

Options for postgraduate anatomy education in Australia and New Zealand

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Abstract

Aims Medical education in Australia has changed considerably in recent times. As a result, hours dedicated to subjects such as anatomy have been reduced. Young doctors preparing for a career in anatomy-focussed specialties such as surgery and radiology require an indepth knowledge of this subject matter. Many Australian and New Zealand universities now offer postgraduate anatomy courses to address this potential gap in a budding surgeon's education. This article summarises the current options for postgraduate surgical anatomy education in Australia and New Zealand.

Methods All universities in Australia and New Zealand were contacted between September 2010 and December 2010 regarding the nature and content of course offerings. An Internet-based search was also conducted.

Results There are currently nine universities in Australia and New Zealand offering postgraduate anatomy courses. Courses vary in contact hours, dissection time, lecture content, and examination methods. There are currently two universities offering a Postgraduate Diploma of Surgical Anatomy—the University of Melbourne, and the University of Otago. University of Western Australia and the University of New England offer a graduate diploma and a graduate certificate, respectively. Several other universities offer courses that deliver quality anatomical education but do not award students a university-recognised qualification. The Australian Orthopaedic Association now offers courses in Perth, Sydney and Brisbane, which delivers anatomy education specific to orthopaedics.

Conclusions There are a number of courses available to budding surgeons and radiologists to help fill the anatomy education void. With the development of such courses questions of accessibility, affordability and equity remain.

Over the last 20 years, medical school curricula have been “modernised”. At the heart of these reforms is a shift from the acquisition of detailed factual knowledge, to an appreciation of core concepts, taught within a problem-based framework.

In an increasingly overcrowded timetable, subjects such as communication, professionalism and psychosocial medicine jostle for airtime alongside traditional subjects including physiology, microbiology and anatomy.¹

Increasing class sizes and a reduced availability of cadaveric specimens means that traditional anatomy teaching by dissection, whilst still occurring in some Australasian medical schools, is no longer the norm.

As a result, total hours dedicated to anatomy education in Australian and New Zealand undergraduate medical curricula have been truncated, with wide variation in the amount of anatomy taught in medical schools.²

Many authors have lamented the demise of traditional anatomy teaching.³⁻⁵ Others concede that in this age of information where facts are available at the click of an iPad, there is no longer a need for students to acquire an intricate knowledge of the human form at the undergraduate level.⁶ This issue remains contentious with junior doctors and surgeons alike questioning the adequacy of modern anatomy education and their resulting preparedness for clinical practice.^{7,8}

There remains little doubt though, that students and junior doctors preparing for a career in surgery or radiology will need to acquire this knowledge, and it is clear that the provision of this knowledge is no longer in the domain of undergraduate medical programmes. As such, there exist an increasing number of postgraduate anatomy programmes that aim to prepare doctors for careers with a heavy focus on anatomy including surgery and radiology. This shift echoes movement in the UK to implement courses for Foundation Year 1 and 2 doctors. This move has been well received as “an expression of a new focus on applied anatomy for surgical trainees”.⁹

At present, there is little information available to junior doctors regarding the options for further anatomy education. This article will examine options for postgraduate anatomy education in Australia and New Zealand. This article will not pass judgment on the quality of these programmes, as this may undermine the need to promote ongoing anatomy education, and a method of reliably concluding how these programmes perform is beyond the scope of this article.

Methods

All 47 Australian and New Zealand Universities, as listed on the Good University Guide website,¹⁰ were contacted regarding anatomy programme offerings. All universities were emailed requesting information regarding anatomy programmes offered, the method of content delivery, course duration, cost, whether dissection is offered, if the course is approved by the Royal Australasian College of Surgeons (RACS), and the presence of surgical/clinical focus. The usual contact point was the head administrator of the anatomy course (Table 1).

Thirty-six universities responded to the email via return email or phone call. A Medline search as well as Internet search was conducted to obtain information about courses not found in the initial survey of universities. This search revealed information relating to one additional course (Australian Orthopaedics Anatomy). The information received from the universities was combined with relevant information from websites listed.

Results

A summary of anatomy courses available at tertiary institutions in Australia and New Zealand is outlined in Table 1.

Postgraduate Diploma in Surgical Anatomy (PGDipSurgAnat)^{12,13}

This course is offered at two universities in Australia and New Zealand, both of which are supported and recognised by the Royal Australasian College of Surgeons (RACS).

University of Otago—The University of Otago, in Dunedin New Zealand, offers a postgraduate diploma in surgical anatomy. The course is fully accredited by RACS and aimed at postgraduate Year 1 to three doctors interested in surgery and radiology.

Table 1. Postgraduate anatomy programmes in Australia and New Zealand

UNIVERSITY	DEGREE	TIMEFRAME	MODE	COST	DISSECTION	RACS APPROVED	CONTACT PERSON
Postgraduate Diploma in Surgical Anatomy (PGDipSurgAnat)							
University of Otago	PGDipSurgAnat	Full-time: 1 year 164 contact hours	External with 2-week block modes	Domestic ~NZ\$8763 International ~NZ\$30,000 (note: bursaries available up to \$13,500)	Yes – 4 weeks Total – 2 blocks of 2 weeks	Yes	Kathryn McClea Course Administrator Dept of Anatomy and Structural Biology Otago School of Medical Sciences University of Otago PO Box 913 Dunedin New Zealand P: 0800580500 E: kathryn.mcclea@anatomy.otago.ac.nz W: http://surgicalanatomy.otago.ac.nz/
University of Melbourne	PGDipSurgAnat	18 weeks. Total 160 contact hours	Internal	Domestic AU\$10,600 International AU\$10,600	Yes – 2 evenings per week for 18 weeks	Yes	Mary Georges Project Manager Melbourne Consulting and Custom Programmes The University of Melbourne P: +(61 3) 9810 3185 E: m.georges@mccp.unimelb.edu.au W: http://www.mccp.unimelb.edu.au/courses/award-courses/postgraduate-diploma/surgical-anatomy
Graduate Diploma in Anatomical Sciences (GradDipAnatSciences)							
University of Western Australia	GradDipAnatSciences	Full-time 1 year Part-time 2 years	Internal	Domestic AU\$14,538 International AU\$28,500	No	No	School of Anatomy and Human Biology +(61 8) 64883288 enquiries@anhb.uwa.edu.au Website: http://www.science.uwa.edu.au/courses/postgraduates/coursework/graddipanatsc
Graduate Certificate in Applied Anatomy by Dissection (GradCertAnat)							
University of New England	GradCertAnat	Full-time 6 months Part-time maximum 2 years	External + 11-day intensive	Domestic ~AU\$9,100	Yes – 11 days	No	Julie Mills School of Rural Medicine University of New England Armidale NSW 2351 (+61 2) 6773 3087; jmills24@une.edu.au; http://www.une.edu.au:80/courses/2011/courses/GCAAD

Advanced Studies in Clinically-Oriented Anatomy							
Monash University	Nil – Certificate of attendance	23 sessions broken (4 modules). Note: Can undertake individual modules	Internal	Domestic AU\$2200 International AU\$2200	No	No	Marilynne Helms Centre for Human Anatomy Education Email: marilynne.helms@med.monash.edu.au Webstie: http://www.med.monash.edu.au/anatomy/clinanatomy/advanced-studies-2011-flyer.pdf
Applied Anatomy for Surgical Trainees							
University of Adelaide	Nil – Certificate of attendance	24 weeks. Total 72 contact hours	Internal	AU\$2200	No	No	Associate Professor Mounir Ghabriel Discipline of Anatomy and Pathology School Medical Sciences, Faculty of Health Sciences University of Adelaide, SA 5005 P: 83035481 E: mounir.ghabriel@adelaide.edu.au http://health.adelaide.edu.au/school_medsci/research/aandp/Applied%20Anatomy%20for%20Surgical%20Trainees%20Overview.pdf
Australian Orthopaedic Surgical Anatomy Course							
Australian Orthopaedic Association (AOA)	AOA Surgical Anatomy Course Certificate - not university recognised	20 weeks. Total 60 hours contact	Internal and Video	AU\$5445	Yes – relevant to orthopaedics	No	Annie Gibbins AOA National Education Manager Email: annie.gibbins@aoa.org.au Ph: 02 80718000 W: http://www.aoa.org.au/Training/Becoming_a_trainee/Anatomycourses.aspx

This programme consists of two semesters (6 months each) of anatomy education consisting of two elements:

- 24 weeks of distance learning, including selected readings, podcasts, questions and four research essays.
- Two separate, 2-week periods of campus-based tuition and whole body dissection.

A maximum of 30 people are selected from the application process, enabling four persons per cadaver. This course is taught primarily via two surgical anatomists with input from a broad range of specialist surgeons and radiologists.

University of Melbourne—The University of Melbourne conducts a postgraduate diploma of surgical anatomy in the first semester. The course runs on two evenings per week, for 18 weeks, totalling 160 hours contact. The course is aimed at participants who intend to sit the RACS part one examination.

This course consists of lectures, tutorials and directed dissection sessions with the option of additional independent dissection. There is currently no option for distance learning. Six students are allocated to one cadaver, however only three students dissect at any given time, rotating with prosected specimens. Both anatomists and specialist surgeons with an interest in anatomy deliver lectures.

Graduate Diploma in Anatomical Sciences (GradDipAnatSciences)¹⁴

University of Western Australia—The Graduate Diploma in Anatomical Sciences is not specifically aimed at medical graduates or those interested in surgery, and thus does not have a surgical focus. Previously the course consisted of five subjects based around an anatomy project.

Students are taught to develop, design and conduct a research project, acquire and record and analyse experimental data and analyse concepts and development in the anatomical sciences. Students then use this basis to conduct an anatomy investigation.

This course is not didactic learning of human anatomy and there is not a set prerequisite for dissection, however dissection is an option. The course length is 1-year full-time or 2 years part-time. It is undertaken at the Perth Campus, with no option for distance learning.

Graduate Certificate in Applied Anatomy by Dissection (GradCertAnat)¹⁵

University of New England—The course is aimed at medical and dental graduates and is a preparation course for those interested in surgical and radiology training. The course consists of an external self-directed component, using web-based, DVD, CD and virtual library technology, and an internal 11-day intensive course of cadaver dissection. At the time of writing endorsement from RACS is being sought. The dissection component is only offered in the second half of the year and occurs in Armidale. For those solely interested in dissection, the option to undertake dissection without obtaining the Graduate Certificate is possible at a reduced fee (2010 cost \$6650 AUD).

Advanced Studies in Clinically-Oriented Anatomy¹⁶

Monash University—This course consists of twenty-three sessions each of 3 hours duration, covering anatomy relevant to surgery within four modules. Anatomists and specialist surgeons present this course. There is no dissection available, however prosected specimens are examined. It is offered in the second half of the year and candidates can elect to take one or more of the modules. This is not a recognised university qualification, but recognition of completion is given.

Applied Anatomy for Surgical Trainees

Adelaide University—The Anatomy Course for Surgical/Radiology Trainees offered through University of Adelaide consists of 24 weeks of evening practical demonstrations and lectures. Each weekly session runs for 3 hours, during which students examine prosected specimens. There is no dissection undertaken. The course is separated into three modules, which are studied for 8 weeks each. This is not a recognized university qualification, but recognition of completion is awarded.

Australian Orthopaedic Association Anatomy Diploma

The Australian Orthopaedic Association (AOA) has recently developed an anatomy diploma, which is run through a number of universities. This diploma is not a university-recognised qualification, however it is formally recognised by the AOA in applications for orthopaedic training. This course is aimed at those wanting to pursue a career in orthopaedics and thus has a strong focus on surgical anatomy relevant to orthopaedics.

This course is run in Perth and Brisbane and Sydney. This diploma consists of 15 modules of surgical anatomy, particularly relevant for orthopaedics. It does not cover abdominal or thoracic anatomy in detail is therefore not the course of choice for a budding general surgeon. Each module is presented on one afternoon per week for 3 hours. There is the option for video link up.

Discussion

Undoubtedly undergraduate anatomy education is on the decline. Students no longer undertake dissection as a mandatory component of their formative medical education in many Australasian Universities. Whether this is to the detriment of the quality of medical graduates is questionable, but junior doctors wishing to pursue a career in anatomy-heavy specialties require an indepth knowledge of anatomy, greater than that currently provided by the majority of contemporary medical schools.

As the responsibility for providing such education and dissection experience no longer lies with medical programmes, an educational void develops. This void has been filled to a degree—there now exist multiple options available for formal anatomy education at the postgraduate level, as demonstrated by the variety of courses offered in Australia and New Zealand.

Several of these courses are approved by the Royal Australasian College of Surgeons, through a rigorous endorsement process. Course coordinators are required to submit a detailed analysis of course content, educational foundations, assessment schedules, and internal and external review procedures. Whilst this does not necessarily

guarantee a superior learning experience, and an indepth analysis of the educational merits of each course is beyond the scope of this article, potential surgical trainees set themselves in good stead having completed a course aligned with RACS learning objectives.

Anecdotal evidence also suggests that surgeons within hospital departments have responded to the reported anatomical deficits of their trainees by independently developing preparation courses for trainees sitting examinations.¹¹ Senior surgeons are to be applauded for this, and no doubt young trainees will likewise teach their junior colleagues in years to come. It is difficult to quantify the number of such courses that exist.

It would be worthwhile to consider providing this informal education to trainees at a regional or state level. However, this shift in responsibility is not without controversy. Questions of adequacy, cost, and accessibility remain. For example, should a trainee who has already spent thousands of dollars on a medical degree, and who will potentially spend thousands more during his or her surgical training, be expected to cover the cost of an anatomy course that addresses subject matter that arguably should be covered in the trainee's undergraduate and/or fellowship training?

Should the cost be shifted to the hospital health board where the student currently works? Furthermore, these courses could potentially constitute a new standard of prerequisite education prior to admission to SET training. Completion of anatomy courses attracts a variable but significant number of points in applications to several of the SET specialities. These questions will inevitably be addressed with time and will no doubt be a subject of ongoing discussion in the medical education literature.

Regardless, there is no doubt that anatomy and dissection experience allows a prospective trainee to “know his/her way around the human body”⁴ and sets him/her in good stead for his/her burgeoning surgical career.

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