



# Wet-lab practice on goat's eye: a postgraduate's perspective

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Surgeons walk a tight rope: they need to learn the art of balancing finely between being too aggressive and being too meek. This skill, to choose the right ingredients in the right quantity at the right time, is nowhere more evident than in ophthalmology because of the extremely small and delicate structure of the eye. Ocular surgeons use microscopes and depend heavily on accurate hand-eye coordination. It is a challenge to the teachers to teach ocular surgeries directly on a patient's eye owing to the risks during the learning curve. My teaching institute trains postgraduate students in wet-labs using goat's eyes – this allows one to practice surgical skills before an actual hands-on experience on the human eye. And rightly so.

I vividly remember the initial days of my post-graduate career in ophthalmology. My teacher mentioned to us that we had

to acquire certain skills before we could earn the right to operate on a living human eye:

1. Understand the delicate structure of the eye so that we know just how much pressure it can withstand with our surgical instruments;
2. Master hand-eye coordination before we wield a scalpel over an eye; and
3. Acquire an attitude of respecting ocular tissues and the person they belong to.

I wanted to earn the right, there was no doubt about that. As I wondered how, my seniors told me about the possibility of using a goat's eye to learn surgery. It sounded weird and unnatural. I was disappointed and, remembering our anatomy dissection classes all over again, I felt even worse because this time it was going to be an animal eye; however, I

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soon realized that this was the only way forward for me to get a feel of an “eye” without actually operating on a patient’s eye. Little did I know that the strange feeling I experienced was just the beginning – the whole charade was going to become a lot more troublesome.

The trouble started with “finding” a goat’s eye. Of course, my seniors gave us some directions, but they were vague and inadequate for first timers like us. Who else could we ask who would help us?

Given our commitment, and our great desperation, we finally approached a fruit seller near the hospital, “Boss, where can we get a goat’s eye?”

He said, “You mean meat? You can go towards the right. There are some beef shops nearby.”

Hearing the word beef, we ran away. He must have been perplexed. Next, we approached a hotelier. “Who asks for goat’s eyes? Only freaks!” His expression frightened us away.

A few days later, our teachers reminded us again. “Where is the goat’s eye?” they asked. The seniors, quite amused, directed us to meat shops. I am a non-vegetarian, but a non-vegetarian who has never, ever stepped into a meat shop. With quaking hearts, a friend and I set out on another endeavor. I’d never wondered about the source of meat while eating it in a fancy hotel, and now we were two girls in search of goat’s eyes, and it felt awkward facing this strange predicament.

We realized that being finicky would take forever, so we identified a few meat shops, gathered some courage and went inside a stinky one. We asked the man in charge, “Boss, goat ki aankh rakhte hain kya aap?” (Do you keep goat’s eyes?). Silence. We repeated the question in our timid voices. And then explained to him the purpose. His behavior immediately

changed. Now we appeared sensible to him!

He took out some eyes from a heap of discarded animal parts and handed them to us. I shivered! It seemed sad how some body parts were considered ‘useless’ or ‘a waste’ after death. After double wrapping them in polythene bags, we took the eyes to our hostel.

A new confusion arose once we got back: should they be stored in the refrigerator with other food? No way the other girls shrieked. My non-medico friends even laughed at me. “You will become a goat doctor only!”

Then came the big day, and we actually used instruments to operate on the goat’s eye under the surgical microscope. We first fixed the eye on a thermocol block, and then had to muster the courage to bring the eye and the blade together. My hand trembled; at the same time, the eyeball was slippery. It felt like a balloon filled with water, only with a thicker sticky skin. The consistency was firm yet delicate.

I took a pair of conjunctival scissors and started cutting the conjunctiva, only to realize that watching a video of surgery was so different from actually doing it. It appeared so much simpler in videos. While working under the microscope, it seemed like my hands, my eyes, my mind, and the instruments were all working autonomously and moving in different directions. The challenge was to achieve their coordination and synchrony. It was tough beyond imagination.

The fear was of cutting more but also sometimes of cutting too little. The anxiety was about achieving cuts in millimeters, when it looked like centimeters under the microscope. I gathered some daring, thinking that even if I lose one eyeball, I have a spare one

and I can always get more from the meat shop. My inner voice said to me, “there are no spare ones in real life!” Needless to say I got goosebumps!

With the completion of my untidy conjunctival peritomy - with its ragged margins - I proceeded to make an incision on the sclera. While creating the scleral tunnel, I poked the eye a little too hard and punctured it - it immediately collapsed, losing its tension and its shape. I was shocked to think what would have happened if this had been a real patient's eye. Only then did I realize the importance of practicing on a goat's eye.

I made many more attempts over the next few weeks to practice several steps on goat's eyes - incisions, suturing, capsulotomy, lens delivery and some others. I realized no steps were really so easy on a goat's eye. At times, it was frustrating.

After a period of time, I drew my teacher's attention towards my efforts hoping she'd find me fit to operate on a patient's eye. Finally the day came and I touched the human eye in the operation theater under the microscope with a scalpel. I was there. I had dreamed of it. I had thought of it so many times before. I was well prepared. I had seen many surgical videos. I had assisted my teachers and seniors. I had practiced on goat's eyes - many eyes.

I knew I had done this before, but the difference was that this was a live human eye and I did not have a spare one this time. That was when my hands trembled and shook in fear – they knew, too, that it was my first surgery on the human eye, even though the feel was similar. It

still felt like a balloon filled with water, only with a thicker, sticky skin.

I took a deep breath. By now, I had an understanding of the structures of the eye, I had built up my hand and eye coordination and, most importantly, I had learned to respect the tissues. In all these many ways, I was prepared. The realization mitigated my anxiety – I had “been there, done that”. The beeping of the pulse-oximeter in the theater reminded me of the life and the vision I was handling. Even though the moving and moaning patient was a new and alarming feeling, I thought of the dead goat.

Some steps were easy; some tougher than on the goat's eye. The patient's eye bled and made me dizzy. I was seeing signs of life as I was cutting the tissues - all the time comparing the dead and the living.

Right from my MBBS days, I had dreamed of being a surgeon, and now I was one.

Being an ophthalmic surgeon requires ambidexterity, precision and practice. Even a millimeter matters and might cost the patient his sight. So, a novice cannot be given a human eye to experiment on without any prior practice. It's not fair to patients.

Surgery on the eye of a goat trains a postgraduate student not only in the skills of surgery but also prepares her mind. It teaches patience and respect for tissue. My journey from goat's eye to human eye was emotional, funny, tough but enriching.

If only I could thank the goats!