**Why is ophthalmology so brilliant?**

Picture the role of an ophthalmologist and many will conjure images of dark clinic rooms, endless cataract surgeries and a super-specialist doing their best to stay far from the wards. A job with no on-calls and ample time for private practice. A narrow caseload and a lack of acutely ill patients. Despite these assumptions, I firmly believe that ophthalmology is the most dynamic, intellectually stimulating and personally fulfilling discipline of any clinical career.

**Surgery using microscopes**

I have always been excited about the possibility to one day perform microsurgery. As a medical student I found the careful hand-eye coordination used in laparoscopic surgery fascinating. I find observing how miniscule laparoscopic instruments are finely manipulated and the tiny margins for error during vitreo-retinal surgery an incredibly intriguing aspect of the career. Few other medical specialties demand both high motor and cognitive discipline.

Not only do ophthalmologists perform such impossibly intricate surgery, but also achieve excellent outcomes. A recent study of patients undergoing anterior segment reconstruction with artificial iris and descemet membrane endothelial keratoplasty showed no major complications or graft failure, demonstrating the strong evidence base in operative care and efficacy of surgical techniques. (1)

Minimal invasive surgery has always been at the forefront of ophthalmic practice, for instance carbon dioxide lasers that seal small blood and lymphatic vessels subsequently preventing surrounding heat damage. Endoscopes are also routinely used to obtain better intranasal views during endonasal dacryocystorhinostomy, as well as better haemostasis, scar elimination and preservation of anatomy in comparison to more traditional transcutaneous methods. (2)

**A touch of neurology**

The application of neuroscience is key to understanding many of the pathologies seen in the ophthalmology clinic and thus demonstrates just one of the ways eye disease is so interlinked with the rest of the body. Neuro-ophthalmology covers such a broad range of eye conditions from visual field defects, to pupil abnormalities and eye movement. Understanding fundamentals of neuroscience is crucial as the eye can show early manifestations of a variety of conditions such as strokes, brain tumours and auto-immune diseases.

Our knowledge of this topic is still primitive and scope for further research is vast. One example includes recent research that has indicated an association between normal tension glaucoma and cognitive impairment, supporting the hypothesis that both disease processes share the same pathophysiology. (3) In addition to this proving the limits of our understanding of brain functions and interface with the visionary system, this also reveals new opportunities for diagnosis of both conditions.

**See better, live more**

Any ophthalmologist will tell you that a big reason that their job is so fulfilling is due to the appreciation patients have for your care because of the enormous contribution to quality of life treating eye disease can have. From being able to drive, read, go back to work or just seeing loved ones, this has a monumental impact on the mental health of a patient. Famous painter Claude Monet (1840-1926) was known to have long-standing cataracts in his later years, which had quite the effect on his work. It is debated to what extent his cataracts influenced the impressionism he became known for; however, his perception of colour did objectively suffer and thus he adopted his iconic straw hat to reduce glare. After reluctance to undergo surgery, he finally had the procedure in 1923 and despite suffering complications, he was finally able ‘to see real colours again’ and could retouch some of his preoperative work in more vibrant colour. (4)

Despite best evidence-based treatments, it is still challenging for an ophthalmologist to assess vision related quality of life and studies have consistently shown this does not have a linear correlation with visual acuity. Looking at functionality can be a blunt tool in measuring a patient’s visual quality of life and it is interesting how much subjective perception can play in a patient’s perceived improved vision. (2) This proves just how important it is for ophthalmologists to explore a patient’s individual social needs and clinical expectations.

**No day is the same**

A unique aspect of the role of an ophthalmologist in respect to other specialties is not just the variety of day to day work between clinics and surgery, but also the spectrum of ages an ophthalmologist can treat. Relating back to my earlier point on the impact on quality of life, one of the most common paediatric surgeries performed on the NHS is corrective squint surgery - a surgery which is crucial for visual development and a young child’s ability to engage in wider early years development.

Another interesting element of an ophthalmologist’s caseload is the variety of rare conditions that often present with eye pathology. For example, orbital inflammatory disease (OID) accounts for 6% of all orbital diseases, encompassing rare autoimmune conditions such as Grave’s disease, sarcoidosis and granulomatosis with polyangiitis, furthermore, high numbers of congenital syndromes are associated with strabismus and lens abnormalities. (5) Ophthalmologists frequently see a subgroup of patients some clinicians will only read about in textbooks.

**Global impact**

Eye diseases make up some of the most prevalent conditions seen in all ageing people, regardless of background. Over the past century we have seen huge advances in surgical techniques as well as instrumentation used for accurate diagnosis. This includes the slit lamp, invented in 1991 by Swedish ophthalmologist Allvar Gullstrand (1862-1930). (6)

Another example is the development of cataract surgeries. Early surgeons relied on the method of couching, essentially dislodging the cataract into the vitreous chamber - what a modern day surgeon might call a dropped nucleus, essentially causing aphakic vision and associated with complications and poor outcomes. (7)

In Sanskrit texts as early as 600BC, a surgeon named Sushruta used a method of piercing the aqueous humour and instructing his patient to perform valsalva manoeuvre with the intent to dislodge the cataract. Leaving the lens capsule in place like this is an early example of extracapsular cataract extraction. Nowadays ophthalmologists are able to perform intracapsular cataract extraction using phacoemulsification and can use implantable lenses to restore visual acuity to much higher levels. (7)

Unfortunately, in some parts of the world, basic methods such as couching are still relied upon, either due to rationing of resources or a preference for traditional methods. This is just one example exhibiting how significant good ophthalmic care is on a global scale and the opportunities available in a career in the specialty. (7)

Despite tropical disease, nutritional deficit and trachoma being endemic causes of visual loss in the third world, corrected refractive error and cataracts are still the leading causes of blindness worldwide and all are easily treatable conditions to a modern ophthalmologist if diagnosis and treatment is achieved timely. (8)

Most perinatal infections that are commonly screened for in western prenatal care such as rubella, HIV and syphilis can also cause devastating congenital syndromes including blindness.

Interestingly, research undertaken in the UK has shown that those registered as visually impaired are more likely to be living closer to the poverty line, with 35% of those suffering from other impairments, particularly hearing, again demonstrating the relationship between vision and quality of life. (2)

In 2020, the WHO published its most recent *World Report on Vision* compiling a universal series of indicators of eye health to be used by health professionals around the globe in order to build feasible and reliable national monitoring frameworks. (8)

**If I have not convinced you yet**

The delicate microsurgery, complex patient cohort of rare diseases and scope to impact global health is key to the dynamism and variety of ophthalmology, yet the most stimulating part of this career is the importance of research at the frontiers of ophthalmic care. Advances in the past century alone have revolutionised quality of life and the vision of patients around the world. A job well done - whilst still managing to get an early night.