Thyroid

A-322

IS IT POSSIBLE TO SELECT PATIENTES WITH INDETERMINATE THYROID NODULES FOR SURGICAL TREATMENT?

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Background:
The main aim is to evaluate the number of thyroid cancers in patients with cytology of Bethesda 1 (B1), Bethesda 3 (B3) and Bethesda 4 (B4), and which factors are related with its diagnosis. It is a retrospective review including patients from January 2017 to October 2022.

Method:
We included 134 patients with a Fine Needle Aspiration (FNA) of B1 (33 patients), B3 (40 patients) and B4 (61 patients). The variables were age, thyroid lobule, nodule size, ACR TI-RADS™ score, number of FNA performed, surgical intervention, pathology result and if cancer, the subtype, TNM and completion surgery if appropriate.

Results:
The median age was 56.4 years and 77.6 % were women. The median thyroid nodule size was 29.6 mm. ACR TI-RADS™ score 4 was the most prevalent and the median number of FNA were 2 for B1 and B3, and 1 for B4 nodules. 103 patients underwent a diagnostic lobectomy and 31 a thyroidectomy. The global number of patients with cancer was 38 (28.4%), 5 (15 %) for B1, 14 (35%) for B3 and 19 (31%) for B4. 55 % of them had a completion surgery due to cancer subtype and size. In the multivariant analysis, ACR TI-RADS™ score 5 and small size nodules were statistically significant for cancer

Conclusion:
Surgical treatment for indeterminate nodules is the first option in our hospital, with an accurate diagnosis of cancer we could avoid it and its side effects.

A-153

PREDICTORS OF HEMATOMA DEVELOPMENT AFTER THYROID SURGERY

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Background:
Postoperative hematoma (PH) is a rare (0.43-6.5%), but a formidable complication after operations on the thyroid gland (TG) causing compression and respiratory disorders and even death. The goal is to determine the risk factors for the PH origin.
Method:
Among 3768 patients operated from 2017 to 2022, 2346 patients were with nodular goiter, 1423 - with Graves' disease (GD). Thyroidectomy was performed in 2865 patients, hemithyroidectomy - in 903. PH was observed in 46 (1.2%) patients.
Results:
All 46 (100%) patients underwent thyroidectomy. 32 (69.6%) of 46 patients took anticoagulants and antithrombotic drugs. Only 11 (34.3%) of them took one drug (antiplatelet or anticoagulant), the remaining 17 (53.1%) used a combination of these drugs. 28 (60.8%) patients were hypertensive. 19 (41.3%) patients suffered from GD. Repeated thyroidectomy was performed in 13 cases (28.3%).
Conclusion:
The main predictors of the PH were:- 1. The volume of operations performed. Thyroidectomy was performed in 46 (100%) patients. 2. The use of antithrombotic and anticoagulant drugs (69.6%), especially the combination of these drugs. A thorough analysis of the ratio of the risk of surgery and changes in the applied anticoagulant therapy regimen is necessary. 3.Hypertension (60.8%), requiring thorough preoperative preparation followed by blood pressure monitoring. 4.GD (41.3%). Long-term use of thyrostatics, a large volume of the gland increase the risk of PH. 5.Repeated operations (28.8%). The presence of fibrosis, changes in anatomical structures increase the PH risks. Such operations should be performed by experienced surgeons.

A-295

IN SPORADIC MEDULLER CANCER DETECTION OF MOLECULAR CHANGES WITH NEXT GENERATION SEQUENCİNG: PATHOLOGIST EXPERIENCE

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Background:
Medullary thyroid Carcinoma (MTC) is a malignant tumor that accounts for 3.5-10% of all thyroid cancers originating from the parafollicular C cells of the thyroid gland . Sporadic form constitutes 70-80% of MTC . Diagnosis and treatment approaches differs from other differentiated thyroid cancers. Today, RET tyrosine drugs with kinase receptor blockers are used in the treatment. Since there is no data on molecular changes in sporadic MTC thyroid cancers in our country , in this study, it was aimed to detect molecular changes by next generation sequencing (NGS) and whole exome analysis (WES).

Method:
In a tertiary center affiliated to University of Health Sciences, all exon analysis of 63 genes was performed by adding 16 more important genes in the molecular pathogenesis to the lung- thyroid gene panel with the NGS method in 20 cases diagnosed with MTC during the 01/01/2007 – 31/12/2020 period. In addition, all patients were evaluated with CHASM-plus THCA-based artificial intelligence software trained on thyroid cancer.

Results:
We found mutations in 3 genes that have the potential to be significant in our cases. One of these genes was in our 63-gene target gene list (HRAS), while two were not on our list (MAP3K1 and EIF1AX). Although the mutation on MAP3K1 was seen in many of our patients, only one of them was homozygous . This case was an advanced stage thyroid cancer with lymph node metastasis.

Conclusion:
Our study of the thyroid revealed the mutation distribution in medullary cancer tumors and the EIF1AX gene mutation is associated with a worse prognosis.

A-273

WHAT HAPPENS WHEN IT IS NOT RECOMMENDED TO STUDY A THYROID NODULE?

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Background:
To know the clinical evolution of patients without the indication for a cytological study of a thyroid nodule (TN) according to the recommendations of the different radiological classifications (ACRTIRADS, EUTIRADS, KTIRADS, and ATA)
Method:
A prospective descriptive study of 216 patients operated on for TN from January 1, 2020, to December 31, 2021. The demographic variables, preoperative clinical variables, ultrasound characteristics of the nodule, and definitive anatomopathological variables' findings were analyzed. Each TN was assigned the corresponding category of the different radiological classifications according to the ultrasound findings
Results:
259 TN were included. After analyzing the indication for FNA according to the recommendations, we obtained 25 patients operated on for TN who did not meet the indications of FNA for any of the radiological classifications. The size by ultrasound was 8(5,5,9)mm; 3(12%) and 5(20%) were Bethesda V and VI. When analyzing the definitive histological result, 13(52%) were papillary thyroid microcarcinoma, 2(8%) papillary thyroid carcinoma, and 1(4%) NIFTP. All patients with a histologic result of malignancy had a NT <10 mm on ultrasound, so FNA would't have been indicated. The presence of lymph nodes with metastatic involvement was demonstrated in 4(16%) of the 25 patients operated on, and a 25% of the patients demonstratedmalignant histology
Conclusion:
More than half of the TNs operated on without indication for FNA, according to recommendations, had a definitive malignant histological result and in 25% had associated metastatic lymph node involvement

A-276

ANALYSIS OF THE DIAGNOSTIC CAPACITY OF RADIOLOGICAL CLASSIFICATIONS TO DETECT MALIGNANCY IN THE STUDY OF THYROID NODULES

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Background:
To know the diagnostic capacity of the different ultrasound classifications (ACRTIRADS, EUTIRADS, KTIRADS and ATA) of thyroid nodules (TN) according to the definitive anatomopathological results

Method:
A prospective descriptive study of 216 patients operated on for TN from January 1, 2020, to December 31, 2021. The demographic variable, preoperative clinical variables, ultrasound characteristics of the nodule, and definitive anatomopathological variables' findings were analyzed. Each TN was assigned the corresponding category of the different radiological classifications, according to the ultrasound findings. Values of sensitivity (SE), specificity (SP), positive predictive value (PPV), and negative predictive value (NPV) were obtained

Results:
The study included 259 TN. The results obtained are: ACRTIRADS 5 (SE 0,43; SP 0,89; PPV 0,7; NPV 0,72); EUTIRADS 5 (SE 0,71; SP 0,71; PPV 0,59; NPV 0,8); KTIRADS 5 (SE 0,52; SP 0,8; PPV 0,62; NPV 0,74), ATA highsuspicion (SE 0,8; SP 0,52; PPV 0,5; NPV 0,81). When the size was added as a variable the SE increased in all radiological categories: ACRTIRADS 5 (SE 0,81; SP 0,05; PPV 0,67; NPV 0,1); EUTIRADS 5 (SE 0,79; SP 0,28; PPV 0,55; NPV 0,1); KTIRADS 5 (SE 0,82; SP 0,06; PPV 0,6; NPV 0,18), ATA highsuspicion (SE 0,82; SP 0,04; PPV 0,46; NPV 0,17)

Conclusion:
The KTIRADS and ATA classification obtains higher SE in categories of high suspicion compared to the rest of the classifications if we take into account size as a factor for suspicion of malignancy, at the cost of very low SP. The highest PPV is presented by ACR-TIRADS in the highest category

A-175

Multidisciplinary management of tracheal perforation following thyroid surgery for malignancyA case report and literature rewiev

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Background:
Total thyroidectomy complications are rare. Currently, this operation has a mortality rate of about 0% and an overall complication rate of less than 3%.
In this presentation, we will look into the literature to discuss the multidisciplinary management of a patient with Hurthle Cell Thyroid Carcinoma who developed tracheal perforation following thyroidectomy.

Method:
A 76-year-old woman with compression symptoms and a body mass index of 36.5 was planned for an elective total thyroidectomy.

Subcutaneous emphysema developed on the face and neck skin after severe coughing on the 6th postoperative day. A fiberobtic bronchoscopy was planned as an emergency procedure for the patient. Bronchoscopy detected a gap between the first and second tracheal rings on the anterior face. She was taken in for an emergency procedure.
During the procedure, a separation was detected between the infective fibrin materials and the region's first and second tracheal rings on the entire anterior surface. Tracheal tissue was not necrotic. The defect was repaired with interrupted. 4.0 pds suture. A strep muscle flap was used to support the repair.

Results:
According to the literature data, the demographic characteristics and preoperative parameters of the patient show parallelism with the other cases presented. We think that the blust effect caused by severe cough and tracheal weakness due to long-term compression of the large thyroid tissue are effective in tracheal perforation.

Conclusion:
Tracheal perforation, if encountered, must be treated effectively in centers of expertise with a large thyroidectomy volume.

A-288

THE RELATION OF RECURRENT LARYNGEAL NERVE TO INFERIOR THYROID ARTERY AND EXTRALARYNGEAL NERVE BRANCHING MAY INCREASE THE RISK OF VOCAL CORD PARALYSIS IN THYROIDECTOMY

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Background:
Anatomical variations of the recurrent laryngeal nerve (RLS) are common during thyroidectomy. We aimed to retrospectively evaluate the risk of RLN paralysis in case of anatomical variations.
Method:
The patients with primary thyroidectomy between January 2016 and December 2019 were enrolled. The effect of age, gender, surgical intervention, neuromonitorisation type, central neck dissection, postoperative diagnosis, neck side, extralaryngeal branching (ELB), non-RLN, relation of RLN to inferior thyroid artery (ITA), grade of Zuckerkandl tubercle on vocal cord paralysis (VCP) were evaluated.
Results:
This study enrolled 1070 neck sides. The ELB rate was 35.5%. 45.9% of RLNs were anterior and 44.5% were posterior to the ITA and 9.6% were crossing between the branches of the ITA. The rate of total VCP was 4.8% (transient:4.5%, permanent: 0.3%). The rates of total and transient VCP were significantly higher in ELB nerves compared to nonbranching nerves (6.8% vs 3.6%, p=0.018; 6.8% vs 3.2%, p=0.006, respectively). Total VCP rates were 7.2%, 2.5%, and 2.9% in case of the RLN crossing anterior, posterior and between the branches of ITA, respectively (p=0.003). The difference was also significant regarding the transient VCP rates (p=0.004). Anterior crossing pattern increased the total and transient VCP rates 2.8 and 2.9 times, respectively.
Conclusion:
Variations of the RLN cannot be predicted preoperatively. This study is the first one reporting that the relationship between RLN and ITA increased the risk of VCP. Thus, RLN should be identified definitely until the entry of larynx to preserve all its branches.

A-317

INTRAOPERATIVE NERVE MONITORING CAN MINIMIZE THE RISK OF INJURY OF THE EXTERNAL BRANCH OF THE SUPERIOR LARINGEAL NERVE

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Background:
We aimed to evaluate the effect of intraoperative nerve monitoring (IONM) on the injury risk of the extenal branch of the superior laryngeal nerve (EBSLN) and EBSLN injury mechanisms with intraoperative cricothyroid muscle (CTM) electromyography (EMG) retrospectively.
Method:
Patients were divided into 2 groups according to superior pole dissection without IONM (Group 1) and with IONM (Group 2), between June 2015 and June 2016. At the end of the operation, in both groups, the CTM needle electrode was placed into the CTM and the EBSLN was stimulated at a point proximally to the division point of superior thyroid pole vessels. EBSLN injury and its mechanism was evaluated by CTM EMG.
Results:
There were 234 patients with a mean age of 45.7+11.7 years in study. Group 1 and 2 included 189 and 187 neck sides, respectively. 29 and 4 EBSLN injuries were detected in Group 1 and 2 respectively ($p<0.001$).
The types of injury were division in 16, thermal injury due in 5, traction trauma in 7, and ligation in 1. The cause of injury in 4 nerves could not be determined.
In the univariate analysis, not using monitoring ($p<0.001$), left neck side ($p=0.037$), Graves disease ($p=0.046$), Friedman type 2 ($p=0.007$) were determined as risk factors for EBSLN injury.
In multinominal logistic regression analysis, not using IONM ($p<0.001$) and Friedman type 2 nerve presence, compared to type 3, were determined as independent risk factors affecting EBSLN injury ($p=0.011$).
Conclusion:
The risk of EBSLN injury may increase inadvertently in superior pole dissection without IONM. IONM-guided EBSLN dissection can minimize the risk of injury.

A-221

METASTASIS IN THE THYROID GLAND. ABOUT TWO CASES

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Background:
Cancers metastasizing to thyroid gland are relatively uncommon in clinical practice. We report two patients with cancer who developed a metastasis to the thyroid gland.

Method:
A systematic review using the PRISMA methodology was performed for metástasis to the thyroid gland. Keywords searched included ‘’thyroid gland’’ AND ‘’ metastasis’’ OR ‘’ neoplasms metastasis’’. Additionally, we use clinical dates’patients for describing both clinical cases that we report.

Results:
We decribe two clinical cases diagnoseded and trated in our hospital by endrocrinology surgery specialists.
Case 1:
A 75-year-old woman was followed-up for treated lung adenocarcinoma. In the third year, a cervical tumor was observed. ECHO and needle aspiration puncture, suggestive of papillary thyroid carcinoma with adenoaptia in levels II-III on the left. Total thyroidectomy was performed with functional left lymphadenectomy from II to V and central compartment, in pathological anatomy metastasis of lung adenocarcinoma.
Case 2:
A 78-year-old woman with multinodular goiter. Diagnosed with clear cell renal cell carcinoma treated with nephrectomy and adrenalectomy. During follow-up, a thyroid nodule was diagnosed, and needle aspiration puncture of clear cell carcinoma metastasis. Total thyroidectomy is performed.

Conclusion:
We conclude that in a patient with a known history of malignant disease, the finding of a new thyroid mass should be promptly evaluated

A-207

IMPACT OF THE USE OF AUTOFLUORESCENCE FOR DETECTION OF PARATHYROID GLANDS DURING THYROIDECTOMY: A RANDOMIZED CONTROLLED TRIAL

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Background:

Hypoparathyroidism is the most frequent complication to thyroid surgery. Recently techniques for auto fluorescence have been introduced in order to visualize and protect the parathyroid glands during surgery. Only a few randomized controlled trials have been reported.

Method:

A multi-center randomized controlled trial to investigate the use of Fluobeam$^{\dot{O}}$LX to visualize the parathyroid glands during first time surgery with total thyroidectomy compared to no use. There was no restriction in the indication for thyroid surgery. The primary end-point was the rate parathyroid hormone (PTH) levels below the lower reference limit the day after surgery

Results:

Some 486 patients were randomized to the use of Fluobeam$^{\dot{O}}$LX (n=246) or controls (n=240). Mean age was 51 (s.d. 15) years and 389 (80.0 per cent) were women.

The rate of low levels of PTH on the first postoperative day was 64 (26.0 per cent) in the Fluobeam$^{\dot{O}}$group and 77 (32.1 per cent) in the control group (p=0.141). Sub-analysis of 174 patients undergoing central lymph node clearance showed that 15 of 82 (18.3 per cent) patients in the Fluobeam$^{\dot{O}}$group and 31 of 92 (33.7 per cent) in the control group (p=0.021) had low levels of PTH the day after surgery.

Conclusion:

The use of auto-fluorescence to detect parathyroid glands during thyroidectomy did not reduce the rate of low PTH levels at postoperative day one significantly. However, it was beneficial in sub-groups of patients.

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Prevention of post-thyroidectomy body weight gain: role of dietary intervention

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Background:
It is widely accepted that patients' experience weight gain after total thyroidectomy, and preventive measures should be recommended. We designed a prospective randomized trial to assess the efficacy of a dietary intervention to prevent post-thyroidectomy weight gain.

Method:
We enrolled patients undergoing total thyroidectomy for both benign and malignant disease between February the 1st and the 30th of June 2013. The patients were prospectively and randomly assigned to receive personalized dietetic counselling (GROUP A) or not (GROUP B). All patients underwent endocrinological follow-up with body weight measurement and thyroid function evaluation at baseline (T1), 45 days (T2) and 9 months (T3). After surgery all patients were treated with levothyroxine.

Results:
The final study group encompassed 30 patients in Group A and 30 patients in Group B. Both groups encompassed 10 males and 20 females. The two groups were similar in terms of age, pre-surgery BMI, thyroid disease, post-operative course and TSH. The evaluation of body weight variations showed that patients in group A did not undergo any significant body weight change at T2 and T3 (p=0.636), while group B patients underwent significant body weight increase at T2 and T3 (mean weight gain 1.1 kg at T2 and 1.5 kg at T3; p=0.02).

Conclusion:
Dietary intervention effectively seems to prevent post-thyroidectomy weight gain, irrespectively of post-operative thyroid function and underlying thyroid condition. Further long-term follow up studies are needed to define the role of a dietary approach after thyroid surgery.

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DID COVID-19 HAVE AN IMPACT ON THE SURGICAL THERAPY OF DISEASES OF THE THYROID AND PARATHYROID GLAND?

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Background:
The Covid-19 pandemic provoked multiple changes also affecting scheduled surgical procedures, such as thyroid and parathyroid resections. We present the impact of the Covid-19 pandemic on thyroid- and parathyroidectomy at a reference center for endocrine surgery.
Method:
Retrospective data analysis of all thyroid or parathyroid resections from 2018 to 2020 was performed. Periods from 01.03. to 01.05.2020 and 01.10. to 31.12.2020 were defined as Covid-19 high-incidence periods ("COV-19") and compared with reference periods ("Ref-18" and "Ref-19").
Results:
The number of thyroidectomies during COV-19 was significantly decreased compared to Ref-18 and Ref-19 (n=44 vs. n=60 and n=79). In 2020 and during COV-19, indication for thyroidectomy was significantly more frequent due to suspected or malignancy (57.1% vs. 54.9% and 44.8%; p=0.05; 65.9% vs. 51.7% and 36.7%; p=0.007). Interestingly, patients who underwent surgery for secondary hyperparathyroidism during COV-19 phases were significantly older (58 yrs vs. 41 yrs and 51 yrs; p=0.04), while LOS was significantly shorter (2d vs. 5d and 4d; p=0.004).
Conclusion:
Especially during the high incidence phases of the Covid-19 pandemic, thyroid surgery numbers were reduced compared to the corresponding previous years. For procedures with standard LOS of more than three days, the Covid-19 pandemic led to a relevant reduction of LOS, presumably to protect multimorbid patients from infection during their inpatient stay. Fortunately, the Covid-19 pandemic had no influence on complication rates as an indicator for the high standardization in endocrine surgery.

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COMPREHENSIVE ANALYSIS OF 129 PATIENTS WITH FOLLICULAR THYROID CARCINOMA- DISTANT METASTASES BEFORE AND AFTER THYROID SURGERY

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Background:
Follicular thyroid cancer (FTC) is the second most common of all thyroid malignances. Retrospective cohort study was performed to determine how often distant metastases of FTC are, and what were the risk factors for dissemination of FTC.

Method:
Study included 129 patients who were operated since 1995 to 2020 with subsequent pathohistological confirmation of FTC. Type of surgery (hemithyroidectomy, total thyroidectomy), type of tumor (minimally invasive or wide spreading), general demographic and social-epidemiological data were analyzed.

Results:
Distant metastases were found in 4 out of 129 operated patients. In 67 patients total thyroidectomy (TT) was performed while hemithyroidectomy (HT) was performed in 52 patients. 10 patients were operated in two stages: HT after which totalization was performed. Four out of 129 patients had distant metastases. One patient with unrevealed multinodular goiter had metastasis discovered in the body of 4^{th} cervical vertebra which was biopsied prior to thyroid surgery. One patient had metastasis at the basis of cranii two years after thyroid surgery (TT), one had pulmonary metastasis thirty-six years after surgery (HT), and one in pubic bone 12 years after thyroid surgery (HT). In all 4 of patients wide spreading histology type was diagnosed.

Conclusion:
Distant metastases of FTC occurred 2 to 36 years after thyroid surgery. Type of surgery didn’t seem to have predictive value for the time of metastases onsetting. In all patients with distant metastases wide spreading type of FTC was diagnosed.

A-228

Widely invasive encapsulated follicular variant of papillary thyroid carcinoma – case report

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Background:

The diffuse or multinodular follicular variant of papillary thyroid carcinoma, now included as widely invasive encapsulated follicular variant papillary thyroid carcinoma, is extremely rare, with only 24 cases described in the literature. It typically occurs in young women and may involve one or both lobes with extra-thyroidal and vascular invasion, in addition to frequent metastasis.

Method:

Clinical Case: 76-year-old man with hemoptoic sputum and a thoracic nodule in continuity with the thyroid, discovered by CT scan, not accessible to fine needle aspirate.

After cervico-sternotomy, a plunging mass of the left thyroid lobe was visualized, with invasion of the recurrent and 6 tracheal rings. Almost total excision of the mass was carried out, with shaving of the trachea.

Results:

Despite the impossibility of doing a tracheostomy if an injury occurred to the right recurrent nerve, a total thyroidectomy was performed with the support of neuromonitoring without complications.

Histological examination showed papillary thyroid carcinoma with follicular pattern and extra-thyroidal, vascular and perineural invasion, low mitotic index, Ki-67<5%, p.(Ala762Val) BRAF mutation and no necrosis – pT4aN0R1.

Scintigraphy after therapy with I131 showed left paratracheal uptake and right pulmonary focus.

Conclusion:

The widely invasive follicular variant papillary thyroid carcinoma has an aggressive behavior and could be resistant to therapy with I131, which, together with the frequent diagnosis in advanced stages, explains its poor prognosis.

The mutation found may be the target of future therapy with BRAF inhibitors.

A-261

SURGICAL APPROACH FOR LOCALLY ADVANCED THYROID CARCINOMA: THE USE OF NIRAF AND ICG ANGIOGRAPHY TO REDUCE POST-OPERATIVE HYPOPARATHYROIDISM.

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Background:
Post-operative hypoparathyroidism is frequent after total thyroidectomy. Its incidence is higher for locally advanced thyroid carcinoma with clinically evident lymphadenopathy(N+) or extrathyroidal extension(EET+). We evaluate the impact of Near-Infrared Auto-Fluorescence(NIRAF) and Indocyanine Green Angiography(ICG) to reduce the rate of post-operative hypoparathyroidism following total thyroidectomy plus central neck dissection compared to standard technique.

Method:
Patients undergoing at least total thyroidectomy plus central neck dissection between January 2018 and Mai 2022 were included and divided in three groups: CG group in which visual identification of parathyroid was performed with standard technique, NR Group in which parathyroid were verified by NIRAF before dissection and ICG group where 2 ml/5mg of Indocyanine Green were injected to visualize parathyroid vascularization before dissection. Outcome measured were: duration of surgery and the rate of transient (tHypo) and permanent hypoparathyroidism (pHypo).

Results:
83 patients underwent total thyroidectomy plus central neck dissection: 29 in CG, 40 in NR and 14 in IGC group respectively. Median operatory time was 191.5 minutes in CG, 206 in NR and 195 in ICG group respectively. Rate of tHypo was 7/29(24.1%) in CG, 8/40(20.0%) in NR and 1/14(7.1%) in ICG, while pHypo rate was 1/29(3.5%) in CG, 2/40(5.0%) in NR and 0/14(0%) in ICG.

Conclusion:
ICG green angiography allows to reduce tHypo and avoid pHypo in patients undergoing surgery for locally advanced thyroid carcinoma, while simple NIRAF will not avoid parathyroids' iatrogenic lesion.

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SOLID VARIANT: PAPILLARY THYROID CARCINOMA IN ITS AGGRESSIVE FORM

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Background:
Papillary thyroid carcinoma(PTC)is the most frequent malignant thyroid tumor,with low mortality rate, and>10histological variants described. Tumor size,histology,extra-thyroid disease and age allow risk stratification of local recurrence,metastases and mortality. Aggressive forms are rare,having a worse prognosis. From those described,solid variant is highlighted.

Method:
A 71 years-old male, no personal history of cervical irradiation and no relevant family history,presented with dysphonia and liquid dysphagia for 1,5 months,associated with weight loss and talk-breathing incoordination. He had a volumous hard cervical mass on the right thyroid lobe,with right vocal cord paresia and medialization. CT-scan showed contralateral tracheal deviation,no cleavage plan with adjacent structures,enlarged mediastinal lymph nodes and small scattered pulmonary nodules. Biopsy revealed a follicular tumor.

Results:
Patient was submitted to total thyroidectomy with partial excision of esophagus,trachea and larynx,reconstructed with direct suture and strap muscle flap. Histopathological exam showed a PTC,follicular solid variant. Patient was discharged at 9thpost-operative day.

Conclusion:
Solid variant of PTC is rare,aggressive and poorly characterized,with controversial biologic behavior.In adults,it is more aggressive,with higher rate of distant metastases. Diagnosis is based on the solid growth pattern. Prognosis is favorable. Most patients have excellent long-term survival, with 30%recurrence rate. Mortality is tumor-related. Systemic therapy(I-131)is indicated for remanent eradication. Life-long follow-up is needed.

A-287

Utility of correlation between TI-RADS and Bethesda classification to estimate risk of malignancy for cytologically indeterminate thyroid nodules

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Background:
Currently, we are directing therapeutic strategy based on the results of fine-needle aspiration biopsy with Bethesda classification. But TI-RADS classification can help surgeon to estimate the risk of malignancy (ROM). The aim of this study was to explore the correlation between the two classifications.

Method:
All patients who underwent a total or hemithyroidectomy from January 2021 to June 2022 in a high-volume endocrine surgery center were included in this study. The results of TI-RADS classification and Bethesda classification were collected, as well as the pathologic results. Multivariable logistic regression analysis was performed to determine whether malignancy correlated with the Bethesda diagnosis and TI-RADS score.

Results:
During the study period, 1.903 patients had thyroid surgery including 848 (44,6%) who had a final pathological thyroid cancer. Bethesda 3 group is associated with ROM of 25,4%. But the association with a TI-RADS 5 increased the ROM to 48,6%. Bethesda 4 group is associated with ROM of 33,5%. Combining with TI-RADS classification, ROM range from 33,3% with TI-RADS 3 to 44,8% with TIRADS 5. Bethesda 5 group is associated with ROM of 81,8%. A combination with TI-RADS 5 score increased the ROM to 90,2%. Our model used the TI-RADS score to stratify the ROM for each Bethesda diagnostic group. We found that the model was more accurate than using the Bethesda diagnosis alone especially for Bethesda III thyroid nodule ROM estimation.

Conclusion:
Use of TI-RADS scores for each Bethesda diagnostic group allow a more accurate assessment ROM for indeterminate thyroid nodules.

A-187

EXTREMELY HIGH THYROID ANTIBODIES AND BILATERAL ENLARGED NECK LYMPHNODES MIMICKING HASHIMOTO THYROIDITIS IN CASE OF ADVANCED PAPILLARY CARCINOMA WITH WIDE-SPREAD NECK METASTASES AND APPARENTLY DISEASE-RELATED TORTICOLLIS

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Background:
Elevated Tg-Ab and TPO-Ab are considering as equivocal factor of risk and prognosis of TC. Some authors suggest that presence and level of Tg-Ab correlate with incidence and negative prognosis of papillary thyroid carcinoma (PTC). Publications didn’t mention more than 9000 IU/ml level of Tg-Ab in PTC and the torticollis as a consequence of lateral neck metastases at presence of high Tg-Ab

Method:
We observe 17 y girl with aggressive PTC, involving all thyroid and most of neck lymhnodes. She was misdiagnosed as Hashimoto thyroiditis and was treated for hypothyroidism during 4 y. At the time of operation she had extremely high levels of serum Tg-Ab (36 000 IU\ml), TPO-Ab (8000 IU\ml), diffuse enlarged irregular thyroid, multiple large bilateral neck lymphnodes (prominent on left side), and clinically apparent left side torticollis (appeared 6 y ago)

Results:
FNAB and MRI revealed PTC with neck metastases. During operation (total thyroidectomy and bilateral radical neck dissection) severe fibrotic changes of back portion of left m.sternocleidomastoideus was found. Multifocal diffuse-sclerosing variant of PTC (1-8 cm) and 36/59 removed bilateral macro metastases (1-4 cm) of II-V neck compartments were confirmed by pathology. Postoperative course was uneventful. I-131-treatment (5.3 GBq) and postablation SPECT revealed 4 small residual neck metastases and no outside uptake. In 6 weeks after operation Tg-Ab diminished to 4000 IU\ml with false negative Tg level

Conclusion:
Very high Tg-Ab may indicate metastatic PTC. Cytokine attack around metastases could cause fibrotic transformation of muscle and torticollis.

A-223

ROUTINARY PREOPERATIVE THYROCALCITONIN MEASUREMENT IN CANDIDATES TO SURGERY FOR THYROID DISEASES: IS REALLY USEFUL?

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Background:
The preoperative routine measurement of basal serum thyrocalcitonin (CT) in candidates for thyroidectomy due to thyroid diseases is at present a subject of debate. Clinical practice suggests to perform it even if 2015 America thyroid association guidelines didn’t express either for or against it.

Method:
The objective of this study was to evaluate the role of systematic basal serum CT measurement in improving the diagnosis and even surgical treatment of medullary thyroid carcinoma (MTC) in patients undergoing thyroidectomy regardless of preoperative CT levels.

Results:
We included 513 patients among more than 700 underwent thyroidectomy towards our Institution from January 2020 to September 2022 with a preoperative diagnosis different from sporadic medullary thyroid carcinoma (MTC). We recorded 7 cases (1.36%) of CT higher than laboratory cut off (10 pg/ml) up to 21 pg/ml. Final histology showed no MTC or C cells hyperplasia. Moreover we recorded 1 cases (0.2%) of MTC (pT1aN0) with normal preoperative CT and 1 case of C cells hyperplasia (0.2%) with any alteration of CT.

Conclusion:
Sporadic MTC is a rare form of differentiated thyroid cancer. According to biological behavior of MTC, performing preoperative CT measurement in patients selected for surgery could be useful to change surgical approach even if it is quite evident than the only CT less than 20 pg/ml isn’t able to detect all the cases of sporadic MTC. An early diagnosis could change the natural history of these kind of tumors that’s why a comprehensive clinical algorithm should always be carried on in the daily routine.

A-291

LONG-TERM IMPACT OF PROPHYLACTIC CENTRAL LYMPH NODE DISSECTION IN PATIENTS OPERATED ON FOR PAPILLARY THYROID CARCINOMA

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Background:
The role of prophylactic central lymph node dissection (pCLND) remains controversial in patients with papillary thyroid carcinoma (PTC). With the aim to assess the impact of pCLND after a long-term follow-up we conducted a single-centre retrospective cohort study.

Method:
Review of consecutive patients with TT+CLND for PTC (1993-2021). Patients with two-staged thyroidectomy, redo surgery, incidental carcinoma, and those who did not receive CLND, were excluded. Postoperative complications, loco-regional recurrence, and mortality were assessed.

Results:
From 257 patients who underwent TT+CND, CND was prophylactic in 143(55.4%) and therapeutic in 114(44.6%). Patients with therapeutic CLND (tCND) had higher prevalence of permanent hypoparathyroidism (7.9% *vs.* 1.4%, P=0.008) and temporary recurrent laryngeal nerve injury (13.2% *vs.* 4.2%, P=0.009). Median follow-up was 75 months (range 37.6-139.8). Patients undergoing pCLND had higher overall survival rates (293±12 *vs.* 217±11 months, p<0.001) and disease-free survival (296.5±11 *vs.* 205.3±11 months, p=0.001). The tCLND group presented 4.5-fold higher loco-regional recurrence than the pCLND group (15.8% *vs.* 3.5%, p<0.001). On multivariate analysis, predictive factors for recurrence were male sex, age > 45, and extracapsular invasion, while laterocervical lymphadenectomy and ^{131}I emerged as protective factors.

Conclusion:
Patients with pCLND presented a higher survival, less loco-regional recurrence and a lower rate of postoperative complications than tCLND. Node involvement does show an impact on mortality once the follow-up is maintained long enough.

A-161

HOW TO MANAGE ADVANCED DIFFERENTIATED THYROID CANCER: STEP BY STEP ANALYSIS OF TWO ITALIAN TERTIARY REFERRAL CENTERS

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Background:
Differentiated thyroid cancer (DTC), papillary and follicular carcinomas, represents 1-2% of all human malignancies. They are slow-growing malignant tumours and the prognosis is good generally. When local invasion occurs with cervical nodes localization, or in the case of distant metastases, the management starts to be complex and the overall survival decreases. Surgery represents the treatment of choice, nevertheless the more the excision must be radical, the more it will be challenging, and significant morbidity and functional loss can follow the treatment. Literature about those tumours, does not provide clear and specific guidelines, but there is a comprehensive agreement about the need for a tailored and multidisciplinary approach.
Method:
The experience on 380 advanced (local, regional, and distant) DTCs in two tertiary referral centers, investigating the rate of radical excision, peri-procedural and post-procedural complications, quality of life, persistence, recurrence rates, and survival rates. We analysed 30 years follow-up digital database, and evaluated all the features above, through appropriate statistical tools.
Results:
The study enrolled 380 patients. Results are critically appraised and compared to the existing published evidence review.
Conclusion:
In the case of locally and/or metastatic ADTC, there are many therapeutic options available. The best treatment requires a multidisciplinary approach. Management in a high-volume center is preferred. Step by step and tailored attitudes must always be a considerable part in the therapeutic decision-making process.

A-313

ARTIFICIAL NEURAL NETWORK APROACH TO THYROID PAPILLARY CARCINOMA PREDICTION IN BENIGN MULTINODULAR GOITER. PRELIMINARY RESULTS

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Background:
Artificial neural networks (ANN) have progressively gained popularity for their flexibility and ability to assist the clinician in cancer detection and treatment. As part of a project aiming at exploring ANN value in thyroid cancer treatment, we sought to identify predictors of incidental differentiated thyroid cancer in benign multinodular goiter (MG) using clinical data within a multilayer perceptron model (MPM).

Method:
We retrospectively reviewed a database of MG patients who underwent thyroidectomy from 1/1/2021 to 1/9/2021 and whose perioperative data were collected. Fortyfive patients met the inclusion criteria and were therefore included in the analysis. All patients had benign cytology. A MPM was run including age, platelets/lymphocytes, lymphocytes/monocytes, neutrophiles/lymphocytes ratios, systemic immune inflammation indexes and sonographic nodules' features as covariates.

Results:
Papillary microcarcinoma was identified in 14 (31,11%) patients.
The model performance was high with an AUC of 0,942 and an accuracy of 92,3% in the testing set in predicting the occurrence of thyroid cancer. Calcifications and vascularity had the most relative importance in predicting the outcome.

Conclusion:
In this study the neural network model yielded high accuracy making a decision support tool from the variables considered feasible if adequate data is provided.
We believe that artificial intelligence and ANN could improve cancer detection and aid surgical decision making in the near future. Further analyses and large databases are essential to validate these findings.

A-213

PROLONGED AND TAILORED FOLLOW-UP BY ENDOCRINE SURGEONS IS A PROTECTIVE FACTOR AGAINST PERSISTENT POSTOPERATIVE HYPOPARATHYROIDISM. ANALYSIS OF A SERIES OF 1965 CONSECUTIVE PATIENTS

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Background:
Postoperative hypoparathyroidism (HypoPTH) is the most common complication after total thyroidectomy (TT). Risk factors have been identified, but no data about the specialists performing follow-up have been previously reported.
Method:
The study focused on 1965 patients undergoing TT at a tertiary level academic centre. Anamnestic, surgical, pathological, biochemical and follow-up data were evaluated. HypoPTH was defined by serum concentration of PTH <10 pg/mL in the 1st and/or the 2nd post-operative day. Persistent hypoPTH was defined by hypoPTH at the end of the trial, lasting >6 months.
Results:
Postoperative HypoPTH occurred in 541 patients (28%). At multivariate analysis, reduced preoperative PTH levels, association of lymph-nodal dissection, higher rate of incidentally removed parathyroids and longer duration of the surgery were independent risk factors. With a drop-out of 9% at final follow-up, hypoPTH regressed in 494 (in 6% >6 months after surgery) and persisted in 53 patients (2,7%). Patients having higher product Calcium x PTH levels at 1st post-operative day (OR 0.821; p=<0,001), or undergoing prolonged and direct follow-up by the operating endocrine surgeon team had a significantly lower risk of persistent hypoPTH (2.5% compared to 33% for other specialists) (OR 0.09; p=<0,001)
Conclusion:
Various patients, disease and surgeon-related risk factors may predict increased postoperative HypoPTH. Prolonged and tailored follow-up directly performed by operating endocrine surgeons may significantly reduce the rate of persistent HypoPTH.

A-180

DISCORDANCE BETWEEN SERUM CALCIUM VALUES WHEN CORRECTED FOR SERUM ALBUMIN OR FOR TOTAL PROTEINS AFTER TOTAL THYROIDECTOMY

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Background:
Corrected serum calcium may be used for selecting patients with biochemical hypocalcemia (BQhypoCa) and starting substitutive treatment with calcium and vitamin D after total thyroidectomy. We aimed to study whether serum calcium corrected for albumin (CaAlb) or total proteins (CaPT) may lead to relevant differences.
Method:
We retrospectively studied 65 consecutive patients. Criteria for considering BQhypoCa was CaAlb ≤8mg/mL on the first postoperative day, where we also determined CaPT, intact parathormone (iPTH) and its decay from preoperative values (iPTH%).
Results:
Values of CaPT were higher than CaAlb, 8.32(0.52) vs 8.03(0.47) mg/dL (P < 0.001) with a mean difference between them of 0.29(0.27). CaAlb showed BQhypoCa in 29/65 (44.6%) patients, whereas using CaPT only 18/65 (27.7%) had values ≤8mg/dL (P = 0.001). From 29 patients with CaAlb ≤8mg/dL, 11 (37.9%) had CaPT >8mg/dL. Comparing these discordant 11 patients with the rest of patients with CaAlb ≤8mg/dL (18), CaAlb was higher, 7.82(0.10) vs 7.46(0,33) (P = 0,001), iPTH was higher, 20.9(12.3) vs 10.8(9.3)pg/mL (P = 0.019) and iPTH% was lower, 48(31.7) vs 79(21.9) (P = 0.005). All discordant patients but 1 recovered early and were off treatment within a month.
Conclusion:
1. The rate of BQhypoCa was around one third lower when conisdering CaPT instead of CaAlb. Discordant patients (CaAlb ≤8mg/mL with CaPT >8mg/dL), harbor a mild BQhypoCa and may be considered for no initial substitutive treatment.
2. Te rate of BQhypoCa from different studies may not be comparable depending on the method used for correcting total serum calcium.

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LOW LEFT VENTRICULAR EJECTION FRACTION AND LONGER DELAY FOR SURGERY REFERRAL INCREASE CARDIAC MORTALITY AFTER TOTAL THYROIDECTOMY FOR AMIODARONE INDUCED THYROTOXICOSIS

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Background:
Thyroidectomy is the option for patients with amiodarone induced thyrotoxicosis (AIT) when amiodarone cannot be stopped. However, the impact of an impaired left ventricular ejection fraction (LVEF) is poorly known. The aim of this retrospective study was to report the post-operative outcomes of total thyroidectomy for AIT according to the baseline LVEF.

Method:
Patients who underwent total thyroidectomy for AIT between 2010 and 2020 with age > 18 and available pre-operative LVEF were included in this retrospective, monocentric study. Patients were dichotomized into: group 1 with LVEF ≥40% (reduced ejection fraction), and group 2 with LVEF <40% (mildly reduced/normal ejection fraction).

Results:
Thirty-four patients belonged to group 1 and 17 to group 2. The latest were younger (median 58.4 [Q1-Q3 48.0–64.9] vs. 69.8 years [59.8–78.3], p=0.0035) and more displayed cardiomyopathy (58.8 vs. 26.5%, p=0.030). Overall, the median delay for surgery referral was 3.1 months [1.9–7.1] and 47.1% were euthyroid during thyroidectomy. Surgical complications accounted for 7.8%. In group 2, surgery improved significantly the median LVEF (22.5 [20.0–25.0] vs. 29.0% [25.3–45.5], p=0.0078). Five-year cardiac mortality was significantly higher in group 2 (p<0.0001): 47.0% versus 2.9% in group 1. A baseline LVEF <40% and a longer delay for surgery referral were significantly associated with cardiac mortality (multivariable Cox regression analysis, p=0.015 and 0.020, respectively).

Conclusion:
These results reinforce the idea that surgery, if chosen, should be performed quickly in patients with a LVEF < 40%.

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LENVATINIB NEOADJUVANT TREATMENT IN ADVANCED HÜRTHLE CELLS THYROID CARCINOMA

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Background:
The promising results being offered by TKIs as adjuvant treatment has led to their use as a neoadjuvant option for advanced thyroid carcinomas. Our aim is to describe a case of a locally advanced Hürthle cell carcinoma, which was successfully treated with the neoadjuvant use of lenvatinib.
Method:
Case report of a patient succesfully treated with lenvatinib prior to surgery.
Results:
A 75yo man was referred to our department due to a cervical mass. The patient had undergone a left lobectomy for a Hürthle cells adenoma 7 years before. The US revealed a 4-cm hypoechoic lesion on the left thyroid bed, and a satellite lesion with the same characteristics, suggesting a metastatic lymph node. FNA was categorized as a Bethesda IV lesion with a high component of Hürthle cells, the same features as observed in the satellite lesion. Complementary tests revealed a 6-cm mass with invasion of the esophagus, the sternocleidomastoid muscle, the carotid artery, and likely the trachea and the prevertebral fascia, with two satellite lesions but without metastatic spread. Our multidisciplinary decision was a down-staging strategy with lenvatinib. After 6 months, Tg decreased from 506 to 41 ng/mL and the CT revealed tumor necrosis and more rounded borders of the lesion. A complete resection of the lesion and the contralateral lobe, with central and left lateral neck dissection was performed, with excellent response after postoperative radiotherapy and RAI.
Conclusion:
Lenvatinib seems to be a good option for selected cases of locally advanced differentiated thyroid carcinoma, which could allow for less aggressive resections.

A-155

LARGE GOITERS AND SURGICAL COMPLICATIONS, MYTH OR REALITY?

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Background:
Classically,large goiters have been considered as a risk factor associated with increased surgical complications in cervical endocrine surgery.The aim of our study is to confirm that increased thyroid volume does not represent a risk factor for complications.

Method:
A review of the prospective database of patients undergoing total thyroidectomy between 2018 and 2021 was carried out.All patients had a minimum follow-up of one year.An estimate of the thyroid volume was made based on the preoperative cervical ultrasound and all the intraoperative and postoperative variables were collected to correlate them with volume.

Results:
121 patients were included,80% are women. 75.2% of surgeries are due to multinodular goiter, 15.7% to Graves' disease, and 9.1% to thyroid cancer.Postoperative incidence of bleeding, nerve injury and permanent hypoparathyroidism was 0%, 2.5% and 5.8%, respectively.There was no correlation between thyroid volume and the incidence of complications. When dividing the sample by quartiles according to thyroid volume, there is even a certain tendency towards less post-surgical hypoparathyroidism in those patients with larger goiters, who even have fewer parathyroid glands removed, however, no statistical significance was reported.

Conclusion:
The size of the goiter, contrary to what has been classically considered, does not seem to be a risk factor for the development of postsurgical complications.There is even a trend that should be confirmed for these patients to have a lower percentage of hypoparathyroidism after surgery.

A-257

OMISSION OF LYMPH NODE DISSECTION IN MEDULLARY THYROID CANCER WITHOUT A DESMOPLASTIC STROMAL REACTION, COULD BE AN OPTION?

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Background:
Predictive criteria to determine the absence of node metastases from thyroid specimens are scarce for sporadic medullary thyroid cancer. It has been suggested that lymph node dissection could be avoided in patients with MTC without a desmoplastic stromal reaction (DSR-negative). The aim of our study was to perform a correlation study between DSR status and lymph node involvement to establish a criterion on which to base prophylactic surgery in these patients.

Method:
This was a multicentric retrospective cohort study of a prospectively maintained database of patients with medullary thyroid cancer treated in two tertiary hospitals using a standardized protocol, and subdivided into DSR-negative and -positive groups. Intraoperative, Long-term clinical and biochemical follow-up data were collected, and baseline parameters and histopathological characteristics were compared between groups.

Results:
The study included 29 patients. In the DSR-negative group (24,1 % of all tumours) no patient had central or lateral lymph node or distant metastases at diagnosis or during follow-up, and all patients were biochemically cured. In the DSR-positive group (75,9 % all tumours), lymph node were present in 66% of patients. DSR-negative tumours were more often stage pT1a and levels of basal calcitonin were significantly lower.

Conclusion:
Lymph node surgery may be individualized in medullary thyroid cancer based on intraoperative analysis of the DSR. Patients with DSR-negative tumours may not require lymph node dissection.

A-248

UNEXPECTED MAPPING OF RECURRENT LARYNGEAL NERVE BY NEAR-INFRARED INDOCYANINE GREEN ANGIOGRAPHY: A CASE SERIES

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Background:
The scientific discovery of the parathyroid autofluorescence in the near-infrared spectrum (NIRAF) was given a new possibility for intraoperative parathyroid identification.During routine use of scanning of parathyroid fluorescence in near-infrared spectrum after the injection of indocyanine green (ICG) we noticed the fluorescence of recurrent laryngeal nerve (RLN) even before performing para-nerval tissue dissection when intraoperative neuromonitoring (IONM) didn't reveal distinct signal.

Method:
ICG angiography of RLN was performed in 7 patients. An IONM was applied as a method of controlling RLN. During the operation, parathyroid glands and RLN were identified by visual inspection (naked eye). To further confirm the location of the parathyroid glands by their autofluorescence, an intravenous injection of ICG was performed with a concentration of 0.25 mg/kg (Diagnostic Green, Germany) with applicationof image-based system Fluobeam-800 or Fluobeam LX (Fluoptic, France). Control method for confirmation of RLN was IONM by using C2 NerveMonitor (Inomed, Germany)

Results:
A good signal was achieved in the near-infrared spectrum from the RLN in all cases after the ICG injection. In patients 6 and 7 we didn't perform any RLN dissection but ICG detected nerves. We confirmed RLN by IONM only after tissue dissection.

Conclusion:
Unexpected effect of fluorescent-guided thyroid surgery is additional detection of RLN even before regional tissue dissection. It could prevent damages of RLN before using IONM. But the main concern of wide implamentation of this metjlogy is high cost of both of equipment (ICG and IONM)

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CONTINUOUS INTRAOPERATIEVE NEURAL MONITORING IN THYROID SURGERY

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Background:
Recurrent Laryngel Nerve (RLN) palsy is still the most upcoming complication in thyroid surgery. Several strategies have been adopted to prevent it including Intermittent IntraOperative Neural Monitoring (I-IONM). The major limitation of I-IONM relies on its functioning: a temporarily evaluation of RLN viability, which allowes detection of RLN palsy only when accoured. Continuous-IntraOperative Neural Monitoring (C-IONM) instead, provides a live detection of RLN viability, giving the chance to adjust surgical manoeuvres and potentially prevent RLN palsy. The aim of the study is to evaluate C-IONM in terms of effectiveness, costs, and possible risks.

Method:
A prospective study was based on a group of 517 consecutive treated by same surgeon patients contributing to a total amount of 773 nerve at risk. General demographic data, indication and type of surgery, pre/post operative laryngoscopy and C-IONM reports were analysed. Finally an evaluation of costs has been performed.

Results:
The total percentage of definitive RLN palsy was equal to 0,26% (2 cases), temporary RLN palsy over 6 months was 1,81% (14 cases) . Bilateral palsy was 0%. No advert events linked to vagal nerve stipulation have been reported. The costs of C-IONM doesn't impact beeing lower than an average energy device.

Conclusion:
C-IONM can give a live detection of RLN palsy and detect even subclinical/asymptomatic palsies. The results of this monocentric study encourage to further evaluate C-IONM in RLN palsy prevention, the absence of adverse events, the contained costs can encourage its utilisation on a routine basis.

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DOES PAPILLARY THYROID CANCER COEXISTENT WITH GRAVES' DISEASE HAVE AGGRESSIVE HISTOPATHOLOGICAL FEATURES AND POOR PROGNOSIS?

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Background:

To compare the clinicopathological features and outcome in papillary thyroid cancer (PTC) patients with and without Graves' Disease(GD).

Method:

A total of 989 patients underwent thyroidectomy for PTC between January 2014 and June 2022 and 53(5.4%) of these patients had GD coexistent with PTC.During the same period, total number of the patients who underwent thyroidectomy for GD was 191.The PTC patients with and without GD were classified as Group 1(n=53) and Group 2(n=936),respectively.The demographic data,clinicopathological features and the recurrence rates were compared.

Results:

Demographic data showed no signficant difference between the two groups.Papillary microcarcinoma was 79%vs43.3% in group1 vs group2(p=0.0001).The tumor size was significantly smaller in group 1 (p=0.0001).The rate of classical variant PTC was significantly higher in group 1vs group2 (64%vs45.6%,p=0.001).In group 1vs Group2,the rate of lymphatic invasion,lymph node metastasis and multicentricity were 3.8%vs18.4%, 0%vs10.2% and 30.2%vs48.6%,respectively(p=0.005,p=0.007 and 0.01,respectively).The rates of recurrence and distant metastasis was higher in Group 2 vs Group1,but the difference was not significant(32%vs0%,p=0.4 and 13%vs0%,p=1,respectively).When GD patients with or without PTC were compared, older age and nodular GD was significantly associated with coexistent PTC(p=0.0001).

Conclusion:

The present study failed to show significant aggressive histopathological features associated with PTC coexistent with GD. Older age and coexistent thyroid nodules in GD were significantly associated with increased rate of PTC.

A-111

CLINICAL OUTCOME AND PROGNOSTIC FACTORS OF PAPILLARY THYROID CARCINOMA PRESENTING WITH ADVANCED DISEASE AT INITIAL DIAGNOSIS

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Background:

Papillary thyroid carcinoma (PTC) generally has a good prognosis. Outcomes are worse when patients present with advanced PTC, such as locally extensive primary tumour and/or distant metastasis. The role of thyroidectomy and radioiodine remains controversial for such patients. Thus, the aim of this study was to describe treatment and evaluate outcome for patients with advanced PTC.

Method:

Patients with PTC with distant metastasis and/or advanced primary tumour (T4), operated in Lund University Hospital between 1st January 2006 and 31st March 2017, were identified by cross-linking data from the Scandinavian Quality Register for Thyroid and Parathyroid Surgery with INCA, the national cancer register for thyroid cancer. Distribution of metastases, and complications to the disease and its treatment were determined by searching patients' health records. Patients were followed until death or 30th June 2021. Survival was calculated as time from first surgery until death, or until end-of-follow-up.

Results:

There were 25 patients with advanced PTC; 11 presented with distant metastasis. In all, 20 patients underwent total thyroidectomy, and 21 were treated with radioactive iodine. At last follow-up, nine patients had permanent recurrent laryngeal nerve paresis, three had a gastrostomy and two patients had a tracheostomy. No patient below 55 years at diagnosis died during follow-up. In patients above 55 years, the 5-year survival was 40%.

Conclusion:

Young patients with advanced PTC have an excellent prognosis. In older patients, complications are common, and overall survival is less favourable.

A-110

EU-TIRADS CAN SERVE AS THE REMEDY FOR OVER-DIAGNOSIS AND OVER-TREATMENT OF THYROID CANCER. RESULTS FROM THE EUROCRINE SURGICAL REGISTRY.

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Background:
EU-TIRADS, has been introduced to reduce over-diagnosis of thyroid cancer (TC) by guiding the selection of thyroid nodules for fine-needle aspiration cytology (FNAC). The aim of the study was to validate EU-TIRADS selection algorithm using real-life practice data from the EUROCRINE, a large international endocrine surgical registry.

Method:
A total of 32,008 thyroid surgeries performed between 03/2020 and 03/2022 were submitted to EUROCRINE. EU-TIRADS category was specified in 68% of submissions. Of the 20,762 operations eligible for the validation analysis 7,907 (38%) malignancies were diagnosed on histopathology. ROC AUC of EU-TIRADS for the prediction of TC ranged from 0.626 to 0.895 across high-volume sites (median 0.752).

Results:
We compared pathological outcomes between patients with a positive and negative biopsy EU-TIRADS recommendation. Patients with TC were stratified into 3 risk categories: minimal (papillary microcarcinomas), high (pT3b or higher, pN1b or pM1) and low/moderate(remaining). In 4390 (55%) of the malignant cases FNAC was not indicated. Of these patients 2,583 (58%) were in the minimal, 1,554 (36%) in low/moderate, and 253 (5.8%) in the high-risk category groups, respectively. Of patients with recommendation for FNAC the respective counts were 24 (0.7%), 2,743 (78%) and 750 (21%).

Conclusion:
EU-TIRADS provides effective preoperative malignancy risk stratification. Efforts should be made to disseminate proper use of EU-TIRADS in the clinical practice since this could limit over-diagnosis and over-treatment of low-risk TC.

A-114

THE INFLUENCE OF BIOLOGICAL TISSUE WELDING AND SMALL INCISION ON THE APPEARING OF SPECIFIC COMPLICATIONS WHILE PERFORMING THYROIDECTOMY WITH CENTRAL LYMPH NODE DISSECTION FOR DIFFERENTIATED THYROID CANCER

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Background:
The risks of specific injuries of the recurrent laryngeal nerve (RLN) and parathyroid glands vary. Biological tissue welding (BTW) is based on concept of sealing vessels and getting feedback according to the tissue's impedance during the passage of electric current through the cells. In our study we compared the frequency of temporary unilateral RLN injury and temporary hypoparathyroidism on the basis of recognized international and our center's data.

Method:
We conducted a retrospective analysis of 311 consecutive patients who were operated with the usage of BTW between September 2016 and June 2020 in our medical center. 61 patients were selected who underwent thyroidectomy (TT) for differentiated thyroid cancer (DTC) with central lymph node dissection using Kocher’s small incision. The assesment of the RLN injuries based on the nerve at risk (NAR) method.

Results:
Six men (9,8%) and 55 women (90,2%) were operated on. The average age of the patients was 45 years (18-78). NAR - 122 nerves. The average length of the incision - 3,6 cm (3,1-4,0); the cases of unilateral vocal cord paresis - 3 patients (2,4%); temporary hypoparathyroidism postoperatively - 2 patients (3,2%). There was no case of postoperative bleeding, seroma formation or permanent injuries.

Conclusion:
Performing surgeries on the thyroid gland for DTC through a small incision on the neck and with the use of BTW does not lead to an increased risk of complications. In our study, the risks of unilateral vocal cord paresis (2,4%) and temporary hypoparathyroidism (3,2%) fully correspond to the average global data, 2-11% and 1,6-38%, respectively.

A-249

SURGICAL TREATMENT OF SOLID VARIANT OF PAPILLARY THYROID CARCINOMA WITH A FIVE YEAR FOLLOW UP: FIFTEEN-YEAR EXPERIENCE IN TERTIARY CENTER.

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Background:
Papillary thyroid carcinoma (PTC) is the most common malignant endocrine tumor and represents up to 85-90% of all thyroid gland malignancies. Solid variant represents one of the rarest variants of papillary thyroid carcinoma, with an incidence of about 2.6% according to retrospective studies. We have analyzed characteristics of 50 patient with solid variant of PTC treated at our Institution, with the aim of better understanding the prognosis of patients diagnosed with this variant.

Method:
In this retrospective study, data of all patients that underwent thyroid surgery between January 2003 and January 2018 were analyzed. All relevant information was obtained from prospectively maintained institutional database. We have used the following criteria for diagnosing solid variant PTC: more than 70% of solid growth pattern, nucleus characteristics of papillary thyroid carcinoma and the absence of tumor necrosis.

Results:
Of total of 1867 consecutive patients operated for thyroid follicular-cell carcinoma during fifteen year period, 50 had solid variant of PTC (13 male and 37 female, with the average patient age of 55 years). The incidence of solid variant PTC is 2.67% in our series. The average tumor size was 3.4 cm. Average survival time was 197.1±4.8 months (95%CI=187.8-206.5). Two patients died as a consequence of the malignancy, making the five-year survival 95.6%. One patient had a disease recurrence, which was subsequently treated.

Conclusion:
The results of this study helped us understand that the solid variant of PTC is not as aggressive as previously thought to be.

A-264

DOES CONTINUE INTRAOPERATIVE NERVE MONITORING DECREASE THE RATE OF PERMANENT VOCAL CORD PALSY DUE TO TRACTION INJURY OF RECURRENT LARYNGEAL NERVE

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Background:
The aim of the study was to evaluate the choice of intraoperative nerve monitoring (IONM) technique (Intermittent vs Continue IONM)on the rate of loss of signal (LOS) and vocal cord palsy (VCP) in a tertiary referral endocrine surgery center.
Method:
2493 nerve at risks (NAR's) in 1407 patients were included in the study. Group 1 included 1643 NAR's underwent CIONM and group 2 included 850 NAR's underwent intermitten IONM. The demographic data, clinicopathological features and the rate of LOS and permanent VCP were compared in both groups.
Results:
The demograpghic data and the clinicopathological features showed no significant difference between the groups. The rate of LOS showed no significant difference between group 1 and 2 (2.8% vs 2.9%, p=0.8 respectively). The rate of traction injury in group 1 and 2 were 2.3% vs 2.5% (p=0.8) respectively. The rate of non-traction injury was also similar in group 1 and 2 (0.48% vs0.47% p=0.8 respectively). The rate of permanent VCP in group 1 and 2 were 0.6% vs 0.7% (p=) respectively. The rate of permanent VCP was significantly associated with non-traction injury in both groups (p=0.001).

Conclusion:
The impact of the IONM technique , either continue or intermittent on the rate of the traction or non traction injury showed no significant difference in a tertiary referral endocrine surgery center.

A-216

Use of ‘T’ incision for Retrosternal goitres in an iodine deficient population

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Background:
The treatment of choice for retrosternal goiter with or without clinical symptoms is surgery. Majority of the cases can be performed through a cervical approach. Sternotomy is fraught with its own antecedent complications and is reserved for goiters extending beyond the aortic arch. For goiters having a large retrosternal part extending until the inferior border of the arch of aorta, ‘T” incision with downward vertical extension may prove to be advantageous. We report our experience

Method:
We have used ‘’T’’ incision for management of goiters with retrosternal extension in a total of 10 patients. The length of the linear cervical incision was 12 cm. The ‘T’ cut was given at 6 cm. The flaps raised were fixed to the anterior chest wall which gave the much needed exposure of the surgical field. Strap muscles were cut in all patients . SPSS version 20.0 was used.

Results:
Among the total of 10 patients who were given ‘T’ incision, the mean age was 51.6 ± 12.4 years. The mean duration of goiter was 8.80 ± 3.11 years. The mean weight of the goiter was 650 ± 250 g. 8 patients were euthyroid while 2 were hyperthyroid on anti thyroid drugs. All patients were proven colloid goiters by pre operative aspiration cytology. 3 patients were found to have tracheomalacia and needed tracheostomy.Histology of all 10 patients was reported as multinodular goiter. One patient had temporary RLN paralysis and one had scar contracture.

Conclusion:
We found that using a ‘T’ incision for a large retrosternal goiter was safe and effective. It provided adequate surgical exposure and avoided a more morbid procedure like sternotomy.

A-211

PATIENT AND HEALTHCARE WORKERS' PERSPECTIVES ON DECISION-MAKING BETWEEN CONVENTIONAL OPEN AND TRANSORAL ENDOSCOPIC THYROID SURGERY

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Background:
Endoscopic thyroid surgery (ETSx) remains a distant second choice as compared to conventional open thyroid surgery (OTSx) in India. The aim of this study was to explore the factors influencing a patient's choice for ETSx when eligible, and Healthcare Workers (HCW) perspectives on it.

Method:
Patients eligible for ETSx between January 2020 and December 2021 were included. An interviewer-administered questionnaire focusing on patients' reasons for choosing surgery mode was used. HCWs who have assisted in ETSx were administered a questionnaire on their perspectives on ETSx and OTSx. p value <0·050 was considered statistically significanct. .

Results:
Patients Perspectives: 36 patients were eligible for ETSx, 21 opted OTSx and 15 ETSx. Education level, marital/employment status or nodule size were not significant in decision making. Long waiting period (50%) and cost (50%) were the main limiting factors. 33% in OTSx would choose ETSx if given the option again.
HCWs perspectives: Response rate 89% (12 surgeons, 8 and 5 scrub nurses (n=25)). 96% felt ETSx is associated with a more satisfactory scar, fewer complications (52%) and lesser chance of RLN injury (68%).76% would opt for TOETVA if they ever require thyroid surgery. Age (50%) and cost of surgery (40%) were the most important factors in selecting the mode of surgery.

Conclusion:
One-third of patients regretted their decision and would opt for ETSx if could rewrite their decision. This reflects a gap in patient care while imparting information about ETSx, which will widen further in developing countries if approprite steps are not taken.

A-227

OUTCOME OF THE SURGICAL TREATMENT OF METASTASES TO THE THYROID GLAND

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Background:
Metastases to the thyroid gland (MTG) are a rare indication for thyroid surgery and present up to 1-3% of all thyroid carcinomas. MTG gland are with poor prognosis, usually to an advanced stage of the primary tumor. The aim of this study was to present the incidence, clinical characteristics, and treatment outcome of MTG in a single, tertiary high-volume center.

Method:
From 1995 to 2022, patients who underwent thyroidectomy at our center were analyzed. Patients with a confirmed diagnosis of MTG were identified using the results of histopathology analyses. We reviewed the database to find out general clinical characteristics, survival time, time from diagnosis of primary tumor, follow-up, and treatment outcome.

Results:
Out of 17307 patients who have undergone thyroid surgery, 4471 (25.8%) patients had thyroid malignancy. MTG were found in 14 patients (0.08% of all patients who have undergone thyroid surgery, i.e. in 0.31% of patients with thyroid malignancies), with a mean age of 60.4 at the time of surgery. The most common primary tumor site were kidney and lungs in four patients, esophagus and colon in two patients, and pharynx and breast in one case each. Total thyroidectomy was feasible and performed in seven patients and in two patients lobectomy was done. The mean survival time following thyroid surgery was 48.8 months (range 1-204). One-year survival was 71%, and five-year survival was 26%.

Conclusion:
MTG are rare and mainly poor prognosis is associated with the characteristics of the primary tumor. Still, in selected cases, surgical treatment of MTG should be considered.

A-283

ANATOMICAL FACTORS INCREASING THE POTENTIAL RISK OF RECURRENT LARYNGEAL NERVE PARALYSIS IN PATIENTS CONSIDERED AS LOW RISK THYROIDECTOMY

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Background:
Recurrent laryngeal nerve (RLN) paralysis is one of the main complications of thyroidectomy. First time operations of patients with low thyroid lobe volume (<40 ml), without Graves' disease or without papillary carcinoma larger than 1 cm can be considered as low risk thyroidectomy for RLN paralysis. However, several intraoperative findings can increase risk of RLN paralysis. In this retrospective study, intraoperative anatomical factors that can potentially affect RLN paralysis were evaluated.

Method:
Patients that were operated between June, 2016 and June 2022 were evaluated for low risk thyroidectomy. Presence of nonrecurrent laryngeal nerve, RLN branching, Ligament of Berry or vessel entrapment of RLN and presence and grades of Tubercle of Zuckerkandl were analyzed.

Results:
A total of 993 nerves at risk were evaluated. One (0.001%) nonrecurrent laryngeal nerve were observed. Branching of RLN were seen in 266 (26.8%) nerves and 250 (93.9%) nerves have 2 branches, 14 (5.2%) nerves have 3 branches, 2 (0.2%) nerves have 4 branches. During dissection, Ligament of Berry entrapment or vessel entrapment were seen in 203 (20.4%) nerves. Grade II and grade III tubercle of Zuckerkandl were seen in 116 (11.7%) and 210 (21.1%) thyroid lobes, respectively.

Conclusion:
Preoperatively unpredictable anatomical factors that may increase the risk of RLN paralysis are frequent. Therefore, description of low risk thyroidectomy is not a valid entity and well-understood anatomical knowledge is essential.

A-304

CONTINUOUS VERSUS INTERMITTENT INTRAOPERATIVE NEUROMONITORING FOR THE PREVENTION OF RECURRENT LARYNGEAL NERVE PARALYSIS IN PATIENTS OPERATED FOR HYPERTHYROIDISM

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Background:
Thyroidectomy for the definitive treatment of hyperthyroidism is challenging due to increased vascularity and thyroid volume. Increased risk of Recurrent Laryngeal Nerve(RLN) paralysis in hyperthyroidism were shown in studies especially in Graves' Disease. Therefore, continuous intraoperative neuromonitoring (C-IONM) of RLN may give a better solution to prevent this complication. In this study, the efficacy of continuous versus intermittent neuromonitoring (I-IONM) for prevention of RLN paralysis were retrospectively evaluated.

Method:
Patients that were operated for the definitive treatment of Graves' Disease, toxic multinodular goiter and toxic solitary adenoma between June, 2016 and July, 2022 were included. Patients had antithyroid medications prior to surgery and operated under euthyroid state.

Results:
A total of 200 patients and 365 nerves at risk(NAR) were evaluated. The diagnosis of patients was Graves' Disease in 87(43.5%) patients (173[47.4%] NAR), Toxic Multinodular Goiter in 82(41%) patients (161[44.1%] NAR) and Toxic Solitary Adenoma in 31(15.5%) patients (31[8.5%] NAR). Postoperative RLN paralysis was observed in 26(7.1%) NAR. I-IONM was used in 209(57.3%) nerves at risk and C-IONM was used in 156(42.7%) nerves at risk. RLN paralysis was observed in 21(10.0%) nerves in I-IONM group and in 5(3.2%) nerves in C-IONM group(p=0.012). For permanent RLN paralysis, there was no significant difference between two groups.

Conclusion:
C-IONM gives a real-time functional information about RLN and has better efficacy to prevent RLN paralysis compared to I-IONM in patients operated for hyperthyroidism.

A-312

PREDICTION OF RECURRENT LARYNGEAL NERVE PARALYSIS IN THYROIDECTOMY BY USING MACHINE LEARNING ALGORITHMS

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Background:
Recurrent Laryngeal Nerve (RLN) paralysis is one of the major complications of thyroid surgery. In order to avoid bilateral RLN paralysis staged thyroidectomy may be planned in high-risk patients. In this study, to determine high-risk patients, machine learning algorithms were applied for the prediction of RLN paralysis in patient who underwent thyroidectomy
Method:
Patients who underwent thyroidectomy/lobectomy ± central neck dissection between June, 2017 and June, 2022 were included in the study. The parameters of age, gender, body mass index, main diagnosis, fine needle aspiration biopsy results, number of neck intervention, operation type, gland volume, largest nodule diameter and presence of substernal component, presence of vocal cord paralysis were collected for machine learning. Patients were divided to test and training groups in a 80:20 fashion. Support Vector Machines (SVM), K-Nearest Neighbor (KNN), Decision Tree (DT) and Naïve Bayes (NB) were used as machine learning algorithms.
Results:
A total of 825 patients were evaluated. The rate of RLN paralysis were 8%. Sensitivity, specificity and area under curve values were 91%, 69%, 86% in SVM, 81%, 73%, 87% in KNN, 82%, 81%, 81% in DT and 73%, 76%, 73% in NB, respectively.
Conclusion:
Machine learning is a useful method for preoperative decision making for prediction of RLN paralysis. These tools may help for preoperative planning of staged thyroidectomy in clinical practice in high-risk patients.

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Effect of surgical treatment on the progression of locally advanced differentiated thyroid carcinoma infiltrating the recurrent laryngeal nerve.

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Background:
Although the prognosis of differentiated thyroid carcinoma (DTC) is generally favorable, locally advanced tumor limits survival. The aim of our work was to assess the impact of surgical treatment (shaving vs. resection of the recurrent laryngeal nerve (NLR)) on the prognosis of patients with locally advanced DTC infiltrating the NLR.
Method:
We retrospectively analyzed a group patients with DTC operated during the years 2007-2021. Of the entire group of 1401 patients, 33 (2.35%) had infiltrating NLR (10 men, median age 41 years, median follow-up 59 months).
Results:
The most frequent site of NLR infiltration was in the ligamentum Berry area (17x) and in the central neck compartment with metastatic lymphadenopathy (13x). 8 patients (24.2%) had preoperative NLR paresis. 25 patients were cured, 8 (24.2%) had disease progression, of which 6 (18.2%) died. The type of surgery for NLR (resection versus shaving) did not affect the prognosis of the patients (p= 0.12). The risk factors for the progression of the disease in these patients were shown to be: the occurrence of postoperative NLR paresis after NLR shaving (OR 7.8, p=0.05), age >55 years (OR 5.33, p=0.033), remaining tumor residue on the neck with indicated external radiotherapy (OR 7.33, p= 0.017) and the presence of distant metastases (OR 80.5, p=0.0003).
Conclusion:
When preoperatively functional NLR is infiltrated by differentiated thyroid carcinoma, its shaving should be the preferred surgical intervention, which assumes preservation of quality of life. If NLR paresis occurs postoperatively, a worse course of the disease can be expected.

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TRACHEAL RECONSTRUCTION IN ADVANCED THYROID CANCER USING STENTED AORTIC MATRICES

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Background:
Extensive airway involvement in thyroid cancer is associated with poor prognosis and constitutes one of the main causes of mortality. Airway replacement based on the implantation of stented aortic matrices emerges as a novel tool in the treatment of primary tracheobronchial malignancies and tracheal involvement in advanced thyroid cancer.

Method:
We conducted a retrospective cohort study including patients who had tracheal replacement with a stented aortic matrix for advanced thyroid cancer with (crico)-tracheal invasion at our centre.Cryopreserved aortic allografts were used for tracheal reconstruction. To prevent airway collapse, silicone stents were placed inside the grafts.The bioprostheses were covered with local muscle flaps.No immunosuppressive therapy was required.

Results:
Over 5 years, 10 patients underwent tracheal replacement with stented aortic matrices.2 patients underwent a concomitant thyroidectomy with neck dissection and 8 had thyroidectomy prior to airway replacement and presented with recurrence. A R0 resection was achieved in all patients. There were no cases of perioperative mortality. At a median follow-up of 19 months, 8 patients were alive and breathing and speaking normally. 2 patients died of causes unrelated to the graft.De novo generation of pseudocartilage was observed within the grafts.

Conclusion:
Tracheal resection using stented aortic allografts is a simple and efficient technique of tracheal replacement that is becoming part of standard care at our institution. This approach allows for a R0 resection in advanced thyroid malignancies considered thus far as non-resectable.

A-210

A SIMPLIFIED CALCIUM-SUPPLETION PROTOCOL EFFECTIVELY TREATS POST-THYROIDECTOMY HYPOPARATHYROIDISM

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Background:
Calcium-homeostasis disruption following thyroidectomy remains a significant issue. It has been hypothesized that earlier supplementation of calcium allows the injured parathyroids rest(i.e. splinting). We assessed the incidence of hypoparathyroidism(hypoPT) among patients(pts) who underwent a total thyroidectomy(TT) or 2-stage thyroidectomy(2ST) at a tertiary referral centre using such a protocol. Until 2021, a tailored protocol was used; a more simplified version was introduced subsequently. We compared the two protocols and rates of post-operative hypoPT.
Method:
Our database was queried for pts who underwent a TT or 2ST between 2019-2022. Clinical and outcome data were collected and analysed. PGRIS-score: 4-(glands auto-grafted + glands in the specimen).
Results:
187pts were included, most female(*n*=152;81%), median age 50[range:19-94]. Most underwent TT(*n*=111;59%), while 76(40.6%) had 2ST. 25pts(13%) underwent concurrent central neck dissection(CND). While 38pts(21%) were hypoPT on discharge, only 18(10%) remained so at 1mo. At 6mo, only 5pts(3%) developed long-term hypoPT. Among those with hypoPT at 1mo, there was no difference between splinting-protocols($p>0.05$). Incidences were similar for sex, surgery, and CND($p>0.05$). The rate of hypoPT at 1mo was higher for those with low vitamin D, or with PGRIS<4($p<0.05$).
Conclusion:
While 1 in 5 developed hypocalcaemia after surgery, only 3% suffered from long-term hypoPT at 6mo. A more simplified splinting-protocol provided similar long-term outcomes. Incorporation of less cumbersome protocols and pre-operative vitamin D supplementation should be considered.

A-201

COMPARISION BETWEEN IMMEDIATE VS DELAYED BLEEDING AFTER THYROIDECTOMY

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Background:
It is important to identify risk factors for post-thyroidectomy bleeding that requires airway intervention or surgery . In this study, we divide the bleeding cases into two groups, immediate and delayed, and investigate whether there was a difference in each group.
Method:
From March 2009 to June 2022, we retrospectively compared 129 post-thyroidecotmy bleeding cases into two groups, immediated (2nd op date < POD#7) and delayed (2nd op date > POD#7) group. We investigated patient characteristics, surgical procedure kinds, and clinical outcomes.
Results:
There were no significant differences between the two groups in the basic pateitn characteristics, such as height, weight, and sex ratio. There were also no differences in the kind of surgical procedure ; total thyroidectomy, less than total, and recurred cases. The lateral neck dissection was more done in the group of delayed bleeding than immediate bleeding.
Conclusion:
In the comparison between immediate and delayed group, there were no differences between the two groups except the frequency of the performed LND. The 2nd op date was less than 12 hours in 74 cases, and less than 36 hours in 109 cases. The LND performed ratio was 22.9% in the case that less than 12 hours, and 29.3% in the case that less than 36 hours.

A-202

TRANSORAL ROBOTIC THYROIDECTOMY VS TRANSORAL ENDOSCOPIC THYROIDECTOMY VESTIBULAR APPROACH

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Background:
The transoral endoscopic thyroidectomy vestibular approach (TOETVA) and transoral robotic thyroidectomy (TORT) have been an important way of thyroidectomy in recent years that have no scar on the neck with few complications. In this study, we compared TORT and TOETVA in patients with papillary thyroid cancer.
Method:
From January 2019 to April 2022, we retrospectively compared 100 consecutive TORT cases and 300 TOETVA cases. We investigated patient characteristics, pathologic findings, and clinical outcomes including total operative time.
Results:
There were no significant differences between the two groups in terms of op time. The op time of TORT and TOETVA showed the similar results at 82.3min and 81.4m (P = 0.784). The median number of retrieved lymph nodes for TORT and TOETVA were 2.82 and 2.89. (P = 0.833), and the median number of retrieved metastatic lymph nodes (positive lymph nodes) for TORT and TOETVA were 0.74 and 0.40. (P = 0.056). The median days of POD for TORT and TOETVA were 2.39 and 2.54. (P = 0.091).
Conclusion:
In this single center study, we found that TORT have no difference from TOETVA about op time and retrieved lymph nodes. In terms of lymph node and POD, TORT has a similar number of retrived metastatic lymph nodes and PODs with TOETVA.

A-203

SURVEY RESUTLS COMPARING PATIENT SATIRFACTION WITH TRANSORAL THYROIDECTOMY VERSUS OPEN THYROIDECTOMY

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Background:
The number of patients who undergo Transoral thyroidectomy has been increased with the recent progress in thyroid surgery techniques and the increasing number of patients concerned about cosmetics. This study plans to compare TOET survey results to Open thyroidectomy and find out if there is any difference between 2 groups.
Method:
From August 2021 to January 2022, 100 patients who underwent thyroidectomy performed by a single surgeon at Gangnam Severance Hospital were enrolled in this study. Before and after surgery, the HADS, PCS, QoR-15, PCL surveys were done. The patients with insufficient survey result were excluded from the study.
Results:
The HADS-Anxiety score of TOET and open thyroidectomy was 7±1.032 and 7.45±0.75 (P value = 0.480). The HADS-Depression score of TOET and open thyroidectomy was 4.22±0.781 and 5.52±0.84 (P value < 0.05(0.039)). The PCS score of TOET and open thyroidectomy was 10.5±3.504 and 9.21±1.80 (P value = 0.773). The QoR POD#0 score of TOET and open thyroidectomy was 126.75±5.908 and 129±4.39 (P value = 0.527). The QoR POD#1 score of TOET and open thyroidectomy was 86.02±6.885 and 91.4±7.16 (P value = 0.236). The QoR POD#2 score of TOET and open thyroidectomy was 110.75±6.253 and 116.05±6.54 (P value = 0.279). The PCL score of TOET and open thyroidectomy was 10.27±3.103 and 8.76±2.06 (P value = 0.409).
Conclusion:
There was no difference between the results of TOET survey and open thyroidectomy. From these results, the post-operative stress about pain and the degress of recovery that patients feel after the surgery are similar between TOET and open thyroidectomy.

A-145

THYROID SURGERY WITHOUT SACRS –TOETVA AS A NEW ENDOCOPIC SURGICAL PROCEDURE- HUNGARIAN EXPERIENCES

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Background:
In thyroid surgery recently is a very important issue to maintain good cosmesis of the scar which can always be visible. Even smaller incisions have been utilized in order to improve satisfaction of the patient. In the last decades new endoscopic techniques have been applied using breast or axillary approach with unfavourable cosmetic outcome In the last couple of years there has been a development of a new endocopic technique known as transoral endoscopic thyroidectomy vestibular approach (TOETVA) which is suitable for patients with small thyroid carcinomas without extrathyroidal extension, for benign nodules up to 4-5 cm, and also for parathyroid adenomas. Metastatic thyroid diseases and large substernal goiters should be operated with conventional open surgery.

Method:
From June 2018 to October 2021, a total of 13 patients with thyroid cancer or nodule (size of 1-5 cms) were operated with TOETVA in our institute. Lobectomy was performed in 12 cases, and 1 patient had ithmusectomy.

Results:
11 patients were female, 2 were men, mean age was 48 years (41-72) . 11 right sided, 1 left sided and 1 isthmusectomy were performed.TOETVA patients had no drain placement, and were discharged on the 1st postop day.The average operating time was 107 minutes.

Conclusion:
A TOETVA is the only scar –free, and effective procedure of the thyroid gland,which provides good cosmetic outcome. The long operative procedure time will be shortened with experience after a learning curve of 15-20 operations. The surgeon must be a high volume surgeon on the field of thyroid surgery.

A-167

DIFFERENCES AND SIMILARITIES BETWEEN FAMILIAL AND SPORADIC PAPILLARY THYROID CANCER

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Background:

Papillary thyroid cancer (PTC) is the most common type of thyroid cancer (70-80% of all thyroid cancer cases). Familial PTC (fPTC) affects 5% of patients with PTC and it demonstrates more aggressive features with higher rates of local recurrence than the sporadic counterpart.

Method:

To analyse the differences and the similarities between familial and sporadic PTC we retrospectively reviewed 231 patients with PTC, of which 47 (20,3%) were catalogued as fPTC in our centre.

Results:

Of the patients with fPTC, 36 (76,6%) were women and 11 (23,4%) were men with a median age of 49,9 years. In sporadic PTC, 148 (80,9%) were women and 35 (19,1%) were men with a median age of 49,16 years. All the patients underwent total thyroidectomy. In terms of aggressiveness, 10 patients (21,3%) with fPTC presented capsular invasion and 9 (19,1%) vascular invasion, while in sporadic PTC we found capsular invasion in 28 patients (15,3%) and vascular invasion in 6 (3,3%). In 12 patients (25,5%) with fPTC we observed cervical lymph node metastases and in 4 patients (8,5%) distant metastases. Among the sporadic cases, we found 29 (15,8%) and 4 patients (2,2%) respectively. During the follow-up we identified 11 cases of lymph node recurrence, 3 patients (6,4%) with fPTC and 8 (4,4%) with sporadic PTC.

Conclusion:

According to our experience, patients with fPTC presented a higher rate of capsular invasion, vascular invasion, cervical lymph node metastases, distant metastases and recurrence than sporadic PTC. Nevertheless, vascular invasion was the only statistically significant were (p=0,00).

A-229

A CORRELATION STUDY BETWEEN HISTOLOGICAL RESULTS AND ULTRAOSUND FINDINGS IN THYROID GLAND NODULES

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Background:

The Thyroid Imaging Reporting and Data System (TI-RADS) is a 5-point classification to determine the risk of cancer in thyroid nodules based on ultrasound characteristics.

Method:

A retrospective review was made of all patients who underwent surgery due to thyroid nodular disease between January 2015 and December 2020 in our centre. We analysed the correlation between the histological results of surgical specimen and the TI-RADS score.

Results:

A total of 230 patients were included. We grouped TI-RADS grades 2 and 3 as “negative test” (group 1) and grades 4 and 5 as “positive test” (group 2). Therefore, the lesions with benign histopathological findings and classified as TI-RADS<4 represented true negative cases, and those with malignant histopathological findings and classified as TI-RADS≥4 represented true positive cases.

In group 1 (139 patients) we found 45 colloid nodules, 42 hyperplastic nodules, 12 chronic thyroiditis, 18 follicular adenomas, 4 oncocytic adenomas and 18 cancers (7 papillary microcarcinomas). Therefore, we identified 121 true negative and 18 false negative.

In group 2 (91 patients) we found 19 colloid nodules, 8 hyperplastic nodules, 9 chronic thyroiditis, 12 follicular adenomas, 2 oncocytic adenomas and 41 cancers. Therefore, we identified 41 true positive and 50 false positive.

Conclusion:

Of the 230 study patients, 171 were diagnosed with benign and 59 with thyroid cancer. Correlation of histological results with preoperative ultrasound reports showed an initial sensitivity of 69,5%. After excluding 7 patients diagnosed with occult microcarcinoma, sensitivity increased to 78,9%.

A-289

CENTRAL LYMPH NODE INVOLVEMENT IN PATIENTS OPERATED ON FOR PAPILLARY THYROID CARCINOMA: IS THE SURGEON RELIABLE?

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Background:
Routine prophylactic central lymph node dissection (pCLND) remains controversial in patients with papillary thyroid carcinoma (PTC). Single-centre retrospective cohort study designed with the aim to assess the performance of the surgeon detecting suspicious lymph nodes (LN) in the central neck compartment and its impact on the recurrence
Method:
Review of consecutive patients with TT+CLND for PTC (1993-2021). Patients with two-staged thyroidectomy and those without CLND, or no pathology report assessing LN, were excluded. Postoperative complications and loco-regional recurrence were assessed
Results:
From 256 patients who underwent TT+CLND, CLND was prophylactic in 142(55.5%) and therapeutic in 114(44.5%). LN were positive in 59% of cases. Among patients in whom the surgeon did not report suspicious LN and performed a theoretical pCLND, 51(35.9%) had positive LN (3.5% with >5 positive LN).
Surgeon's sensitivity detecting suspicious LN was low (66%) with similar NPV (64%), and better specificity (86%) and PPV (87%). Median follow-up was 75 months (range 37.6-139.8). Loco-regional recurrence was higher in patients with therapeutic CLND and pCLND-positive LN than those with pCLND-negative LN (17.2% *vs.*7.8% *vs.*1.1%, respectively; P=0.001), differences becoming more evident beyond 5 years of follow-up. Permanent hypoparathyroidism and recurrent laryngeal nerve injury were similar in pCLND group, regardless involvement of LN
Conclusion:
Surgeon's sensitivity detecting suspicious LN is low, missing more than one third of patients with positive LN with increased local-recurrence if CLND is not routinely performed.

A-293

TROMS (TRAINEE-REPORTED OUTCOME MEASURES): THE NEW FOCUS OF TRAINING IN ENDOCRINE SURGERY

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Background:
PROMs (Patient-Reported-Outcome-Measures) are an emerging method to assess healthcare quality. Similarly, we propose assessing trainee satisfaction using TROMs (Trainee-Reported-Outcome-Measure) questionnaires. With the aim to improve trainee implication and perception in Endocrine Surgery(ES) we conducted a prospective multicenter study

Method:
The technique of thyroidectomy was split into 4 steps to be sequentially completed by the trainee. A specific TROMs survey was designed and distributed to evaluate trainee satisfaction before and after its implementation. Members of the Endocrine Section of the Spanish Association of Surgeons were invited to participate.

Results:
Some 20 Spanish ES Units were involved (October/2021-March/2022), of which 17 trainees answered the poll. Most of them were in their 4th-5thyear of training, 65% were female and only 25% would choose ES as a subspecialty. Hemithyroidectomies performed as main surgeon ranged from 0 to 10 and only 60% felt they were capable of performing it unassisted. When training in a high-volume-unit, they performed a hemithyroidectomy 4 times more frequently. Initial global satisfaction was high in 70% of trainees. After implementation of the 4-step thyroidectomy, surgical items evaluated through TROMs showed improvement with increased number of surgeries performed per trainee as well as their perception of improving their surgical technique with slight increase in reported global satisfaction.

Conclusion:
Teaching in ES may be improved by standardized steps and TROMS may well become a valuable

tool to assess teaching satisfaction of surgical trainees.

A-144

131 RADIOIODINE OVERTREATMENTS IN INCIDENTAL THYROID CANCER PATIENTS. PRELIMINARY STUDY.

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Background:
Thyroid incidentalomas are malignant neoplasm which are unexpectedly discovered in a research for other reasons. Thyroid neoplasm adjuvant radioiodine treatment is based on American Thyroid Association (ATA) 2015 criteria, restricting it to patients who have intermediate or high risk of recurrence. The objective is to analyze if the series of incidentalomas operated in our center is in accordance with the treatment indications with radioiodine according to ATA 2015 criteria.
Method:
Observational retrospective study of 168 patients. Thyroid incidentaloma were diagnosed after a surgery in a second level hospital between 2000-2015. We check treatment adequacy following ATA 2015 criteria. We analyze the global recurrence and for periods, radioiodine treatment adequacy following ATA 2015 criteria and the recurrence according to risk factors.
Results:
We analyzed 163 of 168 patients. 150 patients (92%) had surgery for Multinodular Goiter. 122 patients (74,8%) received radioiodine treatment after the surgery. Treatment was inadequate for 102 patients (62,6%) following ATA 2015 criteria. No statistically significant differences were found between radioiodine treatment and recurrences. Radioiodine treatment decreases in time intervals.

Conclusion:
There is overtreatment of thyroid incidentalomas in our center regarding 2015 ATA criteria. We can not conclude that radioiodine treatment has a significant influence on recurrences. The radioiodine treatment adequacy has increased in recent years.

A-230

USE OF INDOCYANINE GREEN FOR THE IDENTIFICACTION OF THE THORACIC DUCT

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Background:

Injury to the thoracic duct (TD) occur in 4-8% following a left lateral neck dissection and carries a high degree of morbidity and increase hospital stay.

The frequent anatomical variations, its small size (2-4mm) and its weak consistency make it difficult to identify it during surgery.

We present the results of three patients who underwent left lateral neck dissection who underwent subcutaneous indocyanine green (ICG) injection to identify TD.

Method:

It is a descriptive series cases.

The patients had a diagnosis of papillary thyroid carcinoma, with histological confirmation of lymph node metastasis in the left lateral compartment.

ICG 2,5 mg was injected into the dorsum of the foot, with a subcutaneous needle at the start left lateral neck dissection. A total thyroidectomy was performed, followed by a left lateral neck dissection . Intraoperative imaging was performed with a hand-held Near Infrared (NIR) camera (Fluobeam LX, Fluoptics®).

Results:

In the first two patients, the TD was identified on the dissection of the IV compartment, 45 minutes after de ICG injection. The third patient underwent a reoperation to lymph node recurrence after a radical neck dissection. The identificaction of the TD was not achieved despite the reinjection of 2,5 mg more por indocyanine green.

Conclusion:

Identificaction of the TD during a left lateral neck dissection is made possible by injection of indocianine green and the use of NIR imaging. It is technically simple, without side effects for the patient. It is a useful tool for the endocrine surgeons.

A-254

PRIMARY SOLITARY FIBROUS TUMOR OF THE THYROID GLAND: A CASE REPORT

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Background:
Primary solitary fibrous tumor (SFT) of the thyroid gland is a rare tumor encountered in middle-aged patients with equal sex distribution. The first three cases of primary SFT of the thyroid were reported in 1993 and since then, to the best of our knowledge, only 39 cases have been published in English literature.

Method:
Literature review based on a clinical case

Results:
We present the case of a 44-year-old woman who began a study for a left thyroid nodule that produced compression symptoms.
Cervical ultrasound: 2x2.7x3.6 cm thyroid nodule ACR-TR4
PAAF: Bethesda II
Left hemithyroidectomy is performed
Pathology: mesenchymal neoplasm, formed mainly by spindle-shaped elements of eosinophilic cytoplasm. Positive for CD34, CD99, BCL-2 and STAT6. 3% proliferation rate.
In the multidisciplinary committee of endocrine tumors, it is decided not to complete thyroidectomy and follow-up by medical oncology

Conclusion:
Primary SFT of the thyroid gland,is a rare mesenchymal spindle cell neoplasm. Patients usually present a slowgrowing cervical mass. Histological diagnosis of SFT can be difficult because thyroid spindle cell tumors are rarely encountered in day-today practice and because differential diagnosis includes numerous other spindle cell lesions. Immunohistochemistry is the only ancillary test that can differentiate SFT from other mimicking spindle cell lesions. A definitive diagnosis of SFT can be made if the tumor is STAT6 nuclear positive. Prognosis in thyroid SFT is favorable, but because cases with late recurrence and metastases were reported, long-term surveillance is required.

A-138

MAKESHIFT WOUND PROTECTOR FOR SMALL INCISION THYROIDECTOMY- OBSERVATIONS FROM A TERTIARY CENTRE

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Background:
Open thyroidectomy(OT) remains standard procedure. Skin damage due to retractor pressure/cautery burns result in undesirable scars. We aim to prevent these with wound protectors (WP) prepared using sterile surgical gloves(SSG).
Method:
Observational study of 52 patients undergoing OT at Maax Superspecialty Hospitals (Shivamogga,India), from March/2021-July/2022. Patients with incisions </=5 cm included, those with latex allergy excluded. 31 patients underwent conventional OT without WP, 21 patients with WP. Distal end of powder-free SSG cut from the proximal(fingers) part. Two rectangular flaps fashioned, sutured to platysmal edges of upper & lower skin-flaps. These cover skin edges, on which retractors are placed. After procedure, WP detached from platysma & wound closed. Scars assessed using Patient & Observer Scar Assessment Scale (POSAS-2.0), 2 weeks post-procedure.
Results:
Female:Male was 50:2. Mean age 42.13 +/- 13.01. Thirty-seven patients had benign goitre while 15 malignant. Mean incision length(IL) without WP= 4.05 (+/- 0.53)cm, with WP= 3.84 (+/- 0.50)cm. Reduction in IL was significant (p- 0.037). Patient Scar Assessment Scale without WP was 11.19 (+/-2.80) & with WP was 8.71 (+/- 2.39), mean difference 2.476 (+/- 4.11) and p- 0.012, improvement statistically significant. Observer Scale without WP was 12.38 (+/-3.26) & with WP was 9.29 (+/- 2.84). Mean difference was 3.095 (+/-4.80) & p- 0.008, statistically significant. Scar pigmentation, thickness & pliability showed significant improvements, while vascularity & relief didn’t.
Conclusion:
SSG WPs improve cosmesis and is economical.

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PRIMARY THYROID LYMPHOMA: REPORT OF TWO CASES.

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Background:
Primary thyroid lymphoma(PTL) is a very rare condition. With an annual incidence of 2 cases/million inhabitants, it represents 2% of extranodal lymphomas and most of them are B-cell non-Hodgkin type. We present 2 cases:
Method:
A 70-year-old woman referred from Endocrinology due to a large, rapidly growing thyroid mass. An 8,8cm. tumor with lymphatic nodes was observed on a CT and FNA wasn´t diagnostic. The patient underwent surgery on June 8,2017, performing an intraoperative biopsy that confirmed lymphoma (definitive histology: large B-cell non-Hodgkin type). Subsequently, chemotherapy was started with the rituximab-CHOP protocol with a complete response and continued close follow-up to the present date.
A 78-year-old woman with hypothyroidism associated with Hashimoto's thyroiditis(HT),had a rapidly growing thyroid nodule with mild compressive symptoms. On physical examination we detected a nodule of 6cm. and FNA reported HT. Surgery was performed on October 31,2022, visualizing a right hemithyroid neoplasm taking an intraoperative biopsy that confirmed lymphoma and performing a right hemithyroidectomy (definitive histology: mantle cell non-Hodgkin type). The patient has been evaluated by Oncology and is starting chemotherapy
Results:
The diagnosis of PTL presents important difficulties, due to its low incidence and the absence of specific clinical characteristics, tending to be confused clinically with anaplastic cancer and cytologically with HT.
Conclusion:
Treatment may include radiotherapy and chemotherapy. Surgery is indicated to obtain a satisfactory biopsy or to decompress cervical structures.

A-278

WHAT CAN PROPHYLACTIC CENTRAL LYMPH NODE DISSECTION CHANGE IN BETHESDA 5 AND 6 PATIENTS ?

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Background:
Central lymph node dissection (CLND) in well differentiated thyroid cancer (DTC) is controversial in recent literature. Our aim was to evaluate patients with Bethesda 5 and 6 nodules to whom total thyroidectomy and therapeutic or prophylactic CLND (t-CLND or p-CLND) were performed and to analyze the necessity of p-CLND.
Method:
121 patients who had t-CLND or p-CLND between June 2020-June 2022 are included in the study. Pathology results, disease recurrence and complications were evaluated.
Results:
83 patients had unilateral p-CLND and 15 patients had bilateral p-CLND. 7 patient had unilateral t-CLND and 16 had bilateral t-CLND . When pathology results were evaluated, 2 patients had benign pathology and 119 had well DTC. 67 patients had metastatic lymph nodes (LN). Out of these 67, 35 had macrometastasis and 32 had micrometastasis. In 98 p-CLND cases, 44 had LN metastasis and out of these 44, 20 had radioactive iodine (RAI) treatment due to LN metastasis regardless of other risk factors. 2 patients had type 1 and 6 patients had type 2 loss of signal. All the patients with type 2 loss of signal had a normal postoperative vocal cord movement. Out 13 patients (10%) who had permanent hypocalcemia, 7 patients (7%) had p-CLND. Only 3 patients had disease recurrence (3/119).
Conclusion:
The survival is longer in well DTC. Although disease recurrence, repeated RAI treatment and recurrent surgeries does not affect survival, They affect quality of life. Although our series is similar to the literature in terms of complication rates, the treatment and stage of 20 (%16i6) patients with p-CLND have changed.

A-307

DISTRIBUTION OF LYMPH NODE METASTASIS BY LATERAL LYMPH NODE STATIONS IN METASTATIC PAPILLARY THYROID CANCER

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Background:
Functional neck dissection (FND) in patients with thyroid cancer and macroscopic lymph node (LN) metastases reduces recurrence and improves survival. However, the extent of lymph node dissection remains controversial.
Method:
Metastatic Papillary thyroid cancer patients undergoing FND between June 2020 and June 2022 were classified surgically as ipsilateral FND (I-FND) / contralateral FND (C-FND) according to the thyroid lobe where the tumor is located; and the pathological data retrospectively evaluated.
Results:
FND was performed in 37 patients with lateral region LN metastasis verified by FNB, and in 2 patients with negative FNB but with a thyroglobulin washout result higher than 500. We performed bilateral FND to 9 patients because of bilateral LN metastasis. In the I-FND group (n=38), the lymph node positivity rate was 65.1%, 7.89% , 92% , 89.4% , 13.1% at levels 2a, 2b, 3, 4 and 5b, respectively. The rate of lymph node positivity in the C-FND group (n=9) was 55.5%, 0%, 66.6%, 55.5% and 22.2% at Levels 2a, 2b, 3, 4 and 5b, respectively.
Conclusion:
It should not be forgotten that papillary thyroid cancer is a systemic disease that spreads through the lymphatic route. In cases of papillary thyroid cancer with proven lateral metastases, at least regions 2a, 3 and 4 should be included in the dissection. Dissection of 2b and 5b should also be considered in selected cases.

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LIGHTENING EFFECT "COLLOID LEAK IN THYROID SURGERY

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Background:
Thyroidectomy is the common most common endocrine surgical procedure varies from Scalpel to Robotic transoral thyroidectomy. Colloid nodules are common and easily operable without any difficulty. We report a phenomenon where in the surgery becomes difficult and lead to complications if not thought with this phenomenon – colloid leak.

Method:
The endocrine surgeon (Associate Professor) has been involved in training of over 25 superspeciality endocrine trainers over a period of nine years in a tertiary referral high volume center. He has participated in 700 Thyroidectomies of which 250 thyroidectomies for colloid goiter. We have observed this phenomenon in 5 patients over 5 years in a tertiary referral centre in north India

Results:
5 male patients (46.7±12.1 years) had this colloid leak. Mean BMI was (22.4±2.9). FNAC was colloid in all patients. 3 had colloid leak in all planes.2 had only per thyroidal leak. All patients had Recurrent Laryngeal nerve identified. In 1 patient only 1 parathyroid gland could be identified. Mean duration of surgery was 120± 12 minutes. Mean blood less was 10 ml ± 2.5ml.Mean duration of stay after surgery was 48.± 12 hours. No permanent complication was observed. All HPT was colloid.Immunohistochemistry revealed IgG4 stained plasma cell aggregates in the line of colloid leak.

Conclusion:
This phenomenon was observed in muscular males in the colloid goiters where in there is leak of colloid after FNAC and this colloid elicited an inflammatory response in the surrounding tissues as evidenced by IgG4 positive immunohistochemistry staining for plasma cells.

A-302

Carcinoembryonic antigen (CEA): unusual presentation of medullary thyroid cancer (MTC)

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Background:

CEA is mainly known as gastro-intestinal cancer marker, but not exclusively. We report a clinical case in which it was decisive in a complex diagnostic pathway.

Method:

73 year old woman: in October 2020 CT scan is performed to check for kidney stones; collateral CT finding of 2 cm bone thickening at the iliac wing is unacknowledged.

Since December 2020 she has pelvic and legs pain, weight loss of 12 kg, diarrhea. In January 2021 ultrasound of the neck is perfomed, it shows a thyroid node (TIR IIIb). In July 2021 CEA 335 ng/mL is founded. She submits to CT scan and MRI documenting lumbosacral, pelvis and femoral bone progression. She submits to gastroscopy, colonoscopy, mammography, negatives, chest-abdomen CT scan negative for parenchymal lesions. A bone biopsy is scheduled. In the meantime endocrine surgeon is consulted, who recommends immediate calcitonin dosage which results > 5000 pg/ml, clarifying the diagnosis. Bone biopsy is canceled. She undergoes total thyroidectomy for histological diagnosis: medullary thyroid microcarcinoma, pT1a, vascular invasion, no adenopathy. She starts pelvic radiotherapy with analgesic purposes. Staging is completed with 18 FDG-PET and DOPA-PET that show bone and hepatic progression, and genetic study. Therapy with tyrosine kinase inhibitors is started.

Results:

An occasional elevated CEA, also marker of extra gastrointestinal cancer, if associated with elevated calcitonin is pathognomonic of MTC.

Conclusion:

In case of increased CEA, systematic association with serum calcitonin dosage allows earlier diagnosis of MTC, avoiding invasive and unnecessary diagnostic tests.

A-269

IMPACT OF THE COVID-19 PANDEMIC ON SURGERY FOR INDETERMINATE THYROID NODULES: RESULTS FROM A LARGE MULTICENTRIC INTERNATIONAL (THE THYCOVID) STUDY

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Background:
During the COVID-19 pandemic, planned surgery was ubiquitously suspended or slowed down. We focused our attention on surgery for indeterminate thyroid nodules (ITNs).
Method:
This was a retrospective multicentric study. Patients with ITNs were included in the study and were divided into three groups based on when they were submitted to thyroidectomy:
- January 2019-February 2020: pre-pandemic phase (P1)
- March 2020-May 2021: pandemic phase(P2)
- June 2021-December 2021: pandemic decrease phase (P3).
The main aims of the THYCOVID study were:
1) to quantify the reduction in surgical activity for ITNs during the COVID-19 pandemic
2) to evaluate whether the delay in the operations has led to an increased incidence of aggressive thyroid tumors.
Results:
We included 22,974 patients with ITNs from 157 centers, mainly located in Europe (76.5%) and Asia (11.8%). The median monthly operations per center were 2 (IQR: 0.9-3.7) in P1, 1.4 (IQR: 0.6-3.4) in P2, and 2.3 (IQR: 1-5) in P3; all the differences among the phases were significant ($p<0.001$).
At pathological examination, the incidence of lymph node metastasis was significantly higher in P2 (11.7%) and in P3 (12.2%) than in P1 (9.3%; $p<0.0001$). Considering the ATA classification for risk of disease recurrence, the incidence of high risk tumors increased over time from 203 (5.7%) patients in P1, to 198 (6.2%) in P2, and to 155 (7.7%) in P3; the difference between P1 and P3 was significant ($p=0.0072$).

Conclusion:
Surgical activity for ITNs decreased significantly during the pandemic. In the last phase, an increased incidence of aggressive tumors was found.

A-209

Right Lateral Lymphadenectomy for Papillary Thyroid Cancer Recurrence using Bilateral Axillo Breast Approach (BABA) Remote Endoscopic Approach

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Background:
BABA endoscopic access approach offers wide technical possibilities and familiar view of surgical field.Hemithyroidectomy,total thyroidectomy,thyroid totalizations are affordables using this approach with high degree of functional and cosmetic results.To our knowledge, this is the first European report on laterocervical lymphadenectomy using BABA endoscopic approach

Method:
This video presents a right lateral lymphadenectomy (IIA-III-IV levels) performed on a papillary thyroid microcarcinoma relapse operated in 2003. Preop studies ruled out central or thyroid bed recurrence, as well as low-volume nodal recurrence located at levels III and upper IV. In November 2021, we operated on this patient through 4 incisions (two periareolar and two axillary). An small percutaneous retractor (2 mm in diameter) was also used

Results:
Endoscopic approach allows to perform lateral lymphadenectomy (levels IIA, III and IV), showing,clearly,all vasculo/nerve structures.Intraoperative intermitent nerve monitoring was used for vagus, spinal, hypoglossal and phrenic nerves. 3/30 nodes were affected without extranodal extension.Patient was discharged on the third postoperative day without any local or general complications.Cosmetic satisfaction was high as well as the oncological result

Conclusion:
BABA endoscopic approach is a good tool, useful in specific situations.It provides comparable results to conventional surgery,avoiding large incisions.However,its use cannot be generalized to all pathologies and situations,and most important,surgical technique should not be conditioned by endoscopic approach

A-174

SURGICAL MANAGEMENT OF THYROID CANCERS WITH INVASION IN SUPERIOR VENA CAVA

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Background:
Extension of tumour thrombus into the jugular vein can be encountered in locally advanced thyroid cancers but involvement of the superior vena cava (SVC) has been reported seldomly.
Method:
Case series of consecutive patients.
Results:
All patients presented with rapidly expanding neck mass associated with clinical signs of SVC obstruction and had total thyroidectomy and neck dissection as part of their treatment. Following sternotomy and control of SVC and its tributaries, tumour thrombus was extracted with/without resection of a vein segment and bypass between left brachiocephalic vein and right atrium. Surgical resection was followed with radioactive iodine ablation and external beam radiotherapy. A 33-years old man was readmitted 5 months after initial operation with cord compression from multiple deposits along the thoracic dura and died 7 months postoperatively with multiple lung and brain metastases. A 64-years old woman who also needed partial tracheal resection had two doses of radioactive iodine ablation and remains alive with local recurrence 18 months postoperatively. A 36-years old woman remains well 5 years after initial treatment.

Conclusion:
Timing and pattern of disease progression are unpredictable in patients with thyroid cancer presenting with SVC involvement. Radical resection including venous reconstruction of mediastinal venous system should be considered in units where input from cardiovascular/thoracic surgeons is available. A large series of such patients is warranted in order to inform future treatment guidelines.

A-225

PRESERVATION OF ONE WELL-PERFUSED PARATHYROID GLAND IS SUPERIOR TO PGRIS FOR PREDICTING POSTOPERATIVE NORMOCALCEMIA

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Background:

Different intraoperative tests to predict immediate postoperative parathyroid function have been proposed. Our aim is to compare the correlation of postoperative hypocalcemia with the number of glands preserved in situ (PGRIS), the preservation of at least one well-vascularized gland (ICG2) and the percentage of PTH decline at 10 minutes after thyroidectomy (%ioPTH).

Method:

Data from consecutive patients undergoing total thyroidectomy with or without central neck dissection (CND) were prospectively collected. In all cases, the number of PGRIS, the degree of perfusion of the parathyroid glands by ICG arteriography and the %ioPTH were collected. Postoperative hypocalcemia was defined as the need to use calcium to treat symptoms of hypocalcemia or corrected calcium values <7.2 mg/dL.

Results:

A total of 144 patients were included, 25 of whom developed postoperative hypocalcemia (17.4%). There were no baseline differences between the two groups. CND was performed in 59.7%. Regarding PGRIS, 0.7%, 4.2%, 25% and 70.1% of the patients had PGRIS 1, 2, 3 and 4, respectively. At least one gland with an ICG2 was preserved in 77.1% of the patients. The % median PTH drop was 38.1% (8.9-67.6). Although in the univariate analysis all of them were related to hypocalcemia, only the preservation of at least one gland ICG2 and %PTHio remained independent predictors of hypocalcemia on multivariate analysis (OR 0.026 and 1.089, respectively).

Conclusion:

Our data suggest that preservation of at least one well-vascularized gland would be the best predictor of no postoperative hypocalcemia.

A-135

ECTOPIC INTRATHORACIC HYPERFUNCTIONING METASTASIS OF POORLY DIFFERENTIATED CARCINOMA OF THYROID GLAND

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Background:
RARE METASTASIS OF THYROID TUMOR IN THE LOWER MEDIASTINUM

Method:
IN A CT SCAN STUDY OF A LOWER RESPIRATORY TRACT INFECTION A 67 YEAR OLD MALE PATIENT WAS DIAGNOSED WITH A LARGE GOITER WITH AN ISTHMIC FOLLICULAR LESION OF UNDETERMINED SIGNIFICANCE 57 MM WIDE AND AN ECTOPIC NODULE EXTENDING THROUGH MEDIASTINUM DOWN TO THE LEVEL OF THE AZYGOS VEIN.
THE ECTOPIC NODULE SHOWED A MODERATE HYPERFUNCTION IN THYROID SCINTIGRAPHY (TC99M AND SPECT-CT).
THE SURGICAL TREATMENT CONSISTED OF THE RESECTION OF ALL MACROSCOPIC DISEASE THROUGH TOTAL THYROIDECTOMY WITH STERNOTOMY IN 2020

Results:
THE PATHOLOGY EVALUATION REPORTED A POORLY DIFFERENTIATED THYROID CARCINOMA, SOLID AND TRABECULAR, WITH FOLLICULAR AND INSULAR AREAS OF THE RIGHT THYROID LOBE (PT3A N0 AJCC 2017- 8TH EDITION).

IN THE ECTOPIC NODULE A SIMILAR 55MM THYROID TUMOR WITHOUT THYROID OR LYMPH NODE TISSUE WAS DESCRIBED AND DIAGNOSED AS METASTASIS.
THE PATIENT UNDERWENT ADJUVANT TREATMENT WITH RADIOACTIVE IODINE AND IS DISEASE FREE

Conclusion:
THE POORLY DIFFERENTIATED THYROID CARCINOMA IS A RARE BUT CLINICALLY SIGNIFICANT TUMOR AS IT IS RESPONSIBLE FOR HIGH MORTALITY RATE, PARTICULARLY WHEN DISTANT METASTASIS OCCUR

A-129

AN UNUSUAL CASE OF DELAYED SUBGLOTTIC LARYNGEAL PERFORATION AFTER THYROIDECTOMY

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Background:
Inadvertent airway injury is a rare complication of thyroidectomy that can be life-threatening. Most studies report injuries occurring below the larynx in the tracheal region. This case report focuses on delayed subglottic laryngeal perforation following thyroidectomy, that is rarely encountered by surgeons.

Method:
A 65-year-old lady with a history of thyroid surgery underwent thyroidectomy for recurrent goitre. On day-3 post-op, she presented to the emergency department with sudden neck swelling after forceful coughing. There was no sign of airway compromise. Computed tomography scan showed a suspicious laryngeal perforation with extensive subcutaneous emphysema. Direct laryngoscopy revealed a defect in the anterior laryngeal wall in the subglottic region.

Results:
After intubation with video-laryngoscope, the patient underwent an emergency wound exploration and was found to have a 5 mm perforation in the anterior wall of the cricothyroid membrane. The defect was repaired primarily with absorbable sutures. A drain was placed and the wound was closed. The patient was successfully extubated and recovered well post-operatively.

Conclusion:
Laryngeal perforation can occur during thyroidectomy, especially in redo cases. Thermal injury from heat-generating devices is one of the major causes of delayed perforation. Adequate surgical exposure and meticulous dissection can reduce such risks. Surgery is the preferred treatment because of potentially life-threatening complications. Primary repair can be done in most patients, but some may require a muscle flap to cover the defect.

A-166

PROSPECTIVE OBSERVATIONAL STUDY ON PATIENTS' CONCERNS AND COSMETIC OUTCOMES OF THE CERVICOTOMY SCAR

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Background:
Although many studies have described the impact of the cervicotomy scar in the Asian population, it is still unclear whether these findings can be extrapolated to the European population. . We conducted a prospective observational study to assess the preoperative cosmetic concerns and the postoperative outcomes of the cervicotomy scar in Southern European patients.
Method:
Patients who underwent a thyroidectomy in two centers were asked to fill in an adaptation of the Dermatological Life Quality Index (pre-aDLQI) questionnaire regarding the expected scar-related outcomes prior to surgery. Six months after surgery, all patients were asked to complete the aDLQI (post-aDLQI) and the Vancouver Scar Scale (VSS) questionnaires. The scores from these questionnaires were analyzed, together with demographical and surgical related aspects.
Results:
90 patients (78.9% women, 56 [44.7-66] years) were enrolled. Median pre-, post-aDLQI and VSS scores were 3 (0-7), 1 (0-2) and 1 (0-1), respectively. Female gender was associated to a higher pre-aDLQI score (3 vs. 1; p=0.003). A weak inverse correlation between age and post-aDLQI and VSS scores was observed. No other factors were related to differences in these scores. No correlation was observed between VSS and post-aDLQI scores. The median difference between pre- and post-aDLQI scores was -1 (-5.2-0), with a worsening in 18.9% of the patients.
Conclusion:
Cosmetic outcomes and their influence on patients’ quality of life seem to be lower than that reported in the Asian population. Relation between cosmetic outcomes and quality of life was not observed.

A-294

SLOW PROGRESSION OF PAPILLARY MICROCARCINOMA WITH LATERAL NECK METASTASES

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Background:
Papillary thyroid microcarcinoma (PTMC) generally presents with an indolent disease course and good prognosis. However, some PTMCs show aggressive behavior, such as multiple-level metastasis at initial diagnosis, which indicates a high risk of locoregional recurrence and poor disease-free survival
Method:
We present a case of a 39-year-old female first diagnosed at age of 18 with potentially malignant mass in the right lateral neck compartment
Results:
At first thyroid US and FNA malignancy was not proven. Due to clinical signs of malignant process operation was offered but the patient refused. No significant progression of the neck mass during the next 20 years was noticed. Later due to increasing compression symptoms, CT was performed. A large 8cm lymph node conglomerate laterally from the right carotid sheath was visualized. Thyroid US showed multiple nodules TIRADS 5. In the biopsy from lateral neck mass, papillary carcinoma complexes were diagnosed. PET-CT showed no other pathological uptake, except in lateral neck lymph nodes. Total thyroidectomy and right-side central and lateral lymph node dissection was performed. Morphology revealed multifocal PTMC in the right thyroid lobe. Metastases were found in all 6 lateral and in 13 out of 18 central neck compartment lymph nodes. Diagnosis of multifocal papillary microcarcinoma T1a(m)N1bM0, Stage I was established. The patient received I^{131} therapy. At 6-month follow-up, no recurrence was found.
Conclusion:
Nevertheless, PTMCs in general are indolent tumors, they can be presented with macrometastases. MDT approach facilitates promotion of patients' trust

A-218

EUROCRINE®: TRENDS IN THE MANAGEMENT OF ANAPLASTIC CARCINOMA 2015 - 2021

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Background:

To investigate preliminary results of anaplastic carcinoma patients from the EUROCRINE® database.

Method:

Data from 11 countries and 53 centers was analyzed. Tumor size, postoperative complications, metastasis, overall survival were compared between resection types and impact of neoadjuvant therapy was investigated. Fisher's exact and Mann-Whitney U tests were used.

Results:

There were 253 patients (172 female, 81 male) with a mean age of 69. Only 20% of patients received R0 resection and 44% R1. Mean tumor size was 52.5mm. Postoperative vocal cord paralysis rates were 45%, 41% and 35% for R0, R1 and R2, respectively (p= 0.01). According to the Clavien-Dindo classification, morbidity was higher in R2 cases (p=0.006). Metastasis rates were 33% in R0, 42% in R1, and 72% in R2 (p=0.02). Median survival rate was 100 days. Life expectancy was highest in R0 (260 days for R0, 159 days for R1, and 78 days for R2). Regarding neoadjuvant therapy, no significance was found between groups (p=0.56). The use of neoadjuvant therapy had no impact on postoperative VCP rates and morbidity (p=0.11). Neoadjuvant treatment seems to have an effect on survival time, but the numbers of patients were low for significant comparison.

Conclusion:

Preliminary analysis of the Eurocrine® database reveals that achieving an R0 resection seems to increase life expectancy.

A-190

LONG-TERM ACTIVE SURVEILLANCE FOR PATIENTS WITH MICRO-PAPILLARY THYROID CARCINOMA (MPTC) IN BULGARIA

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Background:
The incidence of Papillary thyroid cancer (PTC) is increasing and most patients present an indolent course of disease. We performed a single center prospective survey on an outpatient basis and analyzed the cohort of patients, who were observed without immediate surgery in order to establish whether active surveillance is a justifiable approach in selected patients.

Method:
We chose 117 patients (median 40yo), with FNA evidence of low-risk PTC classical variant d<11mm (BETHESDA V/VI), to examine the outcomes of follow-up without surgery. 19 patients underwent surgery due to size enlargement, ultrasound suspected lymph nodes or patient request. 98 patients were only followed and remained clinically disease free and none of the patients showed distant metastases or died during follow-up. The median follow-up time was 51 months with neck ultrasound every 6-12 months.

Results:
19 patients had surgery for size enlargement, ultrasound suspected lymph nodes or patient request. Size enlargement(n=4), Ultrasound suspected lymph nodes(n=5), Elevated calcitonin levels(n=1), Patients request(n=9)
Final histology revealed in 13 cases PTC, in 1 case MTC and in 5 cases benign lesion.
TNM Patients Details: pT1aNoMo(n=10); pT1bNoMo(n=2); pT1apN1aMo(n=1); pT1bpN1aMo(n=1).

Conclusion:
Our results concurred with similar publications and demonstrated that active surveillance is a great approach for a selective number of patients. When performed correctly and by an experienced team it can save the patient from the risks of an unnecessary operation and reduce treatment related costs.

A-298

IN-HOSPITAL MORTALITY FOLLOWING THYROID SURGERY: LESSONS FROM THE UKRETS DATABASE

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Background:
Death from thyroid surgery is very rare. The aim of this study was to quantify in-patient mortality from thyroid surgery, explore potential causes and suggest an accountability framework.
Method:
A retrospective analysis of the UKRETS database. Non-parametric statistical tests.
Results:
Between February 1999 and March 2022, 83,410 thyroid operations were registered into UKRETS. After exclusions, in-patient mortality was 0.054% (45 patients). Mortality in malignant cases was 6-fold higher than for benign disease (29/17404[0.17%] vs. 15/51758[0.029%]; p<0.001). Histology unknown in one case.
In benign disease, death was associated with thyroid surgery to permit airway control procedures, cardiac complications, sepsis, mesenteric vein thrombosis, and traumatic brain injury. Only one death followed re-operation for haemorrhage.
In thyroid cancer, the tumour was irresectable in 59%, resectable in 10% and unknown in the remainder. Mortality by histology was anaplastic 10/157(6.37%), lymphoma 1/100(1%), MTC 2/677(0.30%), FTC 4/3071(0.13%), PTC 5/12446(0.04%).
Conclusion:
Thyroid surgery has an in-hospital mortality of around 1 in 2000. Malignancy is analogous with a 6-fold increase in mortality, mostly driven by ATC (220-fold). Most malignant deaths occur with irresectable disease. Supra-regional MDTs may identify such cases and prevent futile surgery. Mortality in benign disease is often unrelated to thyroid surgery itself. We propose ‘airway control’ is introduced as an indication in UKRETS and that all deaths are discussed in a mortality review session at national conference level.

A-130

RETROSTERNAL GOITER: RETROSPECTIVE REVIEW OF INDICATIONS TO STERNOTOMY AND PERIOPERATIVE OUTCOMES IN A LARGE SERIES FROM AN ACADEMIC ENDOCRINE SURGERY REFERRAL CENTRE

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Background:
Total thyroidectomy(TT) is the primary treatment for retrosternal goiters(RSG) with symptoms or suspicion of malignancy. In most RSG, TT can be performed via cervical approach; however, when the gland is predominantly intrathoracic, with abnormal vasculature, in recurrent goitres or when infiltration into surrounding structures is suggested, sternotomy may be necessary.
We investigated the indications to sternotomy and impact of TT for RSG on postoperative morbidity.

Method:
From 411 thyroidectomies performed between January 2019 and October 2022, 114 TTs for symptomatic or malignant RSG were retrospectively reviewed for indication to sternotomy and perioperative outcomes. RSG was defined as a thyroid portion remaining permanently retrosternal with neck in hyperextension.

Results:
Cervical approach was used in 112 RSGs(98.2%) and full sternotomy in 2(1.7 %). Thyroid cancer was found in 35.8% of specimen(cancer >1cm in 17.4%). Transient hypocalcemia and transient, monolateral vocal fold palsy occurred in 25(21.9%) and 5 (4.3%) cases, respectively. Posterior mediastinal location on CT scan was independent preoperative risk factor for sternotomy in this study($P<0.001$).

Conclusion:
TT for RSG can most commonly be performed by cervical access. Sternotomy may be necessary with posterior mediastinal goiters, which are sometimes crossing the midline. To deliver the retrosternal portion surgeons should proceed progressively isolating thin bands of tissue, after identifying the vagus and recurrent laryngeal nerve. Informed consent in RSG should include potential for sternotomy and increased risk of complications

A-297

ADVANCED DIFFERENTIATED AND POORLY DIFFERENTIATED THYROID CANCER IN EUROPE: RESULTS OF A MULTICENTER STUDY BASED ON THE EUROCRINE® REGISTRY

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Background:

Differentiated thyroid cancers (DTC) are usually indolent with excellent prognosis, but may present as advanced disease (AdvDTC). We evaluated their incidence, presentation and surgical outcome in European Centers

Method:

All thyroid cancers (TC) in the Eurocrine® registry (1/2015-12/2021) were reviewed. Adults with stage IV or any stage M1, N1b or T3b/T4 DTC or poorly DTC were defined AdvDTC and compared to non-advanced DTC (n-AdvDTC)

Results:

Among 23703 DTC (93.8% of all Eurocrine® TC), 3261(13.7%) were AdvDTC. In 893 cases(27.4%) DTC were locally advanced (T3b/T4), in 2542(77.9%) presented regional disease (pN1b) and in 351(10.8%) distant metastases (M1). T4 DTC infiltrated RLN in 64.6% of cases, trachea in 13.0%, major vessels in 8.7%, the esophagus in 8.7% and the larynx in 3.1%. Patients with AdvDTC were younger (47±16Vs50±13 yrs,p<0.001), more frequently males (32.1%Vs20.8%, p<0.001) and undergone surgery for recurrence (25.4%Vs13.2%,p<0.001). Operative time and hospital stay were longer in AdvDTC (150±120Vs80±65 min,p<0.001, and 2±2Vs1±1 days,p<0.001, respectively). Papillary and poorly differentiated tumors were more frequent among AdvDTC (92.7%Vs88.6% and 3.1%Vs0.5%,p<0.001, respectively). Surgery for AdvDTC was associated with increased rates of RLN palsy (12.2%Vs4.9%,p<0.001), hypoparathyroidism

(35.6%Vs23.9%,p<0.001) and other complications (2.4%Vs0.5%,p<0.001)

Conclusion:

AdvDTC represent a minority, albeit not negligeable, of DTC(14%). AdvDTC were associated with younger age, male sex and increased risk of complications. Follow-up studies would depict oncologic outcome in Eurocrine® series

A-159

DEEP SUBCUTANEOUS THYROID IMPLANTATION 7 YEARS AFTER THYROID LOBECTOMY FOR BENIGN FOLLICULAR ADENOMA

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Background:

Subcutaneous implantation of thyroid tissue is a rare condition involving the neck and may occur after surgery,diagnostic procedures or cervical trauma. It has been described also after endoscopic or robotic assisted procedures.

Method:

Case: A 37 yrs old woman consulted because she noticed two slowly growing tender nodules in the anterior left neck region below the scar of the right hemithyroidectomy that has been performed 7 years before because a 2,5 cm diameter benign follicular adenoma.Three 10x12 mm solid isoechoeic nodules were detected.Aspiration citology:Bethesda II benign follicular lesions. Surgical excision was performed through the previous scar.Histopathology:adenomatoid thyroid nodules.

Results:

Discussion: Soft tissue seeding of thyroid tissue is uncommon;it has been reported in benign and malignant pathologies,specially in follicular cancer.First described this complication in 1976,less than 100 cases of subcutaneous colonization have been reported.Preventing the spread of tumor cells during operations is crucial.It seems remote access thyroid surgery might be more prone to thyroid tissue seeding.When thyroid tissue is detected in neck soft tissue or scar tissue a malignant etiology must be considered in its differential diagnosis.

Conclusion:

Adequate handling of thyroid tumors seems important to avoid thyroid tissue seeding.Treatment of these cases may be tricky.

A-185

Robotic transaxillary thyroidectomy: time to expand indications?

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Background:
In 2016, the American Thyroid Association (ATA) published a statement on remote-access thyroid surgery, claiming that it should be performed in patients with thyroid nodule<3 cm, thyroid lobe<6 cm and without thyroiditis. We aim to compare surgical outcomes between patients who met inclusion criteria of the ATA statement and those who did not
Method:
We retrospectively enrolled all patients who underwent robotic trans-axillary thyroidectomy at the University Hospital of Pisa between February 2012 and March 2022. Patients were divided into 2 groups: patients with thyroid lobe diameter>6 cm or thyroid nodule diameter>3 cm or with thyroiditis were included in group A, whereas patients without these features were included in group B. We compared surgical outcomes between groups
Results:
357 patients were included in group A, whereas 293 in group B. The rate of overall complications resulted comparable(p=.399), as well as for each specific complications (hypocalcemia, vocal cord palsy, hematoma, bleeding, seroma). The operative time(p=.477) and the hospital stay(p=.305) did not differ significantly. After stratifying patients of group A in three categories (patients with thyroid lobe>6 cm or thyroid nodule>3 cm or with thyroiditis), surgical outcomes did not differ significantly except for bleeding(p=.015) between patients with or without thyroid nodule> 3 cm. Nonetheless, all bleedings but one occurred in the remote-access site from the axilla to the neck
Conclusion:
In experienced hands, robotic trans-axillary thyroidectomy is feasible and safe even in patients with large thyroid nodules or thyroiditis

A-188

The impact of obesity on thyroidectomy outcomes: a case-matched study

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Background:
Obesity is a well-known public health concern in western. Accordingly, an elevated number of obese patients undergo thyroidectomy every year. Obesity is considered associated to higher risk of complications in selected abdominal surgeries. We aim to assess the impact of obesity on intraoperative and postoperative outcomes of patients who undergo thyroidectomy
Method:
1712 patients underwent thyroidectomy in our department between January 2021 and September 2021, 261 of whom were obese (BMI ≥ 30 Kg/m^2). The intraoperative and postoperative outcomes were compared using case-control methodology. A propensity score approach was performed to create 1:1 matched pairs (matching according to age, gender, diagnosis, nodule size and type of operation). Univariate analysis was performed to compare these two groups. P< 0.05 was considered significant
Results:
The duration of hospital stay resulted longer in the obesity group (p=0.002). No statistically significant differences were documented in terms of operative time (p=0.206), use of energy devices (p=0.855) and surgical complications (p=0.429). Moreover, no statistically significant differences were documented considering each specific complication: transient and permanent hypocalcemia (p=0.336; p=0.813), transient and permanent recurrent laryngeal nerve palsy (p=0.483; p=0.523), hematoma (p=0.779), bleeding (p=0.178) and wound complications (including infection and cheloid) (p=0.517) resulted comparable
Conclusion:
Thyroidectomy can safely be performed in obese patients. Outcomes resulted comparable; nonetheless, obesity correlates to longer hospital stay

A-189

Transcutaneous laryngeal ultrasound is a valid alternative to laryngoscopy for the vocal cord mobility assessment in post-thyroidectomy patients

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Background:

Assessment of vocal cord mobility is a crucial issue in patients undergoing thyroid surgery. Transcutaneous laryngeal ultrasound (TLUS) has recently been proposed as a promising and non-invasive alternative to laryngoscopy

Method:

From February 2022 to October 2022 we conducted a randomized prospective study on patients scheduled for thyroid surgery at the University Hospital of Pisa. On first post-operative day, all patients underwent TLUS and were subsequently evaluated by laryngoscopy by a blinded otolaryngologist. The ultrasound and laryngoscopic findings were compared

Results:

151 patients were selected for the study. 18 male patients were exclude due to inability to visualize vocal cords due to thyroid cartilage calcification. TLUS enables the visualization of vocal cords in 133 patients (88.1%). A significant difference in terms of gender was found between patients assessable and those non-assessable with ultrasound ($p < 0.001$). The sensitivity of TLUS was 100%, the specificity was 98.8%, the positive predictive value was 96.7%, the negative predictive value was 100%, the accuracy was 99.1%. The K Cohen resulted 0.977. Discordance between TLUS and laryngoscopy was documented in 5 cases (3.8%). All cases were reviewed by a second blinded otolaryngologist which confirmed ultrasound findings in 3 cases and laryngoscopic findings in 2 cases

Conclusion:

TLUS is a valid, cheap, rapid, easy-to-perform, non-invasive and painless alternative method for evaluating the vocal cords in selected patients. It can be used either as a first level exam and as screening tool for selecting cases for laryngoscopy

A-206

ANAPLASIC THYROID CARCINOMA. THE NODULE WAS ALREADY THERE

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Background:
Anaplastic thyroid cancer (ATC) is an infrequent entity with a mean survival time less than 10% at 5 years. Although it has been suggested that ATC develops from a previous thyroid nodule, knowledge about its natural history is still lacking. We reviewed anteriorly performed image test looking for cervical tracheal deviation in patients who developed ATC.

Method:
Patients with confirmed histopathological ATC from May 2000 to October 2022, were included. Chest X-ray at least one year previous to the ATC were blindly re-assessed by expert radiologist. Demography data, time elapsed from chest X-ray to ATC diagnosis and tumor characteristics were recorded. Data was presented as a mean 95% CI or median IQR when appropriate.

Results:
Of 21 patients with ATC, there were 13 women (61.9%) with median age 70,7 (95% CI 66.0 to 75.4) years. The TNM stage was IV A 3 (12.5%), IVB 10 (41.7%) and IVC 8 (33,3%). The median overall survival was 2 months (IC 95%: 0 to 4.89). There were 9 patients (42,9%) with previous chest X-ray ordered for different reasons than cervical symptomatic tumor. From these, 4 (44,4%) showed significant contralateral deviation, none of them recorded as pathological, with a median (IQR) time from test to ACT diagnosis of 64 months.

Conclusion:
Cervical tracheal deviation at the chest X-ray should be considered as indirect sign of symptomatic thyroid tumor. Such incidental finding should promote diligent cervical ultrasonogram. Potential curable window might eventually exist for such patients.

A-177

IMPACT OF COMPLETION THYROIDECTOMY TIMING ON POSTOPERATIVE COMPLICATIONS: OUR RESULTS

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Background:

Completion thyroidectomy is the removal of the remaining thyroid tissue with a second operation in patients who have had a lobectomy as the primary operation. The indication of completion thyroidectomy fall under three categories: postoperative diagnosis of cancer, residual or recurrent cancer and symptomatic multinodular goiter.

Despite a number of studies, the optimal timing of completion thyroidectomy is still controversial.

Method:

We present a retrospective analysis of completion thyroidectomy performed in a specialized endocrine surgery department between 2018 and 2022.

A total of 1026 patients recorded were analysed. Data from 38 completion thyroidectomies was obtained and we sought to evaluate preoperative diagnostic, timing to completion thyroidectomy, complications rate and final histopathologic findings.

In our study early completion thyroidectomy is the procedure done between 7 to 90 days, whereas delayed completion thyroidectomy is done after 90 days.

Patients were divided according the interval of surgery and data were compared.

Results:

As in primary thyroid surgery, RLNP and hypoparathyroidism are the most common and most feared complications in completion.

Conclusion:

There is no agreement regarding timing of reoperation for completion thyroidectomy, after considering issues of tissue inflammation, edema, adhesions, and scar tissue development after the first operation, the consequent inevitable bleeding, and complications occurring during second surgery due to loss of landmarks.

A-306

METHIMAZOLE-INDUCED AGRANULOCYTOSIS AND THYROTOXICOSIS: THE ROLE OF EARLY THYROIDECTOMY

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Background:
Graves disease and toxic multinodular goiter are two of the most common causes of thyrotoxicosis. Antithyroid drugs, such as methimazole (MMI), are the usual initial treatment. Despite MMI's availability and widespread use, MMI-induced agranulocytosis (MMI-AGRAN) is a rare but potentially deadly side effect that should be noted.

Method:
Case 1 involved a 45-year-old woman, with a recent diagnosis of Graves disease who presented with neutropenic fever. The dose indicated was 30 mg of MMI daily for two months.
Case 2 involved a 48-year-old woman, with a history of Graves disease, who presented with neutropenic enterocolitis and ulcero-necrotic tonsillitis. She was recently discharged on 40 mg of MMI daily for three months. She was admitted to the ICU because of a septic shock and surgery was required due to intestinal perforation.

Results:
In both cases, MMI was discontinued, filgastrim was started and cell counts gradually improved. Beta-blockers and corticoids therapy were used to control thyrotoxicosis.
Plasmapheresis was indicated, with the aim of rapidly remove the increased thyroid hormones to prepare patients for an early thyroidectomy.

Conclusion:
First-line treatment for hyperthyroidism is not always an option because of possible severe adverse reactions such as MMI-AGRAN. It is imperative to identify risk factors and closely monitor patients taking MMI. The most common risk factors associated are increased age, female sex, and higher doses of MMI.
A life-saving thyroidectomy may be necessary when contraindications to therapy or severe side effects appears.

A-281

SENSITIVITY OF CALCIUM TEST TO DIAGNOSE ACCOMPANYING THYROID MEDULLARY CARCINOMA

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Background:
In recent guidelines, it was stated that calcitonin stimulation test (CST) can be applied in cases with calcitonin less than 100 pg/mL however no diagnostic cutoff value exists for medullary thyroid cancer (MTC). If calcitonin is >80 in females and >100 pg/mL in males; malignancies other than thyroid can be ruled out. We aimed to detect the sensitivity of calcium stimulation test to diagnose accompanying medullary thyroid cancer.
Method:
Patients undergoing surgery other than MTC who had 8-100 pg/mL basal calcitonin level in females and 10-100 pg/mL in males and applied preoperative CST were retrospectively analyzed between years 2020-2022.
Results:
Preoperative CST was applied in 16 patients. Eight patients had multinodular goiter, 4 patients had fine needle biopsy result of Bethesda 3,4,5; 2 patients had Graves and 2 had papillary thyroid cancer (PTC). All these patients were operated. Average basal calcitonin level was 13.2 pg/ml (8-30). Average calcitonin level after CST was 284.75 pg/mL in females (range: 162-625) and 304 pg/mL in males (range: 195-669). 1 patient had MTC, 2 had PTC accompanying MTC, 7 had PTC and 6 had C cell hyperplasia. After the operation, all the patients had a calcitonin level <2 pg/mL.
Conclusion:
To interpret increased serum calcitonin is a grey zone since calcitonin is secreted from other tissues and since both basal and stimulated calcitonin had different cutoff values. A higher serum calcitonin level points out MTC however it is not pathognomonic. We believe that CST is not for diagnosing MTC but to exclude calcitonin elevation is due to nonthyroid origin.

A-251

BILATERAL CHYLOTHORAX AFTER CENTRAL AND BILATERAL CERVICAL LYMPHADENECTOMY FOR MEDULLARY THYROID TUMOR

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Background:
Medullary thyroid carcinoma (MTC) derives from parafollicular cells or C cells of the thyroid.Surgical removal is the basis of treatment. We present a bilateral chylothorax as a rare entity after this type of intervention.

Method:
Case-report

Results:
A 43-year-old woman no personal history of interest. After puncture and aspiration of a 30-mm right thyroid nodule, was diagnosed with MTC, calcitonin levels around 1835 pg/mL.CT is performed as an extension study. No significant laterocervical adenopathies was observed. Elective surgery was underwent, thyroidectomy, central and bilateral lymphadenectomy was performed. No lymphorrhagia or injury to the thoracic duct was observed during the intervention. 48 h after intervention, she presented desaturation and admnission to ICU. CT shows bilateral pleural effusion. Bilateral endothoracic tube with whitish-looking liquid and 876 mg/dLtriglycerides. Diet low in medium chain triglycerides and conservative managment.

Conclusion:
High calcitonin levels suggest metastatic disease. Due to this level, we decided to complete bilateral lymphadenectomy.No adenopathies in CT prior to the intervention, being visible in various territories during it. Final histopathology pT2N0 medullary thyroid carcinoma, despite having obtained a total of 103 lymph nodes. Neoplastic infiltration was not evidenced in any node. Highlight the absence of distant involvement despite high levels of calcitonin, as well as the presence of self-limited bilateral chylothorax managed by bilateral drainage, despite not showing lymphorrhagia or apparent lesion of thoracic duct during the intervention.

A-292

SINGLE INSTITUTION EXPERIENCE IN THE MANAGEMENT OF LOCALLY ADVANCED (pT4) DIFFERENTIATED THYROID CARCINOMAS

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Background:
Locally infiltrating (T4) differentiated thyroid carcinomas (DTC) represent a challenge. Surgical strategy and adjuvant therapy should be planned balancing morbidity and oncologic outcome. A series of T4 DTC who underwent multidisciplinary evaluation and treatment is reported
Method:
All DTC cases operated between 2009 and 2021 were reviewed and T4 DTC cases were identified. *En bloc* resection of inferior laryngeal nerve (ILN), tracheal (TR) and/or internal jugular vein (IJV) was performed in cases of massive infiltration. In case of pharyngoesophageal junction (PEJ) invasion shaving technique was always chosen
Results:
Among 4775 DTC cases, 60 (1.25%) were T4. ILN infiltration was documented in 45 cases (75% - *en bloc resection* in 9), TR infiltration in 14 (23.3% - tracheal resection in 2), PEJ invasion in 11 (18.3% - in 7 cases R0 resection, in 4 cases <1cm residual tissue), and IJV resection in 6 (10%). Eleven post-operative ILN palsy, 23 transient hypoparathyroidism and two hematomas requiring reoperation were registered. Final histology showed 7pN0, 22pN1a, 31pN1b tumors. Aggressive variants were observed in 78%. All patients underwent radioiodine treatment and 12 adjuvant external beam radiation therapy (EBRT). At a median follow-up of 47 months, no tumor-related deaths was registered. Seven patients required re-operation (DFS mean 123.7 months, CI:111.2-136.2)
Conclusion:
Multidisciplinary approach is essential for the management of T4 DTC. Individualized and balanced surgical strategy and adjuvant treatments, in particular EBRT, ensure control of locally advanced disease with acceptable morbidity

A-154

COMPARATIVE ANALYSIS BETWEEN HARMONIC ACE-7 VERSUS LIGASURE IN TRANSORAL ENDOSCOPIC THYROIDECTOMY: A RANDOMIZED CONTROLLED TRIAL

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Background:
Transoral endoscopic thyroidectomy vestibular approach (TOETVA) is a most recently developed method of minimally invasive thyroidectomy technique. For safe tissue dissection and bleeding control, use of energy device is very important in TOETVA. Aim of our study is to find out which energy device is more compatible for TOETVA.

Method:
This study was designed as a prospective, open-label, randomized controlled trial. Patients were randomly assigned to use Harmonic ACE-7 (Harmonic group) or LigaSure™ (LigaSure Group). From June 2020 to May 2022, 40 patients were enrolled (20 were in Harmonic and 20 were in LigaSure group). Primary endpoints are operation time, number of camera cleaning, and bleeding amount during the lobectomy procedure. Secondary endpoints are pain score, postoperative drainage amount and blood chemistry tests. This study was registered on ClinicalTrials.gov, NCT04320901.

Results:
Time for lobectomy was significantly shorter in LigsSure group (33.8±6.4 versus 41.9±9.0 minutes, p=0.002). The number of camera cleaning was significantly lower in LigaSure group (2.9±1.6 versus 5.8±2.5 times, p<0.001). Estimated blood loss during surgery was also lower in LigaSure group (11.5±17.3 versus 81.8±99.5ml, p=0.004). Postoperative hospital admission days, drainage amount, visual analogue pain scores were not significantly different between two groups. No significant difference was observed in the laboratory findings and postoperative complications.

Conclusion:
LigaSure group showed better surgical performance in TOETVA, with shorter operation time, less camera cleaning and reduction of bleeding.

A-277

POSTOPERATIVE COMPLICATIONS IN THYROID CANCER CASES UNDERGOING FUNCTIONAL NECK DISSECTION

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Background:
Complications may occur in metastatic thyroid cancer (MTC) patients undergoing functional neck dissection (FND). Since MTC are rare, little is known about management and complications of these cases. In our study, we aimed to present our complications and management of these complications.
Method:
MTC patients undergoing FND between June 2020 and June 2022 were retrospectively analyzed for postoperative complications such as hematoma, hypocalcemia, recurrent laryngeal nerve paralysis, chylous leakage (CL).
Results:
19 bilateral, 17 left, 28 right so a total of 64 FND were performed. 2 patients had postoperative hematoma (3%), 4 patients (6%) had decubitus and 1 had transient brachial plexus injury (1.5%). 1 patient had transient marginal mandibular branch of facial nerve injury (1.5%). In 5 patients (7%), CL was detected due to ductus thoracicus (DT) injury. In these 5 patients, drainage was taken off in postoperative day (PD) 1, pressured dressing was applied and long chain fatty acid poor diet was given. In 4 patients, CL was controlled in average of 3 days while in one patient, due to long lasting CL, percutaneous drainage catheter was applied to the operation lodge and embolisation was performed to the level of cisterna chyli. Due to the high CL, thoracoscopic DT ligation was performed. On PD 2, the patient was discharged. In 1 patient, after the ligation due to per-operative DT injury, acute edematous pancreatitis (1.5%) occurred.
Conclusion:
In a high volume center, low complication rates can be seen after FND. Multidisciplinary experienced team effort is needed for management of complications.

A-282

DID HIGH SERUM CALCITONİN LEVEL LOSE ITS IMPORTANCE IN DETERMINING METASTATIC DISEASE IN MEDULLARY THYROID CANCER ? A NEW ESTABLISHED ENDOCRINE CENTER

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Background:
In literature it is suggested that serum calcitonin level (sCL) can be used as a determinative criteria for indication of functional neck dissection (FND). Our aim is to evaluate the effectiveness of sCL for surgical indication and follow-up by investigating pathologies and follow up data in cases who underwent FND for medullary thyroid cancer (MTC).
Method:
MTC patients who had FND were evaluated retrospectively in terms of postoperative cytopathological data, pre- and postoperative sCL, and recurrence in follow-up between June 2020 and June 2022.
Results:
After detecting sCL above 500 pg/mL, 10 patients had systemic scanning. Out of these 10, 8 had bilateral FND. Other 4 patients had unilateral FND. In 7 patients, accompanying occult papillary thyroid cancer (PTC) was detected with MTC. Only one patient had PTC metastasis in central region and in the remaining 6 patients, no metastasis was detected. In the case where both tumor types metastasized, the diameter of MTC was 0.5 cm, without metastasizing to the central; Level 3-4 were found to have skip macrometastases. No LN metastasis was found in the postoperative pathology of 4 patients who underwent bilateral FND according to sCL. The other 8 patients had metastases to more than 1 LN station. 2 patients had micrometastases in the LN. Except metastatic 2 patients, 10 patients reached normalized values after surgery.
Conclusion:
In our series, 33% of the patients who had FND due to high sCL did not have metastasis and these patients reached normalized values after surgery. It suggests that high sCL are not sufficient to predict metastatic disease.

A-252

A SINGLE CENTER SERIES OF TRACHEA RESECTIONS FOR LOCALLY ADVANCED TUMOR INFILTRATION

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Background:
Infiltration of the cervical-visceral axis in advanced thyroid carcinoma determines the prognosis of the patients. Complete locoregional tumor resection therefore prolongs the survival even in presence of distant metastases. Results of trachea resections performed at the University Medical Center (UMC) Mainz are presented and discussed with regard to the literature.

Method:
Patients who underwent neck surgery along with trachea resection in a time period from January 2007 to December 2022 were retrospectively included in the study. Surgical resection strategy and operation-associated complications were documented. Overall survival and post resection survival were analyzed.

Results:
From 2007 to 2022, at the single-center UMC Mainz 36 patients (16 female, 20 male) were treated with neck surgery with trachea resections for locally advanced carcinomas. Of these, 18 underwent trachea shaving, 15 partial trachea resection and 3 circular trachea resections. Underlying histology was papillary (16/36), follicular (8/36) and poorly differentiated (4/36) thyroid carcinoma, and 8 other diagnoses. 10 patients suffered from postoperative complications (of these, 5 patients ≥ Dindo Clavien grade 4). Tumor recurrence was registered in 5 cases, whereas 19 patients remained tumor free after the operation (tumor persistence in 12 individuals). Mean overall survival from diagnosis was 75 months, mean postoperative survival was 31 months (mean postoperative follow-up period: 31 months).

Conclusion:
Trachea resections for locally advanced tumor infiltration are feasible within highly individualized treatment concepts.

A-204

RISK FACTORS FOR POSTOPERATIVE HEMORRHAGE IN THYROID SURGERY

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Background:
Despite developments in surgical techniques, postoperative bleeding is still the most serious complication in thyroid surgery. It is rare but potentially life-threatening complication. This case-control study was conducted to identify independent risk factors for the occurrence of postoperative hemorrhage.

Method:
Retrospective review of 6938 patients undergoing thyroidectomy in a tertiary center in a ten year period (2009-2019) revealed 72 patients with postoperative hemorrhage requiring reoperation. All patients under the age of 18 were excluded from the study, as well as patients with parathyroid disease, and patients with postoperative hematoma that did not require surgical reintervention. Each patient with postoperative hematoma was matched with four control patients that did not develop postoperative hematoma after thyroidectomy.

Results:
The incidence of postoperative bleeding was 1.04%. Sixty-nine patients (95.8%) bled within first 24 hours after surgery. On univariate analysis older age, male sex, higher BMI, higher ASA score, preoperative use of anticoagulant therapy, thyroidectomy for retrosternal goiter, larger thyroid specimens, larger dominant nodules, longer operative time, higher postoperative blood pressure and the use of postoperative subcutaneous heparin were identified as risk factors for postoperative bleeding

Conclusion:
Early recognition and emergency intervention are esential in in managing post-thyroidectomy bleeding. Therefore, it is especially important to identify risk factors, as well as the time frame for the occurrence of this complication.

A-181

CENTRAL NECK LYMPH NODE INVOLVEMENT IN PATIENTS WITH PAPILLARY THYROID CARCINOMA AND HASHIMOTO'S THYROIDITIS

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Background:

Chronic lymphocytic thyroiditis (CLT) seems associated with less aggressive papillary thyroid carcinomas (PTC). We aimed to evaluate the lymph node yield (LNY) in prophylactic ipsilateral central neck dissection (pCND) in patients with PTC and CLT submitted to surgery.

Method:

We retrospectively studied patients with diagnosis of PTC, between 2009 and 2021, submitted to total thyroidectomy and pCND. We compared the group of patients diagnosed with CLT (yesCLT) with those without (noCLT), evaluating TNM staging, lymph node yield, number of metastatic nodes, and structural recurrence during follow up.

Results:

Some 118 patients were included (48 in yesCLT and 70 in noCLT group).

Stage T1 was present in 73% of all cases, without differences.

There were 1 case of non-recovered recurrent laryngeal nerve palsy and 4 of permanent hypoparathyroidism.

Lymph node yield was higher in yesCLT, 11(4.9) vs 7(3.3) nodes; P<0.001. Presence of lymph node metastasis was less frequent in yesCLT, 20.8 vs 40 % of cases; P=0.02.

Among those with metastatic lymph nodes (38 patients, 10 in yesCLT and 28 in noCLT group), total lymph node yield was higher in yesCLT, 12.9(3.9) vs 7.2(3) (P=0.01), whereas the number of metastatic lymph nodes (percentage of total lymph node yield) was lower in yesCLT, 31.3(18) vs 45(19)%; P=0.06.

Structural recurrence occurred in five cases, all of them in noCLT (p=0.07).

Conclusion:

Presence of CLT may be relevant when interpreting lymph node yield in patients with PTC undergoing central neck dissection.

Prognosis seems better in CLT patients, with structural recurrences only observed in absence of CLT.

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THYROID CARTILAGE NEEDLE ELECTRODES FOR INTRAOPERATIVE NEUROMONITORING DURING THYROID SURGERY: A SINGLE CENTER SERIES OF 2530 NERVES AT RISK

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Background:
In neural monitored thyroid surgery, the most common recording-side method is endotracheal tube electrode which has disadvantages like false positive loss of signal (LOS) due to tube dislocation, accumulating saliva and discontact. Needle electrodes can be used as a recording-side method by inserting the needles on both sides of the avascular thyroid cartilage lamina. This is an alternative and cheaper recording-side electrode system that eliminates problems related to tube electrodes.
Method:
Data were retrospectively analyzed from those who underwent thyroid surgery with intermittent intraoperative nerve monitoring with thyroid cartilage needle (TCN) electrodes. Patients' demographic data, diagnosis, surgery type, pre-resection vagus nerve (V1) and RLN amplitudes (R1), and post-resection vagus nerve (V2) and RLN (R2) amplitudes were evaluated.
Results:
We evaluated 1314 thyroidectomized patients and 2530 nerves at risk [1008 (76.7%) female and 306 (23.3%) male]. The mean age was 49 (±14.81) years. Ninety-eight (7.5%) hemithyroidectomies and 1216 (92.5%) total thyroidectomies were performed. Mean initial amplitude was 1732 μV (±1457) at V1 and 1435 (±945) μV at R1. LOS occurred in 21 (Type-1, 9; Type-2, 12) patients (1.6%). Unilateral permanent vocal cord paralysis developed in 7 patients (0,53%). Needle-related complications and false positive LOS didn’t occur in any patient.
Conclusion:
The use of TCN electrodes is an inexpensive, efficient, and safe recording-side technique in monitored thyroid surgery. Therefore, we believe that this technique has the potential to be used more commonly.

A-142

COMPARISON OF THE THYROID CARTILAGE NEEDLE ELECTRODE AND THE ENDOTRACHEAL TUBE ELECTRODE DURING MONITORING OF THE EXTERNAL BRANCH OF THE SUPERIOR LARYNGEAL NERVE: A CASE-CONTROL STUDY

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Background:
Thyroid cartilage needle electrodes (TCN) are an effective and safe recording side technique in intraoperative neuromonitoring. However, the incomplete contact to the vocal cords of the electrodes on an endotracheal tube may hinder an optimal outcome and even result in inability to obtain an EMG wave during monitoring of the external branch of superior laryngeal nerve (EBSLN). This study aims to compare TCN and endotracheal tube electrode (ETE) recordings during EBSLN monitoring.

Method:
Twenty-six consecutive patients undergoing total thyroidectomy were included in the study. Intraoperative neuromonitoring was performed simultaneously, with both TCN and ETE . Pre-resection (V1, R1, EBSLN1) and post-resection (V2, R2, EBSLN2) amplitudes and latencies were recorded for both types of electrodes. Mann-Whitney-U test was used for statistical analysis.

Results:
Twenty-one women and five men were included, and 52 nerves at risk were evaluated in the study. Mean amplitudes, for right EBSLN1 (314 vs. 168 μV, p= 0.009), for right EBSLN2 (428 vs. 161 μV, p=0.001); for left EBSLN1 (346 vs. 229 μV, p= 0.017) and left EBSLN2 (413 vs. 229 μV, p= 0.009) were statistically higher for the TCN group. All amplitudes obtained with TCN, except on the left for V1, R1, V2, and R2, were statistically higher than those obtained with ETE. There was no vocal cord palsy in the patients. None of the patients suffered from signal loss. There were no needle-related complications.

Conclusion:
EBSLN monitoring by using TCN is a safe and cheap alternative to ETE. With NE, higher amplitudes were obtained.

A-182

THE PROGNOSTIC IMPACT OF LYMPH NODE CHARACTERISTICS AFTER THERAPEUTIC NECK DISSECTION FOR N1 PAPILLARY THYROID CANCER

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Background:

This study aims to evaluate the prognostic impact of lymph node (LN) characteristics in a large cohort of patients with surgery for N1 papillary thyroid cancer (PTC).< div id="eid-safari-extension-is-installed" >

Method:

All consecutive adult patients with a therapeutic central and lateral neck dissection for PTC at a French referral center were prospectively enrolled from January 2000 until June 2021. Primary outcome was the impact of LN characteristics (including lymph node ratio, LNR) in predicting a disease event (persistence or recurrence), using multivariable logistic regression modeling (presented as OR with 95% CI).< div id="eid-safari-extension-is-installed" >

Results:

A total thyroidectomy with therapeutic central and lateral neck dissection for clinically N1 PTC was performed in 462 patients. LN capsular rupture was seen in 260 patients (56%). Median maximum LN size was 15 (9-23) mm. The median central, lateral, and total LNR were 0.50, 0.15, and 0.26, respectively. After a median follow-up of 139 months, 182 (39%) patients had a disease event with associated risk factors: TNM stage 3 (OR 6.08), number of harvested LNs >35 (OR 2.33), LN capsular rupture (OR 1.92), and total LNR >0.20 (OR 2.37). Total LNR of 0.20 predicted a disease event with a sensitivity of 81% and a specificity of 50%, presence of LN capsular rupture with a sensitivity of 72% and a specificity of 54%.< div id="eid-safari-extension-is-installed" >

Conclusion:

Disease event after total thyroidectomy with therapeutic neck dissection for N1 PTC depends on TNM stage, number of harvested LNs, LN capsular rupture, and total LNR.

A-116

18 YEARS LONG JOURNEY FROM BENIGN FOLLICULAR ADENOMA TO RAI REFRACTORY THYROID CANCER – A CASE REPORT.

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Background:
Papillary thyroid cancer (PTC) is the most common type of endocrine system tumor. Surgical treatment and radioactive iodine ablation (RAI) are the cornerstone of its treatment. However around 15% of PTC patients are not cured using these treatments and develop refractive disease .

Method:
A 54-year-old female woman consulted for an enormous neck mass. She underwent a partial resection of the thyroid gland for follicular adenoma in 2004. In 2010, due to the presence of a tumor formation 3/4 cm in the thyroid gland, she was operated again – total thyroidectomy and central lymph node dissection was performed. The histological result showed follicular variant of PTC with central lymph node involvement – pT2N1M0. She underwent RAI treatment. In 2018 she was operated again due to a growing formation 8/6 cm above the larynx and trachea. The histological examination identified it as a local metastasis of FVPTC – pT3N1M0. In 2020, at the beginning of the covid pandemic, the patient was diagnosed with a tumor above the larynx and a suspicious formation in the lower lobe of the left lung. Given the situation, the patient was referred for RAI. The control scintigraphy after 1 year revealed no accumulation of radioiodine by the tumors identified on the CT scan.

Results:
The patient underwent operative removal of three large neck tumors – 12/8, 10/8 and 8/7 cm. A multidisciplinary committee evaluated the disease as cT3N1M1 and because of the RAI-refractiveness recommended vemurafenib.

Conclusion:
This case shows the slow progression from benign disease to metastatic RAI-refractory disease.

A-217

IMPACT OF PREOPERATIVE LUGOL'S IODINE ON SURGERY FOR GRAVES DISEASE. SHORT-TERM RESULTS FROM LIGRADIS MULTICENTER RANDOMIZED CLINICAL TRIAL

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Background:

Many clinical guidelines recommend the preoperative administration of Lugol's solution (LS) for patients undergoing thyroidectomy for Graves disease (GD), mainly based on low-quality evidence. Our aim was to assess its influence on intra and postoperative outcomes in patients undergoing total thyroidectomy (TT) for GD.

Method:

We performed a nationwide multicentre randomized controlled trial including euthyroid patients scheduled for TT due to GD. Patients were randomized for either receiving or not preoperative LS. Surgeons were blinded for treatment assignment. The primary outcome was the overall rate of postoperative complications. Secondary outcomes were intraoperative events and permanent morbidity.

Results:

136 patients were included (68 in each arm), without preoperative differences among groups. The rate of patients who developed any complication was 51.5% in LS arm vs. 50% in controls (p=1). Postoperative hypocalcaemia appeared in 45.6% vs. 38.2% (p=0.487). The rate of postoperative vocal cord palsy was 6.1% vs. 3.3% (p=0.682). Median Thyroidectomy Difficulty Scale score was slightly higher in the LS group (10 vs. 9; p=0.031). No differences among groups were observed regarding surgical time, intraoperative bleeding, gland weight, or the rate of loss of signal in neuromonitoring. Long-term results have not yet been evaluated.

Conclusion:

Preoperative iodine preparation can be safely obviated facing TT for GD, regarding the intraoperative difficulty and postoperative complications. If long-term results sustain these results, current advices for presurgical preparation in GD could be challenged.

A-268

ADVANCED MEDULLARY THYROID CANCER IN EUROPE: RESULTS OF A MULTICENTER STUDY BASED ON THE EUROCRINE® REGISTRY

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Background:
Medullary thyroid cancer (MTC) frequently presents as advanced disease (AdvMTC). We evaluated the incidence of AdvMTC in European Centers and compared presentation and surgical outcome with non-advanced MTC (n-AdvMTC).

Method:
All thyroid cancers (TC) in the Eurocrine® registry (1/2015 and 12/2021) were reviewed. Adults with stage IV MTC or T3b tumors were defined AdvMTC and compared with n-AdvMTC.

Results:
Among 1242 MTC (4.9% of all Eurocrine® TC), 363(29.2%) were AdvMTC, sporadic in 89% of the cases. Sixty-three(17.35%) were locally advanced (T3b/T4), 340(95.8%) presented regional disease (pN1b) and 64(17.6%) distant metastases (M1). AdvMTC were more frequent in men (49.8%Vs31%, p<0.001), presented with elevated CEA levels (79%Vs63%, p<0.001), and required reoperations (39.2%Vs10.4%, p<0.001). Operative time (185Vs110 min, p<001) and hospital stay (2Vs3 days, p<001) were significant longer for AdvMTC. Vocal fold palsy (13.5%Vs6.8%, p<0.001) and other significant complications (4.3%vs0.8%, p<0.001) were more frequent in AdvMTC. R0 resection rate was significant lower in AdvMTC (84%Vs97.3%, p<0.001). At first follow-up, AdvMTC required further oncologic treatment in 18.2%Vs1% of n-AdvMTC, including radiotherapy (5.1%), chemotherapy (3.8%), combined radio-chemotherapy (1.7%) and tyrosine kinase inhibitors (1.3%).

Conclusion:

MTC presented as AdvMTC in one third of the cases and was associated with male gender and elevated CEA. Complications rate and need for adjuvant multidisciplinary treatment require management in specialized Centers. Follow-up studies would depict oncologic outcome in Eurocrine® series

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LOW-RISK THYROID CANCER IN SRI LANKA: ARE WE OVERUSING RADIOIODINE?

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Background:
Radioactive iodine (RAI) is the most effective treatment to ablate remaining thyroid tissue following total thyroidectomy in differentiated thyroid cancer. Evidence suggests non-treatment with RAI is non-inferior to adjuvant RAI treatment in low-risk thyroid cancer patients.

Method:
We retrospectively analysed prospectively collected data from 268 thyroid cancer patients who underwent thyroidectomy in 2019-2020 at a dedicated tertiary cancer centre in Sri Lanka.

Results:
The majority were females (224, 83.6%) with a mean age of 41.6 years (SD=13.5) at diagnosis. Commonest pathological types were papillary (75.4%) and follicular carcinomas (17.5%). Tumour stage was T1, T2, T3 and T4 in 137(51.1%), 87(32.5%), 40(14.9%) and 4(1.5%) patients, respectively. Nodal staging of N0, N1a, and N1b were seen in 215(80.2%), 32(12%), and 20(7%), respectively. Total thyroidectomy accounted for 98% of the surgeries. Patients who were T1N0M0 (n=111), without aggressive histological features were categorized as low risk. Of this low-risk group, 68.4% (n=76) had received RAI treatment. The mean duration from surgery to RAI treatment was 8.6±5.2 months. Four recurrences (3.6%) in the neck (n=1 in RAI group) were detected after a median follow-up duration of 12.5 (SD=11.2) months.

Conclusion:
Over treatment with RAI was commonly seen in patients with low-risk thyroid cancers. This is a likely reason for the observed long delays in treatment. Avoiding RAI in low-risk thyroid cancers will help reduce delays, cut costs and minimize treatment-related side effects.

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DEEP LEARNING MODELS WITH OBJECT DETECTION METHOD FOR INTRAOPERATIVE THYROID RECURRENT LARYNGEAL NERVE IDENTIFICATION: SINGLE CENTER PRELIMINARY STUDY

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Background:
Recurrent laryngeal Nerve (RLN) is one of the most critical surgical landmark during thyroidectomy. Herein, we evaluated the feasibility of different deep learning models, including both segmentation and object detection method RLN detection via different intraoperative surgical image.

Method:
From Dec 2021 to Nov 2022, patient's intraoperative image were retrospectively collected. The image included dissection phase and post-dissection phase of RLN. Deep learning model with ROBOFLOW 2.0 OBJECT DETECTION (FAST) was applied for RLN detection. Ground-truth annotations for each surgical image were done by 2 endocrine surgeons. The mean average precision(mAP), precision and recall were analysis for module testing.

Results:
Our dataset contains 417 color photographs representing 148 patients undergoing thyroidectomy under diverse surgical and image conditions. After data augmentation, 981, 60, 30 labeled surgical images were randomly divided to training set, validation set and testing set. The initial mAP, precision and recall are 43.6%, 68.5% and 40%. We further subgroup the 286 close-up images for model training, the updated mAP, precision and recall improved to 64%, 77.7% and 70%.
Conclusion:
This preliminary result showed the potential of deep learning for intraoperative soft tissue discrimination with free-form, instructed image capture. Further model adjustment, image data enrolled and algorithm fine-tuning is required for better object detection improvement.

A-184

Risk factors of recurrence after treatment for metachronous lateral neck metastasis of papillary thyroid cancer.

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Background:
To analyze from the perspective of recurrence, patients who underwent metachronous lateral neck dissection (mLND) despite initial thyroidectomy and patients who underwent synchronous lateral neck dissection (sLND) for papillary thyroid cancer (PTC) and risk factors for recurrence after mLND.
Method:
This retrospective study reviewed the medical records of 1760 patients who underwent LND for PTC. Of these, 1613 patients underwent thyroidectomy and sLND at diagnosis. In 147 patients, only thyroidectomy was performed at the time of diagnosis, and mLND was performed when recurrence to the lateral neck lymph node was confirmed.
Results:
During a median follow-up of 102.1 months, 110 (6.3%) patients had a recurrence. There was no significant difference in recurrence between the sLND and mLND groups (6.1%, 8.2%, p=0.317). The period from LND to recurrence was longer in the mLND group than in the sLND group (113.6±39.4 months, 87.0±33.8 months, respectively, p<0.001). The age (≥50 years) (adjusted HR=5.209, 95% CI=1.359–19.964; P=0.016), the tumor factors of tumor size (>1.45 cm) (adjusted HR=4.022, 95% CI=1.036–15.611; P=0.044), and the LN ratio in the lateral compartment (adjusted HR=4.043, 95% CI=1.079–15.148; P=0.038) were independent variables predictive of recurrence.
Conclusion:
mLND is suitable for treating lateral neck recurrence in PTC patients who underwent thyroidectomy. Lateral neck recurrence after treatment in patients who underwent mLND was predicted by age, tumor size, and LN ratio in the lateral compartment.

A-275

HEMITHYROIDECTOMY OR TOTAL THYROIDECTOMY FOR DIFFERENTIATED THYROID CARCINOMA

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Background:

There is no consensus as to whether patients with low risk differentiated thyroid carcinoma should undergo total thyroidectomy or hemithyroidectomy. Current guidelines recommend personalised decision making in such cases.

Method:

A retrospective multicentre analysis of patients undergoing hemithyroidectomy or total thyroidectomy for differentiated thyroid carcinoma between 2015 and 2022 was performed. Logistic regression analysis was performed to determine predictors of completion thyroidectomy and residual disease in the completion specimen.

Results:

A total of 247 patients underwent surgery for differentiated thyroid cancer. The median age was 46 and 187 (75.7%) were female. The majority (207, 83.8%) had papillary carcinoma. A total thyroidectomy was performed upfront in 91 patients (36.8%). The remaining 156 patients (63.2%) underwent a hemithyroidectomy. Of those, 111 (71.2%) proceeded to completion thyroidectomy. Age, sex, and nodule size were not associated with undergoing completion surgery ($p = 0.53$, 0.84, and 0.36 respectively). Patients with lymphovascular invasion (OR 4.68, 95% CI 1.55-14.17, $p = 0.006$) were more likely to proceed to completion surgery. Of those who had a completion thyroidectomy, 40 (36.0%) had disease in the completion specimen. Papillary carcinoma was the only factor predictive of disease in the completion specimen (OR 5.09, 95% CI 1.39-18.55, $p =0.014$).

Conclusion:

71% of patients proceeded to completion thyroidectomy. No further disease was identified in 36%. Disease in the completion specimen was more likely in patients with papillary carcinoma.

A-137

SURGICAL RESOURCES IN ADVANCED WELL-DIFFERENTIATED THYROID CANCER WITH AERO-DIGESTIVE TRACT INVOLVEMENT

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Background:
Despite well-differentiated thyroid cancer(WDTC)excellent prognosis,15% patients might present aggressive local behaviour.

Method:
We present in this video a 57y woman with asymmetric goitre and 60 mm nodule(B-VI).CT showed suspected involvement of aerodigestive tract.EBUS showed no tracheal invasion,whilst EUS confirmed transmural oesophageal involvement.Total thyroidectomy,bilateral central and left lateral lymph node dissection,oesophageal resection and reconstruction with free radial flap were performed.
We also present a 75y male with cervical mass and haemoptysis.US showed 62 mm nodule(B-VI).PET-CT and EBUS showed tracheal invasion.EUS showed no transmural oesophageal involvement.Total thyroidectomy,bilateral central lymph node dissection,tracheal resection and extramucosal oesophageal resection were performed.

Results:
First patient required tracheostomy due to laryngeal edema and presented self-limiting salivary fistula that closed at 3weeks.Discharged after 6weeks with good oral intake and tracheostomy closed.Pathology report:multifocal papillary thyroid cancer(tall cells,70mm),micro-metastatic lymph node involvement.Radioiodine ablation was performed.Six months after surgery:no structural disease,thyroglobulin1ug/L.
Second patient developed nosocomial pneumonia.Discharged after 3weeks.Pathology report:papillary thyroid cancer(insular growth,52mm),bilateral neck central lymph nodes involvement,transmural tracheal infiltration,free margins.Radioiodine ablation was performed.

Conclusion:
Surgery offers good results in advanced WDTC. Adequate planning and multidisciplinary team approach are essential.

Parathyroid

A-158

MALIGNANT AND INDETERMINATE LESIONS IN PRIMARY HYPERPARATHYROIDISM: ANALYSIS OF A SERIES OF 154 CASES

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Background:
Hyperparathyroidism is usually caused by parathyroid benign neoplasms and, rarely, by parathyroid carcinoma (PC). Atypical parathyroid adenomas (AA) are borderline variants, with a benign natural course but some features shared with PC. Clinical and pathological differential diagnosis between PC and AA is challenging.
Method:
This retrospective study is aimed to analyse a series of patients that underwent surgery for PC and AA, in order to identify possible features useful in differential diagnosis.
154 consecutive operated patients (54 PC and 100 AA) were examined. Demographics, clinical, biochemical, pathological, genetic and follow-up data were evaluated.
Results:
No significant differences were found between PC and AA regarding PTH levels (median PTH: 5.16 vs 4.43 times the upper normal limit; p=0.32); preoperative calcemia was higher in PC compared to AA (3.07 vs 2.88 mmol/L; p=0.019). Male/Female ratio was 1 and 0.38 for PC and AA (p=0.0083). No significant differences regarding neurological, psychiatric, gastroenterological, renal, cardiovascular or bone symptoms were observed between the two groups. PC were significantly larger than AA (median diameter 25 mm vs 20 mm; P=0.046). At a mean follow-up of 3.2 years (range 1-14), persistence or recurrence disease occurred in 2 PC (4%) vs 0% in AA (p=0.12).

Conclusion:
The preoperative differential diagnosis between PC and AA is challenging, since AA had preoperative clinical features similar to PC but a postsurgical course similar to typical benign hyperparathyroidism.

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PERSISTENT PRIMARY HYPERPARATHYROIDISM DUE TO DOUBLE ADENOMA, A NEW REALITY?

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Background:
To discern the clinical evolution of patients reoperated for persistent primary hyperparathyroidism (PHPT) due to double adenoma in a high-volume hospital
Method:
A retrospective descriptive study of 7 patients who were reintervened for persistent PHPT from January 1,2014, to June 1,2022.The demographic variables related to the diagnosis in the first and second surgery and their analytical and anatomopathological results have been analyzed
Results:
17 patients have been reoperated. 7(41.17%) had an anatomopathological result of parathyroid adenoma in both surgeries. 85.7% had 2 positive localization test imaging during the first and second surgeries. The preoperative PTH in the 1º surgery was 210±49.16pg/mL vs 141±40.39pg/ml in the second, in all cases higher in the first. Selective parathyroidectomies were performed in all patients in the 1º operation, with a cure rate of 43%. In the 2º intervention, selective parathyroidectomy was opted for in 57.1%, cervical exploration in 28.6%, and guided parathyroidectomy in 14.3%, with a cure rate of 100%. The weight of the adenoma in the 1º surgery was 913±448mg vs 522±229mg. In one case, the weight of the second adenoma was greater. PTH one year after the 2º surgery was 61.72±20.86pg/mL, and the corrected serum calcium was 9.12±0.56mg/dL
Conclusion:
The presence of double adenomas is a rare entity that may imply the persistence of PHPT. In our sample,all patients presented a lower preoperative PTH after the surgery of the first adenoma. Selective parathyroidectomy may be an option in cases of localized adenomas with 2 imaging tests despite being a reintervention

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IMPACT OF AUTOFLUORESCENCE AND INDOCYANINE GREEN ANGIOGRAPHY ON POST-THYROIDECTOMY HYPOPARATHYROIDISM: A MULTICENTRIC CASE-CONTROL STUDY

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Background:

Post-thyroidectomy hypoparathyroidism (hypoPT) is more common than expected, and the issue of saving parathyroid (PT) glands leads to novel technology such as autofluorescence (AF) and indocyanine green (ICG) angiography.This study aims to investigate the impact of AF and ICG on hypoPT after total thyroidectomy.

Method:

Thyroidectomized patients, where Storz Endoscopic Near Infra Red/ICG imaging system, RUBINA™was used for identifying PT glands, were evaluated retrospectively. The control group was chosen from consecutive thyroidectomies with similar demographics and operated without AF and ICG. Two groups were compared regarding demographics, postoperative (PO) first-day and first-month Ca levels, parathormone (PTH) levels, symptomatic hypocalcemia, and replacement therapy. Mann-Whitney U and student t-tests were used for statistics.

Results:

Fifty-three patients [39 (73%) female,14 (27%) male] were evaluated in the AF group and 47 [37 (74%) female, 10 (26%) male] in the control group. There was no difference between the two groups regarding demographics, PO first-day and first-month calcium and PTH levels, and their Vit D and Ca replacement requirement. A significant difference was found in the rates of symptomatic hypocalcemia in favor of the AF group ($p=0.03$). Also, in the AF group, subnormal PTH levels were associated with lower ICG scores ($p<0.001$)

Conclusion:

ICG angiography with autofluorescence reduces early symptomatic hypocalcemia incidence. In addition, lower ICG scores was related to post-operative hypoPT.

A-156

RECURRENT HYPERPARATHYROIDISM DUE TO PARATHYROID AUTOGRAFTS PRESENTED WITH A MASS

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Background:
The total parathyroidectomy (TPTX) with auto-transplantation (AT) has commonly used to treatment refractory renal secondary hyperparathyroidism (SHPT). However recurrent hyperparathyroidism (HPT) occurs in a small percentage of patients undergoing parathyroidectomy due to parathyroid autografts. In this study, we present a 36-year-old woman presented with progressively elevated serum PTH and fixed mass who were operated due to secondary hyperparathyroidism as a complication of chronic renal failure six years ago in our department.

Method:
The patient was presented with increased PTH levels and fixed and immobile mass.

Results:
The mass was completely excised with an elliptical incision made over the shoulder. After it was cut in half, dirty yellow 2x2 cm tissue, which was thought to be parathyroid tissue, was excised from the mass, and half of it was sent for frozen examination. Since no malignancy was detected, it was decided to auto-transplant the remaining 1x1cm tissue. Parathyroid auto-transplantation was performed in the left upper rectus muscle because both arms contained scar tissue due to multiple arteriovenous fistulae. On post-operative day 1, patient Ca value was measured as 8.43 mg/dl and PTH as 37.68 pg/ml. The patient was discharged on the post-op day 2. A month after the surgery, patient Ca value was measured as 9.02, PTH as 22.38. Histopathological examination of the mass lesion excised from the shoulder revealed mature parathyroid tissue.

Conclusion:
In some conditions autotransplanted parathyroid tissue may presented with soft tissue calcification which could be challenge to manage.

A-121

THE IMPACT OF PRE- AND INTRAOPERATIVE DIAGNOSTIC TOOLS ON CLINICAL OUTCOMES AND COST-EFFECTIVENESS IN PARAHTYROID SURGERY

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Background:

Pre- and intraoperative diagnostic tools influence the surgical management of PHPT, whereby their performance of classification varies considerably for the two common causes of PHPT: solitary adenomas and multiglandular disease. Consensus on the use of such diagnostic tools for an optimal perioperative management of all PHPT patients has not been reached.

Method:

We developed a decision-tree model to estimate and compare clinical outcomes and cost-effectiveness of using different preoperative imaging modalities and ioPTH monitoring criteria, focusing on the United States healthcare system. We assesseed the robustness of the model by conducting a one-way sensitivity analysis and probabilistic uncertainty analysis.

Results:

In the base-case analysis, four-dimensional (4D)-computed tomography (CT) was the most cost-effective strategy with $10,010 and 23.90 quality-adjusted life years. Ultrasound and ^{99m}Tc-Sestamibi single-photon-emission computed tomography/CT were both dominated strategies, while ^{18}F-fluorocholine positron emission tomography was not cost-effective. The application of ioPTH monitoring with the Vienna criterion decreased the rate of reoperations from 10.50 to 0.58 per 1,000 patients. Due to an increased rate of bilateral neck explorations from 257.45 to 347.45 per 1,000 patients, it was not cost-effective.

Conclusion:

4D-CT is the most cost-effective instrument for the preoperative localization of parathyroid adenomas. Due to an excessive increase of bilateral neck explorations, the use of ioPTH monitoring is not cost-effective in PHPT, but leads to a significant reduction of reoperations.

A-284

PARATHYROIDECTOMY IN PREGNANCY: KEY LESSONS LEARNED IN 29 CASES

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Background:
Primary hyperparathyroidism (pHPT) during pregnancy is known to pose health risks to both mother and foetus. The diagnosis, imaging, surgical strategy and anaesthesia all present specific challenges. There are no universally accepted guidelines on the optimal management strategy, but multi-disciplinary team discussion usually recommends surgery in the second trimester in women with significant biochemistry or symptoms. We reviewed the outcomes of pregnant women undergoing parathyroidectomy in a regional complex pregnancy unit.

Method:
Data were collected on parathyroidectomies performed in pregnancy over a 15 year period, including demographics, diagnostics, surgery and maternal/foetal outcomes.

Results:
Twenty-nine pregnant women underwent parathyroidectomy in our institution from 2007 to 2022. The median age at operation was 34 years (range 17-52), median peak adjusted calcium was 2.95mmol/l (range 2.63-3.68) and median peak parathyroid hormone (PTH) level was 18pmol/l (range 6-60). Dual localisation with ultrasound and Sestamibi was achieved in four patients (Sestamibi was performed in eight cases that were diagnosed pre-pregnancy). Parathyroidectomy was carried out under general anaesthesia between 12 and 30 weeks' gestation, with no adverse outcomes for mother or foetus. Cure rate was 97%.

Conclusion:
Appropriately selected patients with pHPT can undergo parathyroidectomy safely in the second trimester. The challenges in diagnosis, imaging and surgical strategy experienced in 29 cases are discussed and should inform much needed guidelines on the management of this condition.

A-300

Intraoperative parathyroid hormone monitoring should be abandoned in patients with primary hyperparathyroidism with concordant preoperative imaging

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Background:
Intraoperative parathyroid hormone (IOPTH) monitoring has been widely used to confirm surgical cure for primary hyperparathyroidism (pHPT). Some experts consider it essential for success. However, the benefit of the routine IOPTH assay, may be limited in patients with concordant preoperative imaging.
This study aims to evaluate the usefulness of the routine IOPTH monitoring.

Method:
This is a retrospective review involving patients who underwent focused parathyroidectomy for pHPT from 2012 to 2020 at our institution after concordant neck ultrasonography and MIBI scan. IOPTH monitoring was performed using blood samples withdrawn before skin incision, and then 90-minutes after excision. Cure was defined as normal serum calcium and parathyroid hormone levels 6 months postoperatively.

Results:
A total of 638 patients were included (mean age:60.9 years, 530 females). Surgical cure was achieved in 613 patients (96%). A 50% decrease in PTH values from the highest baseline was observed in 596/638 (93%) of patients, including 3 patients (0.5%) who were not cured with a positive predictive value=99%; 17 patients (2.7%) had a false negative IOPT drop (<50%) (negative predictive value=60%).

Conclusion:
Our results show that IOPTH sampling at 90 minutes is the most reliable result for predicting failure, therefore being simply a postoperative datum for subsequent outpatient management. It does not seem to improve the outcome in patients with concordant preoperative imaging undergoing focused parathyroidectomy. Moreover it increases operative time and the risk of a useless conversion to bilateral neck exploration.

A-271

EN BLOC INCLUDING THYROIDAL RESECTION FOR THE TREATMENT OF PARATHYROID CARCINOMA WITH CDC73 GERMLINE MUTATIONS. A PROPHYLACTIC APPROACH

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Background:
Parathyroid carcinoma (PC) is a rare endocrine malignancy accounting for 0,005% of all cancers. Most PC are functional hypersecreting parathormone (PTH) and causing hypercalcemia at presentation. A germline CDC73 pathogenic variant has been identified in 20-29% of individuals with apparently sporadic parathyroid carcinoma.

Method:
We report the case of 28 years old men who was diagnosed of hypercalcemia with parathormone (PTH) levels of 140pg/mL. He had family history of aunt who was, previously, diagnosed and operated on by a PC with germline CDC73 pathogenic variant identified. He had story of clavicle, ulna and radius fracture and multiple renal colic.

Results:
Thyroid scintigraphy and ultrasound findings were concordant and reported findings suggestive of probable adenoma located in the upper third of the left thyroid lobe (LTL). Fine needle aspiration (FNA) was not performed. A prophylactic En bloc resection (including left superior and inferior parathyroidectomy, left thyroidectomy and ipsilateral central lymph nodes) was carried out. Intraoperative parathyroid hormone assay showed a drop more than 50% of the base line PTH. Pathological findings confirmed the diagnose of benign parathyroid adenoma and benign thyroid histology as well.

Conclusion:
PC can be difficult to diagnose preoperatively due to clinical features shared with benign causes of hyperparathyroidism. As PC is insensitive to chemo or radiotherapy, complete surgical resection is the best chance of cure. In cases of high suspicion of malignancy, en bloc resection (including thyroidectomy) of affected parathyroid gland may be assessed.

A-239

IMPACT OF SUCCESSFUL SECONDARY HYPERPARATHYROIDISM TREATMENT ON CARDIOVASCULAR MORBIDITY IN PATIENTS WITH CHRONIC KIDNEY DISEASE STAGE IIIB-V

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Background:
The aim of the study is to assess the effect of treatment success of secondary renal hyperparathyroidism (SHPT) on cardiovascular morbidity. Retrospective single-center analysis.
Method:
211 patients chronic kidney disease (CKD) stages IIIB-V undergoing computed tomography for coronary artery calcium (CAC) scoring at the University Hospital of Zurich between 2015 and 2019. Presence of and control of SHPT was assessed at the timepoint of CAC scoring, and 6-12 months prior. Information on left ventricular ejection fraction (LVEF), and left ventricular hypertrophy (LVH) were obtained from echocardiography at the timepoint of CAC scoring. Independent predictive factors for ACS and LVH were assessed by multivariable analysis.
Results:
34% (n=72) of the patients had uncontrolled SHPT, whereas 66% (n=139) had either no- (n=98) or a controlled SHPT (n=41). Patients with uncontrolled SHPT had a significantly lower LVEF (p=0.028), significantly more pronounced LVH (p=0.003), a higher left ventricular myocardial mass index (LVMMI) (p=0.002) than the group with no SHPT or well controlled SHPT. Uncontrolled SHPT had a significant higher risk for developing ACS (p=0.011) compared to no- or controlled SHPT patients (41.7% vs 31.7%).
Conclusion:
SHPT is common (54%) in progressed CKD patients and is insufficiently controlled in one-third of patients. Insufficient control of SHPT has a negative impact on cardiovascular morbidity with lower LVEF, increased LVH and a higher incidence of ACS. Thus, increased focus on SHPT control in CKD patients is important and may have a beneficial impact on cardiovascular outcomes.

A-208

FACTORS INFLUENCING BONE MINERAL DENSITY IN DIFFERENT HYPERPARATHYROIDISM PHENOTYPES: A PROSPECTIVE STUDY.

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Background:
Primary hyperparathyroidism (PHPT) could manifest in 3 different biochemical phenotypes: classic hypercalcemic, normocalcemic, and normohormonal. PHPT results in a higher propensity for fractures due to progressive bone loss. In this prospective study we aimed to find the factors influencing bone mineral density (BMD) changes and define the best candidate for surgery
Method:
We included 109 patients diagnosed with PHPT who underwent parathyroidectomy. Sociodemographic profiles, biochemistry results and both pre-operative and one-year postoperative dual energy X-ray absorptiometry scans were used to compare BMD gain. Hypercalcemic, normocalcemic and normohormonal subgroups has also been analysed.
Results:
Bone mineral density was significantly increased 1 year after parathyroidectomy on lumbar spine (LS), total hip (TH) and femoral neck (FN) sites with no change in 1/3 distal of radius. Gender and age didn’t show any correlation with BMD gain. Post-operative low phosphorous levels and higher preoperative urinary calcium were associated to a higher BMD gain. Greatest decrease between pre and post-operative PTH correlated with a higher increase in BMD and t-score both in LS and FN. The three subgroups of PHPT patients showed similar postoperative BMD gain.
Conclusion:
Bone mineral density significantly improves in operated patients with primary hyperparathyroidism. Severe biochemical profiles showed greater increase in BMD gain. Regardless of age and sex, all patients with PHPT could benefit from parathyroidectomy.

A-233

PERSISTING HYPERCALCEMIA AND HYPERPARATHYREOIDISM AFTER KIDNEY TRANSPLANTATION HAVE A NEGATIVE IMPACT ON GRAFT- AND PATIENT SURVIVAL

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Background:
Hyperparathyroidism (HPT) with hypercalcemia (HC) is thought to be irreversible and deleterious for graft survival after kidney transplantation (KT). Consequently parathyroidectomy is recommended in hypercalcemic patients prior to transplantation.

Method:
Retrospective analysis of 1212 kidney transplant recipients (KTRs), between 2006 and 2019. Presence of HPT and HC was assessed at KT, and until 60 months follow-up. The effect of persistent HPT and HC on graft- and patient survival, and risk factors for persistence were analyzed.

Results:
At KT, 5.7% (n=69) had no HPT, 32.7% (n=396) had HPT without HC and 37.0% (n=448) had HPT with HC. At 2 years FU 26.4% (n=320) of patients had no HPT and 6% (n=73) had HPT with HC. Dialysis and dialysis vintage were risk factors for developing HPT, and dialysis, KT waiting time and donor type for persisting HC after KT.
Living donor KTRs had significantly lower PTH levels at all FU timepoints, less HC persistence, and an improved patient survival (HR: 1.93 (95% CI 1.35 – 2.77), $p<0.001$).
KTRs with normalized PTH and even more so with recovered HC had improved death-censored graft survival ($p<0.001$), and overall patient survival ($p<0.001$).

Conclusion:
HPT with hypercalcemia is frequent at KT with normalization of PTH and calcium in a substantial part of patients after KT. This finding questions routine pre-KT parathyroidectomy for suspected parathyroid autonomy. Persisting HPT, particularly with HC, is associated with a negative graft- and patient survival. Thus, more aggressive treatment of HPT, especially in case of persisting HC might be warranted.

A-236

THE DIAGNOSIS OF PRIMARY HYPERPARATHYROIDISM NEGATIVELY AFFECTS LIFE EXPECTANCY IN PATIENTS FOLLOWED-UP FOR DIFFERENTIATED THYROID CANCER

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Background:

Differentiated Thyroid Cancer (DTC) is the most common endocrine neoplasia, and primary hyperparathyroidism (PHPT) is the most common cause of hypercalcemia in healthy subjects. An association between PHPT and thyroid disease has been suggested. The aim of this study is to evaluate the possible impact of PHPT on the course of DTC.

Method:

Among patients affected with DTC followed-up in our center, those who had data covering at least 10 years of follow up. were enrolled. Clinical, biochemical, and pathological data at 5 and 10 years were retrospectively reviewed, as well as the oncological course and the overall survival (OS).

Results:

Incidence of PHPT in patients affected with DTC was 4.2%, against an expected 2.4%. Patients with both DTC and PHPT showed an older age at diagnosis of DTC ($p<0.01$), a history of a second tumor ($p=0.02$), and of cardiovascular events ($p=0.01$). Overall, their oncological course was worse, with higher mortality ($p<0,01$) and shorter OS ($p<0.01$). Among the variables considered, the OS was significantly affected by: higher preoperative PTH ($p<0.01$), female gender, older age at diagnosis ($p<0.01$), a second oncological diagnosis ($p=0.04$) and a history of cardiovascular events ($p<0.01$). The correlation between higher mortality and PHPT remained significant also when corrected for the above-mentioned factors ($p=0.01$)

Conclusion:

Patients affected with DTC and PHPT display a lower life-expectancy, independently from DTC stage. This suggests a significant negative role of PHPT on survival. An active surveillance of PHPT is mandatory during follow-up for all patients with DTC.

A-160

CASE PRESENTATION OF THE SMALLEST NON-FUNCTIONAL PARATHYROID CARCINOMA

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Background:

Non-functional parathyroid carcinoma (PC) is one of the rarest malignant neoplasms. Due to the lack of symptoms and laboratory findings, it is mostly diagnosed in late stages, when local invasion and dissemination are already present. However, our case is an exception, because it was detected in early stage, with no local invasion present.

Method:

We present a case of the smallest non-functional PC yet reported in literature.

Results:

A 47-year-old woman was admitted to outpatient Clinic where fine needle aspiration biopsy (FNAB) of bilateral thyroid nodules (slide 1) and central neck mass (slide 2), which was suspected to be an enlarged lymphatic nodule or parathyroid gland, was performed. Results came back as Bethesda I (slide 1), and Bethesda IV (slide 2), stating that it is hard to distinguish thyroid gland oxyphill lesions from parathyroid cells. Total thyroidectomy was performed as well as excision of the left central neck mass, without any involvement of surrounding structures. Pathological examination revealed bilateral thyroid follicular nodular disease, papillary microcarcinoma and parathyroid carcinoma with vascular and capsular invasion, measuring 10x8x8 mm. The immunohistochemical profile included positive PTH, Chromogranin A and negative TTF1.

Conclusion:

Non-functional PC is usually diagnosed in advanced stages, already involving adjacent structures, however this case presents a rare example. It is important not to exclude PC as a differential diagnosis in absence of elevated Ca and PTH serum levels. Follow-up will be difficult, since there are no prognostic parameters to rely on.

A-259

IN SEARCH OF PERFECT ASSAY – PROSPECTIVE, MULTI-CENTRE CLINICAL VALIDITY STUDY OF NOVEL, ULTRAFAST IOPTH MONITORING SYSTEM.

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Background:
NBCL Connect is the first Analyser able to measure PTH in whole blood in 5 minutes but achieving precise measurements while maintaining speed and simplicity of IOPTH system is a significant challenge in real-time surgical environment.

Method:
Prospective, multi-centre Clinical Validity study assessing NBCL performance during life surgery with an aim of identifying and implementing incremental improvements in hardware, calibration, operating protocol and composition of assay.

Patients undergoing parathyroidectomy had simultaneous IOPTH monitoring (Miami criteria) with NBCL and either Roche or Abbott (gold standards). Pearson coefficient was used for linear correlation and NBCL sensitivity/specificity/accuracy was calculated. Monitoring Committee regularly discussed results and implemented improvements in 3 stages (stage 1 66, stage II 97 and stage III 71 patients)

Results:
NBCL alignment with “gold standards” measurements improved in subsequent stages (Roche; R=0.98, slope1.2, R=0.92, slope0.9, R=0.94,slope1.3) (Abbott; R=0.82,slope 0.4, R=0.89, slope0.8, R=0.91,slope 0.8). Clinical performance of NBCL improved with sensitivity of 83.9%,91.2%,98.6% and accuracy of 84.8%, 91.3% and 98.6% in stages I, II and III respectively. There were no false positive results (specificity 100%).

Conclusion:
Close cooperation between surgeons, clinical scientists and engineers led to implementation of incremental improvements resulting in better clinical performance of NBCL Connect Analyser, which proved its ability to predict biochemical cure in patients undergoing surgery for PHPT.

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Robotic Parathyroidectomy is feasible technique for Primary Hyperparathyroidism.

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Background:
Focused parathyroidectomy is the gold standard treatment modality for primary hyperparathyroidism, which allows accurate preoperative localization. Robotic parathyroidectomy has emerged as a feasible procedure for focused parathyroidectomy.
Method:
We assessed the data obtained from patients who underwent gasless robotic parathyroidectomy with the transaxillary approach between December 2013 and August 2022 and were diagnosed with primary hyperparathyroidism at our institute. The data included clinical, biochemical, and pathological features and operation time.
Results:
Of the 12 patients, 11 were women and one was a man. The median age of the patients was 44.5 years (range: 15–65 years). The median preoperative maximum mass diameters on ultrasonography and neck computed tomography were 1.2±0.5 and 1.1±0.6 cm, respectively. The median size of the postoperative maximum mass diameter in gross pathology was 1.3±0.4 cm. The location of the enlarged parathyroid was left superior in five patients, right inferior in four, left inferior in three, and no right superior in one. In the final pathological examination, all cases were parathyroid adenomas. The mean operative time was 113±48 min. The mean robot docking and console times were 9±5 and 47±52 min, respectively.
Conclusion:
Robotic transaxillary parathyroidectomy is a feasible technique in select patients with primary hypoparathyroidism and preoperatively localized disease. The gasless robotic transaxillary approach provides procedural safety as well as superior cosmetic results without a neck scar.

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CARCINOMA OF PARATHYROID GLAND AND REPEATED SURGERY – TWO SIMILAR CASES BUT OTHER DIAGNOSIS

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Background:
Primary hyperparathyroidism is one of the most common endocrine disorders, and it is an important cause of hypercalcaemia. Parathyroid carcinoma is very rare, but very serious cause of primary hyperparathyroidism.

Method:
Among the years 2000-2022 we have performed 3459 operations (including 6,6% reoperations) with diagnosis of hyperparathyroidism. Of these 3459 operations, there were 5 patients with 20 operations/reoperations for parathyroid carcinoma. All pathological tissue was examined by an experienced pathologist.

Results:
We describe two similar cases of repeated surgery of hyperparathyroidism, 56-years old man and 52-years old woman. Both were operated on four times for hyperparathyroidism. In the first case, the last patological result was parathyroid carcinoma, in the second case the last patological result was benign.

Conclusion:
The histopatological diagnosis is difficult but important.

A-232

FAST, WHOLE BLOOD INTRAOPERATIVE PARATHYROID HORMONE ASSAY FOR SIMPLE USE DIRECTLY IN THE SURGERY ROOM

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Background:
Intraoperative Parathyroid Hormone (IOPTH) monitoring is a reliable method of predicting cure during surgery for Primary Hyperparathyroidsm (PHPT). Current Near Patient Testing (NPT) immunoassays testing often lacks sensitivity and precision in comparison to results generated by the central laboratory. Often this testing is time consuming and requires laboratory staff. Diagnostics in central laboratories causes delayed test results, through logistics and availability. Here, the application of a NPT platform measuring PTH in 5 minutes in whole blood is described. The analyzer can easily be operated by non-laboratory staff, such as e.g. nurses and anesthetist.

Method:
A chemiluminescent assay using paramagnetic particles and anti-PTH antibodies was developed and IVD certified.

Results:
The Limit of detection on the analyzer is 4.6 pg/mL. The range of the assay is up to 3000 pg/mL. A precision study showed CV% of 8.5% and 6.2% for Repeatability and 11.6% and 10.0% for Total precision at levels of 59.6 and 294 pg/mL (n=33 and 31, respectively). Correlation with a predicate device (n=35) resulted in a correlation coefficient of 0.90, a slope of 1.14 and an intercept of -3.6.

Conclusion:
The quick PTH immunoassay on the NBCL CONNECT analyzer, operated by OR staff, demonstrated good performance during surgery in patients with primary hyperparathyroidism. Furthermore, good correlation and agreement with a predicate device was observed.

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INFLUENCE OF PGRIS SCORE IN POSTOPERATIVE HYPOCALCEMIA AFTER TOTAL THYROIDECTOMY

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Background:

Postoperative hipocalcemia is the most frequent complication after total thyroidectomy (TT). Parathyroid insufficiency is the main cause. The aim of this study is to analyse the cases of transient and permanent hypocalcemia after TT according to the number of parathyroid glands remaining in situ (PGRIS).

Method:

We retrospectively reviewed all the patients with postoperative hipocalcemia after TT between January 2015 and March 2021. The PGRIS score was calculated using the formula: 4–(parathyroid glands autografted+parathyroid glands found in the specimen). Afterwards patients were classified according to the PGRIS number as group 1-2 (one or two PGRIS), group 3 (three PGRIS) and group 4 (all PGRIS).

Results:

A total of 574 patients were included. Among patients in PGRIS group 1-2 we found 132 cases of transient hipocalcemia (57,4%) and 37 of permanent hipocalcemia (16,1%). In relation with group 3, there were 125 patients with transient hipocalcemia (54,1%) and 12 with persistent (5,2%). Finally, in group 4, 65 patients presented transient hipocalcemia (57,5%) and 11 permanent (9,7%).

We did not find statistical significance between the PGRIS score and transient hipocalcemia (p=0,734). Nevertheless, the differences were statistically significant between the PGRIS score and permanent hipocalcemia (p=0,01).

Conclusion:

According to our experience, the PGRIS score is not enough to predict postoperative transient hipocalcemia after TT. That could be explain by the role of ischemia in parathyroid insufficiency and the need of other methods to analyse parathyroids vascularisation.

A-186

DYSPHAGIA AS A SYMPTOM OF MISPLACED PARATHYROID ADENOMA: A CLINICAL PRESENTATION WORTH KNOWING

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Background:
Parathyroid adenoma (PA) is the primary cause of primary hyperparathyroidism (PHP). Increased parathyroid hormone secretion results in hypercalcemia leading to a range of clinical manifestations including nephrolithiasis, depression, nausea or vomiting as well as osteoporosis. However, most patients present with minimally symptomatic or asymptomatic hypercalcemia. In addition, loco regional symptoms are rarely seen.

Method:
We reported three cases of PA of ectopic location and atypical symptoms. Diagnostic workup included ultrasonography and a ^{99m}Tc-MIBI scintigraphy. A systematic preoperative ENET examination was performed. No arteria lusoria was discovered. All patients were operated with minimal invasive cervicoscopy according to Henry's technique.

Results:
Three female cases of 62, 71 and 87 respectively were described. PHP diagnosis was evoked following symptoms of fatigue, osteoporosis or during a routine check-up. The imaging work-up showed PA of atypical location. The first one was right retro-tracheal and latero-esophageal. The two others were located behind the oesophagus. Patients reported an improvement in swallowing after surgery. Indeed, retrospectively, they described a history of dysphagia to solid.

Conclusion:
Dysphagia is a rare but already described manifestation of PA that should be kept in mind. This complaint is rarely thought of preoperatively. However, it may appears in retro esophageal PA, corresponding to a P4 gland. Cervicoscopy is an ideal minimal invasive surgery technique, able to perform dissection between the spine and esophagus. Dysphagia was relieved in all after surgery.

A-253

IMPROVEMENT OF MOTOR FUNCTION AFTER SURGICAL MANAGEMENT OF PRIMARY HYPERPARATHYROIDISM IN A FOURTEEN YEARS OLD WITH SICKLE CELL ANEMIA; A CASE REPORT

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Background:

Primary Hyperparathyrodism in children is a rare condition. It has a more aggressive coarse and bone related complaints is the most common presentation. In most cases, it is usually due to single adenoma. Laboratory workup shows high parathyroid hormone and high serum calcium levels. Boa_Image_Frame imaging modality for localization of the adenoma is the sistamibi scan.

Method:

This is a case report, the patient file and medical record was reviwed

Results:

A complete recovery and improvement motor function in a 14 years old child with primary hyperparathyrodism after surgical intervention and excision of parathyroid adenoma. Review of local and international literature showed no similar reported cases.

Conclusion:

The treatment of hyperparathyrodism in children remains a topic of conflict as they are still in the developing stage. Nevertheless, in children with other co-morbidities that would effect the intervention plan. Optimization of patient condition before a surgical intervention in such cases remains crucial. Also early intervention in primary hyperparathyroidism could be a curitaive measure and prevents further boneloss and loss of motor function. This article could help clinicians and surgeons predict the outcomes and disease prognosis after surgical excision of parathyroid adenoma.

A-165

GIANT PARATHYROID ADENOMA: A DIAGNOSTIC CHALLENGE WITH PARATHYROID CARCINOMA

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Background:

Parathyroid adenoma (PA) is the leading benign cause of primary hyperparathyroidism (PHPT) accounting for 85%of cases,while less than 1%is due to parathyroid carcinoma (PC).PA heavier than 3.5g or bigger than 3cm are known as giant parathyroid adenoma (GPA).Preoperative differentiation is challenging since GPA and PC share similar characteristics.Differential diagnosis must be considered,as it determines surgical and follow-up management.

Method:

We report a case of GPA. The following QR code shows a video of the surgery.

Results:

A 57 y.o. woman was referred to our clinic with knee pain and weight loss.No palpable mass at physical examination.Labs showed high serum calcium level(13.0 mg/dl),PTH level(900.00 pg/ml),25-hydroxy-vitaminD(10.70 ng/ml), human chorionic gonadotrophin(9.5 mUI/ml).Neck ultrasound and Choline PET scan revealed a complex nodule (4x6 cm) at the inferior pole of the right thyroid lobe.A 3D model for surgical planification was obtained, excluding involvement of adjacent structures.Due to PC suspicion, we performed *en bloc* parathyroidectomy with ipsilateral thyroid lobectomy.Surgical specimen weighted 31.9g (with no histological evidence of capsular,vascular,perineural invasion).Postoperative calcium level dropped within normal range, iPTH levels reduced significantly, yet remaining above normal values.

Conclusion:

GAPs are a rare cause of PHPT. Preoperative differentiation between GPA and CP is challenging yet important,since clinical diagnosis determines surgical management. Although GPA is mostly benign,a higher rate of atypia has been described,making long-term follow-up mandatory.

A-157

CARDIOVASCULAR EVENTS AND GLOBAL VASCULAR RISK IN PATIENTS WITH PRIMARY HYPERPARATHYROIDISM

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Background:
Although previous studies have shown reduced cardiovascular events following PTX, it is unclear whether that is true for contemporary patients currently diagnosed and treated with milder disease than previously. The aim of this nation-wide record-linkage study was to study any change in cardiovascular events after PTX, and to evaluate the global vascular risk in pHPT patients.
Method:
The cohort consisted of 5009 patients who underwent PTX were identified in the Scandinavian Quality Register for Thyroid, Parathyroid and Adrenal Surgery. These were matched with 14983 population controls. Data was linked with the National Patient and Death Registries. Incidence rate ratios [IRRs] were estimated with Poisson regression for AMI, stroke, TIA, coronary artery disease [CAD], heart failure [HF], mitral valve stenosis [MVS], peripheral artery disease and aortic aneurysm [AA]. IRRs were compared in patients and controls before and after PTX. Serum calcium, adenoma weight and multiglandular disease were analysed as predictors.
Results:
TIA was twice as common in patients than controls 4–1 years before PTX (IRR 2.06, CI 95% 1.31–3.25), whereas the incidences of AMI and stroke were not increased. AMI and CAD after PTX were associated with preoperative calcium. MVS was increased before PTX (IRR 3.22, 1.51–6.85), as was HF (IRR 1.37, 1.11–1.67). AA was increased pre- and postoperatively and associated with calcium and multiglandular parathyroid disease.
Conclusion:
TIA and chronic heart diseases such as MVS and HF are increased in patients, alleviated by surgery. The impact of pHPT on global vascular risk is uncertain.

A-309

ATYPICAL PARATHYROID ADENOMA VS CARCINOMA: A RARE CAUSE OF HYPERPARATHYROIDISM

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Background:
Atypical parathyroid adenomes(APA) have features of carcinoma, are difficult to distinguish during the surgery of primary hyperparathyroidism, they lack of unequivocal evidence of invasive growth and present a benign clinical outcome.

We present 2 cases of patients with APA

Method:
Case 1: 59-year-old female with primary hyperparathyroidism. Preoperative ultrasound and PET-CT showed right inferior parathyroid adenoma

Case 2: 51-year-old male patient with primary hyperparathyroidism.
Preoperative studies showed a 2 cm node adjacent to right thyroid lobe.

Results:
Case 1: Excision of a 1.5cm adenoma was performed.
Definitive histopathological study showed an encapsulated tumor with collagenized fibrous tracts of growth expansive that extend through capsule reaching the surrounding tissues without going over them. No vascular invasión, being diagnosed with APA
The patient has been in clinical and radiological follow-up for 1 year with no evidence of recurrence

Case 2: Excision of a hard mass was made without infiltration, intraoperatively frozen section could not prove or rule out malignancy.
Histopathological study showed findings that seemed to match the criteria for APA, but in some sections appeared fat tissue invasion wich determined the diagnosis for parathryroid carcinoma.
Ipsilateral hemithryroidectomy was performed.

Conclusion:
Distinction between APA and carcinoma is difficult. Neither preoperative data, macroscopic or histopathological findings are conclusive unless a local invasion is present.
It is unclear if hemithyroidectomy versus serial controls is the best option. Further investigations are needed.

A-319

INDOCYANINE GREEN (ICG) FLORESCENCE-GUIDED PARATHYROIDECTOMY IN PRIMARY HYPERPARATHYROIDISM: EXPERIENCE IN A 2º LEVEL HOSPITAL

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Background:
Indocyanine green (ICG) fluorescence imaging has been used for the identification of the parathyroid glands(PG) during parathyroid surgery, however, it still lacks standardization and further studies are needed.
We present our experience on the use of ICG for surgery in primary hyperparathyroidism, in a 2nd level hospital.
Method:
We performed a retrospective review of patients with primary hyperparathyroidism undergoing parathyroidectomy with ICG between October 1, 2021 and September 31, 2022.
Parathyroidectomy with ICG angiography was performed in 6 patients.
Boa_Image_Frame approach was performed through a transverse incisión. After the supected lesión was identified, ICG was administered as an intravenous bolus. Intraoperative fluorescence imaging was performed.
Confirmation of surgical success was attained by intraoperatively frozen section and PTH drop of >50% after excision compared to the preoperative levels.

Results:
ICG was administered to 6 patients undergoing parathyroidectomy. All female patients with a mean age of 64 years.
In 5 cases the ICG identified the parathyroid adenoma. In 1 case there was no uptake with the use of ICG.
In all cases, excision of adenoma was confirmed by histology and
all had a decrease in their intraoperative PTH level of >50%.
2 patients underwent major ambulatory surgery and 3 underwent surgery with a stay of <24 hours, without complications.
Conclusion:
In this review, ICG can be a useful and safe technique to aid in the intraoperative localization of parathyroid adenomas and should be considered as an adjunctive localization method during parathyroid surgery.

A-272

OUTCOMES FOR PARATHYROIDECTOMY IN DOUBLE SCAN NEGATIVE PATIENTS FROM THE BRITISH ASSOCIATION OF ENDOCRINE AND THYROID SURGEONS NATIONAL REGISTRY

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Background:
Incomplete resection of multiple abnormal glands results in failure to cure with parathyroidectomy in 37% of primary hyperparathyroidism patients.
Little is reported in the literature on the use of intraoperative parathyroid hormone assay (ioPTH) to aid in the treatment of those who have had negative preoperative localization imaging. The aim of this work was to assess the value of ioPTH monitoring in patients undergoing parathyroidectomy who had negative preoperative localisation.

Method:
Retrospective review of UKRETS parathyroid dataset, between 2005 to 2020, for all first time reported parathyroid surgery undertaken with preoperative double negative localisation (Ultrasound, MIBI and or CT/MRI). Variables studied were: preoperative imaging modality, imaging positivity, use of IoPTH, surgical approach, number of parathyroid glands excised and persistent hypercalcaemia rates.

Results:
A cohort of 6525 patients with double negative preoperative localization imaging underwent parathyroidectomy. The median age was 63 and 77.7% were female. Overall the persisting hypercalcaemia rate was 8.5%. IoPTH directed parathyroid surgery was used in 28.1% of patients. Rates of persisting hypercalcaemia for ioPTH not used vs ioPTH used was 9.19% vs 6.85%, $p = 0.005$. IoPTH use was more likely to be associated with a targeted approach to surgery than not, 11.04% vs 7.09%, $p < 0.001$.

Conclusion:
Persistent hypercalcaemia in patients undergoing PHPT surgery with negative preoperative localisation imaging is significantly lower when IoPTH is used as an adjunct to surgery. IOPTH adds value, independent of localisation.

A-243

HYPOPARATHYROIDISM, CHRONIC KIDNEY DISEASE, AND MORTALITY AFTER THYROIDECTOMY. A NATIONWIDE MATCHED COHORT STUDY IN DENMARK 1998-2017.

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Background:

Total thyroidectomy (TT) carries a risk of hypoparathyroidism (hypoPT). Lately, hypoPT has been associated with increased morbidity and mortality. We aimed to evaluate the frequency of hypoPT, chronic kidney disease (CKD), and mortality in patients undergoing TT in Denmark over a 20-year period.

Method:

Nationwide register-based matched cohort study including patients with TT between January 1998 and December 2017. HypoPT was defined as treatment with active vitamin D after 6 months postoperatively. We classified CKD according to the 'Kidney Disease Improving Global Outcomes' definition of CKD stages 3-5. Patients in the study were matched 1:10 on sex, birth year, and being alive on the date of surgery with individuals from the background population. Cox regression models were used to estimate adjusted hazard ratios (HRs with 95% confidence intervals) for the outcomes in the TT cohort compared with the matched comparison cohort.

Results:

7910 patients had a TT in the study period and were compared with 79,100 individuals from the background population. The incidence of hypoPT was 15.9% (N=1259). The HR for all-cause mortality in hypoPT patients was 1.47 (1.23-1.76) and 1.10 (1.01-1.19) for patients without hypoPT. The HR for CKD in hypoPT patients was 2.39 (1.95-2.92) and 1.43 (1.30-1.58) for patients without hypoPT compared with the matched cohort.

Conclusion:

HypoPT is a frequent complication in Denmark after TT. Patients in treatment for hypoPT after TT have a higher risk of developing CKD. All-cause mortality was higher in patients undergoing a total thyroidectomy compared to a matched cohort.

A-113

QUALITY OF LIFE AFTER PARATHYROIDECTOMY IN PATIENTS WITH PRIMARY HYPERPARATHYROIDISM IN THE SHORT AND LONG TERM. INFLUENCE OF THE SOCIO-PERSONAL AND CLINICAL PROFILE

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Background:
Patients with primary hyperparathyroidism (PHPT) have associated manifestations that may impair aspects of quality of life (QoL). Objectives: 1) To determine the affectation of QoL in patients with PTH and the changes produced after surgery. 2) To analyze a socio-personal and clinical profile that may influence the improvement of QoL after parathyroidectomy.
Method:
Patients with sporadic PTH. Control group (CG): healthy individuals matched for age and sex. QoL analysis using SF-36 and PHPQoL questionnaires. Patients underwent parathyroidectomy, with comparisons at 3 and 12 months. Socio-personal and clinical variables were analyzed. Statistical analysis: Student's t-test / ANOVA test / $\chi 2$ test. A binary logistic regression model of QoL was estimated to determine a socio-personal and clinical improvement profile.
Results:
Forty-nine patients were analyzed. A greater negative effect on QoL compared to CG was observed ($p < 0.05$). At 3 months after surgery, the summary of physical and mental components improved significantly ($p = 0.024$; $p = 0.007$), maintaining in this the improvement at one year ($p = 0.003$) and showing no differences with the CG ($p = 0.122$). PHPQoL showed a progression in QoL after 3 months ($p < 0.001$), with an added improvement at one year ($p < 0.001$). Osteoporosis, history of depression and/or anxiety and PTH levels influence the likelihood of improvement in QoL ($p < 0.05$).
Conclusion:
Patients with PTHTH have a worse QoL. There is an improvement after parathyroidectomy. Aspects such as osteoporosis, psychiatric history or PTH levels may influence the improvement of QoL.

A-305

GIANT PARATHYROID ADENOMA PRESENTING AS A HIPERCALCAEMIC CRISIS: AN ENDOCRINOLOGY EMERGENCY

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Background:

Hypercalcaemic crisis is a complication of primary hyperparathyroidism (PHPT) and an endocrinology emergency.

Method:

A 48-years-old female presented to the emergency room with a history of generalized weakness, nausea, anorexia, constipation, polydipsia and polyuria.

Initial evaluation on admission revealed a calcium of 14.8 mg/dL and a creatinine of 1.74 mg/dl. The patient was admitted, hydrated with normal saline and treated with furosemide and biphosphonates. The PTH level from blood obtained on admission was 4718 pg/ml. Ultrasonography and 99mTC sestamibi scintigraphy (MIBI) were used for both diagnosis and localization, showing an increased uptake localized in the right inferior parathyroid gland.

Results:

Twenty days after the acute crisis, a minimally invasive parathyroidectomy (MIP) was performed and a large right inferior adenoma was excised. The intraoperative pathology examination could not rule out malignancy, so right lobectomy was required. Final histology report informed a 5 g benign parathyroid adenoma.

Conclusion:

Parathyroid adenomas are well-reported tumors that cause PHPT. However, when their weight exceeds 3.5 g, they are classified as giant parathyroid adenomas (GPTAs). Most GPTAs presented symptomatically, ranging from vague bone/abdominal pain to more severe presentations.

A hypercalcaemic crisis is a rare and severe presentation that requires prompt management so that serum calcium levels can be reduced and the patient prepared for elective parathyroidectomy as soon as possible.

A-303

ULTRASOUND, MIBI, FEC PET CT FOR THE LOCALIZATION OF THE PARATHYROID ADENOMA IN PHPT– A PLEA FOR A SIMPLIFIED DIAGNOSTIC ALGORITHM REVIEWING 1000 CONSECUTIVE OPERATIONS.

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Background:
Guidelines suggest dual localization of a parathyroid adenoma (PTA). Established methods of localization are ultrasound (US), MIBI scintigraphy (MIBI) and, more recently, FEC-PET. Based on more than 1000 consecutive operations, we evaluated the diagnostic impact of these methods and addressed the utility of concordant localization.

Method:
Retrospective, monocentric evaluation of patients undergoing surgery for pHPT, prospectively entered into the StuDoQ registry between 5/2017 - 11/2022. The diagnostic performance to localize a PTA was evaluated and the diagnostic impact assessed by calculating the frequency of the correct and concordant localizations of either modality: US, MIBI and FEC-PET.

Results:
From 5/17 to 11/22, 1085 operations were performed for pHPT. Surgeon-led ultrasound was correct for localization in 92.3%. Of 768 MIBI scans 431 were TP, 40 FP, FN 297, sensitivity 59.2%, PPV 91.5%. There were 215 FEC-PET CT, 176 TP, 6 FP, FN 33, sensitivity 84.2% (PPV 96.7%). Of 253 US negative, MIBI Scans showed a much poorer performance than FEC-PET (MIBI n=193; 40 TP, 8 FP, 145 FN – Sens. 21.6%, PPV 83.3%; FEC PET n=114, 89 TP, 2FP, 23 FN – Sens. 79.5%, PPV 97.8%). In 95 US and MIBI negative cases, FEC-PET resulted in a TP result in 72 cases, 0 FP, 23 FN, sensitivity 75.8%, PPV 100%.

Conclusion:
This study found surgeon-led ultrasound to be a sufficient diagnostic localization tool in two thirds of cases. In cases were US in experienced hands does not reveal the localization of a PTA FEC-PET-CT appears to be the modality of choice with the highest additive clinical benefit.

A-310

18-FLUOR-CHOLIN-PET-CT IS THE BETTER TOOL TO LOCALIZE “NEGATIVE” PARATHYROID ADENOMAS – INTRAOPERATIVE CORRELATION AND 12 MONTH POSTOPERATIVE RESULTS

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Background:
To characterize the diagnostic performance of 18-FEC-PET-CT to localize parathyroid adenomas (PA) in primary hyperparathyroidism (pHPT) when ultrasound (US) and MIBI-Scan (MS) fail to localize - intraoperative correlation and one year follow up.

Method:
Beginning in 07/2017 FEC-PET was employed in patients with proven pHPT in whom US and MS delivered either incongruent or negative findings. All patients were offered cervical explorations with intraoperative PTH-monitoring (IO-PTH) and followed for 12 months postop. Imaging results were correlated to operative findings and histopathologic reports and to short term biochemical outcome as well as one year postoperative follow-up data.

Results:
From 07/2017 to 11/2022, 1085 patients were operated by pHPT. In this period 215 FCH-PET-CTs were performed suggesting PA(s) in 176, with 6 FP, and 33 FN, for a sensitivity of 84.2% (PPV 96.7%). Of the 95 cases were US and MIBI both gave negative results, FEC-PET-CT accurately localized PA(s) to the respective side of the neck in all of the 72 FEC-PET-positive cases, for a global sensitivity of 75.8%; and was negative in 23 (24.2%). In the 12-month postoperative follow up (currently matched by 61/95) there was no biochemical persistent disease. However, 3 patients exhibited PTH or calcium at the upper limit of norme, thus, a recurrence cannot be reliably excluded so far.

Conclusion:
FEC-PET-CT allowes for planned unilateral and focused as opposed to bilateral explorations especially when US and MiBI fail to localize. We, therefore, suggest FEC-PET as the preferred tool for the localisation of the “negative” PA.

A-192

CYSTIC PARATHYROID ADENOMA, A RARE CAUSE OF PRIMARY HYPERPARATHYROIDISM

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Background:
Primary hyperparathyroidism is an uncommon disease diagnosed by blood tests, which is mostly caused by a parathyroid adenoma, and rarely, its etiology could be cystic parathyroid adenomas. The majority of the cases are nonfunctional. On the other hand, less than 15% of the cysts secrete parathyroid hormone (PTH)
Cystic Parathyroid adenomas may present as an asymptomatic neck mass, and may be found incidentally, which makes the diagnosis of this pathology challenging. In addition, the accuracy of imaging tests, such as TC- sestamibi scans or SPECT-CT, is lower when recognizing a cystic adenoma.

Method:
We present a 55-year-old woman referred to our Service due to hypercalciuric hypercalcemia. Lab test showed an elevation of the PTH levels, and a further study confirms primary hyperparathyroidism. Cervical ultrasound reports an adenoma with cystic characteristics in the thyroid left inferior pole. SPECT-CT showed mild tracer concentration in the lower polar region of the thyroid left lobe.

Results:
At surgery, a cystic parathyroid adenoma was found in the left inferior gland, which was confirmed by the pathologist.

Conclusion:
Primary hyperparathyroidism is a rare disease and a cystic parathyroid adenoma is an uncommon cause of this condition, making preoperative diagnosis esential to plan an adequate surgery. The accuracy of SPECT in the diagnosis of parathyroid cysts seems to be lower. To determine the PTH and thyroid hormone levels in the cyst fluid by fine needle asporation could be helpful to stablish a diagnosis. For a functioning cystic adenoma, surgery may be considered the best treatment choice.

A-238

THE ROLE OF EARLY POSTOPERATIVE PARATHORMONE VALUE IN PREDICTION OF PERMANENT HYPOPARATHYROIDISM

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Background:
Hypoparathyroidism (HPT) is one of the most common complications after thyroidectomy. Even if surgical cure is achieved after thyroidectomy, this complication, which leads to a significant decrease in quality of life, remains one of the biggest fears of endocrine surgeons.
We aimed to evaluate the contribution of early postoperative parathormone (PTH) level monitoring in order to predict the development of permanent hypoparathyroidism (pHPT) in patients with postoperative HPT retrospectively.

Method:
The data of 168 patients who underwent thyroid surgery procedures were evaluated. Patients who were followed up for at least 6 months postopeative, who were normoparathyroidic in the preoperative period and who had HPT at the 6th postoperative hour were included in the study. PTH results were observed in all patients at postoperative 6th hour, postoperative 1st day, postoperative 1st week, postoperative 1st and 6th months. Patients divided into two groups as patients which have 6. month PTH levels higher and lower than 15 ng/L. Size of the sample groups were 22 (group 1) and 146 (group 2); PTH < 15 ng/L and PTH ≥ 15 ng/L, respectively.

Results:
There is a significant difference at the 6. hour PTH levels between two groups with p-value of 0.0001. Patients had a higher 6. hour PTH levels than 8.48 ng/L had 6. months PTH levels higher than 15 ng/L. PTH results for group 1 was 3,44 ng/L mean with 2,45 ng/L standard deviation (SD); for group 2 was 7,91 ng/L mean with 4,2 ng/L SD.

Conclusion:
According to our results we believe that postoperative 6th hour PTH results can be useful predictor for pHPT development.

A-286

THE REALITY OF POSTOPERATIVE HYPOPARATHYROIDISM IN PATIENTS UNDERWENT MINIMAL INVASIVE PARATHYROIDECTOMY FOR PRIMARY HYPERPARATHYROIDISM

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Background:
Postoperative hypoparathyroidism (POH) after minimal invasive parathyroidectomy (MIP) for primary hyperparathyroidism (pHPT) is one of the important surgical complications.
We aimed to retrospectively evaluate the incidence of POH after MIP in pHPT patients and the factors that may be effective in the occurrence of this complication.

Method:
The data of 180 pHPT patients who underwent MIP were evaluated. Patients divided 2 groups according to the postoperative parathormone (PTH) results. Preoperative and postoperative biochemical markers were compared in these groups.

Results:
Postoperative PTH mean and standar deviation (SD) was 8,88 ng/L ± 3,1 ng/L for group 1 in 99 patients and 32,7 ng/L ± 26,5 ng/L for group 2 in 81 patients.
Preop PTH mean and SD was 191.14 ng/L ± 210.16 ng/L for group 1 and 289.8 ng/L ± 286.75 ng/L for group 2. Two groups have significantly different Preop PTH levels with p value of 0.012 at 95% confidence interval.
Group1 has a 1.99 mg/dL mean Magnesium (Mg) level with 0.2 mg/dL SD and Group 2 has 1.9 mg/dL mean Mg level with 0.27 mg/dL SD. Two groups have significantly different Pre-Op Mg levels with p value of 0.015 at 95% confidence interval.
A significant cut-off value could not be calculated due to the irregular distribution of PTH and Mg results.

Conclusion:
According to our data, it was calculated that POH developed in 55% of patients who underwent MIP. In addition, preoperative low PTH and high Mg levels were found to be significantly effective in the development of POH but there were no significant difference in the preoperative Ca, phosphorus, ALP and vitD3 values.

A-258

CURE RATE FOLLOWING RADIOGUIDED MINIMALLY INVASIVE PARATHYROIDECTOMY

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Background:
The aim of the study is to evaluate the results obtained from the surgical treatment of PHPT in our centre using radioguided minimally invasive parathyroidectomy (RMIP). Descriptive, retrospective and longitudinal study is performed.
Method:
84 patients with PHPT from a prospective database operated at a university hospital between 2014 and 2021 were evaluated. The mean age was 61.7 years.
Results:
27 cases of normocalcemic and 57 of hypercalcemic PHPT were included. 100% of patients had a SPECT/CT scintigraphy, and all identified the suspected adenoma. 88.1% of patients had a cervical US, and only 73% found the suspected adenoma. 64.3% patients met 1 criterion for surgical indication, 26.2% met 2 criteria and 9.5% met 3 criteria. Excision of 21 upper-left, 11 upper-right, 28 lower-left, 24 lower-right and 1 intrathymic glands was performed. One of the patients had 2 lower-left glands. There were 11 postoperative hypocalcemia, 3 of which were symptomatic, 7 patients required oral calcium on discharge and 1 also required intravenous Ca; 3 temporary recurrent paralysis; and 2 permanent recurrent paralysis. 76 adenomas, 6 hyperplasias, 1 normal gland, and 1 carcinoma were obtained. The mean weight of adenomas was 1.53g, with a range between 0.1 and 9.7g. 2 persistent PHPT were detected and reoperated, both due to double adenoma; no cases of recurrent PHPT. Calcemia normalized after 1 year in 98.82% of patients; 37.65% associated elevated PTH.
Conclusion:
98% cure rates for PHPT by RMIP are described in the literature, so the results from our study are consistent with the existing evidence.

A-119

PARATHYROID CANCER IN CHRONIC RENAL DESEASE

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Background:
Apart from being a rare endocrine tumor, parathyroid carcinoma is also one of the rarest malignancies in human beings. Parathyroid carcinoma is even more uncommon in haemodialysis patients with end-stage renal disease. The pathogenesis of parathyroid hyperplasia in haemodialysis patients is well known, but the mechanism of development of parathyroid carcinoma in these patients remains unclear.

Method:
We have analised histopahological findings of all patienst operated for secondary hzyperparathyroidism becaes of end renal chronic disesa durnig period from 1995 fo 2022 years tertiarz health in Universitu hospital, All of them weere included in investigation. Befeore all of patients were prepared for surgery at Clinic for Nefrology,

Results:

Durng 27 years perid 298 pateient were operated for renal hzperparathzroidsm.

Outof them 3 (about 1%) had parathyroid cancer according to gistopatological examination.

Three cases of parathyroid cancer in haemodialysis patients are presented in this study: a 69-year-old male patient and two female patients (67 and 61 years old). In all cases parathyroid carcinoma infiltrated the ipsilateral thyroid lobe and in one patient the right laryngeal nerve was involved as well. One patient underwent three surgical procedures.

surgical treatment, all patients were normocalcaemic and showed a significant reduction in PTH levels.

Conclusion:

Parathyroid cancer is verz rere condition in renal hyperparathyroidism. In natients with secondary hyperparathyroidism, who develop parathyroid carcinoma, surgical resection is the only viable treatment option.

Adrenal

A-172

LOCALLY ADVANCED RETROPERITONEAL PARAGANGLIOMA

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Background:
Retroperitoneal paragangliomas are rare tumors with an incidence of 0’02-0’05/100.000 persons per year. Prevalence is higher in young men. Depending on their functionating nature, symptoms can range from an obstructive mass-effect to the classic adrenergic symptoms.

Method:
A 37-year-old male presented to the ER with back pain and fever in relation to left uretrohidronefrosis secondary to a retroperitoneal mass. After ureteral draining, study of the mentioned tumor began. Blood and urine samples had high levels of metanephrines and there was an increased activity in MIBG scintigraphy (Fig 1). CT-scan revealed a 5 cm mass intimately close to the aorta, inferior to the adrenal gland and no clear plane of separation with the left renal hilum (Fig 2). Abdominal MRI also showed close contact with the left psoas muscle (Fig 3). Treatment included alpha-beta-adrenergic blockade followed by surgery. A midline laparotomy was performed with liberation of the tumor from the abdominal aorta but, as the imaging predicted, macroscopically the left kidney’s hilum and the superficial fascia of the psoas muscle were affected and therefore resected.

Results:
Histology (Fig 4) confirmed the diagnosis of paraganglioma with infiltration of the renal hilim but no invasion of the arteria or vein, a GAPP score of 4, a Ki67 < 1% of and a moderate immunoactivty for S100 marker.

Conclusion:
Malignant behavior in paragangliomas is associated to high PASS or GAPP scores (≥ 4), extra-adrenal location (especially retroperitoneal), large size, high Ki67 percentage (> 3%) and low immunoactivity to specific markers such as S100.

A-139

HAEMODYNAMIC CONSEQUENCES DURING MINIMALLY INVASIVE ADRENALECTOMY FOR PHEOCHROMOCYTOMA: ROBOT-ASSISTED VS. CONVENTIONAL TRANSPERITONEAL LAPAROSCOPIC APPROACH

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Background:
Minimal invasive adrenalectomy is the gold standard for treating pheochromocytomas. Although reports demonstrate the safety and feasibility of robot-assisted adrenalectomy (RA), the objective benefits still need to be determined). This study aimed to compare conventional transperitoneal lateral laparoscopic approach (TLLA) and RA for pheochromocytoma patients in terms of cardiopulmonary changes.

Method:
This case-control study compared 36 RA with a control group of 30 TLLA . Patient and tumor characteristics, intraoperative haemodynamic and respiratory parameters, were assessed . Groups were compared using the $\chi 2$ test for categorical variables and Student's t-test for continuous variables.

Results:
Intraoperative hypertensive peaks were significantly less in the RA group (p=0.01). In addition, a significant difference in favor of RA was observed regarding hypotensive fluctuations (p=0.01). Other haemodynamic and respiratory parameters did not differ between the groups. Operative time of RA did not differ significantly. Tumor sizes, complication rates, and postoperative hospital stays were similar.

Conclusion:
RA is a safe and technically feasible procedure for the treatment of pheochromocytoma. Besides, RA minimized intraoperative blood pressure fluctuations and had no negative impact on the operative time.

A-242

UNILATERAL PRIMARY ADRENAL LYMPHOMA MIMICKING AN ADRENOCORTICAL CARCINOMA

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Background:
Primary adrenal lymphoma (PAL) is a rare form of extra nodal lymphoma with unfavourable prognosis.Commonly clinical manifestations are no specific symptoms. Differential diagnosis with adrenocortical carcinoma is challenging, especially if PAL presents as a unilateral mass. We report a case of unilateral PAL misinterpreted and treated as a right adrenocortical carcinoma and focus on a correct diagnosis

Method:
A 78-year-old female patient, with dyspepsia, underwent a US scan of the abdomen showing a 70 mm lesion on right adrenal gland.Abdominal CT scan confirmed right adrenal lesion of 88 mm, contrast-enhancing, suggestive of malignancy, associated with a para-aortic 22 mm lymphadenopathy. MRI showed right adrenal mass of 84x50 mm, displacing adjacent vessels without infiltration.Biochemical and hormonal tests were within limits. Multidisciplinary evaluation indicated surgical treatment as adrenocortical carcinoma. Patient underwent open right adrenalectomy with regional retroperitoneal lymphadenectomy.

Results:
The postoperative course was uneventful with discharged on p.o.d. 7.Histological examination showed diffuse large B-cell lymphoma (DLBCL)-ABC.Fluorescent in-situ hybridization showed translocation of Bcl2 and Bcl6.Three months after surgery she started R-CHOP21 chemotherapy;adjuvant treatment was well-tolerated.

Conclusion:
Unilateral PAL is very rare and easily misdiagnosed as adrenocortical carcinoma, treated by upfront surgery, instead chemotherapy. Diagnostic approach with suspicion index based on biochemical, hormonal ad radiological features can allow early diagnosis and personalized therapy

A-200

BILATERAL ADRENALECTOMY: EXPERIENCE FROM AN ENDOCRINE SURGERY REFERENCE CENTER

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Background:
Synchronous bilateral adrenalectomy (BA) remains one of the least frequently performed surgeries worldwide, as only selected patients are eligible. Consequently, experience in this regard remains limited.

Method:
Retrospective data analysis of all patients who underwent synchronous bilateral adrenalectomy from 2011 to 2022 was performed.

Results:
Single-stage bilateral adrenalectomy was performed in n=17 patients (n=10 female, n=7 male, age: 48 ± 17 years) with Cushing's syndrome (n=11; including 7 ectopic ACTH production (EA) and 4 therapy-refractory Cushing's syndrome (CD)), pheochromocytoma (n=3), adrenal carcinoma (n=1), metastases (n=1), and adenomas (n=1). Minimally invasive (MI) surgery was performed in n=15 cases; open surgery in n=2. Mean operative time was 200 ± 68 mins. and median hospital stay was 22 d (IQR 6-35 d). In n=3 cases, surgery was an emergency-procedure; in all 3 cases, indication was Cushing's crisis in EA. These 3 patients died within the first 4 months after surgery due to septic complications of derailed Cushing's or underlying malignancy. While duration of surgery and hospital stay did not differ, emergency patients were significantly older (69 ± 9 vs. 43 ± 14 years; p=0.01) and ICU stay was significantly longer (29 ± 17 vs. 3 ± 7 days; p=0.001).

Conclusion:
Single-stage bilateral adrenalectomy remains a rarely performed procedure. The MI procedure represents the standard. Patients who need emergency surgery due to a Cushing's crisis have a very high mortality. Thus, timing of surgery is of highest priority and requires a critical interdisciplinary discussion.

A-197

ADRENAL TUMORS: 9-YEAR EXPERIENCE AT "INFANTA LEONOR" UNIVERSITY HOSPITAL

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Background:
The majority of adrenocortical tumors are benign, non-functioning adenomas that are discovered incidentally on abdominal imaging studies. The aim of this study is to analyse the adrenal tumors profile focusing on malignant adrenal tumors that are diagnosed in our hospital, as well as the surgical approach and the short and medium term results.

Method:
From April 2013 to December 2022, 38 patients with adrenal tumors underwent surgery.

Results:
The patients mean age was 56,05 (27-88) years old. 57,89 % of the cases were women. The average size of the tumors was 5.18 cm. The percentage of tumors which were non-functioning was 44,73%. Benign tumors:30(78,94%): cortical adenoma:17(44,73% of all tumors), hyperplasia:5(13,15%),pheochromocytoma:4(10,52%),myelolipoma:3(7,89%),lynphangioma:12,63 %).Malignant tumors: 8 (21,05%);Carcinoma: 2 (5,2 % of all tumors);Metastasis or tumor invasion: 2 (5,2%). 97,36 % adrenalectomies were performed laparoscopically. The conversion rate to open surgery was 8,10%. The mean hospital stay was 3.4 days. All the patients improved regarding the control of arterial hypertension, reducing the number of antihypertensives or eliminating their administration. Only one patient had postoperative long time complication: neuralgia after laparotomy.

Conclusion:
Most tumors treated in our center were benign, although there is an important percentage of malignant tumors in our series. Adrenal metastases from other tumors are rare, and there is sometimes a discrepancy between imaging tests and definitive pathology (probably due to chemotherapy).

There are no Conflict of interest

A-279

CONTRALATERAL ADRENAL METASTASIS OF RENAL CELL CARCINOMA MIMICKING ADRENOCORTICAL CANCER

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Background:
Contralateral adrenal gland metastasis of renal cell cancer is very uncommon.
Method:
A 64-year-old female patient had complaints of fatigue, nausea and vomiting. In the examinations performed in her home country, mass of 13.6 cm was detected in left adrenal in July 2022. The patient was told that she could not be operated on and no treatment was given at that time. Patient was admitted to our hospital in November 2022, she lost 25 kg in this four months period. In her laboratory test Hb was 7.9 g/dl. New imaging tests revealed. Left adrenal mass size of 18 cm, right renal mass, right adrenal adenoma and inferior vena cava tumor trombosis was detected. The workup for adrenal mass was performed. No hormonal activity revealed. The patient was evaluated in the Multidisciplinary Tumor Board and the operation decision was made.
Results:
The patient underwent left adrenalectomy, right radical nephrectomy, removal of thrombus from inferior vena cava with cavatomy and right partial adrenalectomy. Postsurgical course was uneventful. Histopathological examination of right kidney was renal cell carcinoma unclassified type with 6.7 cm diameter and 18 cm diameter of left adrenal gland renal cell carcinoma metastasis, inferior vena cava tumor thrombosis, a 2.5 cm diameter renal cell carcinoma metastasis at right partial adrenal gland. After pathology result the patient was reevaluated in the Multidisciplinary Tumor Board and was referred to adjuvant oncological therapy.

Conclusion:
As a conclusion, although it is uncommon contralateral adrenal gland masses should be considered of renal cell cancer metastasis.

A-215

SURGERY FOR ADRENAL METASTASES: SINGLE CENTER EXPERIENCE OF 103 CASES

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Background:
Adrenal metastases are a common finding in neoplastic patients and represents an end-stage disease. However, the role of adrenalectomy remains debatable.
Method:
A single center retrospective study analysing 103 patients with isolated adrenal metastases undergoing adrenalectomy was conducted.
Results:
Lung (NSLC) was the most common primary tumor site (37%), followed by kidney (21%), colon-rectum (16.5%), liver (7%) and breast (7%). Microscopically negative margins on final pathology (R0 resection) were achieved in 59%. Postoperative morbidity occurred in 11 cases. The median disease-specific survival (DSS) was lower in patients with NSCLC compared to renal cancer (46vs166 months;p=0.05) and in presence of adrenal metastases >8 cm (14vs103 months;p<0.01). Patients with renal cancer showed higher median disease-free interval (63vs9 months in NSCLC, vs28 in colorectal cancer;p= 0.02). The only factor predicting lower DSS was a metastatic lesion >8cm (HR 3.6). There were no significant differences between open vs laparoscopic approach concerning postoperative morbidity (25%vs18%), size of metastasis (6 vs 5cm), R0 resection (45%vs33%) and DSS (83vs49 months). Hospitalization was significantly lower after laparoscopic than laparotomic adrenalectomy (4vs7 days;p<0.001).
Conclusion:
Adrenalectomy should be considered in selected patients with isolated adrenal metastases since a relative prolonged long-term survival may be achieved. Laparoscopic adrenalectomy may be equivalent to laparotomic adrenalectomy in terms of safety and oncological outcomes and provides the additional benefits of shorter hospitalization.

A-270

TOTALLY ROBOTIC POSTERIOR RETROPERITONEAL ADRENALECTOMY: TECHNOLOGICAL AND TECHNICAL ASPECTS.

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Background:

Minimally Invasive adrenalectomy is currently considered the *gold standard* approach for adrenal pathologies treatment. Posterior retroperitoneal adrenalectomy (PRA) is an alternative to the transabdominal laparoscopic approach (TLA) despite the limitations regarding dexterity using conventional instruments. Robot-assistance proposes to overcome laparoscopic technical pitfalls and consequently to improve technical and clinical outcome of adrenalectomy. This video aims to illustrate the details of our technique in Robotic-Assisted Posterior Retroperitoneal Adrenalectomy (RA-PRA).

Method:

This is a descriptive video in technical aspects related to the right RA-PRA. Trocar placement, creation of retroperitoneal space and robotic dissection were feasible and safe. Anatomical landmarks were clearly observed. The technology used, including Da Vinci® Xi, gave good visualization and image stability; the use of indocyanine green (ICG) fluorescence improved tissue identification.

Results:

We present a 67-year-old man. A superior lobectomy for neuroendocrine tumor (2012) and a total gastrectomy for gastric tumor (2013) were performed. During follow-up a right adrenal metastasis was found. Patient underwent right RA-PRA. Pathology showed adenocarcinoma metastasis. Patient was discharged without complications.

Conclusion:

Our subjective feeling was that the RA-PRA provided better dexterity compared to PRA. Furthermore it has been reported to improve surgeon ergonomics and facilitate dissection. In patients with bilateral adrenal masses, RA-PRA may be the approach of choice.

A-301

UTILITY OF ADRENAL VEIN SAMPLING ON THE MANAGEMENT OF PRIMARY HYPERALDOSTERONISM WITH CONFUSING IMAGING TESTS

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Background:
Imaging tests in primary hyperaldosteronism (PA) have limited sensitivity detecting adrenal adenomas. We conducted a retrospective, observational single-center study with the aim of assessing the utility of adrenal vein sampling (AVS) in PA

Method:
Review of 69 consecutive patients diagnosed with PA in a tertiary hospital (June/2015-May/2022). AVS was performed in every patient aged>40y/o, and in those younger with non-conclusive imaging tests

Results:
AVS was non-assessable in 55.7% of patients. When CT scan showed a unilateral adenoma (N=52), AVS confirmed ipsilateral secretion in only 46% of patients. In patients with bilateral adrenal lesions (N=11) or normal adrenals (N=6), AVS showed lateralization in 45.4% and 83.3%, respectively. On right adrenal gland, selectivity index improved significantly using Androstendione in comparison with Cortisol (78.6% *vs.* 49.3%; P=0.001). Some 25 patients underwent surgery, all of them with positive lateralization. Among them, 17 had coincident CT-scan adenomas, 4 had bilateral adrenal nodules and 1 patient had normal CT-scan. Pathology reported an adenoma in 88% of patients (all cured after surgery) and adrenal hyperplasia in 3 (66% partially improved). Mean follow-up was 36 months. Cure rate was 100% in patients with coincident tests, 75% in those 4 patients with bilateral adrenal lesions on CT and lateralized AVS and a patient with negative CT-scan achieved partial cure

Conclusion:
Patients with PA and uncertain imaging tests may benefit from AVS with Androstendione, improving the cure rate.

A-231

METASTATIC PARAGANGLIOMA - AN INTERDISCIPLINARY APPROACH IN TWO PATIENTS WITH SUCCINATE DEHYDROGENASE SUBUNIT B (SDHB) MUTATION

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Background:
SDHB mutation carriers have an increased risk of developing metastatic paraganglioma. Whereas surgery plays a key role in the therapy of the disease, a handful of adjuvant and palliative treatments are available. Herein, we present two patients with SDHB mutation and metastatic paraganglioma who received interdisciplinary treatment in our clinic.

Method:
In the 1st case, a 30-year-old male patient underwent resection of a right paraaortal paraganglioma in 2011. Due to local recurrence, right nephrectomy and cholecystectomy were performed in 2017 and resection of a tumor adherent to the right iliac artery in 2018. In 2019, chemotherapy with cyclophosphamide, vincristine and dacarbazine followed, after diagnosis of multiple hepatic, lymphatic and bone metastases. In January 2022, a peptide-radio-receptor-therapy with ^{177}Lu-DOTATAE was administered due to disease progression. April 2022 pulmonary metastases were diagnosed. The disease is stable without treatment since then.
The 2nd patient, a 51-year-old male, presented in 2021 due to a paraadrenal paraganglioma with a metastasis to the left upper lung. A left adrenalectomy with nephrectomy and uniportal atypical resection of the left upper pulmonary lobe including two ribs was followed by a ^{131}I-MIBG-therapy. Currently the patient is normotensive and without signs of recurrence.

Results:
Both patients received an individualized, interdisciplinary treatment.

Conclusion:
Treatment of metastatic paraganglioma should be restricted to specialized centers with established cooperation of surgeons, endocrinologists, oncologists, and nuclear medicine doctors.

A-226

CLINICAL FEATURES AND PROFILE ASSOCIATED WITH FAMILIAL PHEOCHROMOCYTOMA

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Background:
Pheochromocytoma (PC) can have a variable clinical presentation and, in addition, there has been an increase in familial cases. The aim of this study is to determine the characteristics associated with familial PC and to determine an epidemiological, clinical and diagnostic profile associated with it.

Method:
Patients diagnosed with FC by histological study or by clinic with compatible tests from a tertiary hospital from 1984-2021. The genetic study was performed by a study directed to a specific gene (55.88%) or with a panel of oncologic genes by *Next-Generation-Sequencing* (44.12%). Sociodemographic, clinical, diagnostic and histological variables were analyzed. Statistics: SPSS v. 29. Descriptive and chi-square test and multivariate analysis with predictive formula.

Results:
A total of 173 patients with PC were analyzed. The genetic study was performed in 78% of the patients (n=123). 88 patients (51%) presented a positive mutation (MEN2A, SDHA, SDHD, VHL, NF1 and BRCA-1). Variables associated with a higher probability of presenting a familial PC were: male gender ($p=0.02$), younger age ($p<0.001$), bilaterality ($p<0.001$), no blood pressure-related, cardiac, neurological or skin-related symptoms ($p<0.05$), mixed secretion pattern ($p=0.018$), and smaller size ($p=0.002$). On multivariate analysis, the variables were: age (OR 0.93), bilaterality (OR 15.49), blood pressure symptoms (OR 0.22), and size (OR 0.7).

Conclusion:
There are characteristics with a higher probability of being associated with familial PC, mainly younger age, bilaterality, no blood pressure symptoms and smaller size.

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PRIMARY ADRENAL NON-HODGKIN LYMPHOMA, PRESENTATION OF AN UNCOMMON CASE OF INTRAABDOMINAL MASS

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Background:
Primary adrenal lymphoma is an infrequent pathology. The age of presentation is between 60-80 years, affecting men more frequently. Diffuse large B-cell lymphoma is the most common histological type of primary adrenal lymphoma.

Method:
A 69-year-old male with symtoms of adrenal insuficiency and an abdominal CT scan observing a large left adrenal mass of 10 x 6.7 x 9.5 cm of non-specific etiology by image, which had grown compared to a known 2.6 cm adrenal nodule in 1 year. Functional tests and urine catecholamines were negative.

Results:
A left subcostal laparotomy revealed splenomegaly and a large left adrenal mass closely adherent to the left kidney. Splenectomy and adrenalectomy were performed. The patient underwent reoperation on the first postoperative day, requiring left nephrectomy due to bleeding from the renal hilum. In the pathology of the adrenal mass, it was reported as non-germinal center type diffuse large B-cell lymphoma. In the postoperative period, the patient required percutaneous drainage of an intra-abdominal collection. At present, he is being treated chemotherapy(CHOP (cyclophosphamide doxorubicin, vincristine, prednisone) and rituximab).

Conclusion:
Primary adrenal lymphoma should be included in the differential diagnoses of patients presenting with a large unilateral or bilateral adrenal mass. In many cases, it is very difficult to establish the relationship organ-dependency of these tumors through imaging tests, due to their large size. The treatment of choice should be surgical excision, if it is a resectable lesion and this can be completed with chemotherapy.

A-260

OPTIMIZATION OF PERIOPERATIVE MANAGEMENT OF PHEOCHROMOCYTOMAS: RESULTS FROM A NATIONAL SURVEY ON FUTURE CLINICAL TRIAL DESIGN

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Background:
The dramatic decline of mortality associated with pheochromocytoma surgery over the past decades is often attributed to the introduction of preoperative α-blockade. Therefore, preoperative use of α-blockade is universally recognized as necessary. However, since preoperative α-blockade has never been studied in a randomized trial, evidence for this correlation is lacking. The aim of this survey was to determine the favored clinical trial design assessing perioperative care for pheochromocytoma patients.

Method:
A survey was sent to specialized physicians involved in pheochromocytoma care in the Netherlands. The survey consisted of questions regarding current perioperative protocols, patient eligibility, study design and outcome measures.

Results:
20 responses from 7 hospitals were included. Among the survey respondents, 8 were endocrine surgeons, 7 endocrinologists and 5 anesthesiologists. The favored study design for the future clinical trial was a randomized controlled trial with non-inferiority design comparing full perioperative α-blockade vs minimal α-blockade. The favored primary outcome measure was the Hemodynamic Instability Score. Opinions on the selection criteria for patient eligibility were more heterogeneous, but the overall opinion was that exclusion of patients should be limited to cases at significantly increased risk of perioperative complications.

Conclusion:
Using a qualitative approach, we engaged various specialists involved in perioperative management of pheochromocytomas and provided an insight into the favored clinical trial design assessing perioperative care for pheochromocytomas.

A-308

APPROACH TO ADRENAL GANGLIONEUROMAS IN ADULTS: A CASE SERIES AND LITERATURE REVIEW

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Background:
Ganglioneuromas are rare benign tumours that arise from neural crest cells. Adrenal ganglioneuromas account for 0.2-0.4% of adrenal tumours. Due to its rarity, characterization of these lesions pre-operatively is challenging, with diagnosis typically being made post-operatively on histological assessment.

Method:
A retrospective review was performed of 4 cases of presentation and management of ganglioneuromas at a tertiary referral centre over a 5-year period.

Results:
4 adrenal ganglioneuromas were treated in 1 female and 3 male patients with a median age of 21 years. The median size of the lesions radiologically was 5.3cm and 5.9cm pathologically. All lesions were first identified radiologically, 2 as incidentalomas and 2 following symptoms of abdominal pain. All patients had a complete biochemical work-up inclusive of metanephrines, aldosterone renin ratio, cortisol, ACTH and dexamethasone suppression test. 2 patients required additional biochemical assessment. A broad range of radiological investigations was performed to stratify management including CT, MRI, MIBG and MR Angiography. 1 patient had image-guided biopsy. All ganglioneuromas were resected with a tailored approach to the lesion including 1 open, 2 transperitoneal laparoscopic and 1 retroperitoneal resection. All patients had surveillance imaging within a year of resection or longer when suspicious findings were identified.

Conclusion:
Our experience with ganglioneuromas is of a heterogenous group with a spectrum of presentations and a resource-intensive approach to reach a diagnosis. The latter reflects the rarity of this condition.

A-171

COMPARISON OF THE CAUSE OF TRAUMA AND MORTALITY IN THORACOABDOMINAL POLYTRAUMA PATIENTS WITH AND WITHOUT CONCOMITANT ADRENAL INJURY

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Background:

This study aimed to compare the demographic data, cause of underlying injury, and mortality in thoracoabdominal polytrauma patients with or without adrenal injury.

Method:

Computerized tomography (CT) images of 1202 thoracoabdominal polytrauma patients who were admitted to the Emergency Surgery Unit between January 2012 and November 2022 were analyzed retrospectively. Demographic data, the underlying cause of trauma, and 30-day mortality were evaluated.

Results:

Radiological evidence of adrenal injury on CT images was detected in 82 (7%) of 1202 patients. The patients with and without adrenal injury were classified as groups 1 (n=82) and 2 (n=1120). In group 1, the rates of the right [44 (54%)] and left [31 (38%)] adrenal injuries were similar (p= 0.1). Bilateral adrenal injuries were observed in 7(8%) patients. Demographic data showed no significant difference between group1 and 2 (p=0.055). The rate of blunt trauma in group 1 was significantly higher than in group 2 (93%vs64%,p=0.0001). The blunt trauma-causing adrenal injury resulted from motor vehicle accidents, falls, and assaults in 46(60%),28(37%), and 2(3%) patients in group 1, respectively. The 30-day mortality rate was significantly higher in group 1 compared to group 2 (15% vs. 2%,p=0.0001).

Conclusion:

Concomitant adrenal injury in thoracoabdominal polytrauma patients was significantly associated with blunt trauma. High mortality rates in thoracoabdominal polytrauma patients with concomitant adrenal injury are related to accompanying other severe organ injuries.

A-162

RESECTION OF A PARAGANGLIOMA AT THE ORGAN OF ZUCKERKANDL IN PATIENT TO A HISTORY OF PHEOCHROMOCYTOMA, WITH STUDY OF MUTATIONS ASSOCIATED WITH PHEOCHROMOCYTOMA NEGATIVE: A RARE CASE REPORT

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Background:

Paragangliomas are uncommon neuroendocrine neoplasms that occur in characteristic locations associated with the paraganglionic system and have the ability to secrete catecholamines. About 53% of paragangliomas happen in Zuckerkandl organs. We report a case of extra-adrenal pheochromocytoma of Zuckerkandl organ.

Method:

A 69-year-old patient with a right adrenalectomy history for pheochromocytoma, study of mutations associated and pheochromocytoma negative. In subsequent checks, slightly elevated levels of noradrenaline were detected in urine and NorMetanephrine in plasma. The MRI reveals an inter-aortocaval retroperitoneal lesion of approximately 13x20mm. Contrast-enhanced abdominal CT showed a solid polylobulated inter-aortocaval retroperitoneal lesion of approximately. Integrated FDG-PET/CT demonstrates in the retroperitoneum, interaortocaval, hypermetabolic lesion.

Results:

The patient underwent surgery by laparotomy, performing a complete en bloc removal of the mass. Hematoxylin-eosin staining of the tumor tissue showed the mass included chief cells with basophilic cells and sustentacular cells. Immunohistochemical staining displayed the tumor tissue was positive for chromogranin A, synaptophysin, S100, CD34, CD56 and vimentin. Collectively, these results indicated the diagnosis of the tumor was extra-adrenal pheochromocytoma.

Conclusion:

Most paragangliomas occur in the subdiaphragmatic region, most commonly within the Zuckerkandl organ, as in our patient´s case. The disease presented with a variability of clinical manifestations and imaging findings makes it challenging to diagnose correctly.

A-198

PARTIAL ADRENALECTOMY: A SINGLE INSTITUTION SERIES OF 688 CASES

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Background:
Partial adrenalectomy, as an organ-sparing surgery, lately increases its popularity. It is associated with the potential preservation of adreno-cortical function and is essential for hereditary diseases. In this study, we analyzed our experience in partial adrenalectomy.

Method:
From January 2010 to August 2022 688 partial adrenalectomies were performed by the retroperitoneoscopic approach. Unilateral surgery was performed in 586 patients, and 51 patients underwent bilateral partial resection. There were 382 female and 255 male patients, mean age of 49.6 ± 15 (range: 10 - 85). The mean tumor size was 2.7 ± 1,5 cm (ranged 0,5-15). The patient data were prospectively collected and retrospectively analyzed. The retroperitoneoscopic adrenal resection was performed using the standard technique (n=505) or as a single-access surgery (N=183). Indications for partial adrenalectomies were: Conn's (n=218), Cushing's syndrome (n=105), pheochromocytoma (n=242), adrenal adenoma (n=54), adrenal metastasis (n=31), other benign pathologies (n=31).

Results:
The median operating time was 60 minutes (range: 15 - 210). 154 tumors were larger than or equal to 4 cm (22.4%). The blood loss was negligible. No major complications. Minor complications included postoperative hematoma (n=3), relaxation of the flank (n=15), and hernias (n=2). The median hospital stay was 2 days (range: 1-8 days).

Conclusion:
Retroperitoneoscopic partial adrenalectomy is a safe procedure. It is the preferred operation for patients with benign pathologies, and in cases with bilateral disease. Tumor size ≥ 4 cm is not a contraindication.

A-240

PHEOCHROMOCYTOMATOSIS – A RARE DISEASE WITH OMINOUS PROGNOSIS

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Background:
Pheochromocytomatosis is a rare but dramatic complication of pheochromocytoma surgery. In this study, we collected and analyzed our experience with the surgical treatment of cases of this rare condition.

Method:
In total 9 patients were operated on between December 2001 and August 2022 at the Kliniken Essen-Mitte due to pheochromocytomatosis. There were 5 female and 4 male patients, mean age of 58 ± 18 (range: 22 to 86). The data was prospectively collected and retrospectively analyzed.

Results:
All patients were initially operated on due to pheochromocytoma (2 with SDHB-Syndrome and 1 with MEN-IIa-Syndrome). In 4 cases an intraoperative tumor capsule injury was described during the initial surgery. The operation due to pheochromocytomatosis was performed minimally invasive in 8 case, 1 patient was operated on by open approach. The mean time between the primary surgery and pheochromocytomatosis operation was 107 ± 60 months. Operation time was 246 + 119 minutes. Follow-up data were available for 8 patients (mean follow-up time: 12 years). 2 patients were cured at the time of the last follow-up. 7 patients developed a recurrent disease: in 6 cases loco-regional recurrence and in 3 cases distant metastasis. 4 patients with loco-regional recurrence were reoperated within 54 ± 50 months (range 10-137 months). By the follow-up, 3 patients died.

Conclusion:
Pheochromocytomatosis is a potentially lethal complication of pheochromocytoma surgery. Even if the initial pheochomocytomatosis could be managed minimally invasive, the recurrence rate is extremely high.

A-241

MINIMALLY INVASIVE APPROACH TO THE ADRENAL TUMORS LARGER THAN 8 CM: A SINGLE INSTITUTION SERIES OF 97 PATIENTS

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Background:
Minimally invasive adrenal surgery is not widely accepted for masses >8 cm because of the potential risk of malignancy and the concern about the oncological outcome. In this study, we analyzed our experience in the minimally invasive treatment of this subgroup of patients.

Method:
In total 97 patients with a tumor > 8 cm were operated on using a minimally invasive approach between January 2010 and August 2022. Female n=50, male n=47, mean age 56,6 ± 15 (range: 23,0 to 84,2). The mean tumor diameter was 9,6 cm. Patients presented with different adrenal pathologies. The data were prospectively collected and retrospectively analyzed. For the analysis, patients were further divided into two groups (Group A Tumor 8-12 cm and Group B Tumor > 12 cm). Both, retroperitoneoscopic (n= 77) and laparoscopic (n=20) approaches were performed using standard techniques.

Results:
Benign tumors were diagnosed in 50 cases, and malignant tumors in 47 cases. There were 23 tumors larger than 12 cm (retroperitoneoscopic 9, laparoscopic 14) and 74 tumors less than 12 cm (retroperitoneoscopic 64, laparoscopic 10). The mean operating time for the tumors larger than 12 cm was 229 min and for the tumors, less than 12 cm was 152 min.
10 cases (9,7%) were converted to open surgery. Mean blood loss - 100ml, mean hospital stay- 2 days. There was no perioperative mortality or major complication. The minor complication included haematoma, and relaxation of the flank.

Conclusion:
Minimally invasive adrenal surgery is a feasible and safe procedure. The type of minimally invasive approach should be determined by tumor size and histology.

A-285

PREVALENCE OF RADIOLOGICAL AND ANATOMOPATHOLOGICAL CORRELATION OF ADRENAL INJURIES (2000-2020)

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Background:
The diagnosis of adrenal injuries before surgery is a challange for radiologist, endocrines and surgeons, due to is not always easy to differenciate adrenal lesions and do the appropiate treatmeant. The mainaim is to know the prevalence of associationbetween images done by Axial Tomography Computed (TC) and anatomopathologycal study.

Method:
Our study is based on 86 cases diagnosed in ourhospital during 2000-2020, with a population older than 18 years old. We analyzed epidemiological variables, radiologycal images and anatomopathologycal results in a retrospective review.

Results:
In our population we found a 55’81% of women and 44’18% of men.
The most commun adrenal injury was adenoma: 40 cases of which 30 were diagnosed by CT (75%), while 4% was feocromoticoma, 4% metastasis and 4% hyperplasia.
50% hiperplasia diagnosed by CT was hyperplasia. 11 cases was myelolipoma by imaging, but only 7was real myelolipomas (63%). 100% of pheochromocytomas and metastasis seen in CT werein anatomophatology results. We founded 2 adrenal injuries suspicious of primary tumor by CT, one wasan feocromocitoma and the other was a real adrenal tumor. The others diagnoses by imagen were different injuries such as cyst or indetermined lesions (22%).

Conclusion:
The most commun adrenal injurydetected was adenoma with CT and anatomopatology diagnosis as we found in literature review. Discovered adrenal masses require a wide differential diagnosis, but the correct diagnosis previous surgery could help to plan the surgery and decrease comorbilities.

A-237

ADRENALECTOMY: REASONS FOR SURGICAL INTERVENTION AND ANATOMOPATHOLOGICAL STUDY OF THE SURGICAL SPECIMEN

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Background:

An adrenalectomy is a surgical intervention performed for treatment purposes in different pathologies. The aim of this study is to compare the surgical indications prior to the intervention with the anatomopathological study of the specimen.

Method:

A retrospective study was carried out from January 2018 to November 2022, reviewing the adrenalectomy cases performed in the general surgery department of the Hospital Príncipe de Asturias. The results of the anatomopathological studies were analysed.

Results:

34 patients underwent adrenalectomy, with variable clinical diagnoses. 14 patients underwent surgery with a preoperative diagnosis of Cushing's syndrome, followed by a histological confirmation of the presumptive diagnosis. 7 patients received surgery with a preoperative diagnosis of primary hyperaldosteronism, with a confirmatory result of adenoma. 1 patient showed a presumably malignant lesion in the adrenal gland, with a confirmatory result of cortical carcinoma. 1 patient was intervened under suspicion of retroperitoneal lesion with involvement of the left adrenal gland. The anatomopathological result was differentiated liposarcoma involving the adrenal gland. 3 patients underwent surgery under the preoperative diagnostic suspicion of pheochromocytoma, with eventual anatomopathological confirmation. In 8 patients, the presumptive diagnoses were malignant lesions, of which, after surgery, 7 were benign tumors and 1 was a metastasis from pulmonary origin.

Conclusion:

In our center, most of the patients receiving a suprarenalectomy are intervened under diagnosis of an endocrine disease

A-255

GIANT NON FUNCTIONING ADRENAL CORTICAL CARCINOMA FOR TEN YEARS WITHOUT SIGNS OF LOCAL INVASION OR DISTANT METASTASIS

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Background:
Adrenal cortical carcinomas (ACC) are rare with an incidence of 2 per million per year. They are usually large with an average size of 10-12 cm and 50% of them are functional. They are aggressive with high incidence of metastasis and local invasion.
Method:
This is a case report. Patient file and medical record was reviewed.
Results:
In this report we discuss a patient who was diagnosed with non-functioning adrenal mass and was operated on 10 years later due loss of follow up. Over 10 years and as supported by the literature the mass has increased significantly in size approximately 15cm, and it was highly suggestive of ACC on radiological images, however it remained non-functioning, and it did not acquire any local invasion or metastasis. Following surgical intervention, the surgical pathology confirmed the diagnosis as ACC and patient was kept on surveillance.
Conclusion:
This is a rare incidence as ACC are known to be 50% functional and have high incidence of distant metastasis.

A-136

MANAGEMENT OF ADRENOCORTICAL CARCINOMA METASTASIS

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Background:
AdrenoCortical Carcinoma (ACC) is an uncommon adrenal tumor with a predilection for the female population.
Method:
A 55-year-old woman was referred to our attention to undergo laparoscopic cholecystectomy for symptomatic gallstone disease. She underwent a left adrenalectomy for ACC 5 years before; the follow-up was negative for relapse. During the preoperative study an Ultrasound Scanner study demonstrated a liver lesion in S6 - S7, confirmed by a Magnetic Resonance. A PET identified also a lesion on L1 vertebra. The hepatic US-guided biopsy resulted positive for ACC metastasis. After a muldisciplinary evaluation, the patients underwent a local approach to treat both hepatic and vertebral lesions. Laparoscopic cholecystectomy was performed in order to prevent biliary and pancreatic complications. The minimally invasive technique was adopted in order to reduce surgical trauma in oncological patients, even the previous abdominal surgery and percutaneous hepatic treatment. The patient is alive, with no recurrence after 12 months from local treatments.
Results:
This is a very unusual case of double ACC metastases, discovered after the end of standard follow-up and locally treated. The patient is recurrence-free 12 months after these procedures. Minimally invasive approach to treat symptomatic cholecystectomy was used in order to avoid pancreato-biliary complications.
Conclusion:
This study emphasized the necessity to realize tailored protocols for the follow-up of rare neoplasia, as ACC.

A-123

S-GRAS SCORE CORRELATES WITH SURVIVAL AFTER RESECTION OF ADRENOCORTICAL CARCINOMAS

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Background:
Prognosis after resection of adrenocortical cancers (ACC) based on ENSAT staging and nomograms is not sufficiently accurate. A new combined score (S-GRAS) has been recently proposed based on age, hormone- or tumour-related symptoms at presentation, ENSAT stage, R stage and Ki67 index but this score is yet to be validated.
Method:
Retrospective analysis of consecutive unselected patients who underwent surgery for ACC in a regional referral centre.
Results:
Between 2000-2022, 71 patients underwent surgery for ACC of whom 31 patients (14M:17F, median age 54 years), the limiting factor being the lack of assessment of Ki67 marker on historical histological specimens.
Survival rates decreased with a rise in S-GRAS from 8/9 (score 0 and 1) to 4/6 (score 2 and 3), 4/10 (score 4 and 5) and 0/6 (score 6 and 7) and overall survival decreased from median 93 months (score 2 and 3) to 19 months (score 4 and 5) and 4 months (score 6 and 7).
Mitotane treatment did not follow the S-GRAS-based protocol proposed recently: for low S-GRAS (score 0-3) Mitotane is not indicated (yet 8/15 received it), those with high SGRAS (score 4-5) should receive mitotane (9/10 did so), and those with S-GRAS 6 and over should receive combination of mitotane&EDP chemotherapy yet none did so.

Conclusion:
S-GRAS score correlates well with overall survival after resection of ACC and this score could inform the decision of using adjuvant therapy after surgery for ACC.

A-125

RUPTURE AFTER TRAUMA OF ADRENAL CARCINOMA. SHOULD IT BE OPERATED?

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Background:
Adrenal cortical carcinoma (ACC) is a highly aggressive neoplasm, incidentally diagnosed in most cases and with a 5-year overall survival rate of 10-35%, since in many of these patients the disease is locally advanced or with distant metastases at diagnosis.

Method:
A 55-year-old woman who came to the emergency department with severe abdominal pain after trauma with hemodynamic instability. The initial CT scan revealed a 20-cm lesion in the right suprarenal fossa, with signs of rupture and associated hemoperitoneum, as well as a thrombus in the inferior vena cava. The analysis revealed hypercortisolism with suppressed ACTH and hyperandrogenism. The extension study did not show signs of distant disease.

Results:
In surgery, complete tumoral resection was performed, including right hepatectomy with resection of the vena cava due to infiltration and tumor thrombus with replacement with a Goretex prosthesis, as well as the kidney on the same side. (Figure. 3,4) . The patient evolved well. The anatomopathological study confirmed the diagnosis of high-risk adrenal carcinoma with free resection margins.

Conclusion:
Surgery is reserved for those cases in which the disease is resectable. The most effective treatment and thus the one to be perfomed is a complete surgical resection, avoiding the rupture of the capsule, since it is a very important prognostic factor. Following surgery, adjuvant treatment with mitotane may delay or prevent recurrence.

A-296

IMPACT OF EN BLOC EXTENDED R0 RESECTION ON ONCOLOGIC OUTCOME OF STAGE III ADRENOCORTICAL CARCINOMA

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Background:

In locally advanced adrenocortical carcinoma (ACC) (ENSAT stage III – S-III) R0 surgery, involving *en bloc* extended resection, is the only potential curative treatment. We evaluated oncologic outcome and complications rate in S-III patients who underwent extended resection in comparison with stage I/II (S-I/II).

Method:

Among 931 adrenalectomies over 25 years (1997-2022) in a tertiary referral Center, medical records of ACC patients were reviewed, excluding stage IV patients.

Results:

Forty-one patients were identified: 6 S-I patients (14.6%), 30 S-II (73.2%) and 5 S-III (12.2%). The latter underwent extended *en bloc* resection (1 partial and 2 radical nephrectomies, 1 right hepatectomy and 1 renal vein trombectomy). Minor complications (Clavien-Dindo≤2) were observed in 11.5% of S-I/II patients and 20% of S-III (p=NS). Adjuvant treatments included: mitotane (all but one S-I patients), chemotherapy (2 S-II and 1 S-III) and radiotherapy (3 S-II). Four S-II patients (13.3%) developed locoregional recurrence (2 lodge, 1 paracaval nodes and 1 peritoneal) (median 21 months). Metastatic disease occurred in 13 (43.3%) S-II and 1 (20%) S-III patients. At a median follow-up of 108 months, all but 8 S-II patients were alive, with recurrent disease in 9 S-II (2 regional, 7 distant) and 1 S-III (lung). No difference was observed between S-I/II and S-III in terms of DFS and OS (p=NS).

Conclusion:

OS and DFS of S-III ACC patients undergoing extended *en bloc* R0 resection were comparable to those of SII/III, without increasing postoperative morbidity. Multi-Institutional studies are necessary to validate these results.

A-247

IMPACT OF ADRENAL SURGEON VOLUME ON OUTCOME: ANALYSIS OF THE UNITED KINGDOM REGISTRY OF ENDOCRINE AND THYROID SURGERY (UKRETS)

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Background:
Although there is surgeon volume-outcome effect in adrenal surgery the threshold for 'high volume' surgeon remains controversial. This retrospective cohort study of the UKRETS database explores this issue further.

Method:
Adrenal data on adults aged 18-90 years from 2004 to 2021 was analysed. Outcomes included postoperative complications, post-operative, length of stay (LOS) and mortality. Factors included in multivariable analysis were patient age, gender, diagnosis, surgical approach, anatomy, and surgeon volume. Cases with missing data on any variable and LOS > 60 days were excluded.

Results:
Of 6174 operations, 4464 (72.3%) cases were analysed. Postoperative complications occurred in 418/4064 (9.4%) and mortality in 14/4064 (0.3%). Median LOS was 3 (IQR 2-5) days. Co-variables significantly ($p<0.05$) associated with adverse outcomes were: **postoperative complications -** age [OR 1.02 (95% CI 1.01-1.03)], adrenal cancer [OR 1.64 (95% CI 1.14-2.36)], bilateral surgery [OR 1.66 (95% CI 1.03-2.69)], laparoscopic approach [OR 0.32 (95% CI 2.50-0.41)] and surgeon volume [OR 0.98 (95% CI 0.96-0.99)]; **mortality -** age [OR 1.08 (95% CI 1.03-1.13)], laparoscopic approach [OR 0.08 (95% CI 0.02-0.27)] and bilateral surgery [OR 6.93 (95% CI 1.40-34.34)] and **LOS** (standardised beta co-efficient) - male sex (-0.03), age (0.09), phaeochromocytoma (0.07), adrenal cancer (0.08), bilateral surgery (0.11), laparoscopic approach (-0.40) and surgeon volume (-0.06).

Conclusion:
Surgery for adrenal cancer and bilateral tumours could be restricted to high volume surgeons, but the threshold still needs to be defined.

A-214

TOTAL ADRENALECTOMY VERSUS CORTICAL-SPARING ADRENALECTOMY FOR BILATERAL PHEOCHROMOCYTOMA: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background:
Bilateral pheochromocytomas are a heritable disease and may require total bilateral adrenalectomy (TA) to achieve a definitive oncological cure, but it expose to definitive hypocortisolism and the risk of life threatening Addisonian crisis; partial cortical sparing adrenalectomy (PCSA) is a possible alternative theoretically exposing to disease recurrence. To date, no meta-analysis has been perfomed to clarify this issue according to an evidence-based methodology.

Method:
A systematic search was performed according to PRISMA guidelines to assess the effects of TA and PCSA for bilateral heritable pheochromocytoma in terms of post-surgical rate of recurrence, metastatic disease and steroid dependence.

Results:
A total of nine study were finally considered eligible. All studies were retrospectively designed, including 1138 patients available for meta-analysis. The pooled recurrence rates after PCSA vs TA were 10.9% vs 2.6% respectively (OR 3.44; p <0.00001, I^2 67%). Pooled effect of post-surgical steroid dependence confirmed a lower risk for PCSA vs TA (12.25% vs 100%, respectively; OR 0.0004; p <0.00001, I^2 56%). No statistically significant differences were evident between TA and PCSA for post-surgery metastatic disease occurrence.

Conclusion:
Meta-analys data confirms that PCSA is favorable in terms of post-surgical steroid dependence, potentially avoiding Addisonian crisis but expose to a not negligeable rate of postoperative recurrences.

A-280

CONN SYNDROME; RESULTS OF PATİENTS WHO OPERATED ACCORDING TO CONTRALATERAL SUPRESSION INDEX

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Background:
Adrenal vein sampling (AVS) is a technically challenging procedure. Successful cannulation rate of both adrenal veins was reported 95.6% in experienced hand and it drops to 30-50% in other series. When unable to cannulate one of the adrenal veins, adrenal vein/inferior vena cava index can highly predict unilateral disease.
Method:
Retrospective analysis of prospectively collected data was performed for patients with primary hyperaldosteronism who underwent AVS in 2020-2021. Postoperative data of patients who were unilaterally catheterized and operated according to their contralateral suppression index (CSI) results were analyzed?
Results:
Adrenal vein sampling was applied to 16 patients between 2020-2021. Eight of the AVSs were unilaterally catheterized. 50% of bilaterally catheterized patients had lateralization. All 8 patients with unilateral characterization had CSI <0.5 and half of them had contralateral adrenal adenoma. Contralateral adrenalectomy was performed in 8 patients according to CSI results, 88% cured postoperatively.
Conclusion:
Remission was achieved with contralateral adrenalectomy in 88% of patients whose CSI <0.5. In order to make an operation decision according to CSI criteria, larger prospective patient series are needed.

A-316

METASTATIC ADRENOCORTICAL CARCINOMA IN KNEE

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Background:

Adrenocortical carcinoma (ACC) is a rare malignancy with an incidence of 0.5-2 new cases per million people per year.

Method:

65-year-old female suffered from progressive pain in right knee in February 2022.

Results:

X-ray was done displaying 6cm cystic lesion in proximal tibia. Magnetic resonance (MRI) was performed after 2 months revealing right tibia malignant tumour, with highest probability – osteosarcoma. Afterwards general practitioner (GP) suggested chest and abdominal CT. Left side 10cm adrenal and 2cm kidney tumours and 2cm mass in between caecum and right psoas muscle were discovered. In July 2022 biopsy from right tibia tumour was done. Pathohistological examination revealed metastasis (MTS) of pheochromocytoma. In August 2022 patient was referred to university hospital for endocrine surgeon consultation and admitted urgently to department of endocrinology due to severe hypokalaemia and hypercortisolaemia. Treatment with fluconazole and spironolactone was started. Tumour markers CA 19-9, CEA, CA 15-3, CA 125 were negative. Control CT revealed 13cm left adrenal tumour and multiple MTS in lungs, liver, retroperitoneal space, left kidney, thrombosis of left adrenal vein and vena cava inferior. Liver biopsy was performed and revealed ACC MTS. Patient was approved for palliative chemotherapy. Third course of palliative chemotherapy has been cancelled due to the deterioration of the general condition.

Conclusion:

Case report presents long period of diagnosing ACC. Early identification of tumour is the key due to the rarity of tumour, where surgery is the main management of localized disease.

A-120

COMPARATIVE EXPERIENCE OF SURGERY FOR ADRENOCORTICAL CANCERS AND RETROPERITONEAL SARCOMAS IN A TERTIARY INSTITUTION: DIFFERENT PATHOLOGY, SIMILAR CHALLENGES

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Background:
Adrenocortical carcinomas (ACC) and retroperitoneal sarcomas (RPS) are excedingly rare tumours. Oncological surgery to achieve R0 resection remains the mainstay of treatment for such patients.

Method:
Retrospective cohort study of consecutive unselected patients with confirmed ACC and RPS who underwent definitive surgical management.

Results:
Between 2013-22, 44 patients (19M:25F, median age 55 years) underwent open adrenalectomy for ACC measuring 106 ± 46 mm. RPS resection was performed in 45 patients (18M:27F, median age 61 years) with median tumour diameter 121 mm (IQR 90-210mm). Multiorgan resection was performed in 24 ACC and 20 RPS. Median length of hospital admission was 6 days (range 1-36). Support from another team (hepatobiliary/vascular/cardiac) was necessary in three ACC cases and 13 RPS cases. Only 9/44 ACC and 7/45 RPS were admitted to ITU postoperatively for 2-4 days (mode 2 days). There was one in-hospital death in each group.
For patients who had ipsilateral nephrectomy as part of the procedure, the postoperative EGFR was similar in ACC patients (4M:3F, median age 49 years, 61±20 ml/min/1.73m^2) and in RPS patients (5F:5F, median age 61.5 years, 69 ±23 ml/min/1.73 m^2).
Overall survival was lower in ACC patients at 12 months (73% vs 93%) and 5 years (36% vs 91%).
Conclusion:
Significant overlap in operative experience and perioperative care can be seen between ACC and RPS. Given these similarities, it can be suggested that the combination of surgical practice for ACC and RPS is beneficial and can facilitate growing confidence in a multidisciplinary approach for these complex cases.

A-124

Diagnostic and therapeutic management of an incidental pheochromocytoma

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Background:

Adrenal incidentalomas have a prevalence of 2.3%. They are incidentally identified in 4-5% of abdominal CT scans. Of all adrenal incidentalomas, 6% correspond to pheochromocytomas.

Method:

We describe the diagnostic and therapeutic management of a clinical case of pheochromocytoma with incidental diagnosis.

Results:

An 81-year-old woman diagnosed with adrenal incidentaloma on CT abdominal. A 42mm right adrenal nodule is described. History of uncontrolled hypertension. She refers to paroxysmal, self-limited symptoms of 2 years of evolution that consist of sweating and nervousness. A biochemical study was carried out with marked elevation of plasmatic metanephrines 1055pg/mL and urinary 11,315mcg/24 hours.

MIBG scintigraphy describes uptake of the right adrenal gland. Prior to alpha and beta blockade, laparoscopic right adrenalectomy was performed. She goes to the intensive care unit for the first 48 hours and is discharged home on the fifth postoperative day. The pathology described a 4.5cm pheochromocytoma, limited to the right adrenal gland, stage pT1. The patient is asymptomatic at 2 years of follow-up.

Conclusion:

The triad of arterial hypertension, headache, sweating and/or palpitations occurs in 89% of pheochromocytomas and should make us suspect this rare entity. In adrenal incidentalomas less than 6 cm in size, the functional study is what determines the surgical indication. Although a size greater than 3cm is a risk factor for adrenal hyperfunction. Finally, MIBG scintigraphy allows staging of the disease since the malignancy of pheochromocytoma is defined by the presence of distant metastases.

GEP-NEN

A-205

Management of appendix neoplasms in a tertiary referral centre

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Background:
Appendix neoplasms are rare. Half are neuroendocrine tumours (NET). Incidence of NET is 0.4 per hundred thousand and of low grade appendix mucinous neoplasm (LAMN) is 0.2-0.3 per hundred thousand. Most are diagnosed incidentally on appendicectomy specimens.

Method:
The aim of this study was to ascertain the incidence of appendix neoplasms managed in a tertiary referral centre and to ascertain compliance with international guidelines. A prospectively maintained gastrointestinal oncology database was interrogated over a six year period (July 2016-July 2022). Histologically confirmed primary appendix neoplasms were included. Data collected included patient demographics, clinical presentation, management and follow up (median 38 months). Histopathological staging was according to the AJCC 8th edition. Institutional review board permission was not required.

Results:
Incidence of appendix neoplasm over the study period is 1.3%. These included 8 NET, 5 LAMNs, 2 invasive adenocarcinoma and 1 adenocarcinoid. A majority were managed with definitive appendicectomy. One patient underwent right hemicolectomy following discussion at tumour board meeting. Four patients were enrolled on a surveillance programme. A further four with LAMN underwent appendicectomy only, one had appendicectomy and partial caecectomy which was the only one on surveillance.

Conclusion:
Incidence is comparable to that reported in larger series (2%).Management in all cases was in keeping with current guidelines. While most patients had adequate margin clearance with appendectomy alone, a small number required further surgery and/or surveillance.

A-140

MANAGEMENT OF NON-METASTATIC DUODENAL NEUROENDOCRINE TUMORS

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Background:
The management of duodenal neuroendocrine tumors (NET) between 1 and 2 cm is not codified. Currently, depending on the centre, endoscopic (ER) or surgical (SR) resection is offered.
The main objective of our study is to describe, in France, the management of non-metastatic duodenal NETs.

Method:
A study was conducted on 153 patients with non-metastatic duodenal NET diagnosed between 2000 and 2019 in 14 French centres of the GTE group (Endocrine Tumors Group)

Results:
58 (37.9%) patients who had benefited from ER and 95 (62.1%) patients from SR were found. Surgery allowed significantly more complete resection than endoscopy ($p < 0.001$). ER margins were significantly less well-defined than SR margins ($p < 0.001$). Among the 51 patients with positive lymph node dissection, tumor size was ≤ 1 cm in 25 cases, between 1 and 2 cm in 14 cases and ≥ 2 cm in 12 patients. No difference in survival was demonstrated regardless of type of treatment. Surgical complications were more numerous than endoscopic complications ($p = 0.001$). Regardless of the type of incomplete resection, there was no significant difference between the two groups according to the criteria of location, size, grade or adenopathy. In the subgroup analysis of duodenal NETs between 11 and 19 mm, the tumor stages were equivalent in pre-procedure between the two groups. In contrast, there was a difference in post-procedure after anatomopathological analysis ($p = 0.001$).

Conclusion:
The type of endoscopic or surgical resection of duodenal NETs has no impact on the long-term results of our study. Lymph node invasion is independent of tumor size.

A-191

Non-metastatic neuroendocrine carcinoma of the colon: a case report

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Background:

Neuroendocrine carcinomas of the colon are an extremely rare subtype of neuroendocrine tumors, representing 1 to 2% of all colorectal cancers. Contrary to other neuroendocrine neoplasms, prognosis tends to be poor, often with disseminated disease at presentation.

Method:

Case report.

Results:

A 51-year-old man with a 1-month history of abdominal discomfort, hematochezia and anorexia was submitted to colonoscopy, which identified a tumor of the cecum. Biopsies showed a poorly differentiated carcinoma CDX2 positive. Serum CEA (carcinoembryonic antigen) was normal (2.20 ng/mL). Body Computed Tomography found no metastasis. The patient was submitted to laparoscopic right hemicolectomy with complete mesocolic excision, which had to be converted to laparotomy due to adhesions. Apart from ileus, his immediate post-operative course was uneventful, being discharged at 10 days post-op. He had to be reintervined one moth later given intestinal obstruction due to abdominal adhesions. Anatomopathological examination showed a high-grade large cell neuroendocrine carcinoma of the colon with metastasis in 3 out of 30 ganglia (final staging pT4aN1bM0). He had an elevated serum Chromogranin A (22.30 nmol/L), with normal Neuron-Specific Enolase (12.2 nmol/L). F-18 Fluorodeoxyglucose Positron Emission Tomography was unremarkable. The patient was proposed for surveillance with no evidence of recurrence at 6 months follow-up.

Conclusion:

Local non-metastatic neuroendocrine carcinomas are rare, but can be successfully treated with radical excision. Multidisciplinary consensus should be privileged and tailored individually.

A-318

Surgical approach to metastasised neuroendocrine tumours of the small intestine: a retrospective European multicentre (EUROCRINE® Study Group)

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Background:
At the time of the diagnosis, up to 60 % of NETs are already metastasised. However, due to the rare prevalence and lack of prospective studies, suitable treatment guidelines have yet been established.

Method:
In a retrospective, multi-center, European study, using the EUROCRINE® database, 144 palliative surgeries due to SI-NETs were selected, divided into 3 groups, and analyzed. Based on the time of the last follow-up, stage, grading, and surgical treatment, Kaplan-Meier survival curves and Log-Rank tests were used to compare the outcome, overall survival, and quality of life.
The 3 groups are as followed:

(A) emergency surgery due to complications
(B) primary tumour resection only.
(C) radical resection

Results:
Out of 144 surgeries, 9 were performed in emergency settings (A). In 42 only the primary tumour was resected (B). The remaining 93 cases reduced the tumour mass (C). (A) did not show a poorer quality of life in the short term, only one case having early onset postoperative complications, compared to 9 (B) and 22 (C). In 4 cases (A) a R0 Resection was obtained, compared to 10 (B) and 46 (C). 2 cases (A) remained tumour-free in the first Follow-up, compared to 3 (B) and 10 (C). No patients were deceased untill the first Follow-up in (A), 1 patient died shortly after resection in (B), and 1 in (C). As many patients were lost in the long-term follow-ups, overall survival could not be estimated.

Conclusion:
(A) has a comparable mortality rate to (B) or (C)
Careful patient selection can greatly improve outcomes
A more thorough follow-up is required to better estimate the survival rates in 5 or 10 years.

A-321

SURGICAL APPROACH IN ADVANCED PANCREATIC NEUROENDOCRINE TUMOURS: A RETROSPECTIVE EUROPEAN MULTICENTRE STUDY (EUROCRINE® STUDY GROUP).

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Background:
Pancreatic Neuroendocrine tumours (PNETs) are rare tumours with different clinical outcomes, the majority of which are metastasised at the time of diagnosis. The palliative resection of the primary site has been shown to improve quality of life in patients with metastatic pancreatic tumours, yet it remains controversial.

Method:
A retrospective, descriptive analysis, using the EUROCRINE® registry. 42 cases between 2015 and 2021 have been selected, divided into 2 separate groups, and analysed:

(A) hormonal inactive PNETs:
(Ai) non-functional tumours with immunoreactivity for hormones
(Aii) non-functional tumours without immunoreactivity for hormones
(B) hormonal active PNETs

Results:
(Ai) 12 cases: 1 enucleation, 4 pancreatectomies, 3 pancreas head resections, 3 pancreas tail resections, 1 non-resectable, with a mortality of 8,3 % shortly after surgery
(Aii) 20 cases: 16 non-resectable, 1 pancreatectomy, 2 head resections, 1 local recurrence (omentum majus), 5 % short term mortality
(B) 10 cases: 6 pancreas tail resections, 4 non resectable, 0 % short term mortality
Due to loss of patients in long-term Follow-ups, the overall survival in 2, 5 or 10 years is yet to be determined.

Conclusion:
Advanced PNETs have different prognostics and should be treated differently depending on hormonal activity or immunoreactivity
Advanced hormonal active PNETs are largely located in the tail of the pancreas
Hormonal inactive PNETs which lack immunoreactivity for hormones or transmitters are likely non-resectable at time of the diagnosis
Further information on long term development and prognosis of advanced PNETs is still necessary

A-163

TRANSARTERIAL EMBOLIZATION OF LIVER METASTASES IN PATIENTS WITH PANCREATIC NEUROENDOCRINE NEOPLASMS

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Background:
Pancreatic neuroendocrine neoplasms (pNEN) may present with liver metastases at diagnosis (LM). Transarterial embolization (TAE) of LM is one of the treatment options.

Method:
We evaluate overall survival (OS) in patients with pNENs and LM treated with TAE. From 1981 to 2020 we diagnosed 367 patients with a pNEN. Among 64 patients with LM, 24 received TAE. We evaluated clinical presentation, histology, and treatment. FU to December 2021.

Results:
Among 24 patients, 19 had LM at diagnosis and five had metachronous LM. Patients with synchronous LM were 11M/8F (averaging 58 yrs): 74% had a non-functioning tumor, 14 located in the body-tail (median size 4 cm); 15 had bilobar LM, three with other distant metastases (bone, lung, and adrenal). Fifteen patients underwent pancreatic surgery, 12 (67%) had surgical debulking of LM, seven (37%) received intraoperative ablation (MW or alcohol injection) of LM. Most patients (84%) underwent multiple TAE with a median of three (up to 13) procedures. One-, 3-, and 5-year OS was 95%, 79%, and 61%, respectively. Patients with metachronous LM were 1M/4F (averaging 60 years): all had non-functioning pNENs, three located at the body-tail (median size 3 cm). Four/5 cases underwent surgery. Metachronous LM occurred after a median of 94 (range 46-164) months. All were treated with TAE up to 5 times, one had surgery and ablation of LM, one had ablation. After a FU of 197 (range 52-232) months, four patients were still alive. Among 77 TAE performed, five (8%) complications occurred (hepatic abscess).

Conclusion:
A long survival may be achieved with repeated TAEs in LM from pNEN

A-235

PANCREATIC NEUROENDOCRINE TUMORS WITH LIVER METASTASES. OUTCOME OF SURGICAL TREATMENT: A 40 YEARS EXPERIENCE

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Background:
Surgery for pancreatic NETs (pNETs) with Liver Metastases (LM) is still debated, particularly in non-functioning tumors. Surgery on pancreatic primary, debulking or partial resection of LM is not a widely accepted procedure resulting in a longer survival.

Method:
We reviewed our series of pNETs observed by our Pancreatic Surgical Unit from 1980 to 2020 to identify patients with LM. Among 375 pNETs diagnosed, 67 (17.7%) had LM. Follow-up to December 2022.

Results:
Among 67 patients with LM enrolled, sixteen (23.8%) had a functioning pNET. Twentysix pNETs (38.8%) were in the head. Thirtynine/67 patients underwent resective surgery; 25 of them had synchronous LM while 14 had metachronous LM, with recurrence after a mean DFS of 95 months. Surgery consisted in: pancreaticoduodenectomy in 12 cases (6 hepatic resection/ablation), distal pancreatectomy in 21 (13 hepatic resection/ablation), total pancreatectomy in 2 and other resections in 4. In hospital mortality was 5.1% (2 patients). Twentyeight patients with pNET and LM did not undergo resective surgery; two cases had palliative procedures (gastric and/or biliary by-pass),and 9 cases had a liver biopsy. Among 25 patients operated with synchronous LM, 4 are still alive after a mean of 166 months; 21 died after 53 months. Out of 14 patients with metachronous LM, 8 patients are alive 176 months after pNET resection, and 5 patients died after 139 months. Only 1/28 non-operated patient is alive (155 months);OS in non-operated pNETs was of 48 months.

Conclusion:
In pNETs with LM a long survival may be achieved even when R2 resective surgery is perfomed.

A-128

ARE HEMICOLECTOMIES STILL INDICATED IN PATIENTS WITH NEUROENDOCRINE TUMOURS OF THE APPENDIX 1-2 CM? A RETROSPECTIVE EUROPE-WIDE COHORT STUDY

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Background:
Awareness of a potential global overtreatment by performing oncological resections for appendiceal neuroendocrine tumours (aNET) 1-2cm is increasing.
We aimed to assess the malignant potential of aNET 1-2cm in patients with or without right-sided hemicolectomy (RHC).

Method:
Patients with aNET 1-2cm from 40 European institutions diagnosed between January 2000 - December 2010 were included. Primary outcomes were frequency of distant metastases and tumour-related mortality rate. Secondary outcomes included frequency of regional lymph node metastases (LNM), corresponding histopathological risk factors and overall survival.

Results:
Of 278 patients with aNET 1-2cm included in the study, 163 (58.6%) had an appendectomy and 115 (41.4%) RHC. After centralized histopathological review, the aNET was classified as possible or probable primary tumour in two patients with distant peritoneal metastases and in two patients with liver metastases. All metastases were diagnosed synchronously with no tumour-related deaths during follow-up. Regional LNM were found in 22 (19.6%) patients with RHC. We estimated that 12.8% (95%CI 6.5-21.1%) of patients undergoing appendectomy likely had residual regional LNM based on histopathological risk factors. Overall survival after median follow-up of 13.0 years was similar between patients with appendectomy and RHC (aHR .88, 95%CI .36-2.17, P=.71).
Conclusion:
This study provides evidence that RHC is not indicated following complete resection of the aNET 1-2cm by appendectomy and that regional LNM of aNET are clinically irrelevant.

A-149

Diagnosis and Treatment of Gastrointestinal Bowel-related Symptoms in Metastatic Small Intestinal Neuroendocrine Tumors: A Systematic Review

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Background:
Metastatic small intestinal neuroendocrine tumors (msi-NETs) are often associated with disabling gastrointestinal symptoms. Treatment of these symptoms is challenging. We performed a systematic review to define the optimal treatment of gastrointestinal symptoms in metastasized si-NETs.

Method:
MEDLINE®, EMBASE®, Web of Science and Cochrane Library were searched for English studies between January 1st 2000 and May 31st 2021. Clinical studies reporting on the effect of medical, surgical or radiological treatment on gastrointestinal symptoms in patients with msi-NETs were included. Clinical response was defined as >50% reduction in the frequency of gastrointestinal symptoms.

Results:
The search yielded 16,239 articles, of which 30 met the inclusion criteria, including a total of 1,801 patients with msi-NETs. Response to therapy was reported in 35-100% of patients. Specifically, 43-94% responded to medical treatment (everolimus 43%, octreotide 83-93%, lanreotide 94% and peptide receptor radionuclide therapy 47%). Response to more invasive treatment was reported as follows: 71% to hepatic artery embolization, 35% to transarterial chemoembolization, 57% to the stenting of the superior mesenteric vein, and 100% to surgery. Some 71% responded to a combination of treatment modalities. Meta-analysis was not possible due to heterogeneity in study populations and definitions.

Conclusion:
Several treatment modalities improve gastrointestinal symptoms in msi-NETs. Different definitions and measurements hamper comparison between them, but somatostatin analogues and surgery have the highest treatment response rate.

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SCHWANN CELL HAMARTOMA OF THE APPENDIX, SHOULD SCREENING FOR MEN-2B BE PERFORMED?

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Background:

Schwann Cell Hamartoma is a type of neural lesion that appears in the colon, frequently as a mass or polyp. It is an infrequent diagnostic entity, first described in 2009 and prior to that date classified as Neuroma. Neural lesions can be associated with congenital syndromes such as Multiple Endocrine Neoplasia-2B . No more than 40 cases have been described to date.

Method:

We present a 79-year-old patient with a history of arterial hypertension and Paget's disease of bone, who attended the Emergency Department for lower right abdominal pain and signs of peritoneal irritation in the physical exploration. The laboratory analysis showed an increase in acute phase reactants and the CT scan revealed a pericecal internal hernia as the first diagnostic possibility, with mild retrograde dilatation of the small bowel.

An urgent exploratory laparotomy was performed, evidencing the presence of plastic peritonitis, with dilation of small bowel loops and abundant free serous fluid. Adhesiolysis and an appendectomy were carried out in the absence of other findings.

Results:

The pathology results showed a piece of ileocecal appendix with diagnosis of Mucosal Schwann Cell Hamartoma. Screening for hereditary Endocrine Syndromes was negative.

Conclusion:

Careful pathological diagnosis must be conducted in neural lesions, especially when the clinical presentation is atypical, as in the described case. It is mandatory to always perform screening for Congenital Syndromes even if no association with these entities has been described in the scarce number of Mucosal Schwann Cell Hamartoma described in the literature.