Patient and surgeon perspectives on the American Thyroid Association (ATA) 2015 & British Thyroid Association (BTA) 2014 guidelines in the management of "Low-Risk" Thyroid Cancers (LRDTCs): Two sides of the coin

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Abstract

Objectives: To investigate how surgeons interpret the ATA 2015 and BTA 2014 guidelines for low risk well differentiated thyroid cancers (LRDTCs) and how they impact patient experiences across the UK. Design: Three nationally disseminated anonymised questionnaires. Setting: A nationwide snapshot of LRDTC management. Participants: Thyroid surgeons and their respective thyroid cancer multidisciplinary teams (MDTs) and thyroid cancer patients. Main outcome measures: The outcomes of interest were how surgeons/MDTs are managing LRDTCs and patient perspectives on 'shared-decision-making' and their ideal surgical management for LRDTCs. Results: 74 surgeons responded. 88% utilised BTA guidelines to assess recurrence risk. Tumour size, histology, stage T3b and central nodal involvement were important for >85%, but age (>45 years) only for 50%. In T1 (2cm), Thy5 solitary nodule, 58% supported hemi-thyroidectomy (HT), with 33% for total thyroidectomy (TT). In T2 (3cm) PTC, 54% opted for TT, with 24% favouring HT. Over 90% recommended TT for any incidentally excised microscopically positive lymph nodes. In T1a(m) multifocal micro-PTC, 63% suggested HT, but with contralateral benign nodules, 66% supported TT. 40% of patients felt 'pros and cons' of different managements were not fully explained. 47% felt they didn't have significant input in their management, with 53% feeling final management was clinician's choice. 60% preferred TT, with 80% wanting to ensure there was no cancer left and avoid recurrence. 20% preferred HT, with 46% wishing to avoid lifelong thyroxine. Conclusions: There is variation in risk assessment and management of LRDTCs nationally, with contrasting views of optimum treatment between patients and clinicians. These variations in practice are affecting patient experiences nationally.

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40% of patients felt 'pros and cons' of different managements were not fully explained. 47% felt they didn't have significant input in their management, with 53% feeling final management was clinician's choice. 60% preferred TT, with 80% wanting to ensure there was no cancer left and avoid recurrence. 20% preferred HT, with 46% wishing to avoid lifelong thyroxine.

Conclusions:

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Introduction

In the UK, the incidence of thyroid cancer has risen from 2 per 100,000 in 1993 to 6 per 100,000 in 2016, with a projected incidence of 11 per 100,000 in 2035[1]. This increase is attributed largely to the use of high-resolution ultrasonography and the diagnosis of small 'low-risk' papillary thyroid cancers (PTCs)[2,3]. Although most patients with thyroid cancer have an excellent prognosis, up to 30% recur[4]. Many risk stratification systems have been designed to predict survival. However, only the American Thyroid Association (ATA) risk stratification (2009) was tailored for recurrence risk. The 2015 ATA guidelines[5] refines its stratification for recurrence. This identifies 'low-risk' cancers that may be suitable for treatment de-escalation in the form of hemithyroidectomy only. Similarly, the British Thyroid Association (BTA) 2014 guidelines have provided similar risk criteria and management strategies of 'low-risk' patients[6].

The British Association of Endocrine and Thyroid Surgeons' (BAETS) 2012 national audit report demonstrated that, prior to the release of the two guidelines, total thyroidectomy (either as a staged or a single procedure) was used to treat the majority of thyroid cancer cases[7]. Two recent studies by Israeli and American groups have demonstrated that the updated guidelines have caused a significant change in surgical management of 'low-risk' small tumours that represent the majority of new thyroid cancer diagnoses[8,9].

Much debate remains about the pros and cons of total thyroidectomy (TT) (standard treatment to date) versus hemithyroidectomy (HT) (treatment de-escalation) in these patients, largely due to lack of level one evidence and potentially biased and limited retrospective data. Further, interpretation of "low-risk thyroid cancer" is open to potential variability, depending on specific guidelines used. This can lead to heterogenous clinical practice as demonstrated by Haymart et al.[10–13] who reported significant variation in thyroid cancer management that was not explained by case-mix, but more related to the physicians' decision making. This in turn, will lead to varied (over- or under-treated) patient experiences.

This study aims to investigate how UK thyroid surgeons and multidisciplinary teams (MDTs) interpret the latest BTA and ATA guidelines to formulate their management strategy for patients with low risk differentiated thyroid cancers (LRDTCs) and how these clinical decisions impact patient perspectives and experiences surrounding difficult 'shared-decision-making' processes.

Study Methods

A questionnaire was sent to thyroid surgeons and their regional thyroid MDTs to ascertain the current national perspective on the management of LRDTCs (Appendix A). Surgeons and their respective MDTs were identified through the "*De-anonymised data from BAETS National Database of Endocrine & Thyroid Procedures 2016*" [14] website, although not all are MDT-designated thyroid cancer surgeons. The questionnaire was emailed via the BAETS, ENT-UK, National Cancer Research Institute and Thyroid Cancer Forum websites. This questionnaire enquired about which guidelines they followed and the risk factors they considered important for decision making. It also presented index case scenarios to investigate how different surgeons/MDTs managed LRDTC cases of varying complexity.

A questionnaire was sent to patients to understand their experiences and perspectives on the 'shared-decision-making' process during their management (Appendix B). This focused on which treatment options were offered and how patients felt about the information given to them regarding their management plans. This was posted online through the National Butterfly Thyroid Cancer Trust's social media platforms (Facebook and Twitter).

Another questionnaire sent to a different cohort of thyroid cancer patients (Appendix C) specifically enquired, given the 'pros and cons' of each surgical choice, which surgical management (hemi- vs total thyroidectomy (or completion surgery)) they would ideally have preferred if diagnosed with LRDTC and their reasons for the choice. We explained that ATA and BTA guidelines proposed treatment de-escalation in LRDTC cases and patients should be offered the choice between a hemi-thyroidectomy or total thyroidectomy. We wished to investigate whether patients' views and preferences were in line with the updated guidelines.

Results

Surgeons' Responses

There were 74 responses from thyroid surgeons. Mapping out the area of practice, most of the UK was covered (Figure 1), giving a good national representation of current practice.

Seventy-two surgeons (97.3%) confirmed they were a core member of the regional thyroid cancer MDT and the majority (72%) reported performing over 30 thyroid operations (hemi- and total thyroidectomies) per annum.

Our survey observed that 87.9% utilised the BTA guidelines with or without other guidelines (ATA, AJCC, AMES) to assess recurrence risk in LRDTC (Table 1.1).

Risk factors that were most frequently considered by MDTs in assessing recurrence risk can be seen in Table 1.2.

To understand how risk assessment and the ATA and BTA guidelines for treatment de-escalation have influenced current UK practice in the management of LRDTC, a series of index cases of LRDTCs were presented. Respondents were asked how they would manage such cases. The responses are represented in Table 1.3.

Case 1:

A 38-year-old female presenting with a thyroid swelling. An ultrasound and fine needle aspiration and cytology (USS & FNAC) confirming a Thy5 solitary right sided 2cm lesion, with no other abnormalities in the thyroid or neck. (No other risk factors).

Case 2:

A 40-year-old male, whose USS & FNAC demonstrated a solitary 3cm, Thy3 thyroid nodule. He undergoes a diagnostic HT, demonstrating a classical PTC. Post-operative USS of the neck shows no other nodules in the contralateral side or any involved nodes (No other risk factors).

Case 3:

Similar scenario as Case 2, but post-operative histology demonstrating a 3cm PTC but with four 'incidentally' excised lymph nodes (not planned central neck dissection), two of which demonstrate microscopic positivity (<3mm).

Case 4:

A 42-year-old female who underwent a HT for a presumed colloid cyst for aesthetic and discomfort reasons (no compressive symptoms). The histology confirmed three foci of intrathyroidal papillary microcarcinomas (mPTC), with the largest measuring 4mm. The post-operative USS did not demonstrate any further pathology in the neck and contralateral lobe was normal.

Case 5:

A scenario similar to Case 4, but the post-operative USS demonstrated several contralateral thyroid nodules, measuring 2cm maximally, classified as U2/3 and confirmed Thy2 on FNAC.

Patient Responses

The first patient questionnaire explored their experiences and perspectives during their treatment pathway. Responses were received from 74 patients nationwide. The responses are represented in Table 2.1.

Question 1: *Were the 'pros and cons' of the different treatment options explained to you in full and the reasoning behind them?*

Question 2: *Was the final decision on treatment/management a 'shared-decision-making' process between you and the doctor or was it mainly the doctor's recommendation?*

Question 3: *Is there any information that you would have liked to have known before that you weren't told about? Especially regarding the different treatment options?*

The second patient survey explored patient preferences for treatment choice in LRDTC. A total of 135 different patients responded, with their responses seen in Table 2.2.

Question 1: *What was their preferred choice between total thyroidectomy vs hemi-thyroidectomy if diagnosed with LRDTC?*

Questions 2, 3 and 4 asked - *What was the main reason(s) behind the preferred surgical choice (hemi- or total-thyroidectomy)?*

Discussion

The aim of this study was to investigate how UK surgeons and MDTs interpret the latest BTA and ATA guidelines on the surgical management of low-risk thyroid cancers (LRDTC) and how this impacts patient experiences across the UK.

This study canvassed opinion from 74 thyroid surgeons (the majority being core members of regional thyroid cancer MDTs) and their region of practice covered most of the UK, thereby allowing an accurate reflection on current national practice. The BTA guideline was the most popular, which is to be expected as this survey was performed in the UK. When asked what specific risk factors were taken into consideration when assessing recurrence risk, interestingly, the cut off for patient's age ($>$ 45 years) was considered by only about half the surgeons/MDTs. This perhaps reflects the increasing evidence that a specific age cut-off is less important (reflected in 8$^{\text{th}}$ TNM change to >55 years) than age being considered a continuously variable risk factor[15]. It also seems that central neck node involvement is considered in the UK to be an important risk factor (85%), with about 50% specifying that they would consider it a significant risk only if more than five nodes were involved. This variability appears to affect the management of patients as shown by the variability in the responses to the five case scenarios of typical LRDTCs.

For scenario one, despite both BTA and ATA guidelines supporting treatment de-escalation, only 58% offered a hemi-thyroidectomy (HT), whilst 33% preferred the traditional approach of a total thyroidectomy (TT). Scenario two presented a similar case but with a larger T2 (3cm) PTC and interestingly, this resulted in 54% favouring, with only 24% favouring HT.

Scenario three demonstrated that the presence of incidentally excised microscopically positive lymph nodes, regardless of number, affected management strategy. Over 90% of respondents recommended TT (+/- RAI). The BTA and ATA guidelines differ here and may explain the observed responses. The ATA suggest that incidental sampling and less than five involved lymph nodes still constitute a 'low-risk' case, whereas BTA have no such qualification and thus indirectly advocate TT and RAI. UK MDTs clearly feel any central lymph node involvement, is a significant risk factor, warranting more extensive surgery, despite the ATA guidance, as well as the lack of clear evidence that CND or TT have any additional benefit to survival outcomes in such cases. Based on this preference, it is clear the results of the current IoN trial[16] (which include N1a patients) will affect management in patients with positivity in incidentally sampled lymph nodes and may further change attitudes towards role of prophylactic CND.

Scenarios four and five presented a patient with a T1a(m) multifocal mPTC, where 63% favoured HT. The ATA and BTA guidelines again differ for multifocal mPTC. The ATA guidelines stratify such patients as 'low-risk' suitable for HT, whereas BTA guidelines promote TT. This reflects the current conflicting evidence in the prognostic impact of multifocal and bilateral disease. Studies have shown better disease-free survival after TT whilst others have suggested HT may be equally effective[17–19]. Despite BTA guidelines promoting TT for multi-focal mPTC, as it is a predictor for contralateral/bilateral disease (up to 50% of cases) only 32% recommended TT, with the remainder recommending clinical surveillance. However, in the presence of contralateral benign thyroid nodules, responses changed towards TT (66%), presumably due to the concern of potential contralateral disease. This is despite current evidence demonstrating that multifocal disease is not an independent prognostic factor for long-term outcomes and those managed with HT alone demonstrate rates of regional recurrence and overall survival to be comparable to unifocal disease[20,21]. The BTA and ATA guidelines differ here and consider multifocality as warranting TT, which may partly explain this preference. This again highlights the concern for inconsistency in practice nationally as a direct result of the lack of high-quality clinical data and the current surgical equipoise introduced by the both guidelines.

A diagnosis of cancer causes a considerable amount of stress to patients. Even more so with LRDTCs; a situation of clinical equipoise and multiple treatment options, all with their associated risks. *"When the evidence for or against a treatment is inconclusive and no randomised or prospective national studies are ongoing to address this issue..."* the BTA & ATA recommend a personalised approach to decision-making via a 'shared-decision-making' model. Our survey demonstrated that 40% of patients felt the 'pros and

cons' of different management options were not fully explained to them. We also found that 47% of patients felt that they did not have a significant voice in their management plan and that the final treatment plan was primarily the surgeon's choice (53%). Nickel et al.[2,22]reported that patients and the general public demonstrated a low pre-existing general awareness of the concept of overdiagnosis and overtreatment of LRDTCs, and a major point of conflict/confusion for patients was that LRDTCs were being described to them as a "good result", despite the association of the word "cancer"[2]. Therefore, it is paramount that clear and comprehensive information is provided to patients who are having to make difficult decisions. Our survey reported that thorough explanation of different treatment options and their respective side-effects, the more satisfactory the decision-making process. These issues may have to be addressed by providing patients with clinical decision aids[23,24] and by future qualitative research.

The second patient survey explored patients' preferred treatment choice if they were theoretically diagnosed with LRDTC and what factors would be important for their decision. Contrary to the clinical shift towards treatment de-escalation, 60% pf patients preferred TT; the overwhelming reasons (80%) being "*to ensure there was no cancer left* ", *"to prevent recurrence* " and "*to avoid the anxiety and worry of having another cancer in the other side* ". Only 20% preferred HT, with their main reason (46%) being "*to avoid lifelong thyroid replacement medication* ". These findings are consistent with a qualitative study by Nickel et al. exploring patient attitudes to thyroid cancer treatment[2]. They suggested that the observed treatment preferences may be due to the implications that the word "cancer" has in society, and observed, like other groups, that the majority of patients perceived thyroid cancer to be similar to other types of cancer in terms of morbidity and mortality[22].

Study Limitations

The main limitation was the relatively small number of respondents. However, the authors do not feel that a larger number of responses was necessary for this study, as this was a snapshot of clinical decision-making and patient experiences in relation to LRDTCs. For the two patient surveys, there may be selection bias, as the patients were approached through a patient support group website which may bias the type of respondent and their experience of treatment. For questionnaire three, even if a patient who answered the questionnaire was not "low-risk", their answers remain valid as the aim of the questionnaire was to investigate what patients would want if they were diagnosed with LRDTC. It was not possible to identify the geographical location of the respondents to investigate any regional variation in experiences, which may have been useful for future quality improvement.

Conclusions

This study has demonstrated significant variation in the interpretation of the ATA 2015 & BTA 2014 guidelines in risk assessment and surgical management of "low-risk" thyroid cancer by different thyroid MDTs/surgeons throughout the UK. There is clear clinical equipoise in the management of LRDTC due to conflicting evidence and the lack of high-quality prospective randomised controlled trial data. It is likely that differences between international and national guidelines (as a result of equipoise in evidence) and differences in interpretation across the UK are contributing to the observed practice variation.

We have also observed that current guidelines seem to be at odds to what patients may prefer (TT over HT). In addition, the variation in surgical practice throughout the country may adversely affect patient experiences. Our findings provide further evidence that improved delivery of pertinent information to patients within a 'shared-decision-making' process is paramount to achieve thorough informed consent and optimal management for each patient. It also highlights the need for better evidence from randomised prospective studies to clarify the current guidelines, particularly in the use of hemi-thyroidectomy, for both the clinicians and patients.

Tables

Guidelines followed	N (%)
BTA alone or with another (AJCC, AMES, ATA)	65 (87.9)
Other	5 (5.5)
ATA alone	4 (5.4)
Non responders	1 (1.4)

Table 1.1 – Guidelines followed by surgeons/MDT [NOS – not otherwise specified]

Risk factors	N (%)
Age >45 years	38 (51.4)
Male gender	46 (62.2)
Tumour histology	65 (87.8)
Tumour size >4cm	64 (86.5)
T3b (Tumour of any size, with ETE to strap muscles only)	63 (85.1)
Any central neck node involvement	63 (85.1)
>5 central neck node involvement	37 (50)

Table 1.2 – Factors considered for recurrence risk [ETE- extrathyroidal extension]

Case Scenario	Options	N (%)
1	HT	43 (58.1)
	TT with/or without CND +/- RAI	24 (32.6)
	Shared decision-making	6 (8.1)
	Non-responders	1 (1.4)
2	Completion thyroidectomy (+/-CND/RAI)	40 (54)
	Clinical surveillance	17 (23)
	Shared decision-making	16 (21.6)
	Non-responders	1 (1.4)
3	Completion thyroidectomy +/- CND/RAI	68 (91.8)
	Clinical surveillance	3 (4.1)
	Non-responders	3 (4.1)
4	Clinical surveillance	49 (66.2)
	Completion thyroidectomy alone	24 (32.4)
	Non-responders	1 (1.4)
5	Completion thyroidectomy alone	46 (62.2)
	Clinical surveillance	26 (35.1)
	Non-responders	2 (2.7)

Table 1.3 – Management plans for cases 1-5

		N (%)
Q 1	Well informed	43 (58.1)
	Partially informed	18 (24.3)
	Not at all informed	13 (17.6)
Q 2	Clinician's decision	39 (52.7)
	Shared decision	24 (32.4)

		N (%)
	Patient's decision	12 (16.2)
	Ranking	**Information Wanted**
Q 3	1	Side effects of TT, RAI and/or life-long levothyroxine
	2	Different treatment options (pros & cons)
	3	More about diagnosis
	4	Support groups

Table 2.1 – Responses for questions 1-3 from patient perspectives questionnaire

Patient Preference	**N (%)**
Total thyroidectomy	81 (60)
Hemi-thyroidectomy	27 (20)
No preference	27 (20)
	Main reason(s) for preference
Total Thyroidectomy	"*ensure there was no cancer left*", "*prevent recurrence"* and "*to avoid the anxiety and worry of hav*
Hemi-thyroidectomy	"*to try and avoid lifelong thyroid replacement therapy*" – 48% (n=13/27)

Table 2.2 – Responses from patient preference questionnaire

Figures

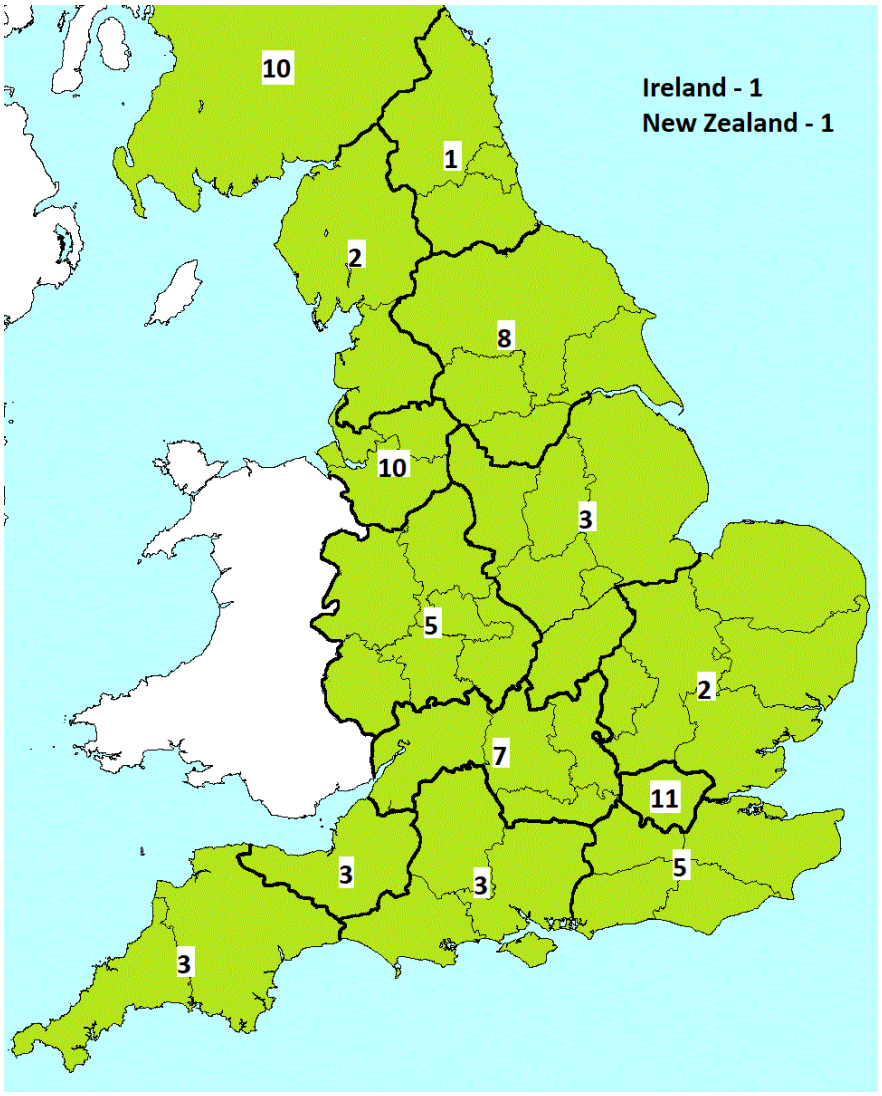

Figure 1 – Geographical area covered by responding surgeons/MDTs

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