common reason for surgeons to opt for synthetic substitutes, which can be costly and can potentially provide less high-quality bone graft. This study from **Utrecht (The Netherlands)** investigated whether patients could correctly identify from which iliac crest their bone graft was harvested, and whether that side was more painful than the contralateral, unoperated side.[6] This study was a multicentre, randomized, intra-patient controlled study involving 90 patients undergoing a lumbar fusion below L3. Patients had bone graft harvested from either the right or left iliac crest via their primary midline incision and the left/right distribution of the donor site was randomly allocated on a 1:1 basis. Patients were then followed up clinically for up to a year; at each timepoint, patients were asked to identify the donor site and rate the pain in their back and in their right and left iliac crests on a visual analogue scale (VAS). Only 24% of patients correctly identified the harvest site side. The VAS scores for the donor site and the contralateral side did not differ. Bone graft harvest site scores were also lower than the back pain score for every follow-up timepoint. The authors conclude that patients could not reliably identify the iliac crest bone graft side and that donor site pain should not be a reason to use bone graft substitutes when harvested in this manner. It is, of course, important to distinguish this type of posterior bone graft harvest from the anterior approach, where a separate incision is made and there is a considerable incidence of postoperative pain.

Predictive factors of postoperative dysphagia in single-level ACDF

In another paper examining the phenomenon of dysphagia following an anterior cervical discectomy and fusion (ACDF), researchers set out to establish the potential risk factors for dysphagia. Previous research has established that dysphagia can occur in the immediate postoperative period in as many as 83% of patients undergoing ACDF, and can be a persistent problem in up to 35% of patients. This study from **New York, New York (USA)** examined various surgical and implant parameters, and assessed their overall influence on the rate of subsequent symptomatic dysphagia.[7] The study was a retrospective review of 64 patients, all of whom underwent an ACDF, who were divided into two groups: a zero-profile device group (41 patients) and a 'traditional' plate/cage group (23 patients). Dysphagia was assessed using a Swallowing Quality of Life (SWAL-QOL) score that was collected preoperatively, as well as at six and 12 weeks postoperatively. This score consisted of 44-items rated from 1 to 5 (worse to best), and is in wide use in the dysphagia literature. In terms of matching, both groups were similar regarding patient demographics but differed regarding operative time; the zero-profile implant group were found to have a shorter mean procedure time than the cage-plate group. Dysphagia rates were similar at all timepoints between the groups. Regression analysis indicated that preoperative SWAL-QOL and procedure time were the only significant variables. This is somewhat surprising, and calls into question the perceived wisdom that proud implants may be partly to blame for postoperative dysphagia. While this is a small, retrospective study, it emphasizes the importance of reducing surgical time (or maybe releasing surgical retraction at intervals), particularly if a multilevel procedure is being performed. It also suggests that perhaps a swallowing score should be recorded routinely in the preoperative phase, as a low preoperative score is associated with an increased risk of postoperative dysphagia. What is clear is that dysphagia is part and parcel of anterior cervical spine surgery for a number of patients, and that preoperative counselling should make this clear. Despite improvements in implant designs, it seems that the approach itself is the main culprit.

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Trauma

X-ref ***For other Roundups in this issue that cross-reference with Trauma see: Foot & Ankle Roundups 3 & 6; Wrist & Hand Roundups 1 & 3; Shoulder & Elbow Roundups 2 & 4; Spine Roundup 3; Children's orthopaedics Roundup 8; Research Roundup 5.***

Is the dynamic hip screw safer in hip fracture?

One of the most controversial studies in trauma practice this year arises from the National Hip Fracture Database (NHFD), with the analysis led by a team in **Bristol (UK)**.[1] The authors addressed the recurring issues of whether to use a sliding hip screw or an intramedullary nail in the treatment of pertrochanteric hip fractures from a national registry perspective. There have been a number of robust randomized controlled trials that have given a somewhat mixed message, suggesting that functional scores may be better with intramedullary nailing at the cost of a slightly higher complication rate. These same trials have failed to show the clinical advantages of nailing these fractures in terms of discharge destination, quality of life, and other outcome measures, despite the potentially better biomechanical properties. The current study examines the problem from the other perspective and asks whether there is a difference in mortality rates between the two implants. The work presented here is based on the episode data of 82 000 patients entered on the NHFD and linked to the United Kingdom's death statistics. Although their headline figure is a 12.5% increase in mortality associated with the use of nails, there are some caveats that require attention. While there is a reasonable explanation as to how mortality rates could be higher (instrumenting the canal is likely to increase embolic events), there are other factors that may account for the differences here. The case mix is unlikely to be equally matched. Practice in

the United Kingdom is firmly in favour of the sliding hip screw unless the fracture pattern is unstable enough to require the additional stability conferred by a nail. The NHFD itself does not record information on other injuries – and older patients involved in high-energy injuries are both more likely to require an intramedullary nail and die. A further confounder relates to the collection of NHFD data. In the majority of units, NHFD data are collected by data clerks or specialist nurses based on the data set available. Some fields are known to be better collected than others. Implant usage is usually accurately collected; however, presence of pathological bone is less accurately collected and, as such, there is under-reporting of patients who present for the first time with a pathological fracture but do not have a confirmed cancer diagnosis at discharge. This study is, overall, as robust as a large registry series can be, and the groups are fairly balanced in terms of the usual caveats. Therefore, units that favour nailing certainly need to evaluate this practice in light of this study and ensure their mortality rates are not higher.

Frailty and malnutrition associated with complications in hip fracture patients

Despite the high proportion of elderly patients in orthopaedic wards, it appears that we still struggle to get to grips with the basics. Beyond the inability to agree on which bits of metal are best suited to treat which fractures, there is still a huge amount of work to be done on the holistic care of the patients. Hip fracture programmes have led the way with comprehensive medical reviews, joint care and assessments for falls, bone health, and so on. However, nutrition and frailty are only just starting to gain attention, even in the Scandinavian countries and the United Kingdom, where comprehensive care of hip fracture patients has been at the forefront of the political agenda for some time. This paper from **Atlanta, Georgia (USA)** brings nutrition and frailty back into focus by investigating their potential associations with morbidity and mortality.[2] Originating from a North American level 1 trauma centre with relatively small numbers of hip fracture patients (approximately 200 per year), their population was younger (mean age 73.7 years) and fitter (only 32.4% required assistive ambulatory devices prior to the fall) than the usual community hospital or European population. They used laboratory assessments for nutrition status and a modified frailty index to determine the effect of each separately and then synergistically on postoperative complications and mortality. The study revolves around albumin and total lymphocyte counts as markers of malnutrition and modified frailty (mFI) scores together with complication data. The authors established that 63% of patients were malnourished by the total lymphocyte count criteria (< 1500 cells/mm^3) or 18% by albumin levels definition. These both correlated weakly with frailty; however, when combined, the predictive power of malnutrition and frailty gave a likelihood ratio of 4 (hypoalbuminaemia and mFI) for complications and 8.5 for mortality. Unsurprisingly, the two often coexist and when taken together are highly predictive of more postoperative complications and increased mortality. This adds considerable leverage to the last changes in best practice tariff for hip fractures and the current focus on 'silver' trauma nationally. Unfortunately, it still does not help in determining if this state is remedial, and therefore should be a focus of intervention, or simply a marker of terminal decline in some of these individuals, therefore requiring a more balanced accommodative approach.

Managing pain following injury and opiate prescribing practices

Here at *360*, we would like to draw readers' attention to two papers that concern analgesia following trauma and surgery. Pain is clearly a major feature of trauma and yet it seems that we can still be overly reliant on opiates. This has been a subject examined widely in the press, and has had a much more prominent profile in North America than in the United Kingdom. The matter is addressed by an excellent editorial from **Melbourne (Australia)** in *Injury*,[3] as well as an unrelated article on the same topic from **Nashville, Tennessee (USA)**.[4] The latter paper details the staggering reliance on opiate analgesia for all lower limb injuries, but particularly for pilon and bicondylar tibial plateau injuries. The authors describe the analgesic regime for 341 patients treated following their musculoskeletal trauma; just over half were male. Worryingly (but perhaps not unsurprisingly, as this is an American population), nearly half (159/341) were prescribed opiates prior to their injury. Prescribing patterns suggest that opiates were more likely to be prescribed to patients with pilon fractures than those with ankle or tibial fractures. Bicondylar plateau fracture patients also received more opiates when compared with unicondylar fractures. Analgesic regimes prescribed by other specialties also resulted in more opiates being prescribed to patients with pilon fractures. In the absence of experienced insight into the management and rehabilitation of these difficult injuries, senior focus is necessary to avoid continued over-reliance on opiates.

Immediate weight-bearing after fixation of fractures?

For many years, the AO doctrine has been open reduction, anatomical fixation, and early mobilization. As our implants have improved – as well as our understanding of the importance of weight-bearing on maintaining muscle tone – we have started to see a gentle change in direction from early joint mobilization to early weight-bearing following osteosynthesis. There is finally some evidence to allow patients to weight-bear as they choose, without castigating them for not complying. *Injury* published work from **London (UK)** exploring the basis for weight-bearing in tibial plateau fractures.[5] In a retrospective comparative series, the authors looked at the radiological outcomes of 90 patients with plateau fractures. The patients were not randomly assigned to weight-bearing status; however, there were 60 non-weight-bearing or touch weight-bearing patients and 30 who were fully weight-bearing. The day one postoperative radiographs were then compared with those taken at six weeks and three months to establish the incidence and amount of secondary fracture displacement (including joint depression and loss of fixation). Although the groups were neither randomized nor appropriately matched, the data were then used to make inferences as to the effects of weight-bearing. There were no failures of fixation in any group, although a single patient (3%) in the weight-bearing group suffered 4 mm of joint depression. Within the limitations of the study design, the authors paint a convincing picture that weight-bearing as tolerated will not result in secondary collapse or metalwork failure in this group of patients. It is likely, as the authors suggest when presenting this work, that patients in fact self-regulate their weight-bearing status. In a similar investigation, authors from **Salt Lake City, Utah (USA)** relaxed their moratorium on

weight-bearing in the first eight weeks following fixation of unstable pelvic injuries.[6] The authors of this study had a more convincing sample size to detect complications that are relatively uncommon and were able to include 286 patients with pelvic ring injuries in their series over a ten-year period. The whole group was dichotomized into early (eight weeks or less) and late (more than eight weeks) weight-bearing groups, which were roughly evenly matched with 132 and 154 patients, respectively. Their cohort consisted of a mixture of stable (using the Young–Burgess classification, 48 patients were classified as LC I and ten were classified as APC I) and unstable pelvic injuries (including eight vertical sheer). The main outcome measure for this study was a composite complication measure, loss of fixation, revision surgery, and malunion. In both groups, there was no increase in malunion or nonunions, implant failure, or other common sequelae of early weight-bearing. Clearly, there is much more scope for early weight-bearing in a range of fractures. Although more evidence is required, we do need to accept how our patients will behave, develop suitable operative techniques for early weight-bearing, and encourage active rehabilitation.

Degloving injuries skin grafting with vacuum sealing drainage or compression dressing: a comparative cohort study

This interesting and important study from **Wenzhou (China)** investigates dressing treatments for patients with degloving injuries of the limb. Specifically, the authors set out to establish if vacuum sealant following skin grafting led to a more successful reattachment of the skin graft than the more common compression bandage method.[7] The results of this series of 83 patients certainly make for clinically relevant and interesting reading. There were 28 patients treated with compression dressings and 55 with a vacuum sealing method. In terms of outcomes, there were no significant differences between the two groups in terms of the proportion categorized as excellent results. However, there was a significantly higher incidence of poor results in terms of necrotic areas exceeding 50% with the vacuum group, as well as increased total costs. The authors modestly state that in rural medical institutions, traditional compression methods are better than vacuum sealing therapy. However, considering complications and medical expenses, the merit of vacuum sealing therapy cannot be found here.

Screw fixation *versus* hemiarthroplasty in elderly patients

There has been a renewed interest in screw fixation of the femoral head. The high-profile FAITH trial (Fracture Fixation in the Operative Management of Hip Fractures) last year evaluated dynamic hip screws *versus* cannulated screws in patients requiring fixation of their femoral neck fracture. The results were in favour of dynamic hip screws in a subgroup analysis of alcoholics, but all other outcomes were the same. This study from **Lørenskog (Norway)** evaluates the potential differences between screw fixation and hemiarthroplasty in patients with a displaced femoral neck fracture.[8] The authors included patients from a range of Scandinavian centres, all of whom were treated in a standard hip fracture care pathway but were randomized to either hemiarthroplasty or screw fixation. Outcomes assessed included hip function, pain, mobility, quality of life, and complications. All patients were over the age of 70 years and outcomes were clinically assessed using a primary outcome of the Harris Hip Score (HHS), the timed 'up-and-go' (TUG) test, numerical pain scale, and quality of life, as assessed with the EuroQol (EQ)-5D-3L at 3, 12, and 24 months post-surgery. There were no overall differences in hip performance as measured with the HHS at 24 months postoperatively. However, there were some differences in mobility, with the TUG test being significantly superior in the hemiarthroplasty group. Aside from the differences in clinical outcomes, there were perhaps more relevant differences in re-operation rates, with the screws group having a 20% major re-operation rate compared with the 5% major re-operation rate in the hemiarthroplasty group. There was also a lower mortality rate in the hemiarthroplasty group of 26% *versus* 36%, although this difference was not statistically significant. There is a clear message here: in the older population, cannulated screws should not be used to treat these older patients with hip fractures.

The floating knee: a challenging injury

The floating knee is a tricky injury to manage from many perspectives, including technical difficulties in achieving the correct rotational profile, selection of implants, nonunion incidence, and the high rate of associated injuries and challenges with rehabilitation. Despite the severity of the injury and the common incidence of complications, there is relatively little known about this injury pattern. In an impressive multicentre study, these authors from across **Italy** managed to evaluate the results of 224 cases of floating knee injuries. In order to achieve this impressive number, they screened 34 480 patients with lower limb injuries, establishing that these injuries represent just 0.65% of lower limb injuries. Nearly two-thirds of patients were adults (16 to 35 years of age) and the majority were male, which is in keeping with the high-energy nature of the injury. Over 90% occurred in this series as the result of a road traffic accident. There is a strong preference for external fixation in Italy, with 82% being managed either initially or definitively in this manner. This is not a preference for treatment that would likely be reflected elsewhere in the world. There was an appreciable risk of compartment syndrome given the severity of the injuries at 3.4%, and 60 patients sustained open fractures. A third of patients suffered heterotopic ossification. The authors concluded that complication rate associated with floating knee injuries remains high. Surgeons should focus on reducing complications while treating these severe injuries.

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