

Commentary: Training in wet labs and on surgical simulators: Need of the hour

“Tell me and I forget, teach me and I may remember, involve me and I learn.” This quote by the Benjamin Franklin cannot be more relevant in regards to surgical training.

Ophthalmology residency programs play a critical role in training surgeons to perform both intra-ocular and extra-ocular surgeries. The positive reinforcement during those early years teaches the budding ophthalmologists to be cautious and conscientious doctors with fine surgical skills.

Surgical skills are an amalgamation of meticulousness, precision, and fine motor skills. The ocular surgery in specific also needs advanced hand–eye coordination as most surgeries are performed under microscope. A fundamental component for developing competency in ocular surgery is undergoing a structured surgical training program.^[1] Unfortunately, high heterogeneity in surgical exposure over time and across locations is a current challenge in ophthalmology residency training.^[2] Concurrently, it is essential to ensure patient safety and provide high-quality patient care without compromising the resident’s educational mission. Traditionally, surgical teaching has centered on the concept of graded responsibility and exposure to a high volume of cases based on the apprenticeship model. However, it has been widely established that training based solely on the apprenticeship model is not an ideal approach for technical skills training.

Surgical skill training not only needs intensive resources but also is very time consuming. Nonetheless, the residents must undergo training, which is appropriately designed, competently supervised, and properly taught to acquire and refine vital surgical skills during the crucial years of residency. Surgical training designs have advanced significantly from comprehensive apprenticeship toward surgical simulation and wet lab supervised practice.

These mandates are driving residency programs to seek new and better ways to enhance surgical education while maintaining high standards of quality of care. It is the need of the hour for the surgical curricula to incorporate auxiliary methods of surgical teaching, which includes wet lab and simulators. In USA, the Accreditation Council for Graduate Medical Education requires that residencies have either a wet lab or a surgical simulator.^[3] These methods provide hands-on experience to practice basic microsurgery steps and interactive teaching platforms, which allows residents to acquire skills needed to safely perform ocular surgery.^[4]

It is now a widely recognized fact that a structured surgical curriculum consisting of wet lab training helps in improving cataract surgical outcome.^[5] Ramani *et al.* reported the effect of wet lab training on the surgical outcome of resident performed manual small-incision cataract surgery (MSICS).^[5] They found that intraoperative complications significantly reduced and postoperative visual acuity was significantly better in the group that received regular wet lab training. Similarly, Rogers *et al.* have emphasized the need for intensive wet lab training for 1st and 2nd year residents to improve their microsurgical skills.^[1] Surgical

simulators are also gaining popularity in the recent past as an effective training tool.^[6] A number of studies have reviewed the possible benefits of adding a simulator, particularly in enhancing surgical efficiency.^[7] Daly *et al.* evaluated the efficacy of surgical simulator training versus traditional wet lab training on operating room performance of ophthalmology residents during capsulorhexis in cataract surgery.^[8] They concluded that simulator training prepared residents for the operating room as effectively as the wet lab. However, most of these studies are focused on cataract surgery training.

The use of wet labs and simulation for training in ophthalmology has had rising evidence of improvement in the outcome of the trainees.

However, some studies indicate that current simulator training may not reduce actual complication rates apart from the high installation costs.^[9] With the rapidly increasing simulation and wet lab based models in ophthalmology, it becomes imperative to include a lot more technical procedures that should be integrated in the curriculum.

In the study titled, “Optimal refinement of residents’ surgical skills by training on induced goats eye corneoscleral perforation”, the authors have addressed a pertinent issue of training residents to perform corneoscleral perforation repair.^[10] The detailed technique of corneoscleral perforation repair on goat’s eye as described in the study can serve an important cost-effective tool in training the residents as the goat’s eye tissue resemblance and the reality of experience while performing crucial steps are similar to human eyes.

Over the years, the All India Ophthalmic Society (AIOS) has taken initiatives toward improving resident education and training.^[11] In collaboration with the International Council of Ophthalmology (ICO), the AIOS has drafted the National Curriculum of Ophthalmology.^[11] In our country, where 40% of the ophthalmology residents are not satisfied with their surgical training,^[11] steps in surgical training of residents is not only important but should also be universal. ICO has, over the years, developed rubrics for surgical training.^[12] Similar efforts should be made by other ophthalmological societies to use standardized rubrics not just in clinics but also in wet labs. Previously wet lab rubrics for eye bank professionals^[13] and phacoemulsification^[14] have been described and the above study adds to the growing list of good work, which has been done in the field of surgical training.

With India being considered as one of the centers of global excellence in ophthalmology, resident training should not stay far behind, and small steps such as these will ensure that we are on track to educational excellence as well.

**Manisha Acharya, Javed Hussain Farooqui,
Abhishek Dave**

Department of Cornea, Cataract and Refractive Surgery,
Dr. Shroff’s Charity Eye Hospital, 5027, Kedarnath Marg, Daryaganj,
New Delhi - 110 002, India


Correspondence to: Dr. Manisha Acharya,
Department of Cornea, Cataract and Refractive Surgery, Dr. Shroff’s
Charity Eye Hospital, 5027, Kedarnath Marg, Daryaganj,
New Delhi - 110 002, India.
E-mail: manisha28dr@gmail.com

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