Who should perform thyroid surgery? United Kingdom (UK) and United States (US) perspectives with recommendations

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Background

Historically, in the United States and Europe, thyroid surgery has fallen within the domain of the general surgeon [1]. To date, most thyroid operations have been completed by surgeons without specialist or sub-specialist interest [2]. Approximately 75% of thyroid operations in the US and UK are performed by low volume surgeons (less than 35 operations over a 2 year period) [2, 3]. It has been demonstrated that the units participating in high volume surgery improve training opportunities and reduce both complications and the length of inpatient stay [4, 5]. Indeed, the length of stay decreases and the training exposure improves as the volume of surgery increases as shown in a busy UK thyroid surgical unit (Figs. 1, 2). As well as having training implications, annual workload within units has implications for membership of some thyroid cancer multidisciplinary meetings (MDT) [3]. These factors shift the paradigm towards specialisation and regional concentration of cases. Thyroid surgery is increasingly performed by surgeons with fellowship training in endocrine or head and neck disease. This includes surgeons in the UK and US with not only a background in general surgery but, more and more,

head and neck surgeons with a background in otolaryngology [1].

The thyroid gland poses unique and specific challenges with potential risk of significant complications. In the US and UK, permanent damage to one or both recurrent laryngeal nerves (RLN), inappropriate cancer management and airway compromise are common reasons for litigation following thyroid surgery [6]. The thyroid surgeon must have the ability to identify and manage complications as they arise. Head and neck surgeons with a background in otolaryngology are trained in airway management, have a mastery of malignant neck disease and regularly manage recurrent laryngeal nerve palsy [7]. As such they, as well as endocrine surgeons, are well positioned to deal with the surgical complexity of the thyroid gland. The background of the surgeon is less important than training experience and the volume of thyroid surgery in their current practice [1]. Surgeons from different training backgrounds often bring new skills and perspectives to common surgical problems. It is the collaboration between disciplines rather than conflict that will result in the best outcomes for patients.

Current state of play

Regardless of training background, there is a call for more thyroid operations to be performed by high volume surgeons [8]. In the UK, approximately 60% of thyroid operations are performed by surgeons with a training background in general surgery and 40% by head and neck surgeons with a background in otolaryngology [9, 10]. This has increased from 1998 when only 15% of thyroid operations in the UK were performed by head and neck surgeons [11]. In the US, division of labour in thyroid surgery has traditionally been centre dependant [1]. However, over the last 5 years, there

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Fig. 1 Average length of stay for unilateral and bilateral thyroid surgery in a busy, high volume UK surgical unit (Birmingham, UK) by year of surgery [10]

has been a significant change with thyroid surgery now shared between otolaryngologists and general surgeons at major cancer centers such as Memorial Sloan-Kettering and MD Anderson. In terms of volume of surgery, UK figures from the national audit of endocrine surgery suggest 46% of members completed less than 35 cases over 2 years (low volume) with 22% less than 5 operations per year [3]. In the US, 25% of thyroid operations are completed by high volume surgeons although these surgeons made up only 3% of those completing thyroid operations [5]. Regardless of background, the future emphasis in thyroid surgery will be on speciality training and high volume practice.

Features of a good thyroid surgeon

Anticipation: clinic set-up and clinical evaluation

The majority of thyroid surgery is uncomplicated. The most experienced thyroid surgeon can be caught out however if not appropriately prepared. Challenging cases such as unexpected malignancy, thyrotoxicosis or retrosternal extension can lead to significant complications and as such should fall within the domain of the high volume surgeon. The ability to anticipate potential pitfalls and address them in the clinic prior to surgery remains the main stay of safe and appropriate surgery. When coupled with teamwork and an open positive working environment, complications are reduced and patient safety improved [12]. The skill within the clinic is to differentiate the difficult from the routine case. Based on the experience and regular practice, it forms the cornerstone of the argument for sub-specialisation.

Thyroid surgery, especially in complex and oncology cases, demands a multidisciplinary approach [13]. The best model for this is the joint or combined discipline clinic. Although typically easier to arrange in large centres, smaller hospitals both in the UK and the US run similar and successful services. The thyroid surgeon must work in close

Percentage of Cases Performed Solely by Trainee

Fig. 2 Graph showing percentage of cases performed solely by trainees at a busy UK surgical unit (Birmingham, UK) [10]. Year on year variation is explained by variation in trainee's level of experience and skill

conjunction with endocrinologists and oncologists to manage complex medical cases, malignant thyroid disease and to optimise thyrotoxic patients prior to surgical intervention. The endocrinologist is likely to play a key role in calcium homeostasis, preoperatively in the case of vitamin D deficiency and postoperative management of surgically induced hypocalcaemia. Access to, and an ability to work within a team of relevant professionals from differing backgrounds leads to knowledge sharing and will improve the outcome for patients.

Planning: MDT for malignant and potentially malignant cases

Thyroid cancer should be managed by an appropriately trained multidisciplinary team [14]. The thyroid surgeon must have access and regularly contribute to the MDT meeting, both to discuss cases as well as supporting colleagues from other disciplines. In the UK, it is a requirement that potential or proven malignant cases are discussed and treatment strategies agreed. The focus of the MDT meeting may vary due to region with thyroid cases being discussed typically at either head and neck or endocrine MDT. The MDT meeting provides a platform for cementing relationships between professionals. Furthermore, it provides a point from which prospective data can be collected and audited locally, improving patient outcomes in malignant disease [14].

Working with radiologists and cytopathologists with a special interest in thyroid disease helps to reduce unnecessary intervention and aids in surgical planning for suspected malignant disease. Ultrasound evaluation of the thyroid gland is recommended for all nodular disease [15].

Although operator dependent, an experienced ultrasonographer can add great deal of additional information to the clinical picture and aid decision making. One stop clinics for neck lumps have been recommended by the National Institute of Clinical Evidence (NICE) and shown to be effective, producing early accurate results and reducing diagnostic delay [15, 16]. Working as part of a diagnostic team with special interest in thyroid disease is likely to reduce unnecessary surgery and improve patient outcome.

Operating room set-up and safety

The thyroid surgeon has a duty as the team leader to manage risk within departments and ensure patient safety, especially at times of change. The key to this role is the facilitation of open communications between members of the surgical team. Much has been written recently regarding safety in surgical practice and there is a need worldwide to improve standards [12]. The World Health Organisation (WHO) surgical checklist and national guidelines for thromboprophylaxis are important examples of maintaining consistently high standards by the application of communication, teamwork and a systematic approach to surgery [16, 17].

In the UK, many departments have seen a shift away from the traditional theatre team structure with pressures from staff rotation and limited working hours often leading to inexperienced staff present within teams. Increasing use of technologies in thyroid surgery such as nerve monitors and harmonic scalpels and robots requires a high level of team expertise and co-operation. It has long been established that a regular theatre team structure with team members experienced and familiar with the type of surgery being performed improves patient safety and outcome [18]. Systematic approaches to surgery are likely to reduce risk and are best facilitated by high volume surgeons working in high volume units.

Identifying and managing complications

Most cases of litigation in thyroid surgery come from damage to the RLN [5]. Surgeons with a background in head and neck surgery are obviously well placed to deal with these complications and have close ties to voice therapists who will play a pivotal role in rehabilitation. In spite of planning and anticipation, complications do occur. Recognition of an asymptomatic palsy is a key in the consenting process as there may be a significant risk of the need for a surgical tracheotomy [10]. UK data suggest that even in redo surgery, the vocal function is only checked 79% of the time [3]. Thyroid surgeons should be able to perform direct laryngoscopy in the clinic or have close association with an otolaryngologist who can verify vocal cord function. The rate of post operative RLN palsy is significantly under-

played in the literature due to the way in which vocal cord function is assessed with studies of early laryngoscopy suggest temporary palsy rates as high as 8%. The British Association of Endocrine and Thyroid Surgeons (BAETS) recommend direct laryngoscopy post-operatively regardless of voice quality (BAETS consensus agreement, annual meeting 2010). There is a debate surrounding the optimal timing of examination and most surgeons would examine routinely at clinic follow up with others moving towards assessment prior to discharge.

Record, analyse and report: audit and follow up

Both British and American thyroid associations recommend surgeons regularly engage in prospective audit of surgical outcome [13, 15]. Audit is also an important factor in the surgical revalidation and appraisal system. In the UK, members of the BAETS submit those data to an anonymous centralised register for collation and comparison with others. Some surgeons underestimate their own morbidity and accept inadequate results without proper enquiry [12]. The need to gather accurate and contemporary data on surgical practice is paramount in improving patient safety and surgical success. Comparison of data with other surgeons on a national level improves transparency and shifts surgical focus to outcome.

Conclusions

Regardless of training background, surgeons operating on the thyroid gland should have a sub-specialist interest and be engaged in high volume surgery. In the future, this is likely to mean fewer surgeons, more of who have fellowship training, performing more individual operations. Although predominantly routine, thyroid surgery can lead to significant complications which the surgeon must anticipate and manage. Anticipation, close co-operation with colleagues, communication and meticulous surgical technique will reduce if not ameliorate complications. Thyroid surgeons have a duty to search for, address and reduce complications, sharing results where possible. Both the head and neck surgeons with a background in otolaryngology and general surgeons specialising in endocrine disease are well placed to do this. Openness and transparency is likely to raise standards. It is these factors rather than training background which define a competent thyroid surgeon.

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