

Mastering clinical skills in ophthalmology

BY SAMMIE MAK

To young junior doctors, and some senior doctors who may not have had much exposure to ophthalmology, the specialty can seem very foreign. Not only are the conditions and examination findings specific to the eyes, but the skill set required to examine them is a learning curve for many.

Once you enter the field of ophthalmology, as a trainee, you are expected to grasp numerous key clinical skills very quickly. This includes measuring intraocular pressure (IOP), being able to view the fundus and interpreting optical coherence tomography (OCT). This is by no means an exhaustive list.

An ophthalmic consultant once said to me that his initial six months in ophthalmology were some of the hardest and most difficult days of his entire ophthalmology training. Ophthalmology is extremely different to the rest of medicine, and there is a vast amount to learn and adapt to, especially in the early stages. This article aims to serve as a starting point on how to approach some core practical skills, specifically for new ophthalmology trainees. It will include some hints and tips that I found to be helpful during my first few months, and it will also highlight some pieces of information that I wish I knew when I started as a junior clinical fellow in ophthalmology.

Using the slit-lamp

Being proficient at using the ophthalmic slit-lamp is one of the core competencies that an ophthalmology specialist trainee (OST) must achieve by the end of their first year in training. The main way to excel at this is to get hands-on and use the slit-lamp to see real patients. The best place to get this

experience would be to see patients in eye casualty. If you have time, I strongly urge you to attend or shadow clinicians in this setting, so that you can also discuss what it is that you have seen and how to manage the condition afterwards, to consolidate your learning.

To get started with the slit-lamp, there are numerous resources that you can read to gain a good understanding of the various aspects of it such as *The Oxford Handbook of Ophthalmology*. There is also an article published by the American Academy of Ophthalmology which provides a good basic outline on how to approach the slit-lamp [6].

Fundus examination

Examination of the fundus plays a pivotal role within the ophthalmic examination. When examining an eye under the slit-lamp, ophthalmic lenses can be used to gain a thorough view of the fundus. In the UK, commonly used ophthalmic lenses are Volk lenses. There is a huge variety of lenses to choose from and at the start it might be very overwhelming to decipher which one to use. Some are better at providing a widefield view, some provide higher magnification, and some are great for both. I was advised that a 90 dioptre Volk lens was the best to start off with as a beginner, as it provides an adequate field of view to get a better image of the fundus as a whole picture.

To practise looking at the fundus under the slit-lamp, I would advise that you shadow clinicians in medical retina clinics, as these patients will most likely have had their pupils dilated, which will make your examination much easier.

Measuring IOP

You will be expected to measure IOP via Goldmann applanation tonometry. This method requires you to instil some fluorescein dye (in combination with some topical anaesthetic) into the patient's eye. Then, move the tonometer forward slowly until the inner edges of the two fluorescein semicircles in the prism head touch [1]. You can familiarise yourself with the steps and what it is that you should be seeing under the slit-lamp through watching educational videos, some of which are available on YouTube.

This skill can take some time to get the hang of, but I would strongly advise that you attempt it on all patients that can tolerate it, because ultimately it is all about practice. A good place to get started would be to sit in on either nurse or doctor-led glaucoma clinics, as these patients most definitely will need to have their IOP measured. One suggestion is that you could see a patient after their clinic appointment and with their consent, ask to measure their IOP again. Then, you could look at the patient's notes and compare the IOP reading that you got with what the healthcare professional who did it earlier got, to see if you were close.

The Tono-Pen is another instrument that can be used to measure IOP, which was designed with the same principle as applanation tonometry [2]. This device is particularly useful in patients with irregular corneas, eye scarring or mobility problems (such as being bed-bound), as IOP readings can be measured in various positions, including supine [2].

When measuring the IOP, there are a few things that should be avoided. Firstly, do not apply pressure to the globe, as this external pressure can influence the measurement [1]. It is also important that as the clinician, you consider the patient's corneal thickness, as thin corneas can underestimate the IOP, whereas thick corneas can overestimate the IOP [2].

Interpretation of optical coherence tomography (OCT)

OCT is a non-invasive imaging test that uses light waves to take cross-section pictures of the retina [3]. They can assist with the diagnosis and management of retinal diseases, such as age-related

“An ophthalmic consultant once said to me that his initial six months in ophthalmology were some of the hardest and most difficult days of his entire ophthalmology training”

macular degeneration (AMD), diabetic maculopathy, as well as glaucoma [3]. Due to the commonality of this investigation, it is imperative for a junior ophthalmologist to be able to interpret such scans correctly and therefore, it is best to develop this skill early in your career.

To be able to properly interpret OCT images, it is important for you to be familiar with the anatomy of the eye, specifically the retina, and to be aware of each of the retinal layers. At the time of writing, there is an online module offered by the American Academy of Ophthalmology, entitled "Introduction to Retinal Optical Coherence Tomography (OCT) Interpretation". It is an interactive course that consists of over 20 case studies designed to demonstrate retinal pathologies, and highlights the abnormalities on OCT images [4]. Having done it myself, I felt that it helped to give me a good foundation and approach to assessing retinal OCT images and would recommend it for all beginners.

Practising ophthalmic surgery

Ophthalmic surgery encompasses all surgeries performed on the eye and it requires specialised microsurgical skills. There are various ways for trainees to practise and perfect such skills, but one way is via model eyes, which can be purchased for training purposes. Some eye theatres stock them for junior doctors, so you can ask the theatre staff if there are any available for you to practise on. Over the years, model eyes have been redeveloped and refined to ensure that they accurately represent a real human eye, therefore making your practice as realistic as possible. To practise suturing skills, similar to using model eyes, you can purchase training suture pad skin models to perfect the technique.

Another fantastic tool that you can utilise to familiarise yourself with ophthalmic surgical procedures is the state-of-the-art EYESi Surgical Simulator. This piece of equipment is highly recommended to new starters in ophthalmology, and allows trainees to practise and refine their microsurgical techniques in a safe environment [5]. EYESi simulators may be available at your local hospital, or alternatively can be accessed at the Royal College of Ophthalmologists [5].

Social media

I consider ophthalmology to be a rather visual specialty, in that a lot of the pathology can be seen right in front of you. In addition to this, being

a visual learner myself, I have found certain resources to be more useful in my education than others, such as YouTube videos.

In this modern day and age, I think it would be foolish if we did not consider all the platforms available to us which could be invaluable to our learning. Take a quick browse through the *Eye News* website and you will find lots of articles covering the top ophthalmology related accounts on various social media platforms including TikTok, YouTube and even podcasts! They all discuss various topics relating to ophthalmology, but a lot of them also discuss performing specific clinical skills in too. I would recommend exploring these accounts in your own time, and hopefully you will find one that you like and can learn through.

In this article, I have only been able to touch the very surface on how to approach clinical skills in ophthalmology. I urge you to use this as a starting point and to continue (or start) to build on your skills. One piece of advice that I have is to not feel defeated should you not manage after the first, second, third or umpteenth attempt with any of the above skills. As Honda once said: "Success is 99% failure." So, if you fail to do something, just know that you are one step closer to succeeding next time.

References

1. Stevens S, Gilbert C, Astbury N. How to measure intraocular pressure: applanation tonometry. *Community Eye Health Journal* 2007;**20**(64):74-5.
2. Brusini P, Salvat ML, Zeppieri M. How to Measure Intraocular Pressure: An Updated Review of Various Tonometers. *Journal of Clinical Medicine* September 2021;**10**(17):3860.
3. Turbert D. What is Optical Coherence Tomography? American Academy of Ophthalmology. Available at: <https://www.aao.org/eye-health/treatments/what-is-optical-coherence-tomography>
4. Cabrera MT, Pepple KL. Introduction to Retinal Optical Coherence Tomography Interpretation. American Academy of Ophthalmology. <https://www.aao.org/resident-course/introduction-to-oct>
5. The Royal College of Ophthalmologists. EYESi Ophthalmic Surgical Simulators. <https://www.rcophth.ac.uk/training/simulation/eyes-i-ophthalmic-surgical-simulators/>
6. Ding J. How to Use a Slit-Lamp. American Academy of Ophthalmology. <https://www.aao.org/young-ophthalmologists/yo-info/article/how-to-use-slit-lamp>

[All links last accessed June 2022].

“As Honda once said: “Success is 99% failure.” So, if you fail to do something, just know that you are one step closer to succeeding next time”

TAKE HOME MESSAGE

- The initial period of ophthalmology training has an incredibly steep learning curve so don't be too hard on yourself.
- Perseverance and endurance are vital to mastering clinical skills in ophthalmology.
- Practise, practise, and practise some more!
- Read more about simulated ocular surgery on the *Eye News* website:



- Remember this: They wouldn't have let you into the specialty if they didn't think that you had the potential to do it. So don't give up!

AUTHOR



Sammie Mak,

Clinical Fellow in Ophthalmology, Northern Care Alliance NHS Foundation Trust, Salford, UK.

Declaration of competing interests: None declared.

REVIEWED BY

Zaria Ali,

Eye News specialist advisor; Research Fellow, Manchester Royal Eye Hospital, Manchester, UK.

Zaria.Ali@mft.nhs.uk