Abstract: Nail surgery is the most commonly performed surgical procedure in podiatric practice. Ideally, undergraduate podiatry students will have performed at least one nail surgery procedure before graduating. However, in schools of podiatry with large cohort numbers, the potential for a shortfall in suitable nail surgery patients is of concern. Even in departments where students can expect to perform several nail surgeries prior to graduation, there remains the issue of skill acquisition. Students learn the technique of nail surgery by studying surgical theory and by observation. Whilst the techniques of local anaesthesia can be practised on inanimate objects such as an orange, the first 'hands on' experience of nail surgery has traditionally been on a patient. In an attempt to simulate nail surgery for undergraduate students, the Department of Podiatry at Charles Sturt University invested in some latex toes, complete with plastic nails. This nail surgery kit allowed students to handle the instrumentation as they would for 'in vivo' nail surgery. Students commented that this experience 'reinforced theory given on how to perform the procedure', enabled them to 'get familiar with surgical equipment' and allowed them to 'make a mistake'. Students reported that it was good to be able to practise the nail surgery techniques of partial and total nail avulsion and that this experience inspired a degree of confidence and potentially reduced anxiety. However, the latex toes are soft and flexible and the plastic nail has none of the qualities of keratinised nail plate. 'There was no real need to try and release the 'nail' from the surrounding latex as it was not really attached'. Whilst a partial nail avulsion procedure was possible, the force required to totally avulse the plastic nail from its attachment, would have sufficed to sublux a hallux. In response to qualitative feedback from year 3 podiatry students, the surgical tutor collaborated with the anatomy department staff to discuss the potential for cadaver surgery. At that time, the anatomy site licence permitted dissection only and specific amendments to the licence were required for surgical procedures. With the necessary changes in place, this year's cohort of 3rd year podiatry students were able to revisit the anatomy lab. Groups of five students worked on a single limb, supervised by the surgical tutor. An experiential learning
experience such as this, with the opportunity for immediate feedback, serves to facilitate deep learning. ‘The cadaver anatomy of the matrix and nail bed really brought the theory to life’. Students found it extremely beneficial to use the instrumentation as they would in surgery and to be able to ‘chat and discuss any problems encountered without fear of upsetting a patient’. ‘Being able to actually get the ‘feel’ of cutting through nail and then the change in cutting through the matrix, is a lot different than simply learning the theory of it’. Gaps in knowledge were identified and theory was immediately related to practice. Cadaver tissues do however lack the texture and elasticity of live tissue and offer slightly different resistance to the instrumentation. Subungual papillary ridges seem to flatten and this resulted in nails becoming loose in some of the cadaver specimens. This was a fairly minor problem for the partial nail avulsion procedure, but in some cases, a total nail avulsion met with no resistance. ‘The adherence of the nail plate to the nail bed was relatively weak and too easy to remove compared to, I suspect, a live patient’. The opportunity to perform cadaver nail surgery provided much more than merely the practical experience. Students were able to view anatomy from a different perspective, confirm areas of uncertainty and receive real-time feedback on their surgical skills. This experiential learning was certainly confidence building. ‘I found it really interesting and I can’t wait to do an actual surgery myself now’. Towards the end of the semester, this cohort of students started to perform local anaesthesia and nail surgery. Their prior experience of cadaver surgery has made a vast difference. Students are far less anxious about the technical aspects of the surgery and as a surgical tutor, my advice is sought much less often. Cadaver surgery will certainly form an element of the podiatric surgery subject in future years.

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Practising nail surgery

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In an attempt to simulate nail surgery for undergraduate students, the Department of Podiatry at Charles Sturt University invested in some latex toes, complete with plastic nails. This nail surgery kit allowed students to handle the instrumentation as they would for ‘in vivo’ nail surgery. Students commented that this experience “reinforced theory given on how to perform the procedure”, enabled them to “get familiar with surgical equipment” and allowed them to “make a mistake”. Students reported that it was good to be able to practise the nail surgery techniques of partial and total nail avulsion and that this experience inspired a degree of confidence and potentially reduced anxiety.

However, the latex toes are soft and flexible and the plastic nail has none of the qualities of keratinised nail plate. “There was no real need to try and release the ‘nail’ from the surrounding latex as it was not really attached”. Whilst a partial nail avulsion procedure was possible, the force required to totally avulse the plastic nail from its attachment, would have sufficed to sublux a hallux.

In response to qualitative feedback from year 3 podiatry students, the surgical tutor collaborated with the anatomy department staff to discuss the potential for cadaver surgery. At that time, the anatomy site licence permitted dissection only and specific amendments to the licence were required for surgical procedures. With the necessary changes in place, this year’s cohort of 3rd year podiatry students were able to revisit the anatomy lab.

Groups of five students worked on a single limb, supervised by the surgical tutor. An experiential learning experience such as this, with the opportunity for immediate feedback, serves to facilitate deep learning. “The cadaver anatomy of the matrix and nail bed really brought the theory to life”. Students found it extremely beneficial to use the instrumentation as they would in surgery and to be able to “chat and discuss any problems encountered without fear of upsetting a patient”. “Being able to actually get the ‘feel’ of cutting through nail and then the change in cutting through the matrix, is a lot different than simply learning the theory of it”.

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Cadaver tissues do however lack the texture and elasticity of live tissue and offer slightly different resistance to the instrumentation. Subungual papillary ridges seem to flatten and this resulted in nails becoming loose in some of the cadaver specimens. This was a fairly minor problem for the partial nail avulsion procedure, but in some cases, a total nail avulsion met with no resistance. “The adherence of the nail plate to the nail bed was relatively weak and too easy to remove compared to, I suspect, a live patient”.

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Full recognition must be given to Heath George, the student who suggested cadaver nail surgery to me last year. Also to the anatomy staff who facilitated this learning experience for the podiatry students.