Abstract ID: 76
Malignant Thyroid

The development and validation of the UK's first thyroid cancer patient decision aid

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Background

Patient decision aids (PDAs) are interventions that support patients and clinicians in complex decision-making by providing detailed information and clarifying personal values. This study developed and validated two thyroid cancer PDAs in determining the extent of surgical resection for low-risk differentiated thyroid cancer (DTC).

Method

Following a structured process proposed by the International Patient Decision Aids Standards, the PDAs were built based on available systematic reviews, meta-analyses, and patients' informational needs during treatment decision-making. The comprehensibility, acceptability, and desirability of the PDAs were assessed iteratively through focus groups, online surveys and think-aloud usability testing with thyroid cancer patients, members of the public and thyroid clinicians.

Results

The PDAs were created as 10-page booklets consisting of six sections: 'Key information', 'Treatment option', 'Compare your options', 'What matters most to you', 'Further information', and 'Patient support'. Information was displayed using a range of visual illustrations, including decision trees, pictograms, comparison charts, and Likert scales. The focus group discussion (n=10 patients/members of the public) and online survey (n=21 clinicians) showed that the PDAs were comprehensive, engaging, and balanced. The result of the think-aloud usability testing (n=10 patients/members of the public) proved that the PDAs were easy to use for decision-making and appropriate for people with low literacy and numeracy skills

Conclusion

We have developed and validated the UK's first PDA to support low-risk DTC patients in deciding the extent of their primary surgery. They can facilitate shared decision-making by providing a reliable, unbiased, and comprehensible representation of clinical options and outcomes tailored to patients' needs.

Abstract ID: 88
Malignant Thyroid

A SYSTEMATIC REVIEW AND META-ANALYSIS OF RISK FACTORS AND PREDICTORS OF THYROID CANCER IN PATIENTS WITH THYROID NODULES

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Background

Thyroid nodules are common and increasingly being identified and investigated. Current management strategy based on ultrasound and cytology assisted stratification between benign and malignant thyroid nodules is inadequate. The aim of this systematic review was to evaluate demographics, clinical and biochemical risk factors for thyroid cancer in patients presenting with thyroid nodules.

Method

A systematic search of literature on thyroid cancer risk published from 1990 to 2023 using PubMed, EMBASE and the Cochrane library databases was undertaken (review registered in PROPERO database - CRD42021276614). A meta-analysis was also performed using random effect model.

Results

A total of 77 studies involving 193, 599 patients were included. Factors significantly associated with thyroid cancer include: male, OR 1.32 (1.12, 1.56); younger age, MD -2.9 (-3.96, -1.61); higher BMI, MD 0.20 (0.08-0.32), family history, OR 1.5 (1.11, 2.24); radiation history, OR 1.8 (1.04, 3.10); Hashimoto's thyroiditis, OR 2.6 (1.34, 5.14); higher TSH MD 0.4 (0.23, 0.53); higher thyroid peroxidase antibody, OR 1.42 (1.84, 1.71); and higher thyroglobulin antibody, OR 1.6 (1.21, 2.19). Apart from BMI, the significant factors in the meta-analyses were also found to be independent predictors in at least two individual studies.

Conclusion

There is potential to utilise demographic, clinical and biochemical risk factors in conjunction with standard ultrasound and cytological predictors to differentiate between benign and malignant thyroid nodules. This may improve prediction of cancer in thyroid nodules and has potential to reduce need for diagnostic thyroidectomy.

Abstract ID: 100
Malignant Thyroid

Real-time differentiation of benign and malignant thyroid tissue, and parathyroid tissue, using diffuse reflectance spectroscopy: a feasibility study

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Background

Although 80-90% of thyroid nodules are benign, accurately differentiating cancer from non-cancer can be challenging; diagnostic surgery is often therefore required. A further challenge in endocrine surgery is intra-operative differentiation of tissue types (particularly thyroid/parathyroid), which can impact surgical outcomes.

Diffuse reflectance spectroscopy (DRS) is an optical technique utilising spectral data to assess tissue morphology, functionality and biochemical composition, with studies showing capability in tissue diagnostics, and differentiating malignant from benign tissue across other organs. This feasibility study aims to assess if DRS can differentiate benign from malignant thyroid nodules, and thyroid from parathyroid tissue.

Method

This is a prospective ex-vivo feasibility study; patients undergoing neck endocrine surgery were prospectively recruited. Freshly resected ex-vivo specimens were analysed with a handheld DRS probe to obtain spectral data, with results validated against histopathology.

Results

Of 18 patients: 14 (69%) were female; median age was 46 (25-78) years. 4146 spectra were collected across 7 benign nodules, 6 malignant nodules, 5 parathyroids and 13 normal thyroids. In pre-operatively diagnosed nodules (Thy2/Thy5), there was a significant difference between mean spectra for the benign vs malignant group ($p<0.01$). This difference was preserved on inclusion of pre-operatively indeterminate nodules ($p<0.01$). When comparing the parathyroid and thyroid group, a significant difference was also observed ($p<0.01$).

Conclusion

DRS demonstrates potential in differentiating benign from malignant nodules, even when pre-operative investigations are indeterminate, as well as capability in differentiating tissue types. This represents a step toward the development of a single intra-operative tool to allow real-time cancer diagnosis and aid intra-operative decision-making.

Abstract ID: 94
Malignant Thyroid

Reducing surveillance in differentiated thyroid cancer

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Background

Differentiated thyroid cancer (DTC) has an excellent long-term prognosis following treatment. Despite this, post-treatment surveillance may last several years with no defined end-point. Our study aimed to identify patients at the lowest risk of recurrence who may be suitable for early discharge.

Method

Retrospective analysis of a single centre database of all patients undergoing surgery for differentiated thyroid cancer between 2009-2022. We excluded patients with metastasis at diagnosis or those without a Tg level two years after complete thyroidectomy.

Patients were grouped based on treatment into Hemithyroidectomy (HT), Total Thyroidectomy (TT), and Total Thyroidectomy with Radioactive ablation (TTR). TT and TTR groups were risk stratified using the Tg level at 2 years into Undetectable/Low (UL) (Tg <0.2), Medium (M) (0.2-1.0), and High (H) (>1.0). The 2015 American Thyroid Association (ATA) risk stratification system was used to further subdivide these groups.

Results

487 patients were included in the study. The overall structural recurrence rate was 19/487 (3.9%) over a median follow-up period of 64 months (1-164). All recurrences occurred in the TTR group, with a median time to recurrence of 21 months. A higher Tg at 2-years ($p< 0.00001$) and a high ATA risk 2015 score ($p =0.0027$) were associated with a higher rate of recurrence. 116 patients were identified as low-risk in the UL group, and there were no cases of recurrence during the follow-up period.

Conclusion

Our study suggests that individuals managed with hemithyroidectomy alone or with undetectable/low Tg levels within 2-years of treatment may be suitable for early discharge.

Abstract ID: 92
Malignant Thyroid

The impact of macroscopic invasion to the recurrent laryngeal nerve alone in papillary thyroid carcinoma

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Background

Gross extrathyroidal extension (macroETE) is one of the most important predictors of survival in papillary thyroid carcinoma (PTC). The aim of this study is to determine the impact of macroETE to the recurrent laryngeal nerve alone (RLNT4ETE) on survival.

Method

After institutional review board approval, adult PTC patients were identified from an institutional database of 8,559 patients undergoing initial surgery for well-differentiated thyroid carcinoma from 1986 to 2020. Patients were classified as having no macroETE (noETE), RLNT4ETE or macroETE involving other adjacent structures (otherT4ETE). Disease-specific survival (DSS) was calculated using the Kaplan-Meier method and groups were compared using the log-rank test.

Results

With a median follow-up of 46 months, the estimated 10-year DSS for patients with noETE, RLNT4ETE and otherT4aETE in the whole cohort were 99.2%, 96.9%, and 81.6%, respectively (P <0.0001). After controlling for nodal and distant disease stage, ETE remained a significant predictor of DSS, however, RLNT4aETE patients did not differ significantly from no macroETE patients (HR 2.75; 95% CI 0.37-20.8, P = 0.3). A subanalysis comparing the RLNT4ETE group to patients with macroscopic ETE to the strap muscles alone (T3b) showed no significant difference in 10-year DSS (p =0.78).

Conclusion

In our study, RLNT4ETE patients appear to be less likely to have a disease-specific death compared to otherT4ETE patients. This observation supports the downstaging of RLNT4ETE patients to the T3b classification, using the eighth edition AJCC TNM staging system.

Abstract ID: 69
Adrenals

The use of ICG in Laparoscopic Adrenalectomies to categorize Adrenal Adenomas as Hyperfluorescent or Hypofluorescent in 62 cases

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Background

Laparoscopic adrenalectomy (LA) is already the golden standard of treatment for adrenal tumors. There is an increasing interest in the use of ICG in laparoscopic adrenalectromy, as there is hope that it may help the surgeon distinguish the tumor from the surrounding normal adrenal tumor, which may prove useful in laparoscopic cortical sparing adrenalectomies. The aim of this study is to present our initial findings of the several categories of adenomas' fluorescence properties in laparoscopic adrenalectomies.

Method

All patients who underwent LA in our Department since June 2020 were included. ICG was injected in 2 distinct stages. An initial dose of 5 mg was administered upon exposure of the retroperitoneal space in order to identify the adrenal vein the tumor. An additional dose of 2.5 up to 7.5 mg was administered after initial dissection, so as to identify the tumor and categorize it as "Hyperfluorescent" or "Hypofluorescent" in comparison to the rest of the adrenal gland.

Results

62 ICG assisted laparoscopic adrenalectomies were performed until June 2024, 31 left, 31 right. 11/13 (85%) of Pheochromocytomas were "Hypofluorescent", while half of the aldosteronomas and 14/21 (66%) of ACTH secreting adenomas (Cusshing) were "Hyperfluorescent". All of the metastasis, Myelolipomas, Non-Secreting adenomas and Paragangliomas were found to be "Hyperfluorescent"

Conclusion

ICG is a safe procedure which can help a surgeon in multiple ways. By categorizing the various adenomas according to their fluorescent properties when ICG is administered, we can facilitate easier and safer cortical sparing adrenalectomies in the future.

Abstract ID: 48
Benign Thyroid

A single dose of IV tranexamic acid reduces bleeding in Graves' thyroidectomy and is safe.

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Background

Bleeding following thyroidectomy may cause life-threatening airway obstruction and require emergency surgical exploration. Risk factors for bleeding include Graves' disease, anticoagulant use, and age. This study aimed to determine whether the use of a single dose of tranexamic acid (TXA) at induction reduced bleeding-risk in thyroid surgery whilst not conferring increased venous thromboembolism (VTE) risk.

Method

Retrospective analysis of a prospectively maintained database on thyroid surgery before/after introduction of IV tranexamic acid at anaesthetic induction. All patients were cross-referenced against radiology databases to examine the incidence of pre and post-operative VTE. Statistical analysis using Chi-squared test and multi-variate analysis.

Results

1847 patients who underwent thyroidectomy were identified; 78% (1440/1847) were female and median age was 49 (IQR 36-62). Post-operative haematoma formation and return to theatre significantly reduced from 4.4% to 1% and 3.6% to zero with the introduction of tranexamic acid in Graves' disease patients (OR: 0.63 (CI:0.59 - 0.66) $p<0.0001$) but not in those undergoing thyroidectomy for multi-nodular goitre (n=982, 1.9% to 1.3% ($p=0.47$)) or thyroid cancer surgery (n= 434, 0.6% to 0% ($p=0.78$)). VTE episodes occurred in 12 patients (0.65%), a median of 16 months (IQR (9.5-67.5) before surgery. There were no radiologically confirmed VTE episodes within 6 months of surgery before or after the introduction of TXA and no anaphylactic reactions.

Conclusion

A single dose of pre-operative TXA significantly reduces bleeding in Graves' thyroidectomy without increasing VTE risk. TXA is safe and should routinely be considered as part of the strategy to reduce post-thyroidectomy haemorrhage.

Abstract ID: 44
Parathyroid

LONG-TERM POST-OPERATIVE SURGICAL HYPOPARATHYROIDISM – METABOLIC ABNORMALITIES AND ADHERENCE TO GUIDELINES ON MANAGEMENT

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Background

This study was done in patients with long-term (>6 months) post-operative surgical hypoparathyroidism (PoSH), to determine the rate of metabolic abnormalities and adherence to European Society of Endocrinology (ESE) monitoring guidelines (2015) and proportion of patients weaned successfully.

Method

All patients with PoSH (requiring supplements) between 2009-2018 were identified using healthcare records at a tertiary center. Data on perioperative blood/urine biochemistry, and evidence of post-operative bone/renal disease was collected. Intention to adhere to ESE guidelines and patients weaned off supplements were recorded.

Results

Of 51 patients with PoSH, 44 had surgery in index unit. Most had thyroid surgery (n=46), followed by parathyroid surgery, or both (n=5). Median (IQR) age was 49.7 (32.4-61.4) years with female/male ratio of 3:1. Median (IQR) follow-up duration was 51 (23-72) months. Overall, the 'intention to adhere' to ESE guidelines rate was 61%. 18 (35%) patients were weaned off supplements after median (IQR) follow-up of 21.5 (1-98) months. 32 (63%) patients did not have vitamin D levels of >75 nmol/L during follow up. Median (IQR) annual rate of creatinine rise was 2.8 (1.1- 5.7) mmol/year. At least one episode of hypercalcaemia, hyperphosphatemia and hypomagnesemia were recorded in 8 (15%), 33 (65%) and 12 (24%) patients, respectively. No patient had evidence of new end organ (bone/kidney) damage. Of 12 patients with recorded urine biochemistry, five had hypercalciuria.

Conclusion

Metabolic abnormalities are common and monitoring in patients with long-term PoSH needs improvement. A significant number of patients with long-term PoSH can be successfully weaned off supplements.

Abstract ID: 75
Parathyroid

Role of the Holo-lens in intra-operative localization of the parathyroid adenoma using 3D reconstructed models of the neck.

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Background

The HoloLens opens up a new era in how you can mix both reality and the virtual world. In this study we used the HoloLens to get a virtual 3D model of the parathyroid adenoma to the patient's neck.

Method

The study included 27 patients diagnosed with (PHPT)based on their biochemical profile. The parathyroid adenoma was localized with US and CT parathyroid. A 3D models based on CT parathyroid weredone for 13 patients using "3D slicer 5.6.0" and they were included in group A and the other 14 patients were included in group B. These models were up-loaded to "Microsoft Holo-lens2"and used to proper localization of the PA intra-operatively.

Results

In this study, 19 patients were females (70.3%) and 8 patients were males (29.6%). Age ranged from 30 to 81 years. The adenoma was in the right upper gland in 10 patients (37%). Operative time in group A ranged from(45-137 minutes)with mean 54minutes while in group B ranged from(49-140 minutes) with mean 70 minutes. In group A 12 patients had MIP and one patient converted to BNE and the efficacy of the Microsoft Holo-lens in Loacalizing the adenoma was 92.3%. In group B three patients were converted to BNE.

Conclusion

Introduction of the Holo-lens in parathyroid surgery improves the intra-operative localization of the parathyroid adenoma and reduces the chances of converting MIP to BNE as well as reduces the operative time.