

The Value of Clinical Practice in Cadaveric Dissection: Lessons Learned From a Course in Eye and Orbital Anatomy

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OBJECTIVE: To test the hypothesis that there is greater benefit in a dissection-based anatomy course among those participants with clinical experience in the relevant field, and those without.

DESIGN: A retrospective comparative study.

SETTING: Brighton and Sussex Medical School Anatomy Department: an educational facility that provides undergraduate and postgraduate anatomy teaching using cadaveric specimens.

PARTICIPANTS: All attendees ($n = 40$) to a postgraduate course in eye and orbital anatomy completed course evaluation forms. The course has been attended by delegates from around the country, with experience ranging from that of final year medical students to clinical fellows who have completed their specialist training in ophthalmology.

RESULTS: Those participants who were practicing ophthalmology tended to be older than those who were not, with a greater amount of time spent on prior learning. Participants scored both the prosection-led and dissection-led sessions highly, with a mean combined evaluation of 8.9 (out of 10) for dissection-led learning and 9.2 for prosection-led learning. Prosection-led learning was regarded equally by those participants currently practicing in ophthalmology, and those who are not. In contrast, dissection-led learning was scored higher by those participants who were practicing ophthalmology (9.4), when compared with those not in ophthalmic practice (8.5; $p = 0.018$).

CONCLUSIONS: The present study supports the hypothesis that the benefits of cadaveric dissection could be

maximized during postgraduate surgical training. This has important implications given the trend away from cadaveric dissection in the undergraduate curriculum. (J Surg Ed ■■■-■■■. Crown Copyright © 2016 Published by Elsevier Inc. on behalf of the Association of Program Directors in Surgery. All rights reserved.)

KEY WORDS: anatomy and dissection and postgraduate and education and surgery and ophthalmology

COMPETENCIES: Medical Knowledge and Practice-Based Learning and Improvement

INTRODUCTION

Anatomical principles underpin the foundations of medical and surgical practice. Because of this, anatomy has historically been taught during the early years of the medical school curriculum. Cadaveric dissection allows a 3-dimensional appreciation of the human body and encourages learning through a process of autonomous discovery. Although dissection has played a central role in anatomy education for many centuries, it is often cited as being time-consuming, resource-intensive, and emotionally disturbing for some students.¹ Wherever one sits in this topical debate, there is little doubt that there has been a trend away from dissection-led anatomy in the modern undergraduate curriculum.^{2,3} It has been suggested that dissection-based learning is better suited to the postgraduate surgical trainee.⁴ Dissection fosters a spatial understanding, a recognition for surgical tissue planes, and a tangible appreciation for the proximity of structures; these skills are of more value to the practicing surgeon than a preclinical medical student. In addition, it might be expected that postgraduate trainees have a clearer vision of their specific field of interest and would likely have a much better clinical appreciation of

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applied anatomy; they are more likely to maximize the potential benefits of dissection. The purpose of this study was to test this hypothesis. It was designed to determine whether there was any difference in the educational value of a dissection-led eye and orbital anatomy course between those participants with experience practicing in ophthalmology, and those without.

MATERIAL AND METHODS

The Course

This instructional course was designed specifically for those in postgraduate ophthalmic training, as well as for those with an interest in undertaking a career in ophthalmology. The Royal College of Ophthalmologists recognizes the importance of applied anatomy as a learning objective in its postgraduate curriculum,⁵ and the course's content is based on the anatomy-specific syllabus for the first part of the College's fellowship examination in basic sciences.⁶ This course has been held annually on 3 occasions since 2014. The course is 8 hours in length during which time delegates undertake tutorials that are both dissection- and prosection-led. During the first 4 hours, the delegates work in groups between 3 and 5 and are supervised in undertaking dissection of the orbit (from a superior approach), the eyelids, and the lacrimal outflow system. The second half of the course comprises tutorials using prosected material that focuses on regional anatomy of the paranasal sinuses, vascular supply to the head, the intracranial visual pathway, and the cranial nerves. The sessions are facilitated by a faculty of experienced specialist consultants and registrars, as well as anatomists from Brighton and Sussex Medical School.

Recruitment and Participants

Since its inception, this course has been advertised online, through printed media, and by correspondence with the local education and training boards that form Health Education England. The course has been attended by delegates from around the country, with experience ranging from that of final year medical students to clinical fellows who have completed their specialist training in ophthalmology.

Outcome Measurement

At the close of each course, participants were asked to complete a detailed evaluation of the course. Evaluation forms were completed and collected anonymously with the course instructors and study authors masked to the individual participants' responses. The evaluation forms asked participants to provide information on basic characteristics such as age, level of experience, completion of their College

fellowship examination (part 1), and prior learning. Participants were also asked to provide a quantitative evaluation of the "educational value of content" and "teaching methods used" for each of the dissection-led and prosection-led sessions. This quantitative evaluation takes the form of a 5-point Likert scale with a score of 1 deemed "very poor" and 5 being "very good." The combined score (out of 10) formed the primary outcome measure in this study. The individual scores for content and teaching methods were used as secondary outcome measures.

Analysis

Based on their responses, participants were divided dichotomously into those who were already practicing ophthalmology clinically (as a specialist trainee, clinical fellow, associate specialist, or consultant) and those who were not (foundation year doctors and medical students). Owing to the discrete, ordinal nature of Likert-scale data,⁷ the Mann-Whitney-Wilcoxon test was used to determine whether there was a difference between these groups in the respondents' scores for educational value of the content, evaluation of the teaching methods, and the combined score (as the primary outcome). This analysis was conducted on scores provided for both the dissection-led sessions and the prosection-led sessions. To evaluate whether prior educational experience was associated with improved course evaluation scores, participants were again stratified into groups based on whether or not they had any prior experience in orbital dissection, any prior experience with orbital prosections, more or less than 8 hours didactic/tutorial-based learning in orbital anatomy, and more or less than 8 hours self-directed learning in orbital anatomy. The 8-hour threshold was selected for didactic and self-directed learning as this represents a full working day. For each of these dichotomous subgroups, the Mann-Whitney-Wilcoxon test was used to determine whether there was any significant difference in the respondents' scores for educational value of the content, evaluation of the teaching methods, and the combined score (as the primary outcome). Where data were missing or illegible, this was recorded as such and was excluded from analysis.

RESULTS

Forty participants completed the course in eye and orbital anatomy. All participants provided evaluation forms. The baseline characteristics can be found in [Table 1](#). Three participants failed to provide their age, but otherwise the evaluation forms were completed in full. Those participants who were practicing ophthalmology tended to be older than those who were not, with a greater amount of time spent on prior learning and a higher pass rate of the Royal College of Ophthalmologists' part 1 fellowship examination ([Table 1](#)).

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