Elective Report

Head & Neck Service, Department of Surgery
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1. *Describe patterns and common presentations of benign and malignant thyroid nodules and their surgical management in the United States of America (USA)*

Thyroid cancer is the most common endocrine malignancy, yet it only accounts for about 1% of all cancers. On the other hand, thyroid nodules are a very common clinical finding, with an incidence of 4 – 7% of the adult population in the USA as detected by palpation [1], and up to 50% as detected by ultrasonography [2]. Of note, thyroid nodules are more commonly observed in the female and elderly population.

90% of thyroid cancers are well-differentiated, comprising two major histologic subtypes – papillary and follicular. While exhibiting certain clinico-pathologic differences, both these cancers have a favourable prognosis, with a 20-year cause-specific mortality of < 1% in 80% of cases and the remaining 20% having a 10 year mortality rate of 50 – 80% [3]. Over the past 20 years, there has been a dramatic increase in the incidence of differentiated thyroid cancer across the world [4,5], with 18400 new cases in the USA in 2000, rising to 48,020 new cases in 2011, with the tumours measuring less than 2 cm in half these cases [6]. Yet, the number of deaths has remained unchanged, with 1740 deaths in 2011 [6], suggesting that the apparent increase in incidence of thyroid cancer is likely due to increased detection and casts doubt on the clinical significance of the vast majority of thyroid cancers.

The management of well-differentiated thyroid cancers is controversial, due to the prolonged natural history and lack of good level 1 or 2 evidence from prospective trials. As such, most recommendations and guidelines are based on large retrospective analyses and expert consensus opinion such as those by the American Thyroid Association (ATA) and the National Comprehensive Cancer Network (NCCN) of the USA. Patients often present to the clinic with asymptomatic thyroid nodules, detected incidentally through clinical examination or imaging. What remains controversial is deciding when to investigate, the extent of clinical investigation required (whether an ultrasound scan or a fine needle aspiration biopsy is warranted) and in deciding which patient would benefit most from require surgical intervention to remove part of or the entirety of the thyroid gland.

2. *Describe the pattern of health provision in relation to the country in which you will be working and contrast this with the UK: To gain an appreciation of the healthcare system in the USA and to compare and contrast this system with the UK National Health Service (NHS)*

Unlike the United Kingdom, where provision of healthcare is delivered via the government-funded National Health Service (NHS), the US healthcare system is privately funded through healthcare insurance companies. The US government provides insurance coverage only for the elderly (above 65) through the Medicare scheme, and for the poor (below the poverty line) through the Medicaid scheme. Recent attempts to reform the American healthcare by the Democrat President Barack Obama through the 'Obamacare' scheme to increase the coverage of Medicaid by lowering the income threshold to provide medical insurance to a greater number of people of low income has received mixed responses, and a number of States, notably those controlled by the Republican party, electing not to participate in the scheme.

Memorial Sloan Kettering Cancer Center (MSKCC) is a National Cancer Institute-designated Comprehensive Cancer Centre. These cancer centres act as a 'one stop' centre with dedicated multi-disciplinary teams that work together to deliver a comprehensive suite of services for the care of patients with cancer. Importantly, these cancer centres also run research programs that encompass the spectrum of basic science, and clinical and translational cancer research. The integration of basic biomedical research laboratories next to these cancer hospitals allows for cross-talk and collaboration between basic research scientists and clinician-investigators to expedite the development and delivery of novel treatments to patients. Based on the model of the NCI Comprehensive Cancer Centres, similar efforts to integrate the delivery of comprehensive cancer services with basic biomedical research have also taken place in the United Kingdom in the past decade through the establishment of Cancer Research UK (CRUK) Cancer Centres across the country.

3. *Health-related objective: To study how patients with head and neck cancers is managed by the Head and Neck Service of MSKCC and to appreciate how their surgical teams interface with other members of the multidisciplinary team in managing the service*

The Head and Neck Service at MSKCC comprise of a group of otorhinolaryngologists or general surgeons who specialise in the surgical management of cancers arising in the head and neck, both benign and malignant. Most attending surgeons have their own particular niche, such as thyroid, laryngeal, hypopharyngeal, and oral cancers and work in collaboration with the radiologists, pathologists, medical and radiation oncologists, plastic and reconstructive surgeons, dental surgeons, and endocrinologists to manage the treatment and long term follow-up of patients. MSKCC also has a survivorship programme in which patients with no evidence of cancer recurrence after 5 years is 'graduated' into this programme. Through this programme, the patient attends an annual monitoring clinic by specialist nurse practitioner who would refer the patients to the head and neck surgeons should there be any evidence of disease recurrence or any condition that warrants surgical input.

At MSKCC, the management of patients with thyroid nodules less than 1 mm in size (as measured on an ultrasound scan) and biopsy positive for a papillary carcinoma is usually conservative. This practise departs from the common practise elsewhere in the USA and worldwide (with the exception of Japan) who adopt a more aggressive approach to surgery with a low threshold for recommending surgical removal of part of or the entire thyroid gland. The reason for this difference in practice is due to the realisation that the great majority of such small papillary carcinomas (microcarcinomas) are slow-growing and takes a long time before they become large enough to compress surrounding structures in the neck, and rarely become locally-invasive or exhibit lymph node spread. However, the question then arises as to when the patient has to under a thyroidectomy because the older the patient is, the greater the likelihood of the existence of co-morbidities that may lead to surgical complications. At MSKCC, each patient receives individualised counselling on their options based on their individual factors and tumour type and the patient will decide on the appropriate

4. *Personal & professional development goals: To gain an exposure to various aspects of academic surgery through this surgical placement at MSKCC*

The placement I had at MSKCC allowed me to integrate myself into an academic head and neck surgery unit. I was tasked with updating the patient list with the daily results clinical biochemistry and haematology investigations and patient vital signs for the morning ward rounds. Assisting in numerous thyroid surgeries allowed me to gain familiarity with the operative steps of thyroidectomies and the anatomical relationships of the structures in the neck. Being in the clinics with the attending surgeons allowed me to observe the consultations between the surgeons and the patients and their family members, and gave me an appreciation of the role of the head and neck surgeon beyond the operating room. My attendance at the weekly Thursday head and neck clinical conferences gave me the opportunity to listen to clinical presentations and research updates. What I found interesting was the close involvement of surgeons at MSKCC with basic biomedical research owing to their access to clinical materials and their proximity to the basic scientific laboratories. My placement at the Head and Neck Service at MSKCC has reaffirmed my commitment to pursue a career as a surgeon-scientist specialising in head and oncologic surgery.

(1133 words)

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