

# Restructuring management of thoracic trauma: a neglected entity

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**T**horacic trauma universally is a major cause of morbidity and mortality across all ages and socioeconomic backgrounds,<sup>1</sup> and in this issue of the *New Zealand Medical Journal*, McGuinness et al demonstrate that adverse events in patients with rib fractures are starting at a younger age than much of the current literature suggests.<sup>2</sup> In New Zealand, 40% of patients presenting with major trauma have thoracic injuries, and with 27,000 trauma admissions per year and 450 admissions to Christchurch Hospital for thoracic trauma in particular, the relevance of this new research must not be overlooked.<sup>3,4</sup>

Thoracic trauma impacts lifestyle and adds a financial burden both personally and to society.<sup>5</sup> In addition to the universal incidence of motor vehicle accidents, New Zealanders are predisposed to thoracic trauma by our national pastimes. These include rugby, the national sport, as well as a multitude of adventure sports, like mountain biking, snow sports and hiking, to name a few.<sup>6</sup> We've also suffered at the hands of natural and man-made disasters in recent years.<sup>1</sup>

With this in mind, New Zealand's experience in the care of a variety of trauma types looks extensive. We should be well placed to establish a comprehensive and up-to-date guideline for providing all ages with high-quality care for thoracic trauma. Multiple guidelines for thoracic trauma across the globe give the ages 65+ as being at greater risk of morbidity and mortality. However, in light of McGuinness et al's study, this appears to be nothing more than an educated guess.<sup>7</sup>

In New Zealand, the age group 45–65 represent 45% of the thoracic trauma patients. This group has the greatest average employment rate (83.45%),<sup>8</sup> so an extended

stay in hospital and prolonged recovery associated with rib fractures and concomitant pneumonias needs to be minimised for the benefit of these patients, their whānau and the wider community. Traditionally, the mainstay of treatment for rib fractures is analgesia and physiotherapy, which have varying degrees of success. This group had the greatest access to patient control analgesia (PCA) and ketamine infusion, arguably the most effective modes of analgesia, and yet their length of stay and rate of pneumonia was comparable to those of the >65 group.

Despite the further physical trauma of surgery, rib fixation has been suggested to be superior for multiple rib fractures, promoting a shorter recovery period (shorter ICU and hospital stay and early return to work) and reducing the likelihood of other complications such as respiratory sepsis.<sup>9,10,11</sup> Randomised controlled trials have reviewed the benefits of rib fixation on ventilated patients with flail segments, with Tanaka et al and Marasco et al showing reductions in pneumonia, tracheostomy and ICU stay and even an increase in return to work at six and 12 months.<sup>11,10</sup> A further study in patients who had a flail segment indicated that rib fixation can reduce the incidence of pneumonia.<sup>9</sup> The surgical treatment of patients with three or more displaced rib fractures without flail segment has also been shown by Peiracci et al to improve recovery when compared to conservative management, showing a decreased pain score and narcotic requirement and increased quality of life.<sup>12</sup> However, a 24-month follow-up of fixated and conservatively managed patients by Marasco et al hasn't shown any improvement in long-term quality of life.<sup>13</sup>

The consensus of current centres is to consider fixation as an option in anyone

with a flail segment; of the patients in McGuinness et al's study, 22% sustained flail segments but only 4% had fixation. Given the evidence of the above papers, it is worth considering fixation in anyone over the age of 45 with three or more contiguous rib fractures in a pattern that is technically possible to access surgically, especially if they have failed a trial of adequate analgesia including PCA and erector spinae block.

It seems that more aggressive management in these patients may be beneficial. However, barriers to this include the local skillset and education of inpatient medical teams and general practitioners.

Across the world, rib fixation is variably undertaken by general surgeons, orthopaedic surgeons as well as cardiothoracic surgeons. In New Zealand the main operators are at the major centres, including Christchurch, Waikato and Auckland. As evidenced by McGuinness et al, thoracic trauma patients in district health boards without cardiothoracic surgeons are commonly admitted under more general services. Depending on local knowledge and regional associations, these patients may not have access to the same opportunities. In Christchurch, cardiothoracic surgery has a close working relationship with the trauma team including a weekly multidisciplinary team (MDT) meeting. The meeting is attended by the cardiothoracic surgeons, trauma team, physiotherapists and pain management team. All thoracic trauma patients are discussed and a management plan is developed.

Albeit with a small sample size, McGuinness et al highlight a variation in management strategies due to regional practice, its implication on society and the need to address a more dynamic approach in a younger population, which comprises the largest group of patients affected by thoracic trauma.

There is a need for a national review and audit of thoracic trauma management. This would help to define the extent of thoracic trauma and its physical and financial impacts on society, and ultimately should lead to the formation of a standardised thoracic trauma care pathway. This should be easily accessible to all inpatient care teams and GPs. This system could allow constant review of treatment strategies implemented to ensure a uniform standard of care for all patients with thoracic trauma. A virtual regional weekly MDT meeting for thoracic trauma would allow smaller centres the opportunity to get specialist advice and provide ongoing education. And if GPs were able to refer patients, this would allow inpatients and community cases equal access.

The development of a national thoracic trauma care pathway should aim to improve care and in doing so reduce hospital stay, morbidity and costs to the health service and ACC and at a community and personal level for our patients. Any change takes time though, and it could be resisted by those who are attached to the more traditional approaches.

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Nil.

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