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Editorial

# Training and Teaching Ophthalmic Surgical Skills to Young Ophthalmologists: An Ophthalmic Surgeons' Perspective

**Suresh K Pandey***

*Director, SuVi Eye Institute and Lasik Laser Center, Kota, Rajasthan, India*

***Corresponding Author:** Suresh K Pandey, Director, SuVi Eye Institute and Lasik Laser Center, Kota, Rajasthan, India.

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Ophthalmology is one of the exciting sub-specialty of medical science with continue change and advancement in the field of investigations (tools) and micro-surgical technique. Surgical training and transfer of surgical skills of new technique to ophthalmology residents and newer generations of ophthalmologists is need of the hour. Cataract surgery is by far the most commonly performed surgical procedure in ophthalmology worldwide. It is imperative that ophthalmology residents should be reasonably proficient in this surgery by the end of their training.

In this era of technology, patient can gather information about the surgical procedure in details even before their visit to doctor and their expectations from cataract surgery have increased tremendously, along with improvements in surgical techniques in the last few years. Cataract surgery has now been refined to the status of being considered "refractive cataract surgery" by many.

Sadly, surgical training of residents in India and several developing countries in most of residency programs has not kept pace with these advances. Most of the medical colleges in India and developing world still focus exclusively on Small Incision Cataract Surgery (SICS), and even traditional Extra-Capsular Cataract Extraction (ECCE) during the ophthalmology residency. These techniques certainly have an important role for selected patients in developing countries. However, we must make sure that our ophthalmology residents are equally well versed with micro-incision cataract surgery- phacoemulsification and other newer developments (including premium IOLs) which are now considered the standard of care for cataract patients, with few exceptions. The need for better curriculum and uniformly applied, well-structured goals for surgical training during residency training cannot be overemphasized [1-7].

As someone who received training in ophthalmology from a regular medical college in India followed by one of India's premier institutions (PGIMER, Chandigarh) and finally at a first world teaching eye hospital (Storm Eye Institute, Charleston and John A Moran Eye Center, Salt Lake City, Utah, USA), I can affirm that surgical training standards in India and other developing countries are hugely capricious, and need to be standardized. I have emphasized the challenges faced by ophthalmology trainees and possible solution for transferring surgical skills in young ophthalmologists in a recently published editorial [8].

While some well-funded and eminently staffed institutions in government (e.g. Dr. R P Center for Ophthalmic Sciences, AIIMS, New Delhi, PGIMER, Chandigarh, India) and non-government sector (L. V. Prasad Eye Institute, Hyderabad, and Aravind Eye Care System, Madurai) in India have excellent surgical training programs, the vast majority of medical colleges offer little to no "hands on" training in phacoemulsification surgery. This revealing fact was unambiguously presented in a landmark study on general residency training standards in India, published in this journal in 2008 [4]. Another study published in 2017 found that cataract surgical training during residency focused only on SICS [2].

Apart from a couple of institutions, ophthalmology residents in India and developing world do not have access to virtual reality training systems. 'Hands on' training is practically the only system of transferring surgical skills in India and developing countries. Where residents do get to learn "hands on" surgery, in addition to high patient expectation about quick visual recovery (after cataract-IOL surgery), there are various procedural and administrative issues that hamper learning. In many teaching institutions in India and developing world, the hierarchal system of case allocation followed is usually such that residents/trainee get the cases at the end of the operating theatre list or at a side table, where surgical instruments, operating microscopes, machines, assistants, support staff and often patient preparation, are all sub-optimal. Most of the times, these resident surgeries are either unsupervised, or supervision is carried out by other, more senior residents, who themselves are in the learning phase. There is a need to change these processes so that ophthalmology residents have a better atmosphere to learn.

Several authors have suggested an urgent need to improve ophthalmology residency training in medical colleges of India [2-4]. This necessitates strong will power (for teachers) to teach the residents, industry support to provide equipments at discounted price, funds to buy new equipment(s), and to maintain them, "training the trainers", standardized and monitored residency curriculum etc. but most importantly -the desire and the drive to make resident training the focus of all activities in training institutes. The residents themselves need to become proactive to achieve the best possible training, utilizing the host of resources (including articles, surgical videos available on internet) that have become available in recent times.

Wet Labs/surgical simulators can be a very helpful option for learning various steps of phacoemulsification before proceeding for "hands on" micro incision cataract surgery and IOL implantation. Wet lab training allows residents to get familiar with phacodynamics/phaco machine settings, operating microscope, ophthalmic microsurgical instruments and definitely help to minimize the learning curve. Animal eyes, postmortem human eyes (Miyake-Apple preparation), simulators, devices, teaching tools such as Kitaro dry lab and wet lab system kit (FCI Ophthalmics, Pembroke, MA, USA) are currently available to learn and practice phacoemulsification surgery in a stress-free environment [9-11]. All India Ophthalmological Society and state ophthalmological societies and several other not-for-profit organizations are doing an excellent job with skills transfer courses where many ophthalmology residents and fellows get exposure to and interaction with experts in the field.

It is high time for medical college heads, ophthalmic teachers and ophthalmic leaders in India and developing countries to put utmost emphasis on high quality advanced ophthalmic (cataract and other) surgery training by providing tools, technology and training to help achieve this goal. The availability of operating microscope with assistant tubes, facility for video recording of the surgical procedure (surgical media center), good phacoemulsification machines, sets of micro-surgical instruments for training, provision of ophthalmic viscoelastic devices (OVDs) and surgical adjuncts for difficult cases (capsular dyes, triamcinolone, iris hook, capsule tension ring, etc.) will all go a long way in achieving this goal. Common pitfalls while learning phacoemulsification (poor incision construction, inability to achieve complete capsulorhexis, inadequate hydrodissection, inability to crack the nucleus, iatrogenic zonular dialysis, posterior capsule rent, vitreous loss, nucleus drop, difficulty to load and implant IOL in the capsular bag etc.) can be avoided using new blades for creating incision, good quality OVD, and compulsory wet lab training to minimize learning curve related mishaps. Practice of suturing with 10-0 monofilament nylon under surgical microscope helps residents be ready when they encounter leaky incisions. Encouraging ambidexterity in residents can help improve surgical skills, too. A focus on supervised ophthalmic surgery needs to be created, with senior experienced faculty performing the skill transfer duty, rather than novice surgeons.

We need to remember that the best of surgeons have made mistakes while learning. However, since we are dealing with human eyes, we can neither afford to make too many mistakes nor leave mistakes unattended. Whenever a mistake is made, an effort should be made to find the cause, learn to avoid it and rectify the same. Surgical video recording and review of videos by self and teachers, especially in case of complication can go a long way in imparting surgical skills while at the same time improving the quality of surgery. As teachers, we also need to inculcate the sense of responsibility in residents to see and care for the operated patient in the postoperative period- where they can learn the nuances of postoperative care.

The private sector forms a large part of Indian healthcare scenario and most private practitioners (ophthalmologists) are very involved in academic activities. Engaging them in surgical training of residents can refine the latter's learning to make them ready for real- life practice scenarios. Out of the box solutions can be adopted where necessary e.g. better collaboration between medical colleges and institutes in the private sector or allowing honorary teaching in colleges by private practitioners.

To conclude, a transformation of the mindset, focus and curriculum of ophthalmic surgery alone can prepare the new generation of ophthalmology residents to be competent world leaders in this field. In the fast paced hi-tech world of modern ophthalmology, this is the least that we owe our trainees. Let us inspire all trainee ophthalmologists as mentioned by William Arthur Ward-The great teacher inspires, The good teacher explains, The superior teacher demonstrates, The mediocre teacher tells.

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