Surgical Training at Crossroads

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We have risen to the challenge of surgical manpower requirements by increasing the postgraduate seats in various medical institutions. The DNB stream has also expanded and is training more surgeons to add to the national pool. It is now time to introspect and look at the quality of surgical training. I am sure we all agree that the quality is as important if not more important than the quantity of the surgical workforce.

Across the world, surgical training has well-defined goals. It is to produce a surgeon who is competent both in theory (cognitive) and operating (psychomotor) skills and is ethically sound so as to meet the requirements of the society he works in. Let us look at two aspects of this training, namely, the cognitive domain and the psychomotor domain.

Cognitive Domain

The cognitive domain consists of the theory aspects of surgery. Students must be encouraged to understand the basic principles and above all, apply these principles to a given clinical situation. This is contrasted to rote learning, which involves memorising facts. We must also remember that students learn better and retain information better if principles of adult learning are employed. Adults learn better when the learning is perceived as important for their day-to-day functioning. The learning process must be participatory and focused on specific problems [1]. The capacity to apply the knowledge gained is called HOTS, Higher Order Thinking Skills or critical thinking. Several factors like the need for specific attention to the teaching of critical skills, the importance of research and the attitude of the teachers

have been recognised as barriers in promoting critical thinking [2]. Importantly, higher order thinking or creativity can be taught. Once learnt, this skill enhances students' capacity to problem solving and enhances his capacity to adapt to changing circumstances [3]. Our teaching and more importantly, our examination system seems to encourage rote learning rather than applying analytical skills. In other words, we are keen to transfer pieces of information and data that are memorised by our students. Students work very hard to remember these pieces of information and reproduce them in our examinations to gain entry to a postgraduate course or get certified after completing a course.

We must really be giving a lot of importance to evidence-based practice and tailor the teaching to clinically relevant and common conditions that one comes across in one's practice. Our trainees must get formal teaching about evidence-based surgery [4]. They must learn the skills to critically appraise a scientific paper [5]. For this, they must understand and conduct some basic research as well. The present system of thesis writing is designed to teach students these skills. However, it does not seem to have met the goals. Perhaps we could give them alternatives to thesis writing. This may include publication of papers in peer-reviewed journals. As successful publication may be a big challenge, we could also consider accepting pre-publication documents for appraisal by our examiners.

Factual data like the normal range of values for some investigations, or the dosage of medications etc., are now available in our smartphones for purposes of point-of-care learning; these data need not be memorised. Rather, the student must be equipped to deal practically with the conditions and cases that he faces in his daily practice as a surgeon. This is the practice-based learning and the systems-based practice that the American College of Surgeons has outlined in its curriculum development programme [6]. Attention must be given to teaching communication skills which forms an important part of a surgeon's professional life. He

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must learn to play the part of the leader of a team that he is. Proper communication with patients will mitigate many of the medico-legal problems that all of us face today [7].

The learning culture turns to one of analysis and logical thinking only when the examination assesses this aspect of the cognitive ability of the student. Hence, our examination pattern needs to adapt to this kind of questioning. Questions like—“What is the amount of fluid required in the stomach to elicit a succussion splash?” or “Which is a better indicator of peripheral circulation? The pulsation in posterior tibial or the dorsalis pedis artery?”—do not help in the proper assessment of the student. A lot of time is spent discussing clinically irrelevant findings in the exam, about which even the examiners have a difference of opinion, that there is little time for discussing the differential diagnosis, the workup of the patient or a plan of treatment. But the latter form the basis of all surgical care. The focus of assessment must turn towards, in addition to salient and relevant clinical findings, assessing the analytical capability of the student and his capacity to choose the correct investigations, interpret them properly and formulate a logical treatment plan. Additionally, he must make sure that the socio-economic status of the patient is factored into his decisions.

Psychomotor Domain

Surgery is a skill-based science. Undoubtedly, the short period of 3 years our students spend in the MS or DNB course cannot be expected to equip them to be efficient surgeons with the requisite skills to operate safely and independently. Students need anywhere between 5 and 8 years in training to gain some degree of proficiency. The psychomotor or skill domain can be learnt only with assistance from a long period of mentoring. It is well known that skills are learnt through three phases [8]. The teacher first explains how a procedure is done. He then shows the student how to do the procedure. Finally, the student is supervised when he undertakes this procedure. At this stage, correction with immediate feedback is required for the student to learn the procedure properly. With the increasing number of post-graduates in various teaching institutions neither the case load permits this kind of teaching nor the individual attention that is required can be provided. This results in a pool of surgeons who are perhaps less adequately trained than is required. This will certainly have a negative impact on surgical services.

What Can We Do?

We can do three things to address this problem.

1. Simulation: it has become increasingly well established that simulation in the laboratory can help students acquire the necessary basic skills [9]. When basic skills are learnt in the laboratory, precious operation theatre time is saved. It is also safer for the patient.
2. Mentoring: an immediate necessity is to increase the number of mentors who are prepared to stand next to the trainee and mentor him during the operating procedure. It is established that this is a safe way of training students. The mentor must, of course, be prepared to give the time required in the mentoring process, as the only issue with mentoring is increased operating time. But, this is time well spent because the mentors will have the satisfaction of ensuring a safe and proficient surgical task force for the coming generation [10]. The trainees must make it a point to have at least 3–4 years of operating experience with a senior surgeon before starting their own practice. This process can be made formal and effective if professional associations start a well-planned mentorship programme that “matches” mentors and mentees.
3. Enlisting private surgeons: it is well established that 70–75% of hospital-based practice in this country is in the private sector. It is unreasonable to expect the limited teaching facilities in the government and teaching hospitals to provide the necessary patient load for training the large number of surgeons required in our country. It is important to establish a bridge between the teaching institutions and private hospitals who perform a good number of surgical procedures. Students can be sent to these institutions to acquire surgical skills. Of course, proper credentialing of these institutions and mentors has to be undertaken by the authorities concerned.

We have taken several important steps in recent years to improve surgical training. The curriculum has been revamped. We have moved to newer methods of examination and assessment like OSCEs. But more needs to be done. Above all, our teaching must focus on analytical aspects of decision-making. A lot more mentoring has to be done. Our examinations must assess competence, based on objective criteria.

Data Availability Not applicable.

Declarations

Ethics Approval Not required.

Conflict of Interest The author declares no competing interests.

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