

compared to data collected at three and twelve month follow-up to determine if the patients with lower ASA grades (I-II) had better outcomes than their counterparts with higher ASA grades (III-V) and published outcomes of NOF fracture patients in general.

**Results:** In total, 763 patients were included in the study; 123 in the fit group and 640 in the less fit group. At twelve months post-operatively, the fit group had a significantly lower mortality rate, 2.7%, than the less fit group, 30.3% ( $p < 0.001$ ). In addition, of those surviving patients, the fit group had a significantly higher proportion which returned to their pre-injury mobility status, 50.0%, than the less fit group, 35.4% ( $p = 0.006$ ) and had a significantly higher rate of return to pre-injury place of residence, 96.3%, than the less fit group, 89.2% ( $p = 0.02$ ).

**Conclusions:** A subset of NOF fracture patients who are medically fitter at time of injury as measured by ASA grade show significantly better outcomes than those generally reported for NOF fracture patients.

#### OS009

##### A HAEMODYNAMIC CHECKLIST TO IMPROVE HAEMODYNAMIC MANAGEMENT IN PATIENTS WITH ACUTE SPINAL CORD INJURY

JONATHAN CHAN, MATTHEW SEWELL, KIMBERLEY TAN, JOANNA ISMAIL, BALAJI PURUSHOTHAMAN AND BEN GOSS

*Princess Alexandra Hospital, Queensland*

The American Association of Neurological Surgeons recommend mean arterial blood pressure (MAP) in acute spinal cord injury (SCI) should be maintained between 85-90mmHg for the first seven days. We aim to evaluate whether haemodynamic management differed between the primary receiving and tertiary hospitals within the first 24 hours for acute SCI patients, and assess whether use of a blood pressure monitoring checklist could improve haemodynamic management. In a retrospective review of 30 patients, haemodynamic management in the primary hospital was compared with that in the tertiary centre. Data on 37 patients was collected after introduction of the monitoring checklist staff education. Before checklist introduction, the mean number of documented MAP readings per hour was 2.3 in the primary and 1.4 in the tertiary centre. This changed to 3.1 and 2.7 after checklist introduction ( $P < 0.01$ ). The proportion of patients having  $>50\%$  of their MAP recordings  $<80\text{mmHg}$  was 19% and 32% at primary and tertiary hospitals respectively ( $p=0.46$ ). This changed to 26% and 18% after checklist introduction ( $p=0.4$ ). The proportion of patients having  $>50\%$  of their MAP recordings  $<70\text{mmHg}$  was 7% and 8% at primary and tertiary hospitals respectively ( $p=0.23$ ). This changed to 9% and 6% after checklist introduction ( $p=0.8$ ). Polytrauma, inotrope use and head injury were independent risk factors for low MAP recordings. There was no significant association between hypotension and age, or improvement in AIS. Although it is common practise to set MAP targets for acute SCI patients, achieving them in practise is challenging. Implementation of a checklist was associated with improved haemodynamic monitoring, but not control.

#### OS010

##### LUMBOSACRAL VERTEBRAL BODY RECONSTRUCTION: VASCULARISED ILIAC CREST TRI-CORTICAL BONE FLAP BASED ON THE DEEP CIRCUMFLEX ILIAC ARTERY

NICHOLAS HAYDON AND SEAN NICKLIN

*Prince of Wales Hospital, Sydney, NSW*

There are many options for lumbosacral vertebral reconstruction. In this paper the use of vascularised bone flaps is discussed with particular attention to the utilisation of iliac crest bone. The iliac crest bone based on the deep circumflex iliac artery (DCIA) has been well described as a free flap for osseous reconstruction, especially mandible defects. It is well described as a pedicled flap for defects of the proximal femur. Vascularised iliac crest has also been described based on the ilio-lumbar artery as the nutrient pedicle for lumbar spine reconstruction. In the case we report, a 71year old patient required revision reconstruction of S1 vertebral body due to lumbo-sacral non-union and S1 fractures. Cortical bone was required to provide a construct for the S1 defect and vascularised tissue to promote bone healing. A free iliac bone flap was not used due to the position of the inset and micro-

vascular anastomoses and given the patients cardiac history. A pedicled iliac crest flap was used to reconstruct S1, utilising the length of DCIA pedicle and bone stock of the iliac crest. The pedicled DCIA bone flap was adequate to reach the S1 defect without tension on the vessels. The iliac crest bone provided adequate amount of cancellous and cortical bone and is a useful technique for lumbosacral reconstruction to have at the surgeon's disposal.

#### OS011P

##### A MULTIVARIATE ANALYSIS OF FACTORS INFLUENCING INFECTION RATES IN CLOSED EXTREMITY FRACTURE FIXATION AT A MAJOR TRAUMA CENTRE

ANDREW LEWANDOWSKI, ROBERT CALVISI, DOUGLAS WILLS, MICHAEL WILLIAMS, NOEL PETER AND KENNETH CUTBUSH

*Princess Alexandra Hospital, Queensland*

Infection in orthopaedic surgery is a devastating complication. However, there are many patient and surgical factors that may contribute towards the development of surgical site infections (SSI), and little is known as to which factor has a superior influence on the development of infection.

**Methods:** We retrospectively reviewed 310 trauma patients who sustained extremity fractures with intact soft tissue envelopes in a major trauma centre between 2011 and 2015 and determined the rate of SSI at a minimum of 12 weeks follow up. Each case was examined for a series of variables including patient age, co-morbidities, smoking status, limb injury, and surgical factors. We then conducted a multi-variate regression analysis model to determine which variable may have a strong influence towards increasing infection rates.

**Results:** The overall rate of surgical infection was 12% at a minimum of 12 weeks follow-up (36 of 310). Based on our analysis the strongest predictors for reducing infection for closed extremity trauma operations were smoking status (0.04), Charlson Comorbidity index (0.024) and the timing of antibiotic administration ( $p=0.048$ ). Factors such as age, length of operation, the use of tourniquet and others demonstrated no statistical significant influence on infection rates ( $p > 0.05$ ).

**Conclusions:** Our study demonstrates that smokers and patients with high Charlson comorbidity index should be counselled on their increased risk of developing a SSI following extremity fracture fixation.

#### OS012P

##### A NOVEL METHOD TO SEAL A VAC DRESSING AROUND AN EXTERNAL FIXATION DEVICE

NEIRAJA GNANESWARAN, KIERAN ROWE AND DAN ROWE

*Royal Brisbane and Women's Hospital, Queensland*

**Purpose:** Vacuum assisted closure (VAC) is a widely accepted method of wound management, either temporarily or definitively. Successful application of VAC devices relies on the formation and maintenance of an airtight seal. Difficulties may arise in the formation of such seal, particularly over irregular surfaces. The increasing use of VAC therapy in the setting of orthopaedic external-fixation devices provides new difficulties in the formation of the crucial airtight seal. The presented technique is a novel and efficient way of achieving an airtight seal with VAC therapy.

**Methodology:** Following fixation of the limb with an external fixator device, the soft tissue defect is template and pre-cut VAC foam is applied directly to the wound. VAC tape is laid on the foam where the seal was not interrupted with pin sites. Pin sites of the ex-fix are within the wound bed. Pin entry sites to the wound are sandwiched by large tegaderm dressings. A 3.0 nylon suture is then tied around each pin site to ensure an airtight seal with the tegaderms.

**Results:** We are able to obtain a complete airtight seal in a reproducible, cost-effective and efficient manner.

**Conclusion:** Given the increasing use of VAC dressings in orthopaedic trauma, obtaining an airtight seal is a constant obstacle. The above-described technique poses a unique and effective method for achieving a seal.