Phacoemulsification cataract surgery: what you need to know

The need for phaco is increasing – especially for those patients with less mature cataracts.

Setting up a phacoemulsification (phaco) cataract service from the ground up can be daunting, as it requires suitable equipment and preparation. Ensure your facility is prepared to handle phaco surgery with properly maintained equipment, adequate supplies of phaco cassettes and consumables, ophthalmic viscosurgical devices (OVD), specialised phaco instruments, and an adequate microscope with an excellent coaxial illumination source.

There are also several considerations beyond the training of surgeons and teams. Biometry will be essential, along with a reliable supply of foldable IOLs across a whole range of powers. Supplies are more expensive than those needed for manual small-incision cataract surgery (MSICS), and these will need to be budgeted for. The equipment will need regular maintenance, and personnel will need to know how to troubleshoot in case of problems. A voltage stabiliser and uninterruptable power supply will be needed if electrical supply is unreliable at your facility. Is there vitreous retinal support available from surgeons in the area, in case of a dropped nucleus? Speak to colleagues for advice.

How to practice skills for phaco using simulation

Learn the basics of phacodynamics and fluids by reading standard manuals and visiting websites (listed below in ‘Useful training resources’). Remember that there is a steep learning curve. Learn the feel of the phaco foot pedal while listening to the sounds of the machine in various pedal positions and sampling other functions you may need. Familiarise yourself with the settings on the machine (phaco power, vacuum, aspiration rate).

Before operating on live patients, surgeons learning phaco must undergo simulation training (on animal or artificial eyes) in as realistic an operating theatre environment as possible. Practice finger positioning on the large handpiece, hand positioning to manage the weight of the handpiece, and foot pedal activation until you can control the handpiece easily and intuitively.

Virtual reality (VR) simulation training in phacoemulsification is also possible using the training modules available with the Eyesi® surgical simulator, which has been shown to reduce complication rates in operations performed by trainee surgeons by up to 38%. The Eyesi® is especially useful for practicing capsulorrhexis. Any virtual reality or other simulation training must always be supported by live surgical observation as well as supervised practice.

Useful training resources

The PGY2, PGY3 and PGY4 Residents’ videos on cataractcoach.com are an excellent resource: https://cataractcoach.com/2020/01/25/list-of-key-videos-for-residents/

Orbis International’s Cybersight website has a ‘Fundamentals of Phacoemulsification’ course: https://cybersight.org/online-learning/


Simulatedocularsurgery.com offers videos for practicing phaco cataract surgery: https://simulatedocularsurgery.com/cataracts

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