

## Role of Cadaveric workshop in refining the Surgical Skills: an experience and way ahead in an institute of National importance

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### Abstract

Cadaveric skill labs are a valuable tool for improving the surgical skills requiring detailed anatomic knowledge. Considering the advantages of cadaveric workshops over other surgical training modalities there is a need to expand the scope. The authors give a view point of conducting cadaveric workshops for acquiring different surgical skills in an institute of National importance. This method provides an opportunity to upgrade both basic and advanced surgical skills for different grades of surgeons and in revisiting anatomy which can be translated to better patient care.

**Keywords:** Surgical skills, Cadaveric workshops, Surgical specialties

### Introduction

Simulation training has been adopted by medical educators to accelerate psychomotor skill acquisition, enhance learning curves of new skills, improve procedural understanding, and to assess proficiency. Cassidy Duran, Kneebone and Aggarwal claimed that the strength of simulation is as an adjunct rather than an alternative to clinical experience. Kneebone R. Various modalities of surgical simulation exist, such as computerized or video simulation and models, Mannequin-based simulators, but these are all compromised by the absence of real anatomical relationships and perception of tissue handling, particularly for surgery Sutherland LM. Cadaver labs are a valuable tool for improving procedural knowledge, understanding difficult anatomic relationships, and improving operative confidence for a number of uncommonly performed open vascular procedures, further supporting the utility of simulation as a tool to help prepare trainees for independent practice. Mitchell EL. Cadaveric workshops have been used widely in the United States and elsewhere and appears to be popular with trainees. Supe A, Dalvi A

Therefore, while considering the advantages of using cadaveric workshop over other forms of simulation in surgical training, it is important to determine the circumstances in which cadaveric training will confer the greatest benefit so that resources can be used appropriately and efficiently. (J Gilbody)

Once divorced from "Surgery and anatomy" as "Anatomy" by Italian Surgeon Giulio Cesare in 1570, there is a recent demand for "Fundamental surgery" as a new sub-speciality branch under Anatomy as fellowship programme or M.Ch course. (Vishram Singh)

A series of Hands-on cadaveric workshops (six) were conducted in the department of Anatomy at the newly developed institute of National Importance AIIMS, Bhubaneswar over a period of two years. The authors analysed the reports of these workshops and provides a view point to reemphasize the role of cadaveric workshop taking the 'need of workshops', 'complexities of skill's learned', 'grade of surgeon participating', 'ways to assess the outcomes' and 'limitations' into account.

### Cadaveric workshops conducted in the Department

Observation

Sl No	Date	Name of Workshop	Collaboration with or Departments Involved	Participants type	No in each group	Total
1	5-5-2013	First Hands-on cadaveric workshop on Brachial Plexus surgery	Neurosurgery and Trauma Emergency ICMR funded	PGs		17
				SRs and MChs	3	
				Faculties	7	
				Consultants	7	
2	22-3-2015	Hands-on cadaveric workshop on Total Knee Replacement	Orthopedics	PGs	3	14
				SRs and MChs	4	
				Faculties	3	
				Consultants	4	
3	25-4-2015 & 26-4-2015	Hands-on cadaveric workshop on Head and Neck	ENT	PGs	6	23
				SRs	4	
				Faculties	6	

		Reconstruction Surgery and ESS		Consultants	7	
4	16-5-2015	Second Hands-on cadaveric workshop on Brachial Plexus surgery	Neurosurgery and Trauma Emergency ICMR funded	PGs		20
				SRs and MChs	10	
				Faculties	4	
				Consultants	6	
5	4-7-2015	Hands-on cadaveric dissection of Extra Ocular muscles and cranial nerves of Orbit	Ophthalmology	PGs	4	17
				SRs	4	
				Faculties	3	
				Consultants	6	
6	18-7-2025	Hands-on cadaveric workshop on FESS and Rhinoplasty	ENT	PGs	4	15
				SRs	3	
				Faculties	3	
				Consultants	3	

1. A total of 106 surgeons participated in 6 different workshops organized over a period of 2 years.
2. Participants were of different grades i.e. Postgraduate residents (17%), Senior Residents and MCh Trainees (25%), Consultants (32%), Faculties (26%).
3. Participants were from different surgical specialties and super-specialities i.e. Orthopedics, ENT, Trauma & Emergency, Ophthalmology, Neurosurgery, Plastic surgery.

## Discussion

**Need of Cadaveric workshop:** Anatomy is considered as the lifeline of surgery. With a conflicting scenario between reduced period of anatomy teaching during undergraduate curriculum and increased demand of detailed anatomical knowledge at postgraduate and M. Ch. level for higher surgical skills the Cadaveric workshop can play a vital role in bridging the gap. (Vishram Singh)

So far the utility of cadaver in medical science is restricted to provide basic anatomical knowledge in first year medical curriculum in the form of dissection, preparation of museum specimens, cross sectional specimens, surface anatomy etc.

Rapid advances in medical technology and greater public expectation with decreasing clinical load, there is need for adaptation of surgical education without compromising the quality of level of skill. Also study shows that there is a great deficit in acquiring technical skills in the residents that must be corrected before graduation. (Gamal A Khairy).

There is a rising trend for surgical skill development through cadaveric workshop throughout the world so also in India. Very few research studies are available answering the feasibility, reliability and validity of this method.

Though bench model and cadaveric model of surgical training offers equal degree of benefit (Hamstra et al), the latter technique provides an extra edge in procedures requiring detail anatomy and tissue fidelity as added dexterity.

**Complexity of skill and skills learnt:** Cadavers can be used as a model to acquire and improve both basic and advanced surgical skills. Basic surgical skills include Burr hole insertion, chest tube insertion, small bowel anastomosis, flexor tendon repair, K-wire fixation of a metacarpal fracture, endotracheal intubation, venous cutdown etc. (Anastakis et al, Martin et al).

Pedicle screw placement in spinal surgery, endoscopic carpal tunnel release, sentinel node mapping and axillary lymph node dissection, advanced laparoscopic techniques in colon, vascular hernia and bariatric surgery, cholecystectomy, appendectomy, splenectomy, varicocele vein occlusion are some of the advanced surgical skills that can be acquired through cadaveric model (J Gilbody1).

We conducted a series of advanced surgical procedure workshops i.e. Brachial Plexus surgery, Total Knee Replacement, Head and Neck Flap Reconstruction Surgery, FESS (Functional Endoscopic Sinus Surgery), Dissection of Extra Ocular muscles and cranial nerves of Orbit, Rhinoplasty.

**Grade of surgeons participated:** Different studies show that cadaveric workshops are used as a tool for skill development by the postgraduate residents (Anastakis et al, Martin et al, Bergeson et al., Dunnington, Reed et al) and few studies shows the participation by consultants and senior residents (Giger et al, Supe et al) and no study shows the participation of faculties in the workshop as trainee.

We observed that along with Post graduate students and Senior Residents (who participate to acquire and upgrade the skill) practicing consultants and faculties also attended the workshop for further honing of their surgical skills.

**Ways to assess the outcome of cadaveric workshop:** The outcome of the different cadaveric workshop can be measured by (a) objective specific assessment (in the form of checklist of steps, post-instrumentation observation, failure as critical violation and post procedure dissection to assess accuracy etc.) (b) transfer of skill by narrative comments from participants, feedback from observers, competency based approach

etc. and (c) trainees' perception by subjective questionnaire and evaluation.(J Gilbody)

A post-workshop feedback form was given to all participants for their responses.

1. 100 participants filled the post workshop feedback form.
2. 34% of the respondents had less than 6 years of surgical exposure, 37 % surgeons had 6-12 years of exposure, 18% had 12-18 years of experience and 11% had more than 18 years of surgical exposure.
3. Only 16% of the respondents had previous exposure of cadaveric workshops at other places.
4. While all the respondents felt that such workshops should be conducted at regular intervals for surgeons after obtaining the basic surgical Degree (PG and MCh), 92% felt that cadaveric workshop should also be part of the regular PGs and MCh training programme.
5. 74% of the respondents perceived that after attending the workshop it will help to further upgrade their surgical skill, 52% of the participants felt that cadaver training exposure should be done prior to the first case of live surgery and only 28% cases felt that the skill learned in cadaveric workshop will help to overcome the crisis of live surgery.

### Conclusion

Though there is a demand for cadaveric workshops among surgeons, very few are conducted for surgical training at different places. Some of the observed challenges are availability of adequate cadavers to maintain proper cadaveric delegate ratio, trained personnel as resource faculty, well-structured objective assessment methods to assess the outcome. But never the less cadaveric surgical training can provide a good opportunity in acquiring and honing higher surgical skills for all grades of surgeons. Anatomists can spearhead in the process to restore the glory of the subject by working in this area. More research work is necessary to improve the reliability and validity of this surgical training model.

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