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Poster Abstract

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Hitotsubashi Hall

Congress President: Takahiro Okamoto

Tokyo Women's Medical University

P-1

**Less than Total Thyroidectomy for multinodular goiter
A prospective study to when and how**

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SGPGIMS

In iodine deficient benign goiter are the most common disorder and multinodular goiter is most common thyroid disease after STN. Various societies and guidelines recommend Total thyroidectomy. Total thyroidectomy is a procedure when performed trained surgeons has less complications. Substantial risk in terms of hyperparathyroidism in the clearly and also morbidity with RLN. We have performed hemi thyroidectomy in carefully selected group of patients presenting with MNG with opposite lobe clinically and ultrasonographically normal. Total patients 25. age all patients had benign FNAC.

After USG imaging and CECT concordance these patients underwent HT removal of diseased side isthmus pyramidal lobe cuff of opposite lobe) with harmonic scalped as vessel sealing device.

P-2

Ergonomics analysis of surgical microscopic, endoscopic and open thyroidectomy

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Background:

Surgeons well-being and ergonomics is an important part of surgical discipline. This study compared ergonomic outcomes between three techniques of thyroid surgery.

Methods

Endocrine surgeon was studied while performing thyroid surgery with three techniques: a microscopic thyroidectomy, endoscopic and open thyroidectomy. Operative positions were uniformly captured in three dimensions. Validated Rapid Upper Limb Assessment (RULA) tool was used to calculate a risk score indicative of potential musculoskeletal misuse in each position.

Results

Higher-risk postures were obtained with open thyroid surgery and endoscopic thyroid surgery. Microscopic surgery was associated with acceptable risk.

Conclusions

Microscopic thyroid surgery is associated.

P-3

Difficult diagnosis of papillary thyroid carcinoma due to tumor and lymph node calcification

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Microcalcification is the characteristic calcification in papillary thyroid carcinoma, which is rarely accompanied by coarse calcification. We report a case of difficult diagnosis due to the presence of severe calcification in the capsule of the main tumor and the regional lymph nodes.

Herein, we present a case of a 39-year-old female patient who was referred to us for a thyroid mass during a visit to her local doctor for systemic scleroderma. A hard mass was palpated in the right lobe of the thyroid gland and near the lower pole.

Cervical ultrasonography indicated the mass with severe calcification of the entire capsule in the right lobe and paratracheal lymph nodes, and few well-circumscribed hypoechoic masses in the left lobe. Contrast enhanced computed tomography showed a coarse calcified mass in the right lobe of the thyroid and swollen lymph nodes from the lower pole to the superior mediastinum.

Fine needle aspiration cytology was performed for the masses of both lobes. It was difficult to puncture inside the mass in the right lobe due to calcification and was found to have unknown significance because papillary carcinoma could not be completely excluded. The left lobe was diagnosed as benign. Although the cytological diagnosis was not well supported, the presence of calcification only on the right side of the neck strongly suggested thyroid cancer with right cervical lymph node metastasis; thus, surgery was recommended. Hemithyroidectomy and unilateral central neck dissection were performed. The right recurrent laryngeal nerve ran lateral to the right paratracheal lymph nodes and was difficult to dissect. The markedly calcified and capsulated mass was difficult to diagnose preoperatively. A comprehensive decision, including imaging studies, could be made.

P-4

Are there any patients with special caution before starting active surveillance?

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Introduction: Thyroid nodule diagnostic fine needle aspiration (FNA) is not recommended for less than 1.0cm in 2015 ATA guidelines. In generally, papillary thyroid ultra-microcarcinoma (PTUMC), defined as a tumor 0.5cm or less in size, can be considered as an active surveillance management. But there is also lateral neck node metastasis in PTUMC patients. The aim of this study is to evaluate clinicopathologic features of PTUMC and to compare the clinicopathologic characteristics of PTUMC with lateral neck metastasis and PTUMC without lateral neck node metastasis.

Methods: The study materials were patients treated at the department of surgery in Gangnam Severance Hospital, from January 2009 and June 2013. 3004 PTUMC patients were analyzed. Of these patients, 89 (3.0%) patients had lateral neck node metastasis and 2915 (97%.0) patients did not have lateral neck node metastasis. The clinicopathologic characteristics including gender, age, size, operation type, tumor location, multiplicity, thyroiditis, microscopic extrathyroidal extension, and nodal status of the two groups were compared.

Results: When PTUMC with lateral node metastasis with the group without lateral metastasis were compared, the patients with PTUMC had a bigger tumor size (0.44cm +/-0.08 vs 0.40 +/-0.10, p-value <0.001), more frequent microscopic ETE (49 (55.1%) vs 937 (32.1%), p-value <0.001), more frequent bilateral multiplicity (20 (22.5%) vs 28 (9.8%), p-value <0.001), more frequent central lymph node metastasis (57 (64.0%) vs 645 (22.1%), p-value <0.001), upper tumor location (42 (47.2%) vs 765 (26.2%), p-value <0.001).

Conclusion: Microscopic capsule invasion, upper pole lesion, psammomatous calcification, and central node metastasis were associated with lateral neck node metastasis in PTUMC patients. Surgical treatment and lateral neck evaluation need to be considered in PTUMC patients presenting with risk factors.

P-5

A Case of Mediastinal Ectopic Thyroid Cancer with a Normal Thyroid Gland

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Ectopic thyroid cancer is extremely rare disease, only a few case reports are published about it. Ectopic thyroid cancer usually arises from ectopic thyroid tissue. The predominant location of ectopic thyroid tissue is the lingual thyroid, whereas a mediastinal thyroid is uncommon. Ectopic thyroid cancer below the neck is extremely rare; therefore, the diagnosis of ectopic thyroid cancer below the neck is based on pathologic results. We describe here a case of asymptomatic mediastinal ectopic thyroid cancer with a normal thyroid gland, underwent mediastinal mass excision and no relapse for 3 years.

Keywords: Thyroid dysgenesis; Thyroid cancer; Mediastinum

P-6

Effect of Apatinib for Lung Cancer on Papillary Thyroid Carcinoma

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Apatinib efficacy on papillary thyroid carcinoma: Papillary thyroid carcinoma is the most common type of thyroid cancer, for which surgery following preoperative staging and risk assessment is the standard treatment. Apatinib is an orally active irreversible ErbB-family inhibitor that binds to the kinase domain of epidermal growth factor receptors (EGFRs), HER2, and HER4, and has been approved as monotherapy for the treatment of locally advanced or metastatic non-small cell lung cancer with activated EGFR mutations.

Recently, we observed an unexpected effect of apatinib administered to treat lung cancer on untreated papillary thyroid carcinoma.

Key Words: papillary thyroid carcinoma, apatinib, EGFR tyrosine kinase inhibitor, lung cancer

P-7**TERTp mutation coincident with rs2853669 are predictors for malignancy of follicular thyroid tumors.**

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Two point mutations C228T and C250T in the promoter region of the telomerase reverse transcriptase (TERT) gene are considered molecular indicators associated with adverse biology of thyroid tumors. The fifth edition of the WHO classification in 2022 clearly states that TERT promoter mutations are involved in the progression of tumors of thyroid follicular cell origin. A regulatory single nucleotide polymorphism rs2853669 (TrSNP) is present in the vicinity of two TERT promoter mutations. Our previous studies showed that this TrSNP as well as C228T increases the in-vitro activity of TERT promoter and is significantly associated with clinical tumor sizes of thyroid papillary carcinomas and follicular tumors.

First, we attempted to analyze TrSNP from peripheral blood specimens, and confirmed the quality of DNA extracted from blood is much better than from formalin-fixed paraffin-embedded (FFPE) surgical specimens. TrSNP analysis from blood is accurate and preoperatively available, and considered to be clinically useful.

Next, we clinicopathologically studied 85 thyroid follicular tumors (19 follicular carcinomas and 66 follicular adenomas) that were surgically removed in Kyorin-University hospital. DNA was extracted from both blood and FFPE specimens. After amplification by PCR with designed primers for three sites TrSNP, C228T and C250T were analyzed by Sanger sequencing.

As the results, TrSNP was detected in 44 (51.8%) of 85 cases of follicular tumors. The frequency of allele C of the TrSNP was 28.0% in follicular adenomas and 47.3% in follicular carcinomas. The frequency of homozygous TrSNP in follicular carcinoma was 31.6%, significantly higher than that in follicular adenoma (7.5%). The frequency of C228T was significantly higher in follicular carcinomas. Multivariate analysis revealed that TrSNP coexisted with C228T were risk factors for malignancy of follicular tumors. In particular, the group with homozygous TrSNP showed a significantly higher risk of follicular carcinoma.

In conclusion, TrSNP is a molecular marker for increased growth and progression of thyroid follicular tumors as well as papillary carcinomas. C228T with synchronous TrSNP is a possible preoperative molecular maker to discriminate thyroid follicular carcinoma from follicular adenoma.

P-8**Identification of a variant of FAM19A2 mRNA as a novel FTC-specific marker**

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Background: Differentiating follicular thyroid carcinoma (FTC) from follicular adenoma (FA) is difficult in terms of both preoperative and histopathological diagnosis. We previously performed microarray analysis of FFPE specimens from 3 FTC cases with distant postoperative metastasis and identified FAM19A2 and LRRK2 mRNAs as transcripts that were highly upregulated in FTC tissues compared to adjacent non-tumorous (NT) follicular tissues. (BMC Res Notes 2020 13:241). As for FAM19A2 mRNA, it was subsequently shown that a specific variant of FAM19A2 mRNA (FAM19A2v) was upregulated in FTC tissues. We then analyzed the expression levels of these mRNAs and TFF3 mRNA, a mRNA known to be downregulated in thyroid carcinoma, in FFPE samples from 57 follicular tumor (FTC and FA) and 15 papillary carcinoma (PTC) cases.

Methods: RNA was extracted from the FFPE samples of FTC (n=28), FA (n=29) and 15 PTC cases, and subjected to qRT-PCR analysis for FAM19A2v, LRRK2, and TFF3 expression. The expression of beta-actin mRNA was also analyzed as an internal standard.

Results: FAM19A2v, LRRK2, and TFF3 mRNA expression was shown to be dysregulated in FTC tissues compared to NT and FA tissues. As previously reported, LRRK2 and TFF3 mRNA expression was also dysregulated in PTC tissues. By contrast, FAM19A2v mRNA expression was unchanged in PTC tissues compared to NT tissues, suggesting the FTC-specific dysregulation of FAM19A2 mRNA. The receiver operating characteristics curves to distinguish FTC and FA were analyzed and the area under the curve for FAM19A2v was calculated to be 0.75.

Conclusion: To our knowledge, FAM19A2v mRNA is the first FTC biomarker candidate that is unaffected in PTC. Therefore, the mRNA and protein of FAM19A2v could be promising biomarkers to differentiate FTC from not only FA but also other ambiguous thyroid lesions such as PTC-follicular variant.

P-9

Diagnosis of lymph node metastasis of papillary thyroid cancer using CT HU Value

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[Introduction]

Diagnosis of cervical lymph node metastasis in papillary thyroid cancer is important in determining the surgical procedure of thyroid surgery. Although the usefulness of ultrasound in the diagnosis of thyroid gland and lymph nodes has been reported, its accuracy is not necessarily high. We have shown that the Hounsfield value (HU) obtained by CT scan can be used to diagnose breast cancer with a high rate of correct diagnosis of axillary lymph node metastasis. We report an attempt to diagnose cervical lymph node metastasis of papillary thyroid cancer using HU.

[Materials and Methods]

Forty-two patients with papillary thyroid cancer who underwent surgery between April 2014 and October 2015 were studied. n 180 lymph nodes (45 positive nodes and 135 negative nodes) from 39 patients, CT images obtained before surgery were analyzed. The periphery of the resected lymph nodes was set as Region of Interest (ROI), and the maximum and mean values in ROIs were measured in the simple and contrast phases. These measurements were compared with the final pathological results of lymph node metastasis, and a cut-off value was established to evaluate the diagnosis of lymph node metastasis.

[Results]

Metastatic nodes were superior to normal nodes in terms of mean HU in the simple phase, maximum HU in the simple phase, mean HU in the contrast phase, and maximum HU in the contrast phase. The highest rate of accuracy with a maximum HU in the simple phase was 78% sensitivity and 84% specificity.

[Discussion]

Metastatic lymph nodes of papillary thyroid cancer showed high HU in both simple and contrast-enhanced CT. Papillary thyroid carcinoma often has calcification and may be due to increased blood flow. Although there is a certain positive predictive value, the negative predictive value is low and there is room for improvement.

[Conclusion]

Diagnosis of lymph node metastasis of papillary thyroid cancer using CT HU is simple and feasible and may help diagnose preoperative lymph node metastasis of the thyroid.

P-10

Neoadjuvant Tyrosine kinase Inhibitor therapy in Locally Advanced Papillary Thyroid Carcinoma

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Papillary thyroid carcinoma (PTC) have been known as well differentiated cancer has good prognosis with a low local invasion, recurrences, and metastasis. However, some patients exhibited with locally advanced PTC which is invading the visceral structures of the central neck. Initial treatment for surgery may be deemed impossible or inappropriate depending on the tumor and patient-related factors. Just a few treatment options are available and neoadjuvant tyrosine kinase inhibitors (TKIs) which are oral multi-targeted drugs used for patients with advanced radioactive iodine (RAI)-refractory progressive DTC can be consider as a treatment option to step for radical surgery.

Here, we discuss two cases of neoadjuvant TKIs in locally advanced unresectable PTC, underwent radical mass excision after neoadjuvant therapy.

P-11

Usage Experience of intraoperative continuous nerve monitoring in video-assisted neck surgery

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Objectives: Recurrent Laryngeal nerve(RLN) injury is one of the severe complications in thyroid surgery. Therefore, intraoperative nerve monitoring(IONM) has been widely used to identify the RLN and confirm its integrity. Recently, the usefulness of continuous IONM(CIONM) with automatic, periodic stimulation to the vagus nerve during thyroid surgery was reported. This study aimed to report our experience with video-assisted neck surgery(VANS), during which, CIONM was successfully applied for the first time.

Methods: Consecutive patients who underwent thyroid surgery with CIONM, performed in our department using VANS between July 2017 and June 2019, were retrospectively analyzed.

Result: A total of 8 patients who underwent thyroid surgery with VANS(8 women, age, 20-61 years [mean, 41 years]) were enrolled in this study. The addition of CIONM in VANS prolonged the operation's duration by approximately 30min as the endoscopic surgery was technically more difficult. No transient or permanent RLN paralysis was observed in any patient.

Conclusion: We reported the first successful application of CIONM during thyroidectomy using VANS. Future clinical trials should clarify the benefits of CIONM when compared to intermittent IONM in VANS.

P-12

Comparison between immediate vs delayed bleeding after thyroidectomy

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Bleeding cases after thyroidectomy:

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.

Methods: From March 2009 to June 2022, we retrospectively compared 129 post-thyroidectomy bleeding cases into two groups, immediate (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 patient 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 recurrent cases. The lateral neck dissection was more done in the group of delayed bleeding than immediate bleeding.

Conclusions: 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.

Key Word: Post-operative bleeding, Thyroidectomy, Immediate bleeding, Delayed bleeding.

P-13

A Rare Case of Thyroid Myxoid Liposarcoma Combined with Papillary Thyroid Carcinoma

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Rare case of papillary thyroid carcinoma with myxoid liposarcoma:

Myxoid liposarcoma is a rare soft tissue sarcoma usually found on retroperitoneum and extremities. In this case report, we describe a 39-year-old female patient presenting thyroid myxoid liposarcoma plus papillary carcinoma, with metastatic lesion to lung and retroperitoneum.

Key Word: Thyroid liposarcoma, Myxoid liposarcoma, Papillary carcinoma, Tumor metastasis.

P-14

Effect of early detection of thyroid cancer on medical costs in the Korean population

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Background: The incidence of thyroid cancer has notably increased in South Korea over the past few years, leading to a greater economic burden. We aimed to evaluate the cost-effectiveness of early thyroid cancer diagnosis and analyze the differences in medical expenses incurred depending on stage of detection of thyroid cancer.

Methods: We used retrospective cohorts data of 1 million patients in South Korea whose conditions were diagnosed as thyroid cancer between 2002 and 2015; the data were supplied by the National Health Insurance Service. We divided patients into early and advanced thyroid cancer groups and compared the extent of surgery required, hospitalization expenses incurred, and number of outpatient visits needed.

Result: Both thyroid cancer incidence and the extent of surgery started decreasing in 2013. Total medical expenditure, including hospitalization and outpatient costs, was lower in the early thyroid cancer group than in the advanced thyroid cancer group.

Conclusions: Early detection of thyroid cancer is beneficial in reducing the medical expenses of patients and the economic burden on the National Health System.

P-15

Importance of comprehensive work-up in MNG

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Multinodular goitre(MNG) is believed to have lower risk of malignancy compared to solitary thyroid nodule(STN). Higher index of suspicion on finding features suggestive of malignant pathology is imperative for adequate management of these patients with malignancy in MNG.

Herein we describe a euthyroid lady aged 24 years who presented with MNG with features of malignancy (including rapid enlargement, fixity to strap muscles and tracheal deviation). She was evaluated elsewhere with TSH of 1.74mIU/L and ultrasonography(USG) revealing MNG with a large(42x36mm) complex cystic nodule in the left lobe. A blind Fine needle aspiration(FNA) was reported as benign goitre with cystic changes. Based on this evaluation, she was planned for total thyroidectomy in spite of clinical presentation probing towards a more dreadful pathology. She was referred to us and after comprehensive review of case, repeat FNA from solid component of complex nodule using USG guidance revealed suspicion of papillary thyroid carcinoma(PTC). CECT neck showed presence of central compartment nodes and loss of fat plane between trachea and thyroid. Total thyroidectomy with left hemi central compartment lymph node dissection was performed. Left lobe nodule measuring 5.5 cm was adherent to straps, trachea and left RLN while the right lobe had a single 12 mm nodule. Straps were excised. Small thyroid tissue was left medial to left RLN. Histopathology reported classical PTC of 4.5cm size with extra thyroidal extension, involvement of straps and positive central compartment nodes. Postoperative course was uneventful. Thyroglobulin post 6 weeks was 5ng/ml (TSH-0.1mIU/L). She received radioiodine ablation and currently is doing well.

In MNG cases with discordant clinical features and investigations, it is critical to adequately evaluate, review and perhaps reevaluate the patient. Clinical findings suggesting malignancy should not be overlooked. As missed malignant pathology may lead to inadequate planning, intraoperative difficulty and higher morbidity eventually leading to suboptimal treatment of the patient.

P-16

One-stage sleeve resection of trachea and end-to-end anastomosis for locally invasive PTC

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Background: Papillary thyroid carcinoma (PTC) is occasionally locally aggressive, especially to trachea. Local control measures for tracheal invasion of PTC include one-stage resection and end-to-end anastomosis, simple resection with tracheostomy, simple resection followed by cartilage patch etc. In terms of QOL of patients, one-stage procedure without tracheostomy would be preferable.

Case presentation: A 43-years-old man without symptom of his neck was referred to our department for further evaluation of neck swelling. Ultrasonography and computed tomography (CT) indicated cystic lesion with papillary component and well-defined calcified mass, suggesting PTC. CT and magnetic resonance imaging indicated transmural invasion to the trachea with 4 cm in axial length. Bronchoscopy also confirmed finding of transmural invasion. Imaging studies showed no cervical lymph node or distant metastases. The right recurrent nerve paralysis was also confirmed.

Due to failure of aspiration biopsy cytology and core needle biopsy for pathological diagnosis, excisional biopsy was performed, and definitive diagnosis of PTC was obtained.

Preoperative evaluation indicated that tracheal invasion was confined in cartilaginous portion, therefore we decided to preserve the membranous portion of the trachea.

Surgical procedure: Prior to the tracheal resection, total thyroidectomy and central neck dissection was performed leaving area of transmural invasion. The right recurrent laryngeal nerve was resected with the thyroid. The cartilaginous portion of infiltrated trachea with sufficient margin (<5 mm) was resected preserving membranous portion. The end-to-end anastomosis with interrupted suture with 3-0 vicryl was performed. No transient tracheostomy was placed. The patient was admitted in the intensive care unit. On the first postoperative day, the intubated tracheal tube was replaced with laryngeal mask under deep sedation to prevent unnecessary stimulation to the larynx. After removal of the laryngeal mask on the same day, postoperative course was uneventful. The neck fixation with the collar prosthesis was removed on the 7th postoperative day.

Conclusion: Single-stage resection of trachea and end-to-end anastomosis for PTC with transmural tracheal invasion is a safe procedure with careful preparation and standard surgical technique.

P-17

A Comparison between transoral endoscopic and minimal-invasive thyroidectomy

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Background: Oncoplastic thyroidectomies seek to minimize or diminish cervical scars in patients for whom cosmetic outcomes are important. Minimally invasive non-endoscopic thyroidectomy had widely adopted and scarless transoral endoscopic thyroidectomy vestibular approach is recently introduced, however, the optimal choice between these two procedures is still missing.

Study Design: To compare the outcomes of TOETVA and MINET. Patients who underwent oncoplastic thyroidectomies with the routine use of intraoperative neuromonitoring between December 2017 and July 2020 at National Taiwan University Hospital, Taipei, Taiwan, were analyzed retrospectively. Propensity score matching was conducted to minimize the selection bias. Time spent, hospital stays, morbidities, expenses, and patients cosmetic satisfaction were compared.

Results: Of the 1702 thyroidectomies during this period, 581 were performed using IONM. 259 patients chose oncoplastic procedures. TOETVA was employed in 119 patients and MINET in 140 patients. 224 patients met the screening criteria, and after matching for age and sex, the study comprised 104 patients. There is no statistical difference in the rate of complications. The MINET group was associated with shorter operation times, including total time and time for preparation and operation, shorter length of hospital stays, and lesser postoperative pain. The TOETVA group was associated with better patient satisfaction but higher costs.

Conclusion: TOETVA fulfills the demand for scarless outcome, and has better cosmetic satisfaction than MINET; however, it is costlier and demands higher human and hospital resources.

P-18

Surgical outcomes of the robotic transaxillary thyroidectomy in the male thyroid cancer

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When performing robotic thyroid surgery, male patients are generally reluctant. The aim of our study is evaluating the results of robotic versus conventional open thyroidectomy for male thyroid cancer. This retrospective review included 948 male thyroid cancer patients who underwent robotic transaxillary open thyroidectomy at our institution from 2007 to 2022. The patient characteristics, surgical variables, extent of surgery, pathological findings and postoperative outcomes including the recurrence rates were analyzed and compared with the previous research data of the conventional open thyroidectomy. There were no significant differences in recurrence rates and disease-free survival. In the hands of the experienced surgeon, Robotic thyroidectomy can be a safe option worth considering for male thyroid cancer patients.

P-19

Asymptomatic Retrosternal Goiters: Should We Intervene?

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Aim: While the need for thyroidectomy in symptomatic retrosternal goiters (RSG) is indisputable, the management of asymptomatic image detected RSG remains controversial. We compared outcomes and complications of performing thyroidectomy for patients with symptomatic and asymptomatic RSG to create a management algorithm.

Methods: Data of patients with RSG between 2011-2019 was collected from our prospective electronic thyroid surgery database. Patient comorbidities, risk stratification, symptoms and signs, modality of diagnosis, surgery details, complications and outcomes were compared between the symptomatic and asymptomatic groups.

Results: A total of 42 out of 477 thyroidectomies (8.8%) had RSG based on our definition with 26 patients (62%) being truly asymptomatic. Detection of RSG was mainly on imaging (88%) with physical examination accurate in only 5 patients (12%). Six patients (14%) with image detected incidental RSG on closer questioning had neck tightness and dysphagia that resolved after thyroidectomy. Surgery involved 23 total thyroidectomies and 19 hemithyroidectomies with no statistically significant differences between the 2 groups in terms of operative time, nerve injury, hypocalcemia or blood loss. Overall incidence of malignancy was 9.5%. Cervical thyroidectomy was successful in all asymptomatic patients whereas 2 patients in the symptomatic arm needed an additional extracervical approach.

Conclusion: Early thyroidectomy can be safely performed in surgically fit asymptomatic RSG patients with excellent outcomes.

P-20

The tumor growth manifested in two-fifths of low-risk papillary thyroid microcarcinoma

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Objective:

To explore the role of tumor longest diameter, tumor volume and tumor doubling rate in active surveillance (AS) of papillary thyroid carcinoma (PTC). To provide a certain theoretical basis for the choice of surgical timing in patients with low-risk PMC.

Methods:

From January 2016 to June 2020, a total of 219 low-risk PMC patients (aged 23-75 years) were consecutively enrolled in the active surveillance (AS) program of our hospital.

Conclusion:

In active surveillance (AS), low-risk papillary thyroid microcarcinoma should be classified according to age and initial tumor size, and the longest tumor diameter, tumor volume and tumor doubling rate should be comprehensively evaluated, and the final judgment of immediate surgery should be made.

P-21

Whether detection of gene mutations could identify low- or high- risk PTMC?

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Objective: To explore the application of the next-generation sequencing (NGS) in the assessment of the possibility of identification of high- or low-risk papillary thyroid microcarcinoma (PTMC) patients. Design: The NGS was performed on 393 formalin-fixed, paraffin embedded PTMC tissue samples. The tumor size was not larger than 15 mm. Conclusion: BRAFV600E mutation could not be a valuable biomarker to identify high-risk PTMC patients or tumor progression in clinical practice. Besides, tumor size was closely correlated with aggressiveness. PTMC less than 5 mm should be regarded as a particular subgroup and treated specially.

P-22

Trans-axillary Endoscopic Thyroidectomy: Singapore Experience

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KHOO TECK PUAT HOSPITAL

Background: Endoscopic thyroid surgery is still in evolution with many centres having limited experience. We studied the feasibility, results, cosmesis and patient satisfaction with Scarless Endoscopic Thyroidectomy [SET] using an axillary-breast approach with re-usable endoscopic instruments and particular emphasis on learning curve, safety and nerve monitoring feasibility. Methods: 40 consecutive eligible patients [M=9, F=31] underwent trans-axillary endoscopic thyroidectomy over a 42 month period. Patients who met the eligibility criteria of symptomatic unilateral biopsy proven benign nodules > 4 cm (cyst, colloid or hyperplastic benign nodule), multinodular goiter and differentiated microcarcinoma with low risk) were offered endoscopic hemithyroidectomy for unilateral disease. Nodules larger than 6 cm, substernal goiter, patients with previous neck surgery, malignancy and Graves' disease were excluded. In our approach (Unilateral Axillary Breast Approach), the 10 mm camera port was placed via the anterior axillary fold with two working 5 mm ports via the ipsilateral shoulder and circumareolar region. A dedicated long hook probe was used for intraoperative nerve monitoring. Results: Mean operating time was 180 minutes (120-200), with a mean blood loss of 45 ml (25-75ml). There was one conversion for bleeding. 2 patients experienced transient voice change with complete recovery in 2 weeks. Pain scores on visual analog scale at recovery, 6 hours and on 1st post-operative day were 1.9, 1.7 and 2.2 (range 1-5, 1-3 and 1-4) respectively. Mean length of stay was 1 day. Nearly 82.5% (33/40) patients rated cosmetic results and overall satisfaction as excellent, (good -6, unsatisfactory -1). 26 out of 40 (65%) of recurrent laryngeal nerves were successfully stimulated. 20 out of 40 (50%) of ELN's could be stimulated whilst only 3 could be visualised. Port insertion and flap raising times showed statistically significant improvements in the 2nd half of the series (p < 0.01). Conclusion: A learning curve of 20 cases is needed for experienced thyroid surgeons who are already well trained in laparoscopic surgery for this procedure. With good case selection criteria, SET offers distinct cosmetic advantages and patient satisfaction with minimal morbidity rates. Intraoperative nerve monitoring though feasible make surgery difficult due to lack of muscle relaxation.

P-23

Bilateral Axillo-Breast Approach Robotic Thyroidectomy in 26 Pediatric Patients

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Background

Robotic thyroid surgeries have cosmetic advantage over open surgeries, which is especially important in pediatric patients considering the psychosocial impact of neck scars. As there are only limited cases of pediatric robotic thyroidectomy, we report our cases of bilateral axillo-breast approach (BABA) robotic thyroidectomy in children.

Materials and Methods

Pediatric patients of age 18 years or younger who received BABA robotic thyroidectomy between 2013 and 2022 were retrospectively reviewed. Clinical characteristics and surgical outcomes were evaluated, including operation time and postoperative complications. Surgical completeness was also evaluated by comparing the number of retrieved lymph nodes by compartment to previously reported lymph node quantification in thyroid cancer patients.

Results

Twenty-six pediatric patients, with mean age of 15.5 years (range, 5-18 years), were included in this study. Out of 26 patients, 21 (80.8%) patients had thyroid cancers (17 papillary thyroid carcinoma and 4 follicular thyroid carcinoma), with 19.0% having aggressive pathology. The mean operation time was 157.3 (sd 65.5) minutes. No patient needed open conversion. Complications included transient hypocalcemia (19.2%), permanent hypocalcemia (7.7%), and chyle leakage (3.8%); there was no incidence of vocal cord palsy. The number of retrieved lymph nodes by compartment were 3.2 (sd 1.0), 4.1 (sd 2.4), 5.6 (sd 2.5), and 9.7 (sd 7.7) in level II, III, IV, and VI, respectively. The numbers were comparable with previously known quantification, except for level II, which was lower in our case series, as level IIb dissection was not routinely performed in our institution.

Conclusion

BABA robotic thyroidectomy is safe and efficient to be performed in pediatric patients, in not only benign thyroid diseases but also thyroid cancer. Most of the complications were minor and transient, and the mean operation time was similar to previously reported adult BABA robotic thyroidectomy. Surgical completeness was also satisfactory in terms of retrieved lymph node quantification. Robotic thyroidectomy can be considered a surgical option regardless of the patient age or diagnosis.

P-24

Consideration on the malignancy risk of thyroid nodules larger than 4 cm

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Background: Thyroid nodules are commonly observed, and clinically palpable giant nodules are observed in between 4 to 7%. Fine needle aspiration biopsy (FNAB) is good diagnostic tool, However, the increased false negative rate in giant nodules is controversial. Many clinicians recommend surgical resection for nodules larger than 4 cm due to an increased risk of malignancy and an increased false-negative rate, even when the FNAB result is benign. The aim of this study is to examine the feasibility of this approach and investigate the incidence of malignancy in thyroid nodule larger than 4 cm without suspicious cytology based on medical records in our center.

Methods: Retrospectively, Jan 2017 to Aug 2022 at in severance hospital, seoul. 453 patients in preoperative FNAB for nodules over 4 cm. Among them, 140 benign and 119 intermediate in FNAB

Results: Among 259 cases, final pathology results were divided into benign 149 and cancer 110 groups, The prevalence of malignancy was 38.9% in the benign group and 55.5% in the intermediate group. Among malignancy, the follicular carcinoma and follicular variants of papillary carcinoma were observed in 83% of cytologic benign group, and 62.8% of intermediate group was confirmed.

Conclusions: Preoperative FNAB had high false-negative rates and low accuracy in patients with thyroid nodule larger than 4 cm without suspicious cytologic feature, therefore diagnostic surgery may be considered as an option for treatment.

P-25

Is still total thyroidectomy recommended for Familial non-medullary thyroid cancer?

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Background

More than 40,000 cases of thyroid cancer are diagnosed every year in South Korea. Most cases are differentiated thyroid cancer and occur sporadically. But some cases have a family history of thyroid cancer.

Although it is still controversial whether a family history of thyroid cancer is a poor prognostic factor or more aggressive than sporadic thyroid cancer, recent studies have shown that close monitoring after lobectomy rather than bilateral total thyroidectomy is sufficient for the differentiated thyroid cancer patient who have a familial history of thyroid cancer.

Therefore, the purpose of this study is to analyze clinicopathological features of patients with a family history of thyroid cancer who underwent thyroidectomy in our hospital and to find out whether familial non-medullary thyroid cancer(FNMTC) is more aggressive than sporadic non-medullary thyroid cancer(SNMTC) and whether a familial history of thyroid cancer is a poor prognostic factor.

Methods and Result

We analyzed and compared tumor size, TNM stage, lymph node metastasis, BRAF V600E mutation, TERT mutation between the FNMTC group and the SNMTC group.

It is found that there was no statistically significant difference in the recurrence rate and 5-year survival rate between SNMTC group and FNMTC group who underwent less than total thyroidectomy.

Conclusion

This study suggest that Lobectomy alone could be a sufficient treatment for the FNMTC patient group. There is no need to total thyroidectomy for the FNMTC patient group any more.

P-26

Papillary Thyroid Carcinoma Presenting as Branchial Cleft Cyst

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PTC metastasis into BCC are uncommon .This are four cases of PTC with presentation of lateral neck mass with preoperative diagnosis as BCC . After complete surgical resection and histopathologic examination, it was found to be a branchial cleft cyst with direct metastasis from thyroid papillary carcinoma. An early diagnosis of PTC with lateral cystic mass is important , before performing definitive surgical intervention to avoid multiple surgery.

P-27

Hemithyroidectomy and total thyroidectomy for PTC under 4cm in Malaysia and the prognosis

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In 2015 ATA guideline, either hemithyroidectomy or total thyroidectomy was recommended for PTC<4cm without thyroidal extension and LN metastasis. We aim to investigate the determinance of treatment and prognosis of PTC <4cm in Malaysia.

This case study describes data of PTC patient in the span of 11 years (from 2001 till 2022) in Breast and Endocrine departement of Putrajaya Hospital.

P-28

Comparing the Diagnostic Performance of ACR-TIRADS And BTA U-Score in Classifying Thyroid Nodules

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Objectives:

The American College of Radiology TIRADS (ACR-TIRADS) and British Thyroid Association (BTA) scoring systems are widely used in the risk stratification of thyroid nodules. Studies on the diagnostic accuracy of both these scoring systems have resulted in heterogenous outcomes. This study is aimed at comparing the diagnostic performance of ACR-TIRADS and BTA scoring systems in a multiracial country, while minimizing bias seen in previous studies.

Methods

In this 5-year retrospective study, 255 surgically resected thyroid specimens were analysed. Ultrasound images were independently reviewed and classified according to both ACR-TIRADS and BTA-score by a senior and a junior radiologist who were blinded to each other findings as well as the clinical history and all prior investigations. A consultant radiologist subspecialising in ultrasonography then independently arbitrated any discrepancies in the classification of the nodules by the two radiologists. The diagnostic performance of each scoring system relative to the histopathological findings - which was used as the reference standard, was analyzed.

Results

63 (24.7%) nodules were malignant with female, 52 (82.5%) preponderance. The diagnostic performance of each scoring system was assessed using sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and accuracy - all of which were compared head-to-head as no statistical tests were available to evaluate the significance of these parameters. The analysis showed ACR-TIRADS and BTA scores had high sensitivity (84% vs 88%) but low specificity (26% vs 29%) in the detection of malignant nodules. The PPV (53% vs 55%) and accuracy (55% vs 59%) of ACR-TIRADS and BTA scores were comparable. The NPV of the BTA scores were however found to be higher than ACR-TIRADS (72% vs 62%). The malignancy rate of each sub-group of ACR-TIRADS were: TR1: 7%, TR2: 22%, TR3: 18%, TR4: 27% TR5: 70% whereas for BTA were: U2: 11%, U3: 16%, U4: 26%, U5: 65%.

Conclusion

In conclusion, ACR-TIRADS and BTA scoring systems were similar in their diagnostic performance although the NPV is higher in BTA which may indicate that the BTA score could accurately stratify patients into lower risk groups who do not warrant immediate intervention. In clinical practice however, ACR-TIRADS may be preferred due to its objective and systematic evaluation of thyroid nodules.

P-29

Examination of transaxillary endoscopic thyroidectomy

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Introduction:

Endoscopic thyroidectomy has no incisional wounds in the neck and has excellent esthetic outcome. Approaches vary from precordial to areolar and axillary. We mainly implement the modified precordial lift VANS method according to the Video Assisted Neck Surgery (hereinafter referred to as the VANS method) of Shimizu et al., but recently we have also introduced the transaxillary approach. We report the transaxillary approach in our department.

Materials and Methods:

Eighteen patients underwent endoscopic thyroid surgery using the transaxillary approach from July 2019 to June 2022. Clinicopathological factors and surgical outcome were studied.

Results:

Age ranged from 24 to 60 years (median 41 years), with a male to female ratio of 1:5. Preoperative diagnosis was nodular goiter in 8 cases, follicular tumor in 9 cases, papillary thyroid carcinoma in 1 case. Tumors size were 13.7-88 mm long (mean 42.3 mm) and the tumor was located in 10 right lobe and 8 left lobe. Operative time was 123-346 minutes (median 201 minutes) and intraoperative blood loss was 0-247 ml (median 5 ml). Perioperative complications included skin injury in 1 patient and postoperative hemorrhage in 1 patient, with no recurrent laryngeal nerve palsy. Postoperative skin discomfort was less than in the precordial approach.

Conclusion:

Transaxillary endoscopic thyroid surgery can be performed safely after thorough training and is a useful procedure that meets the needs of patients.

P-30

Retrosternal Goiters: Case Series and Review of the Literatures

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Introduction: Restrosternal goiter is defined as an extension of thyroid tissue into the mediastinum. The percentage range between 0.2 to 45 percent of all thyroidectomies. The symptoms are goiters, compressive symptoms, dilated veins and rarely, respiratory failure. The surgical approach depends on the type of retrosternal components.

Cases: Here we present a series of cases operated in our hospital with preoperative diagnosis that included retrosternal goiter and preoperative tissue diagnosis of multinodular goiter from October 2019 to October 2022.

The results showed 8 cases with 7 females and one male patients. The mean age is 52.75 years. All but one case successfully removed via transcervical approach. All the histopathological examination results were benign. The complications were reviewed in regard to hematoma development, need of tracheostomy, hypocalcaemia and recurrent laryngeal nerve injury.

Conclusions: Retrosternal goiter ranges from 5.1 to 15.7 percent in patients with thyroid disease and are commonly found in females with 4:1 ratio. The surgical approach and management are discussed in multidisciplinary meeting to gain the best consensus. Intubation during general anaesthesia may be challenging. Transcervical method is safe in most cases.

P-31**Rare Entity: Concurrent Follicular Thyroid Carcinoma in thyroid and ectopic thyroid tissue**

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Follicular thyroid carcinoma is the 2nd most prevalent form of well differentiated thyroid carcinoma. It is around 10-15% of all well differentiated thyroid carcinoma in the world. The preoperative diagnosis of follicular thyroid carcinoma is relatively difficult compared to papillary thyroid carcinoma as follicular thyroid carcinoma can only be diagnosed by identifying extracapsular or vascular invasion in histopathology of the hemithyroid or total thyroidectomy specimen. Therefore, definite characterization of a follicular neoplasm remains a postoperative histopathological diagnosis. This made planning or intraoperative adaptation of the surgical strategy difficult. The prevalence of ectopic thyroid tissue is around 10% in the general population. Diagnosing ectopic thyroid tissue pre-operatively via ultrasound is relatively difficult due to the rare occurrence of primary carcinoma arising in ectopic thyroid tissue compared to more frequent presence of cervical lymph node metastasis from papillary thyroid carcinoma. We report a rare case of lateral neck ectopic follicular thyroid carcinoma that supplements and supports the lacking literature data concerning the management of this rare entity. Our patient had multiple thyroid nodules with suspicious nodules with a left suspicious cervical node pre-operatively from ultrasound. Fine needle aspiration from the suspicious thyroid nodule and left suspicious cervical node concluded as benign nodular hyperplasia without evidence of malignancy. Total thyroidectomy and excision of the left lateral neck mass with thyroidal gross appearance were carried out. The ectopic thyroid mass measured around 5x5x3cm which has no continuation to the thyroid and it was adhered anteriorly to the left carotid artery and left internal jugular vein but separable from those structures. Histopathology was diagnostic for follicular thyroid carcinoma for both total thyroidectomy and left lateral neck mass specimen. All margin of the specimen was cleared from malignant tissue. Post operative, patient was started on suppression thyroxine therapy and was given adjuvant radioiodine ablation. Post-radioactive iodine ablation whole body scan shows multiple foci uptake of varying intensity in thyroid bed with multiple sub-centimeter lung nodules. Thyroglobulin level was high and anti-thyroglobulin was negative. She was being followed up and planned for repeat radioactive iodine in another 6 months. Meanwhile she is receiving high dose suppression thyroxine therapy. The challenge in diagnosis and management of concurrent FTC in thyroid & ectopic thyroid tissue were reviewed.

P-32**Combined Tracheal Tap and Muscle Twitch Tests in Intraoperative Nerve Monitoring for Thyroid Surgery**

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Combined Tracheal Tap and Muscle Twitch Tests as an Alternative to Direct Vagus Nerve Stimulation in Intraoperative Nerve Monitoring for Thyroid Surgery

Introduction: Conventional way of identifying the nerve is by visual identification from its appearance and its anatomical relations with other structures. Intraoperative nerve monitoring is a supplementary and confirmatory to the conventional visual identification technique. One of the main recommended steps in intraoperative nerve monitoring is to perform preliminary vagus nerve (VN) stimulation. However, this practice has limitations including difficult access to the nerve especially for endoscopic surgery and potential injury to the nerve. Tracheal tap (TT) is a simple way to determine that the recording component of the system is working. It is done by finger tapping over the thyroid cartilage. Muscle twitch (MT) test is performed by stimulation of the sternocleidomastoid, when twitching of the muscle indicates that the stimulation component is functioning. Combination of these two, form a complete circuit and validate that the nerve monitoring system is intact. We determine to find out the accuracy of combined TT-MT, and whether it can be an alternative to VN stimulation as an indicator of intactness of neuromonitoring system. Method: Thyroid surgeries were performed in usual manner, with additional of TT and MT with every nerve stimulation, both the RLN and VN. Data collection included signal amplitude and latency of the VN and RLN. These data were compared with the corresponding TT and MT at every VN and RLN stimulations.

Results: This study evaluated 31 RLN out of 21 thyroid surgeries. Types of surgery were 11 hemithyroidectomies including endoscopic and robotic surgery, one for each, and 10 total thyroidectomies. The diagnoses include 10 multinodular goitre, 3 nodular hyperplasia, 1 colloid nodule, 2 papillary thyroid cancer, 3 toxic nodular goitre and 2 toxic nodules. 26 intact VN stimulation in the study (84%), and all were associated with intact combined TT-MT tests. 5 had VN loss of signal (16%). Out of these 5, 1 was associated with intact combined MT-TT test, 1 negative TT with positive MT and 3 positive TT and negative MT.

Conclusion: The accuracy of combined MT-TT test is comparable to VN stimulation and is a reliable alternative to VN stimulation in assessing the intactness of the nerve monitoring system.

P-33

The Challenging diagnosis of Hurthle cell neoplasm on Sonographic features

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Objective: The purpose of our study was to retrospectively analyze sonography of thyroid Hurthle cell neoplasms to identify sonographic features that would facilitate the differentiation of Hurthle cell carcinoma from Hurthle cell adenoma.

Methods. We retrospectively analyzed the sonographic appearance of 38 histologically proven HCNs in 38 patients aged 18 to 90 years (mean age, 51 years with standard deviation of 18 years). 29 patient was diagnosed as hurthle cell carcinoma and 9 patients were diagnosed as Hurthle cell carcinoma. Sonographic features that were reviewed included the size and echogenicity of the tumors, the presence of cystic areas or calcifications, and detectable blood flow on color Doppler imaging. All study patients and control patients underwent surgical resection and pathologic analysis of their Hurthle cell neoplasm. The chi-square or Fisher's exact test was used for categorical variables.

Results: The tumors ranged from 0.9 to 6.8 cm in diameter, but most were less than 3 cm in diameter. 5 (13%) of the 38 Hurthle cell neoplasms were homogeneously hypoechoic. However, 3 (33%) of the 9 Hurthle cell carcinomas were homogeneously hypoechoic. 25 tumours(65%) were predominantly isoechoic with hypoechoic areas to thyroid parenchyma. 7 tumours(18%) were predominantly isoechoic. 27 (71%) neoplasms contained cystic components of any size, but only 7 tumours has cystic area more that 80 percent of tmour crosssection area, we define these as extensive necrosis. 4(44%) of Hurthle cell cacinomas had extensive necrosis, where only 3(10%) of Hurthle cell adenomas contain extensive necrosis.

Conclusions. Hürthle cell neoplasms show a spectrum of sonographic appearances from predominantly hypoechoic to hyperechoic lesions and from peripheral blood flow with no internal flow to extensively vascularized lesions, We observed the higher likelihood of extensive necrosis in hurtle cell carcinoma compared with hurthle cell adenoma. This novel finding suggests difficulty in diagnosing hurthle cell carcinoma arises not only during thyroid sonography but also in fine needle aspiration due to the higher rates of inadequate specimen when aspirating extensively necrosed modules. Awareness of this characteristic is important due to the possibility of misdiagnoses of Hurthle cell carcinoma as benign lesions such as nodular goiter.

P-34

The Learning Curve of Starting Continuous Intraoperative Neuromonitoring in Thyroid Surgery : Our Experience and Pitfalls

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Introduction: Recurrent laryngeal nerve injury during thyroidectomy surgery is one of the major morbidity in thyroid surgery. During surgery, careful identification of the nerve is carried out to avoid injury to the recurrent laryngeal nerve. However, despite this manoeuvre, cases of recurrent laryngeal nerve injury still occurs. In 2019, our department started implementing continuous intraoperative neuromonitoring in thyroid surgery, especially in certain high risk cases.

Key words: Continuous Intraoperative Neuromonitoring(IONM), Thyroidectomy, Recurrent laryngeal nerve (RLN), Thyroid surgery

Place: Breast and Endocrine Unit in a government national state hospital with a high volume of endocrine surgery practice

Method: A retrospective analysis of our thyroid cases performed with intraoperative neuromonitoring from the year 2019 till 2022. Till date, 74 cases have been performed with the assistance of this device.

Results: The number of cases have increased from the year 2019 (8 cases) till 2022 (40 cases). Our analysis of the cases showed good preservation of the nerves at risk. (>90% preserved). Interpretation of the CIONM data helped surgeons to make early referral to ENT surgeons for injection laryngeal plasty. We also discuss certain cases where there is a discordant of CIONM reading with the patient outcome.

Conclusion: The Intraoperative neuromonitoring is a good tool to assist surgeons in thyroid surgery. However, there is a learning curve for surgeons to improve their technique and intraoperative surgical manoeuvre to enable meaningful use of the data. Surgeon also need to be aware of certain technical pitfalls in this tool.

P-35

Robot Assisted Parathyroidectomy In Patients With Primary Hyperparathyroidism: a single center experience

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Keywords: Primary hyperparathyroidism, Robot assisted parathyroidectomy, Transaxillary approach

Introduction: Parathyroid surgery for primary hyperparathyroidism has changed since 1925 and evolved to use robot assisted parathyroidectomy with accurate preoperative localization. The aim of this study was to report the experiences with robot assisted transaxillary parathyroidectomy for primary hyperparathyroidism in single center.

Materials and Methods: From December 2013 to August 2022, data from patients underwent robot assisted parathyroidectomy with transaxillar approach and diagnosed with primary hyperparathyroidism at the Gangnam Severance Hospital, including clinical, biochemical, pathological features, and operation time were assessed.

Results: Of the 12 patients, 11 were women and one was man. The median age of the patients was 44.5 years (range: 15-65 years). Median size of preoperative maximum mass diameter in ultrasonography (US) and neck computed tomography (CT) were 1.2 ± 0.5 and 1.1 ± 0.6 cm. Median size of postoperative maximum mass diameter in gross pathology was 1.3 ± 0.4 cm. Location of enlarged parathyroid was five left superior, four right inferior, three left inferior, and no right superior. In final pathology, 11 parathyroid adenoma and one parathyroid hyperplasia was revealed. Mean operation time was 113 ± 48 minutes. Mean robot docking and console time were 9 ± 5 and 47 ± 52 minutes. Mean hospital day was 4.3 ± 0.7 days. Thyroid lobectomy with central compartment node dissection was conducted in one case after the parathyroidectomy because the frozen pathology was parathyroid adenoma with metastatic carcinoma.

Conclusions: This is a single center study with transaxillary robot assisted focused parathyroidectomy performed by one surgeon. All patients with no neck scar have no severe post op complication that means the procedure is safe with the satisfied patients.

P-36

Echographic imaging of intra-thyroidal parathyroid tumors associated with secondary hyperparathyroid

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Secondary hyperparathyroidism is commonly seen in chronic renal disease with multiple parathyroid glands enlarged by hyperplasia. The frequency of hyperparathyroidism increases with the duration of chronic renal failure and is found in approximately 15% of hemodialysis patients.

Surgery is one of the effective treatments for secondary hyperparathyroidism, and to elucidate preoperative localization of each parathyroid is important, but parathyroid glands rarely localize in thymus and/or thyroid. We compared the echographic findings of two completely embedded parathyroid in the thyroid with nodular goiter.

Case 1: In upper and right lobe of thyroid. Tumor size was 13.1 mm x 11.8 mm in diameter with no halo, hypo internal echo, slightly rough inside, positive margins, clear borders, low depth wide ratio (DW) and significant blood flow inside. **Case 2:** In lower and right lobe of thyroid. Tumor size was 10.0 mm x 4.5 mm in diameter with no halo, honeycomb-like appearance, low DW and partial intra-blood flow. Case 1 was compatible with follicular tumor or parathyroid tumor. However, case 2 was compatible with not parathyroid tumor but nodular goiter. Because internal echo was characterized with nodular goiter. **Conclusion:** It is difficult to define parathyroid gland with certainty in each case, especially intrathyroidal tumor. Each case should be elucidated with comprehensive diagnostic imaging.

P-37**Predictors of improved bone mineral density after surgery for primary hyperparathyroidism**

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Primary hyperparathyroidism exacerbates bone mineral density (BMD) due to accelerated bone resorption by osteoclasts.

It is known that parathyroidectomy improves BMD, and gender, preoperative BMD, and history of fracture have been reported as predictors of improved BMD. In this retrospective study, we aimed to identify other predictors in Japan.

A total of 206 patients who underwent parathyroidectomy for primary hyperparathyroidism at our hospital between 2010 and 2021, 67 patients (12 males and 55 females) measured bone density (frontal lumbar spine) using the DEXA method (Dual-energy X-ray absorptiometry) before and 1 year after surgery were included in the present study. Bone density improved from an average of $0.745 \pm 0.141 \text{ g/cm}^2$ preoperatively to $0.780 \pm 0.140 \text{ g/cm}^2$ postoperatively ($p < 0.05$). Age, gender, preoperative intact-PTH, preoperative corrected Calcium, preoperative Phosphorus, preoperative Alkaline Phosphatase, preoperative serum creatinine, and weight of removed parathyroid gland were investigated in these 67 patients, and multivariate analysis was performed for association with improvement in bone density. Male, high preoperative intact-PTH, and low preoperative BMD were predictive factors for improvement in postoperative BMD.

P-38**Predicting tumor volume in primary hyperparathyroidism from preoperative clinical data**

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Introduction

Primary hyperparathyroidism is a surgical endocrine disorder. Guidelines for surgical intervention and management guidelines have been established in many countries, and parathyroidectomy is considered the only definitive treatment. Preoperative imaging diagnostic techniques such as ultrasonography, CT, and MIBI scintigraphy are used to localize the gland, but surgical treatment may be unsuccessful. Some correlation between the size of the responsible lesion and preoperative clinical data is assumed, and models have been developed to predict the responsible lesion preoperatively. However, the results of clinical studies reported to date have been inconsistent, especially those involving large numbers of patients (>500 cases).

The purpose of this study is to predict tumor volume of the responsible lesion in primary hyperparathyroidism from preoperative clinical data.

Materials and Methods

Patients with surgically treated primary hyperparathyroidism who underwent initial surgery in our department between January 2000 and December 2021 were included. Patients with multiple endocrine neoplasia, cases of multiple parathyroid adenomas, cases of surgery for metastases of parathyroid carcinoma, recurrent or persistent primary hyperparathyroidism were excluded. With the approval of the Ethics Committee, the following data were collected in each case: age, sex, subtype, preoperative blood calcium level, parathyroid hormone level (iPTH), tumor diameter by preoperative imaging (ultrasonography), information on the excised specimen (tumor diameter, weight, density), and pathological diagnosis information. The volume of the removed parathyroid gland was used as the primary outcome, and its association with preoperative iPTH levels was analyzed.

Results

Of the 1144 patients, 826 (72.2%) were women. Median age was 60 years, range 13-95 years. The clinical types were biochemical in 670 cases (58.6%), renal stone type in 433 cases (37.8%), and OFC type in 41 cases (3.6%). Medians (25th – 75th percentile) of preoperative levels of serum calcium, iPTH, and excised tumor volume were 10.7 [10.3 – 11.4], 163 [118 – 247], 754 [359 – 1597], respectively. The data for iPTH and tumor volume were transformed with a logarithmic function for a dependent variable (ln-iPTH) and an explanatory variable (ln-volume) of a multiple regression model. The model indicated that female gender ($\beta = -0.266$, $p < 0.001$) and ln-iPTH ($\beta = 0.913$, $p < 0.001$) were significantly associate with ln-volume, although its adjusted R² was small (0.306).

Conclusion

Preoperative iPTH is associated with a tumor volume of functioning parathyroid adenoma. However, the practical use of the information seems limited in the precise prediction of tumor size.

P-39

Neuroendocrine Tumor of the breast: Two decades of experience in Malaysia breast and endocrine centre

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Introduction: Neuroendocrine tumour of the breast (NETB) is a rare form of breast cancer. It affects elderly and account for less than 0.1% of all breast cancer. Like any other breast cancer the mainstay of treatment is surgical resection. There is no specific guideline on the targeted therapy with chemotherapy or radiotherapy. This study reports cases of neuroendocrine tumour of the breast in Malaysia breast and endocrine centre within two decades experience.

Objectives: The aim of this retrospective study is to analyse the clinicopathological aspects of patients with neuroendocrine tumour of the breast.

Methods: We retrospectively analysed nine patients with neuroendocrine tumour of the breast who was diagnosed and treated between January 2000 through December 2020 at the Malaysia breast and endocrine centre.

Results: Neuroendocrine tumour presented more frequently as breast lump on physical examination or masses on mammograms. Compared to invasive carcinoma and DCIS where lump may not be palpable and calcifications seen on mammograms. The mean age is 62 years old (39-77 years). Mostly patients age more than 50 years old. A rare case of young patient seen where she is diagnosed at age of 39 years old. All patients had surgical resection of tumour. Six out nine patients underwent mastectomy with axillary clearance. The other three patients underwent a breast conserving surgery. Both types of resection shows the resection margin are clear from tumour. Post-surgery seven cases were referred for radiotherapy. Two more case underwent surgical resection without adjuvant therapy. Most NETB express an ER PR receptor positive with HER2 negative. 88% of cases are grade I NETB.

Conclusion: The future of NETB treatment should be more focus on the endocrine therapy. A clear guideline should be generated to aid in the future treatment of NETB. Treatment also need to be aligned with the advance age of most patient.

P-40

Recurrent Malignant Pheochromocytoma in MEN 2a

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A 45 years old lady was diagnosed with Multiple Endocrine Neoplasia MEN 2a in 1996. She had Medullary Thyroid Carcinoma, Parathyroid Adenoma and Bilateral Malignant Pheochromocytoma. She underwent bilateral open adrenalectomy in 1997. However she developed recurrence on the left adrenal in 2005. Subsequently she had laparoscopic removal of the tumour. After that, she achieved clinical and biochemical remission. She was on regular follow up and noted her recent 24H urine metanephrines was on uprising trend and examination revealed hypertension. Serum Chromogranin A was also elevated. Positron emission tomography scan showed Ga68 and fluorodeoxyglucose (FDG) avid large soft tissue lesion at the paracaval and aortocaval region extending from level T11 to L1 vertebrae measuring 6.1 x 6.0cm (scan evidence of I-131 MIBG avid disease at the abdominal soft tissue lesion with supraclavicular node, liver and bone metastasis). Hence, a diagnosis of recurrent metastatic pheochromocytoma was made. She underwent laparotomy and excision of the aortocaval and paracaval as well as non anatomical resection of the liver metastasis. HPE confirmed as Phaeochromocytoma with lymphovascular invasion with liver metastasis. Patient is currently well and now awaiting for Peptide Receptor Radionuclide Therapy (PRRT) for further treatment.

P-41

A case of multiple endocrine neoplasia type 2A detected by severe hyperparathyroidism

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Multiple endocrine neoplasia type 2A (MEN-2A) is an autosomal dominant disease caused by the RET germline mutation. MEN-2A is associated with medullary thyroid cancer, pheochromocytoma and hyperparathyroidism. Hyperparathyroidism occurs less frequently and severe hyperparathyroidism is rare in MEN-2A.

A 38-year-old man was admitted for severe osteoporosis. Bilateral adrenalectomy was performed 10 years ago in China without exact pathologic diagnosis. Initial T-score of lumbar bone mineral density was -5.7. Parathyroid hormone level was 668 pg/mL and ionized calcium was 1.54 mmol/L. Diffuse enlargement of both parathyroid was detected in MIBI scan. In the neck sonogram, both thyroid mass with multiple lymph node enlargement was detected. After fine needle aspiration cytology, he was diagnosed as medullary thyroid cancer with hyperparathyroidism. We performed total thyroidectomy with central node dissection, total parathyroidectomy with parathyroid autotransplantation to left forearm. We tested germline mutations of the RET gene by direct DNA sequence analysis after obtaining the informed consent. In the genetic study, a missense mutation was found in exon 11 which changed 1900th nucleic acid (c.1900T>C) and resulted in an amino acid change of Cysteine to Arginine. This mutation was reported as risk level C in ATA guideline. We diagnosed MEN-2A by severe hyperparathyroidism. Hyperparathyroidism is rare in MEN-2A but should be included as differential diagnosis.

P-42

Large Symptomatic Adrenal Mass With Surrounding Desmoplastic Reaction

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A 58-year-old man with no significant medical history presented in emergency with 3 days of non-radiating left flank pain and fever. He had no constitutional symptoms. Clinical examination revealed a tender mass and fullness in the left flank. Blood investigations were normal. A computerized tomography scan showed a large 11x10x13cm left adrenal mass with extensive surrounding fat stranding extending to left pararenal fascia and pressure effect over the left kidney. No gross invasion was noted in the surrounding structures. Staging scans of the neck and thorax showed no metastatic spread and biochemical workup suggested a nonfunctioning adrenal tumor. Pre-operative prophylactic vaccination was performed due to likelihood of splenectomy. The patient was also counselled for possible nephrectomy and left colon resection. Pre-operative bowel preparation was given. Intra-operatively, a large 15cm tumor with surrounding desmoplastic reaction involving the left kidney, spleen, tail of pancreas, splenic flexure of colon and left colonic mesentery was noted. The spleen and upper pole of the left kidney were difficult to separate free from the tumor, requiring en-bloc resection with the adrenal mass. Final histology showed a pT2NxMx low grade adrenal cortical carcinoma with oncocytic features, 60% necrosis and surrounding fibrosis and inflammation. Resection margins were clear with no lymphovascular or perineural invasion. The tumour was abutting the upper and midpole of the kidney with no gross invasion into the renal or splenic parenchyma. Immunohistochemistry (Fig 3) showed diffuse positivity for Melan A (top left) and inhibin (top right). Ki67 labelling index was approximately 3 to 5% (bottom left) which confers a favourable prognosis¹. Pax8 was negative (bottom right). Diffuse positivity for Melan A and inhibin, with focal patchy staining for Calretinin supports a diagnosis of adrenocortical carcinoma. Negative epithelial markers (AE1/3, MNF116 and EMA) with negative staining for PAX8 deny the possibility of renal cell carcinoma.

P-43

Risk factors of postoperative GFR category decline in patients with primary aldosteronism

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Background. Adrenalectomy (ADX) improves or even normalizes the secondary hypertension in the majority of patients with unilateral aldosterone-producing adenoma (APA). However, a decline in estimated glomerular filtration rate (eGFR) is occasionally observed in patients with primary aldosteronism (PA) after ADX. We have reported in IAES 2017 that only a lower preoperative serum potassium level was a factor associated with GFR category decline* after ADX by analyzing 52 patients in Yokkaichi municipal hospital or our institution. In this time, we re-analyzed in 57 patients who underwent in only our institution to aim at discovering a novel factor for GFR category decline.

Materials and Methods. A retrospective study included 57 patients with PA (24M, 33F; age 26-72 years) who underwent unilateral adrenalectomy between 2005-2020 in our institution. To determine changes in kidney function after ADX, preoperative eGFR.

GFR category decline was determined by evaluating the last category between six months and one year after ADX. Patients were divided into GFR category decline and non GFR category decline groups and compared. To identify factors associated with GFR category decline, multivariate analysis was performed.

Results. Postoperative eGFR at one year after ADX was significantly lower than preoperative eGFR (57.5 +/- 22.3 vs. 72.5 +/- 22.9 mL/min/1.73 m²; p <0.001). Decline in eGFR was already evident at one or two weeks after ADX but this effect did not progress further during subsequent months. Altogether 20(35.0%) of 57 patients showed GFR category decline (18.1% in G1, 30.0% in G2, 66.6% in G3a, 60.0% in G3b, none in G4, respectively). In multivariate analysis, not only a lower preoperative serum potassium level (p = 0.010) but also BMI and duration of hypertension were significant factors associated with GFR category decline after ADX (p = 0.044 and 0.007 respectively).

Conclusions. In the present study, approximately one-third of PA patients showed GFR category decline after ADX. Careful observation is essential, particularly in those who have lower preoperative serum potassium level, lower BMI, or longer duration of hypertension.

*GFR category decline was defined a drop in GFR category (accompanied by a 25% or greater drop in eGFR from preoperative eGFR indicated by the KDIGO 2012 Clinical Practice Guideline.

P-44

Can Pheochromocytoma Change To Adenocarcinoma ? A Case Report And Literature Review

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Adrenocortical carcinoma (ACC) is an aggressive cancer originates in the cortex of the adrenal gland . The diagnosis is sometimes uncertain and the differential diagnosis includes pheochromocytoma, This is a case of a 57year old man with Left adrenal mass with recurrence and was diagnosed as pheochromocytoma until his 7th surgery , it was reported to be metastatic ACC .

P-45

Impact of Surgical Resection

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Impact of Surgical Resection of the primary tumor on survival in patients with metastatic adrenocortical carcinoma

A retrospective analysis in from January 2000 Through January 2020 was done . It is to determine whether primary tumor resection in patients Adrenal Cortical carcinoma (ACC) is associated with longer overall survival (OS).

P-46

Establishing a retroperitoneal adrenalectomy program - challenges, tips and initial experiences

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Endoscopic Retroperitoneal Adrenalectomy has been described since 1995. However, the adoption of the retroperitoneal approach has been limited among General Surgeons due to the lack of familiar anatomical landmarks. We aim to illustrate our process for the safe implementation of the retroperitoneal approach in our institution and to present the results of our early experiences.

Methods: We first started training with a hands-on Endocrine Surgery workshop. Retroperitoneal adrenalectomy was performed in a human cadaveric model. Close collaboration with our endocrinologist colleagues through monthly combined endocrine meetings helped with identification of suitable patients. All cases were proctored by a senior endocrine surgeon. We present our experience from 15 consecutive patients who were recruited from January 2019 to September 2022. Data including demographics, the indication of surgery, operative time and post operative complications were collected.

Results: From our cohort of 15 patients (8 males and 7 females), 11 patients were operated on for Conn's Syndrome, three for Cushing's Syndrome and once for Pheochromocytoma. The mean age of the patients was 48.8 years (range: 28.4-81.3) and the mean BMI was 27.1 (range: 22.5-36.6). All patients underwent unilateral retroperitoneal adrenalectomy, severe on the right and eight on the left. The mean operating time was 135mins (range:84-217). The mean size of the adrenal nodule removed was 2.1cm (range: 0.6-3.5cm). There were no conversions to open surgery. One patient required ICU admission for extensive subcutaneous emphysema. The mean length of hospitalization was 1.33 days (range:0-3) with 10 patients discharged within 23-hours. When we looked at our first seven cases against our subsequent eight cases, there was an increase in trend of the mean adrenal nodule removed. The increase was from 1.84cm to 2.25cm. However, this was not statistically significant. Also, operative time was not statistically significant.

Discussion: The majority of these cases were adrenal incidentaloma picked up on imaging. Functional work-up performed with close collaboration with our endocrinology colleagues helped with identification of cases. In our initial experience, we introduced the retroperitoneal approach to healthy patients with small adrenal nodules. Majority of these patients had Conn's Syndrome.

Conclusion: Endoscopic Retroperitoneal Adrenalectomy can be safely introduced with a hands-on-cadaveric workshop, appropriate patient selection and proctorship by an experienced endocrine surgeon.

P-47

Minimally Invasive Adrenalectomies - Are we ready for ambulatory adrenalectomy?

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Minimally invasive (MIS) adrenalectomy is the gold standard for removal of benign adrenal tumors. The benefits include less post-operative pain, shorter hospitalization and faster return to normal activities. Two main approaches have been described (i.e., transperitoneal and retroperitoneal). We aimed to evaluate the feasibility of ambulatory adrenalectomy at our institution.

Methods: A retrospective review of all patients who underwent MIS adrenalectomy from January 2019 to September 2022 was performed. Open adrenalectomy was excluded. All cases were supervised by a single senior endocrine surgeon.

Results: We identified 31 patients who underwent MIS adrenalectomy, 16 patients via the trans-peritoneal approach and 15 patients via the retroperitoneal approach. The surgical indications include Conn's Syndrome (n=12), Cushing's Syndrome (n=6), Pheochromocytoma or Paraganglioma (n=6) and other adrenal conditions such as adrenal cysts or myoepithelioma (n=7). The mean age of the patients was 50.8 years (range: 28.4-81.3) and the mean BMI was 25.5 (range: 17.9-36.6). All patients underwent unilateral adrenalectomy, 14 of the right and 17 on the left. The mean operating time was 142mins (range: 81-335). The mean size of the adrenal nodule removed was 3.6cm (range: 0.6-10.0). Among patients with functional tumors, the mean tumor size was 2.8cm versus 6.5cm for non-functional tumors.

There were no conversions to open surgery. None of the patients required any blood transfusion. Post-operative complications were noted in two patients. One patient who was operated on via the retroperitoneal approach required ICU admission for extensive subcutaneous emphysema. One patient who was operated on via the transperitoneal approach had hyponatremia secondary to syndrome of inappropriate antidiuretic hormone secretion. The mean length of hospitalization was 1.71 days (range: 0-4) with 15 patients discharged within 23-hours. The indication for surgery (i.e. Conn's syndrome) was associated with earlier discharge (p=0.02). Among the 12 patients with Conn's Syndrome, 10 (83.3%) were discharged within 23-hour. Patients who had post-operative complications, who required steroid tapering and who required close monitoring of hemodynamic status had a longer hospitalization stay.

Conclusion: Patients undergoing adrenalectomy for Conn's Syndrome are ideal to be considered for ambulatory adrenalectomy. Other key factors include patient education, multi-modal opioid sparing analgesia and early clinic review within the first 1-2 weeks. Ambulatory adrenalectomy can be safely introduced for selected patients. The institution should also have a workflow to support the uptake of ambulatory adrenalectomy.

P-48

Adrenalectomy risks in association with health frailty in the cohort of elderly Malaysians

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Malaysians elderly has higher frailty index than other countries in the same region. The outcome of adrenalectomy and health frailty in Malaysians elderly is higher in subset of patients undergoing open surgery.

P-49**Metastatic Adrenal Tumour secondary to Hepatocellular Carcinoma**

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Hepatocellular carcinoma (HCC) is the primary malignancy of the liver. Distant metastasis of the HCC itself is rare, but the adrenal gland is the second most common organ when it does. Due to the rarity of the case, we have limited experience in such a tumour, thus managing it is a challenge. We present a case of a 62-years-old gentleman with hepatocellular carcinoma secondary to chronic hepatitis B with liver cirrhosis. The initial computerized tomography (CT) liver showed an ill-defined segment VIII liver lesion with no distant metastasis. He underwent transarterial chemoembolization (TACE) for the hepatoma. Post TACE, the liver lesion reduced in size showing partial response to the treatment. He was then scheduled for another TACE in the next few months. Unfortunately, repeated CT showed a new liver lesion with an adrenal lesion which was suggestive of metastasis. A total of four TACE was given; however, both the liver and adrenal lesions were increasing in size. The adrenal lesion was noted to be measuring 6.7cm x 7.6cm x 9.3cm. With the background of the cirrhotic liver, surgical resection of the adrenal tumour was best avoided due to the high surgical risk and potential complications. The adrenal tumour needs to be investigated to determine whether is functioning or non-functioning. In the case of a non-functioning adrenal tumour, image-guided biopsy can be done safely to establish the tissue diagnosis prior to starting systemic therapy in an inoperable disease. Multidisciplinary treatment approaches are required when dealing with a huge metastatic adrenal tumour.

P-50**Deep Learning for Assessment of Post-thyroidectomy Scar Subtype**

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The traditional thyroidectomy approaches the thyroid through transverse incisions, causing considerable cosmetic problems. The management remains a challenge because many requires long-term repeated and combined treatment according to the scar characteristics. Hence, it is necessary to assess the characteristics of scars for establishment of an appropriate treatment strategy. This study aimed to present a deep learning models for morphological subtyping of post-thyroidectomy scar from clinical photographs. The study included patients with post-thyroidectomy scar who visited our institution during 2009–2019. The clinical data and photographs of post-thyroidectomy scar were obtained. We developed and validated deep learning models for classifying four scar type. In total, 7,524 photographs of 3,565 patients were included for the study. The most common type was linear flat scar (n=1,740; 48.81%), followed by hypertrophic scar (n=1288; 36.13%), linear bulging scar (n=517; 14.50%), and adhesive scar (n=20; 0.56%). We found that deep learning models can achieve a fair performance in classifying four subtypes of post-thyroidectomy scars, in addition to previous dermatologic applications. Among four, the model showed the greatest performance in prediction of hypertrophic scar, and this may be because there are many cases of showing distinct red-to-pinkish colors compared to other subtypes.