

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

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Abstract

The surgical specialty of otorhinolaryngology has its origins in the nineteenth century. Subsequently, the specialty also incorporated allied disciplines such as plastics and head and neck surgery. Following World War II, the survival of the specialty was threatened by the advent of antibiotics and the rise of the general surgeon. Despite this, the specialty of ENT was strengthened by strong post-war leadership and robust training.

Today, with ENT knowledge ever increasing, the subspecialties have again begun to subdivide. Specialisation brings improved efficiency and outcomes; however, there remains a great need for the ENT generalist. Not all cases require subspecialist attention, and the generalist remains the basis of competent emergency cover. The natural development of otorhinolaryngology has brought the invaluable synergistic knowledge required to comprehensively treat disorders of the ear, nose and throat, knowledge that must not be overlooked when shaping the future of the specialty.

Key words: History Of Medicine; Otolaryngology; Otorhinolaryngologic Diseases

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, *The Journal of Laryngology & Otology*, 1929–1961)¹

It is well established that the structures of the ear, nose and throat are closely related in their anatomy, physiology and, perhaps most significantly, pathology. However, only since the turn of the twentieth century and the birth of otolaryngology have they been treated within one specialty. Over the last century, ENT 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 new technologies, such as laser surgery and cochlear implantation, and to become one of the most diverse and capable disciplines, treating patients of all ages with a gamut of diseases that

ranges from malignancy to hearing loss. Otorhinolaryngology is known for having more distinct surgical procedures than most other surgical specialties,² but now a new question arises; with such a level of diversification, for how long can ENT remain united?

The foundations

References to disorders of the ear, nose and throat feature in records originating from ancient Egypt, Greece, China and India. However, formation of the specialty was largely a product of nineteenth century Europe. This was driven by a myriad of social and scientific evolutions, including demographic shifts, changing understanding of disease, the development of appropriate equipment and the founding of specialist departments at major universities.

During the industrial revolution, poor urban living conditions resulted in increased disease prevalence. Clinicians saw a broader range of disease and specialists began to flourish. Indeed, it was at this time, in 1838, that the first ENT hospital, the Metropolitan Ear, Nose and Throat Hospital, was founded.¹

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Examination of the ear, nose and throat was hindered by the organs' inaccessibility. The invention of the otoscope by Jean Pierre Bonnafont in 1834¹ and the laryngoscope by Türck and Czermak in the late 1850s¹ overcame this difficulty and accelerated clinical understanding of the anatomy and pathology of these organs within the living patient.

The strength of the clinical union of ear, nose and throat was underpinned by the acquired understanding of the organs' associations within the fields of anatomy, physiology and pathology. The anatomical continuum of the inner ear, eustachian tube, nasopharynx, oropharynx and larynx explains the common spread of infections and malignancy through this cavity. Equally, an appreciation of the physiology of the regions explains how, for example, complications within the cavity may also manifest in hearing or balance deficits.

Otorhinolaryngology was founded through the amalgamation of otology and laryngology, both with distinct backgrounds. Otology existed within the realm of general surgeons, who had developed the myringoplasty (Sir Astley Cooper, 1802)¹ and the artificial tympanic membrane (Joseph Toynbee, 1853).¹ Meanwhile, the predecessors of laryngologists were physicians, more concerned with the airway and diseases of the chest. Laryngology as a specialty in itself is said to have begun with the invention of the laryngoscope,¹ and consequently the laryngectomy. The laryngoscope also created a revival of interest in rhinology. Surgical procedures such as rhinoplasty and septoplasty were developed, and the observed relationship between asthma and nasal polyps ignited the laryngologists' curiosity in rhinology.¹

During the late nineteenth century, Austria and Germany were leaders in medical research. In 1861, Politzer was appointed the first lecturer in otology at the University of Vienna. By 1919, the position of 'Head of the Clinic of Ear, Nose and Larynx' was created, and over the next 20 years otology and laryngology became unified. European trends were brought to America by immigrant European physicians and American physicians who had travelled to Europe for further training. The formation of otorhinolaryngology was consolidated by the founding of various representative societies and journals on both sides of the Atlantic.¹

Following World War II, the existence of otorhinolaryngology was threatened. The invention of antibiotics dramatically reduced the incidence of sinusitis, mastoiditis and otitis media. In so doing, they also diminished the workload 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 otolaryngologists' work if they did not 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 of the otolaryngologist being

invaded by general surgeons, plagued by chemotherapy and threatened by microsurgeons until it was stripped bare.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 an unfeasibly long period of learning.⁵

Fortunately, from this desperate situation a strong professional leadership was forged. These leaders 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 who could not be threatened by others wandering into the field.⁷ Breadth of training would only be useful if accompanied by 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

The development of an autonomous specialist has resulted in ENT encompassing 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 1953,¹ alongside advances in chemotherapy, radiotherapy and other imaging techniques, have deftly shaped modern ENT diagnostics and treatment, resulting in a greater proportion of out-patient care.

Specialisation: a step in the right direction

Inevitably, there is a point of saturation at which one individual can do no more. The ever-increasing body of 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. Otology, 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} Otology itself is going through a period of superspecialisation whereby 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, economic and educational forces driving the current changes.¹² In the UK, these are namely the increasing financial constraints within the National Health Service and the reduction in training hours available as part of the Modernising Medical Careers initiative. The latter was introduced in 2005 as an overhaul of UK postgraduate medical training. It has since received much criticism, not least because medical graduates now have to

specialise much earlier in their careers, often at the cost of reduced basic training experience.

It is vital that diminished resources be wisely spent. ENT is known for its armamentarium of gadgets for examination and treatment, which today range from laser surgical equipment to the cochlear implant.² 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 them all.

At the same time, the strong influence of the European Working Time Directive must also be considered. This directive was designed to safeguard the health and safety of European Union member state workers by limiting the maximum length of a working week to 48 hours in seven days, with a minimum rest period of 11 hours daily. However, the combined effect of the European Working Time Directive and the Modernising Medical Careers initiative will cut surgical training hours from an average of 21 000 in the early 1990s to a mere 6000 in 2009.¹⁵ The requisite high level of skill in the use of 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 in the patients' interest to do so. It is a widely recognised principle of economics that specialisation can improve efficiency and outcomes.¹⁶ This has already been observed in medical practice. Treatment outcomes are superior in patients who have received care from specialists trained and experienced in the relevant area, particularly those with the support of a specialised multidisciplinary team (MDT) to deliver allied health care.^{15,17} However, with an increasing number of clinicians focusing upon an ever smaller area of expertise, there is a point at which such specialisation 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 mainly due to closer interaction with audiologists and speech and language therapists as they take their place at the forefront of patient care.^{10,17,19,20} Not only does the MDT represent good clinical governance, it is also essential given that it is no longer sufficient for individual practitioners to function alone. Multidisciplinary teams 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 on 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; however, despite consensus-based practice, there are still differences in technique.²³ These are dependent on one's specialty training,²⁴ and this may require standardisation. Various initiatives have been 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} and this mirrors the population's disease profile. In an attempt to balance the workload, stratification of the workforce has occurred, seen specifically in the abundance of staff grades¹⁰ and the largely out-patient centred practice (70 per cent out-patient and day case care).²⁰

Nevertheless, this core group of diseases is diverse and complex. Otorhinolaryngologists often manage both surgical and non-surgical care, as there were traditionally no conjoined medical specialties. As a result, they remain the only professionals trained in the full breadth of otorhinolaryngology, unlike audiologists or 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 this really be the best use of their time?²⁵

Perhaps due to economical constraints, it has been proposed that this generalist role could be fulfilled by other healthcare 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, such a strategy would only serve to redistribute the problem elsewhere.

Otorhinolaryngology-related problems comprise 15 per cent of general practitioners' work, and it has been suggested that they could take over the task of ENT diagnosis. The costs in time and money required to train enough general practitioners as ENT specialist diagnosticians would not be substantiated, not least because such general practitioners would still not have the ability to deal with an adequate range of surgical procedures nor emergencies.

Another alternative which has been considered is the training of clinical nurse specialists to conduct routine surgery. It is important to be flexible in the development of effective health care, and to 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 nurse-conducted routine surgery,²⁷ e.g. hernia repair.²⁸ However, it has since become evident that although extensive training resulted in the ability to conduct the

surgery, the cost in time and money was unviable. Furthermore, a consultant was always required to be close at hand, should a problem occur.²⁸ 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 jeopardises patients but also future generations of doctors who will look to the current trainees for instruction.

The greatest concern for many, regarding 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 led 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 district general hospitals, with a smaller number of specialists available at tertiary centres, i.e. larger teaching hospitals.²⁵ This pattern would mimic systems used with success in Europe,^{25,26} where the consultant to population ratio is higher, with one consultant to 15 000–30 000. With the relatively small numbers of ENT consultants in Britain (one to 102 000 in England and one to 78 000 in Scotland and Wales),¹ 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 the Modernising Medical Careers initiative.^{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 centred 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, such a scheme would still incorporate a varied spectrum of work, one of the current attractions of ENT, and the need to provide emergency cover would be an exciting challenge.

Conclusion

Otorhinolaryngology seems to have come full circle. Otolaryngology, rhinology and laryngology emerged and united from an era of specialisation. Greater depth and breadth have been acquired with the incorporation of head and neck surgery, but the current rapid rate of development has led to the subspecialties appearing ever more disparate. There is an increasing impetus for specialisation and separation. Although 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. Although 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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