

'Why should disorders of the ear, nose and throat be treated by the same Specialty? Can this situation persist?'

“We are so much pre-occupied nowadays with the problems of the present and the future that our debt to the past is sometimes apt to be overlooked. We are, in fact, inclined to take our present state of knowledge for granted, and when we think of the generations which have preceded our own, we are apt to do so with a sense of superiority and of pity for their mistakes, rather than with a sense of humility and admiration for their achievement.”

Walter Howarth,
Editor of the *Journal of Laryngology and Otology* 1929-1961

It is well established that the structures of the ear, nose and throat have close anatomical relationships and physiological links. Perhaps most significantly they share an important overlap in their pathologies. However, it has only been since the turn of the 20th century and the birth of otolaryngology that they have been treated together, within one specialty. Over the last hundred years this specialty has faced many challenges including the threat of its own demise. It has since evolved to embrace new fields, such as head and neck surgery, and technologies, like laser surgery and the cochlear implant to become one of the most diverse and capable disciplines, treating those of all ages with a gamut of diseases that ranges from malignancy to hearing loss. ENT is known for having more distinct surgical procedures than most other surgical specialties¹ but now a new question arises: with such a level of diversification, for how long can ENT remain united.

THE FOUNDATIONS

Throughout history there have been references to disorders of the ear, nose and throat with records originating from ancient Egypt, Greece, China and India; however specialisation within clinical practice was largely a product of 19th century Europe. The move towards specialisation in the 1800s was driven by a myriad of social and scientific evolutions including shifts in demographics, a changing relationship between the doctor, the patient and disease, the development of appropriate equipment and the founding of specialist departments at major European universities.

During the industrial revolution the population of cities swelled. This migration was rapid and inevitably led to poor living conditions, sanitation and diet, which resulted in an increased prevalence of disease. As a result there was a large influx of patients into hospitals, enabling clinicians to see a broader range of disease. This provided an atmosphere in which specialists flourished. Indeed it was at this time in 1838 that the first ENT hospital, the Metropolitan Ear, Nose and Throat Hospital, was founded.²

At the beginning of the 19th century it had become the vogue to use the 'clinical anatomical approach'. The aim of this approach was to make clinical diagnosis by matching findings on post mortem with signs found in life. Hospitals provided an ideal setting for this methodology, but clinicians wishing to examine the ear, nose and throat were hindered by the organs' anatomical inaccessibility. The invention of the otoscope by Jean Pierre Bonnafont in 1834² and the laryngoscope by Türck and Czermak in the late 1850s,² overcame this difficulty and accelerated clinical understanding of the anatomy and pathology of these organs within the living patient. Specialisation in this area was driven further by the use of expert equipment and required a greater depth in knowledge to assess and measure the newly discovered diseases.

Otorhinolaryngology was founded through the amalgamation of otology and laryngology, specialties with distinct, separate backgrounds. Modern ENTs combination of surgery and medicine reflects its diverse origins. Otology existed within the realm of general surgeons, who had developed the myringoplasty (Sir Astley Cooper, 1802²) and the artificial tympanic membrane (Joseph Toynbee, 1853²). Toynbee emphasised the need to understand pathology and made great efforts to dissect temporal bones to this end². Others should also be acknowledged for furthering modern understanding of ENT, such as those who attempted to elucidate the physiology of hearing (Helmholtz), and balance (Flourens, Breuer and famously Menière).²

Meanwhile the predecessors of laryngologists were more concerned with the airway and diseases of the chest and considered themselves physicians. Laryngology as a specialty in itself is said to have begun with the invention of the laryngoscope,² and consequently the laryngectomy. The first laryngectomy was performed by Theodore Billroth in 1873.² The laryngoscope also created a revival of interest in rhinology. Although the surgical procedures of rhinoplasty and septoplasty were being developed further, one of the more interesting discoveries included the observed relationship between asthma and nasal polyps which ignited the laryngologists' interest in rhinology.²

The growth of research laboratories in Germany and Austria during the late 19th century meant that many in Europe looked to Austrian and German physicians for models to adopt within their own countries. Politzer was the first lecturer in otology at the University of Vienna in 1861 where he also ran otology clinics and wards. By 1919 the position of 'Head of the Clinic of Ear, Nose and Larynx' was created and over the next twenty years otology and laryngology became unified.

As communications and transport improved, the trends that had spread across Europe were carried over the Atlantic, largely by immigrant European physicians and American physicians that had gone to Germany and Austria for further training. The formation of otorhinolaryngology was consolidated by the founding of various representative societies and journals on both sides of the Atlantic, with the first specialist journals being published in the late 1860s.²

The strength of this union was underpinned by the acquired understanding of the associations within anatomy, physiology and pathology. The inner ear is connected by the Eustachian tube to the nasopharynx, which is in turn continuous with the oropharynx and larynx. This anatomical continuum explains the common spread of infections and malignancy through this cavity. It is only through the comprehension of this anatomy that it becomes clear why, for example, blockage of the Eustachian tube by nasopharyngeal structures such as adenoids, nasal polyps or congenital malformation, may lead to complications within the ear. Equally physiology explained why these complications may manifest in hearing or balance deficits.

Over the next few decades otorhinolaryngology had become firmly established, but by the end of World War II there came threats to its existence. The invention of highly effective antibiotics had been a boon for patients and dramatically reduced the incidence of sinusitis, mastoiditis and otitis media but in so doing had also diminished the work load of the ENT surgeon.^{3, 4} The general surgeons and general practitioners, from whom the otologists and laryngologists had initially broken away, were now usurping routine ENT procedures. Furthermore, developments in microsurgery threatened to undermine their work if they did not adapt and assimilate these skills themselves. In 1948, during his Presidential Address to the American Laryngological, Rhinological and Otological Society, Lyman G. Richards used a parable to illustrate the situation, likening it to the bounteous island where the otolaryngologist dwelt being invaded by general physicians and surgeons, plagued by chemotherapy and threatened by microsurgeons until the it was stripped and the otolaryngologist was left weeping with nothing.⁴ Anxiety ensued, as it was believed that training an otolaryngologist in the new allied disciplines including audiology, allergy, radiology and plastics would result in a period of learning too long to be feasible.⁵

It was fortunate then, that from this desperate situation a strong professional leadership was forged. They sought to create an independent and autonomous regional specialist capable of managing the diseases of the head and neck.⁶ One of these leaders was the American, Lawrence R. Boies, who believed that the future of the specialty would be dependent on training highly

skilled specialists that could not be threatened by others wandering into the field.⁷ Breadth of training would only be useful if it came alongside depth and this would involve a longer training structure. Gordon D. Hoople was instrumental in the realisation of this robust training which proved successful in ensuring the future of the ENT surgeon.⁸

As a result of developing an autonomous specialist practitioner, ENT has encompassed a highly diverse range of subspecialties, notably head and neck surgery but also paediatrics, neurosurgery, plastic surgery and maxillofacial surgery. The last century has seen an increasingly rapid rate of development in all areas of science and otolaryngology is no exception. The pioneering use of the endoscope in ENT by Jackson and the implementation of the fibre optic light by Hopkins in 1953,² alongside advances in chemotherapy, radiotherapy and other imaging techniques have deftly shaped modern ENT diagnostics and treatment, resulting in a greater proportion of outpatient care.

SPECIALISATION: A STEP IN THE RIGHT DIRECTION

Inevitably there is a point of saturation in which one individual can do no more. The ever increasing knowledge within ENT, in terms of pathology, surgical skill and patient management cannot be acquired and executed by one person alone. The subspecialties of ENT have begun to subdivide once again. Otolaryngology, rhinology, laryngology and head and neck surgery are advancing separately and the creation of their own journals and societies is indicative of this.^{9, 10} Otolaryngology itself is going through a period of superspecialisation where sophisticated developments have become conducive to its fragmentation into neurotology, skull base surgery, middle ear surgery and implantation surgery.¹¹

Alongside this somewhat natural scientific evolution, there are political, economical and educational forces driving the current changes,¹² namely the reduction in training hours available as part of MMC and increasing financial constraints. With diminished resources it is vital that these are wisely spent. ENT is known for its armamentarium of gadgets for examination and treatment which today range from laser surgery to cochlear implant.¹ To the benefit of the patient there has been a shift towards minimally invasive surgical procedures and this requires a different subset of skills to those needed for open surgery. There are even discussions about the possible application of remote access robotic surgery.^{13, 14} As these innovations arise and become more complex, it becomes harder to master the use of them all.

At the same time the strong influence of the EU working time directive and MMC will cut surgical training hours from an average 21,000 in the early 1990s, to a mere 6,000 in 2009.¹⁵ The requisite high level of skill using technologically advanced equipment, coupled with the loss of training time means that specialisation is a necessity to ensure the competency of modern surgeons.

An important argument for specialisation is that it is within the interest of patients to specialise. It is a widely recognised principle of economics that specialisation can improve efficiency and outcomes.¹⁶ This has already been observed in medicine. Treatment outcomes are superior in those patients who have received care from a specialist trained and experienced in the relevant area, particularly with the support of a specialised multidisciplinary team (MDT) to deliver allied healthcare.^{15,17} However, with an increasing number of people focusing upon an ever smaller area

of expertise there is a point where it is no longer cost effective, nor of any greater benefit to the patient.¹⁸ The MDT may partially delineate the limits of the surgeon's duty as he or she is now working in a defined role rather than autonomously, as before. This is namely due to a closer interaction with audiologists or speech and language therapists as they take their place at the forefront of patient care.^{10, 17, 19, 20} The MDT not only represents good clinical governance, but it is essential given that it is no longer sufficient for individual practitioners to function alone. The MDTs are also likely to propagate the training of 'disease' orientated specialists rather than procedure orientated ones^{15, 21}, for example the competence of a surgeon may be based on their ability to manage otosclerosis rather than simply being able to perform a stapedectomy.²¹ Currently surgeons from several disciplines are qualified to perform various procedures in the head and neck e.g. rhinoplasty.²² Each brings their own skills to the table, and this aspect needs to be conserved, but despite consensus based practice there are still differences in technique.²³ These are dependent on one's specialty training²⁴ and this may require standardisation. There are initiatives set up, such as the Head and Neck Interface Group, to enable ENT, plastic and maxillofacial surgeons to develop their interactions in order that they work as a cohesive team.²¹

A STEP TOO FAR?

As the trend for specialisation continues, the need for an ENT generalist has come under scrutiny. Although specialisation is certainly part of the future, it is imperative that we do not overlook the role of the generalist. A large proportion of ENT work is based on more general, routine procedures,^{25,26} this mirrors the population's disease profile. In an attempt to balance the workload, stratification of the workforce has occurred, namely the abundance of staff grades¹⁰ and the largely outpatient centered practice (70% OP and day case).²⁰

Nevertheless this core group of diseases is diverse and complex. ENT doctors often manage the surgical and non-surgical care as there were traditionally no conjoined medical specialties. The result is they remain the only professionals trained in the full breadth of otorhinolaryngology, unlike audiologists or other physicians allied to ENT. In becoming proficient in the use of both diagnostic tools and an array of surgical procedures, ENT doctors are capable of fully managing patients with common, uncomplicated complaints. If it were left to specialists to see these patients, would it really be the best use of their time, considering it is already in such high demand?²⁵

Perhaps due to economical constraints, it has been proposed that this generalist role can be fulfilled by other health care practitioners. However this solution has the potential to deliver incomprehensive clinical provision that may incur greater costs in the long term. It is probable that as with many other target based approaches it would only serve to redistribute the problem elsewhere.

ENT related problems comprise 15% of GP work and it has been suggested that they may take over the role of making ENT diagnoses. The costs in time and money required to train enough GPs as ENT specialist diagnosticians would not be substantiated, not least because they would still not have the ability to deal with an adequate range of surgical procedures nor emergencies.

Another alternative considered is that Clinical Nurse Specialists conduct routine surgery. It is important to be flexible in the approach of effective healthcare and be aware that traditional roles

may not be optimum.²⁵ Nurse led chest pain clinics have been a success and there have been forays into the use of nurses to carry out routine surgery²⁸, such as hernia repair.²⁹ However it has since become evident that extensive training resulted in the ability to conduct the surgery but at an unviable cost in time and money. Furthermore a consultant was always required to be close at hand, should a problem occur.²⁹ Experience and depth of knowledge only come about through thorough surgical training and this is particularly essential should an emergency arise. Moreover, the long term cost may be a reduction of training for junior surgeons. With an already diminished training time, the remaining education is precious. Insufficient training not only jeopardizes patients but future generations of doctors who will look to the current trainees for instruction.

The greatest concern for many, over the loss of the generalist is the fear of losing adequate emergency cover. A specialist with limited general training would not be equipped to deal with acute presentations; they may not even recognise them. Experience is crucial in attaining the necessary ability to assess and manage emergency situations. Substandard emergency cover could pose a major danger, with ENT emergencies having potentially catastrophic outcomes such as permanent hearing loss, apnoea, brain damage and death.

The work of the medical profession is under intense public scrutiny and this has rightly lead to greater awareness of patient-oriented care.^{15,25} If the best is to be done for patients, surely high quality acute care should be a basic provision. There are worries about litigation when a patient is not seen by specialists²⁹ and rare diagnoses are missed. Yet there is the equally disastrous possibility that a specialist may be incapable of delivering optimum treatment in an emergency outside of their field. In this regard, acute management and highly skilled diagnosis may be considered specialties in their own right.

A model currently under consideration is that of a majority of generalists providing most of the otorhinolaryngology care at DGHs with a smaller number of specialists available at tertiary centres.²⁵ This pattern would mimic those used with success in Europe^{25,26} where the consultant to population ratio is higher, varying between one consultant to 15,000-30,000. With the relatively small numbers of ENT consultants in Britain (1 to 102,000 in England and 1 to 78,000 in Scotland and Wales)²⁷, it is imperative that specialist expertise does not come at the cost of generalist cover.

The training of specialists and generalists is not only desirable but wholly possible even within the time constraints of MMC.^{21,25} In the interests of patient safety all ENT trainees should receive some form of basic surgical training, in addition to becoming competent in the management of common ENT conditions and emergencies.²¹ Beyond this, training for a limited number should be centered on a particular specialty or perhaps even more advanced emergency training. Some argue that trainees will not be attracted to the generalist option. However with a large proportion of the future medical profession likely to be women this option with its potential flexibility is likely to become more popular.²⁵ Furthermore it will still incorporate a varied spectrum of work, one of the current attractions of ENT, and the need to provide emergency cover will be an exciting challenge.

CONCLUSION

ENT seems to have come full circle. Otology, rhinology and laryngology emerged and united from an era of specialisation. Greater depth and breadth have been acquired with head and neck surgery becoming incorporated, but the rapid rate of development today has led to them appearing ever more disparate. There is an increasing impetus for specialisation and separation. Though specialisation is undoubtedly the direction of the future, the achievements of our predecessors should not be lost.

The natural development of otorhinolaryngology has brought us an understanding of the synergistic knowledge and skill necessary to comprehensively treat disorders of the ear, nose and throat. This approach is invaluable given the interconnected nature of ENT pathology. Though history may not define our advances, an appreciation of the past may enable us to avoid mistakes in the future. Unless ENT doctors provide a comprehensive solution with some foresight, the specialty will be vulnerable to changes driven by politics rather than patient care.

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