Trauma Training in New Zealand: A Survey of General Surgical Trainees

Hannah Hurst, Ian Civil, Li Hsee on behalf of the RACS New Zealand Trauma Committee

ABSTRACT

INTRODUCTION: The surgical management of trauma is an important aspect of training in general surgery. The aim of this study is to assess the current levels of experience in trauma management and attitudes towards adequacy of exposure amongst current trainees in New Zealand.

METHOD: An anonymous survey assessing experience in trauma management posted to all New Zealand general surgical trainees in Surgical Education and Training (SET) years two to five.

RESULTS: 21 of 62 trainees responded. There was little correlation between SET levels or months of registrar experience and number of operations performed, which ranged from 0 to 22. 81% of trainees felt their exposure to trauma operations was inadequate. The average supervision rate for operating was 73%. The majority of trainees showed an interest in trauma with 76% replying yes, with four answering maybe, and one no. 100% of trainees felt that training in trauma was at least somewhat important.

DISCUSSION: Experience and training in trauma care is very important but currently inadequate to allow the safe delivery of surgical treatment for injured patients by well-trained surgeons. Surgical training needs to be reorganised, using all available clinical and simulation resources to ensure this critical skills area is maintained for all trainees.

Background

The surgical management of trauma is an important aspect of training in general surgery; the Royal Australasian College of Surgeons (RACS) recognises that the provision of emergency surgery is a core competency in surgery in all surgical specialties.1,2 Competency in trauma management requires a certain level of exposure, experience and supervision during training. In 2000, RACS found that while 95% of advanced trainees believed they might be involved in trauma management in the future, only 32% felt their exposure to major trauma operations was adequate.3 Since then, there have been changes in the structure of the training programme.

The aim of this study is to assess the current levels of experience in trauma management and attitudes towards adequacy of exposure amongst current trainees in New Zealand.

Method

An anonymous survey assessing experience in trauma management was posted to trainees by the RACS Wellington Office in the first week of March 2014. It was sent to all New Zealand general surgical trainees in Surgical Education and Training (SET) years two to five, a total of 62 trainees. The survey was sponsored by the RACS New Zealand Trauma Committee and approved by the Education Committee of the New Zealand Association of General Surgeons.

The short survey consisted of questions regarding level of training, trauma courses attended, operative experience and supervision, trauma resuscitation experience and supervision, interest in trauma as a career or fellowship, expectations of future involvement in trauma and an assessment of the perceived importance of training and the adequacy of exposure and supervision to trauma resuscitation and operating.
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Results

Twenty-one of the 62 surveys sent out were returned by mail, making a response rate of 34%; three surveys from SET Twos, and six surveys each from SET years three, four and five.

There was little correlation between SET level, or months of registrar experience and number of operations performed; two SET Fives had performed 20 and 22 laparotomies, one had performed none and one SET Two had performed eleven laparotomies. There was 100% attendance at the Early Management of Severe Trauma (EMST/ATLS) course, all of the SET Fives and one SET Four had attended the Definitive Surgical Trauma Care (DSTC) course. Additional courses attended included ultrasound, APLS (Advanced Paediatric Life Support), EMSB (Early Management of Severe Burns) and a Masters of Trauma Sciences Degree. One outstanding SET Three with a Masters of Trauma Sciences Degree had attended 50 trauma operations and been principal operator for 18 of 20 trauma laparotomies.

The rate of consultant supervision for trauma operations by consultants ranged from 0–100%, 11 trainees (52%) reporting that all (100%) of the operations they were involved in were supervised. Only one trainee, who performed a total of 10 procedures, was never supervised. The average supervision rate was 73%.

Trainees were asked whether they had a desire for their future career to involve management of major trauma (yes, no or maybe), and separately whether they expected it to, regardless of their desire. The majority of trainees showed an interest in trauma with 76% replying yes, with four answering maybe and only one no. Only one of the 21 trainees did not expect to be involved in trauma in the future. Nine trainees were interested in carrying out a trauma fellowship, with seven replying maybe.

Trainees were asked how important they believed training in trauma is in regards to future practice on a scale of 1–5 (1 = unimportant, 3 = somewhat important, 5 = very important). 100% of trainees felt that training in trauma was at least ‘somewhat important’ with 10 of 21 trainees selecting ‘very important’ for resuscitation and 12 selecting ‘very important’ for operating.

Adequacy of exposure was also measured on a scale of 1–5 (1 = inadequate, 3 = sufficient, 5 = exceptional). For operating: only one trainee, who commented that they had worked as a trauma registrar for 18 months, selected a ‘4’. Three trainees thought that exposure had been ‘sufficient’, the remaining trainees (81%) felt their exposure was inadequate. Scores were better for exposure to trauma resuscitation with 12 of 21 (57%) selecting at least ‘sufficient’.

Supervision in trauma was assessed from 1–5 (1 = unsatisfactory, 3 = just adequate, 5 =
very satisfactory). The majority of trainees felt that their supervision was at least adequate with only three trainees selecting ‘1’ or ‘2’ for resuscitation and operating.

Discussion

One of the goals in the development of an inclusive trauma system in New Zealand is to ensure critically injured patients are transported in a timely manner to the right hospital with the right expertise. Similar to other developed countries, there is progression toward specialised trauma management. It is critical that exposure to trauma is adequate for trainees to address the future needs of trauma patients.

Our results show that experience in trauma is variable throughout the SET training programme. While trainees believe training in trauma is very important and they are interested in it, exposure is largely perceived to be inadequate. Although we had fewer survey participants than there were in 2000, it would seem that exposure to trauma surgery has declined in the past 14 years; with perceived adequacy falling from 32% to only 19%.

Our low response rate of 34% was disappointing but similar to previous surveys; for the survey in 2000, 272 of 587 (46%) responded, across Australasia.

The current structure of trauma management into specialised trauma centres has multiple benefits to patients, but may reduce surgical trainees’ opportunities for exposure to trauma.

Trainees have commented that variability in exposure may depend on the specific placements that any individual trainee may complete. Some who completed the survey noted that trauma exposure is generally limited in New Zealand and some commented that exposure was low in smaller centres and in those hospitals which were bypassed due to the existence of a nearby established trauma centre. Even for those working in a major trauma centre it was noted that, unless allocated to work for the trauma service, trauma exposure was limited to after-hours only.

The majority of trauma in New Zealand is blunt trauma, such as in motor vehicle crashes, rather than penetrating. With advances in diagnostic techniques and management these cases are increasingly managed non-operatively. Some trainees felt that while they had attended a large number of trauma calls or resuscitations, the majority did not need operative intervention. Two SET Fives said they felt uncomfortable or concerned that they were coming to the end of their training with what they felt was limited or inadequate trauma experience, with one having never been involved in a trauma laparotomy.

It is important that trainees are not just introduced to or exposed to a trauma situation, but that they become familiar with it. Due to the scarcity and variability in exposure to trauma, training is heavily reliant on educational courses. The EMST course was introduced to Australasia in 1988 and, over subsequent decades, resulted in improvements in patient care, both through individual management advances and improvements in trauma care systems. EMST and the DSTC course, which is more focused on surgical technique, are now highly recommended for General Surgery SET training in Australasia. There are many other courses now available targeting both individuals and teams of various levels and roles; each course having various lengths and objectives. Training courses variously utilise simulation, task training, live animal and human cadaver work; examples are found in the table on the next page.

Simulation-based training has been widely utilised in other disciplines that involve high stress situations, where decision making and actions are time-critical—such as aviation, fire and military. It may be employed to teach technical skills, familiarise staff with uncommon, high-stress events, and improve communication and teamwork whilst in a safe and structured environment. Structured trauma resuscitation team training has been shown to improve team performance, resulting in improved efficiency of patient care with fewer errors. Where there is an insufficient caseload to provide adequate exposure for trainees, simulation training could help to fill the gaps.

Simulating the operative environment is somewhat more challenging. As trauma surgery is performed relatively uncommonly, training may be supplemented by
Table 1: Some examples of available trauma courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMST/ATLS</td>
<td>Early Management of Severe Trauma</td>
<td>Emphasises life-saving skills and systematical clinical approach to managing severe trauma</td>
</tr>
<tr>
<td>ATCN</td>
<td>Advanced Trauma Care for Nurses</td>
<td>Taught concurrently with ATLS in some countries</td>
</tr>
<tr>
<td>DSTC</td>
<td>Definitive Surgical Trauma Care</td>
<td>Practical cadaveric workshop course and simulated operating theatre using porcine models</td>
</tr>
<tr>
<td>DPNTC</td>
<td>Definitive Perioperative Nurses Trauma Care</td>
<td>Usually conducted in conjunction with the DSTC course</td>
</tr>
<tr>
<td>PHTLS</td>
<td>Pre-Hospital Trauma Life Support</td>
<td>Targeting ambulance technicians, paramedics, registered nurses and registered medical practitioners</td>
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<td></td>
<td>Pre-Hospital and Emergency Department Resuscitative Thoracotomy</td>
<td>Practical course to improve decision making about role of resuscitative thoracotomy and how to integrate this into the trauma resuscitation. Utilises Porcine models.</td>
</tr>
<tr>
<td>SSET</td>
<td>Specialty Skills in Emergency Surgery and Trauma</td>
<td>Key learning outcomes include, acute limb ischaemia vascular repair, design a trauma team, abscess and necrotising fasciitis, damage control surgery</td>
</tr>
<tr>
<td>ATOM</td>
<td>Advanced Trauma Operative Management</td>
<td>Increasing surgical competence and confidence in the operative management of penetrating injuries</td>
</tr>
<tr>
<td>ASSET</td>
<td>Advanced Surgical Skills for Exposure in Trauma</td>
<td>A progression course from ATOM, uses human cadavers to teach surgical exposure of anatomic structure that when injured may pose a threat to life or limb</td>
</tr>
<tr>
<td>DMEP</td>
<td>Disaster Management and Emergency Preparedness</td>
<td>Emphasizes an all-hazards approach, demonstrating that many principles apply to disasters of all kinds, regardless of specific mechanism. Surgical problems and the role of surgeons in the disasters are emphasized, even with non-surgical forms of injury</td>
</tr>
<tr>
<td>BEST</td>
<td>Basic Emergency Sonography for Trauma</td>
<td>Basic principles and practice of USS in emergency settings of trauma and AAA</td>
</tr>
<tr>
<td>CREST</td>
<td>Core Resuscitative Skills Training</td>
<td>Procedural skills course in securing and managing airway, chest tube insertion and gaining vascular access</td>
</tr>
<tr>
<td>RTTDC</td>
<td>Rural Trauma Team Development Course</td>
<td>Based on the concept that in most situations, rural facilities can form a trauma team consisting of at least 3 core members.</td>
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<tr>
<td></td>
<td>TeamSTEPPS</td>
<td>Simulation-based training to improve institutional collaboration and communication relating to patient safety</td>
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<tr>
<td></td>
<td>Trauma Team Training (Sydney Clinical Skills and Simulation Centre)</td>
<td>Focuses on team-based management of high acuity clinical presentations and the competencies required of the team as a whole</td>
</tr>
</tbody>
</table>
the use of live animal and human cadaver models. Each have their downfalls; in the anatomical differences in the animal models, and ‘unnatural’ tissue textures and lack of pulsatile vessels in cadavers. Although potentially costly, novel techniques, for example using sophisticated mannequins, and cadaver’s with artificially re-established circulation may be of benefit here.\textsuperscript{11}

**Conclusion**

Many trainees have an interest in working in trauma in the future; the majority believes experience in trauma is very important but often inadequate. This study confirms the suggestion that training in trauma care is currently inadequate to allow the safe delivery of surgical treatment for injured patients by well-trained surgeons.

Trainees are recommended to complete EMST and DSTC courses. There are guidelines available for trauma training in the SET curriculum. However, there are many other courses and techniques, including simulation, that may be employed to help trainees become more familiar with working in a trauma environment. Additionally it could be compulsory for all trainees to rotate through a position on a trauma service. Surgical training needs to be reorganised, using all available clinical and simulation resources to ensure this critical skills area is maintained for all trainees.

**Competing interests:** Nil

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