

# ROUNDUP<sup>360</sup>

## Research

**For other Roundups in this issue that cross-reference with Research, see: [Trauma](#); [Shoulder & Elbow](#); [Hip](#); [Knee](#); [Spine](#).**

### Markers of post-traumatic ankle arthritis

#### x-ref [Trauma](#)

■ Post-traumatic ankle arthritis is a common condition and there is little research investigating the biochemical basis of this condition. The ankle provides an ideal *in vivo* model for this kind of research, with relatively high disease frequency and post-traumatic arthrosis reported in up to 30% of patients. Unpicking the complex cascade of biochemical markers that are associated with post-traumatic disease – and conversely those that are not – would be a great step forwards in understanding the drivers for arthrosis. Despite the obvious nature of the model, very few research groups have taken advantage of the opportunities offered by these patients. Basic scientists in [Baltimore \(USA\)](#), however, have done so and they present some initial results aimed at understanding the differences between those with and without post-traumatic arthrosis.<sup>1</sup> The study team compared synovial fluid aspirates from 20 patients with, and 20 patients without, post-traumatic arthrosis. They characterised a range of potential biomarkers including interferon- $\gamma$ , TNF- $\alpha$ , MIP-1 $\beta$ , MCP-1 and a range of interleukins. The study team used an ELISA method to perform metabolomics for over 3000 metabolites in addition to cytokines. There are few such ex-

tensive studies and the research team performed forest analysis to establish if the control or post-traumatic subgroups could be distinguished based on their metabolic patterns. The researchers were able to identify that a range of cytokines (IL-1Ra, IL-6, IL-8, IL-10, IL-15, and MCP-1) were elevated in the post-traumatic arthritis group and that, additionally, there were over 100 metabolites that were associated with this change. The metabolic analysis implicated the usual suspects of deranged amino acid, carbohydrate and lipid metabolism. More specifically to arthropathy, there were also changes in matrix turnover and collagen degradation. This study does look promising, with a fairly specific (90%) metabolic profile identified, including a range of novel biomarkers. We would hope that the ankle will become a more widely used biomarker in arthropathy research.

### Mangoes, trees and Solomon Islanders

■ Behavioural patterns are an interesting and important driver in injury patterns. It is commonplace to expect an increase in extremity injuries from trips and falls during icy weather. Drivers towards injury may, however, be more profound. An interesting population study from [Honiara \(Solomon Islands\)](#) highlights how injuries may be driven by behaviours on a national scale.<sup>2</sup> The researchers investigated tree-related injuries in the Solomon Islands by investigating all recorded injuries related to trees at the National Refer-

ral Hospital in Honiara over a 17-year period. There were a total of 7651 injuries recorded in the database. A surprisingly high proportion (14% (n=1107/7651)) were related to falls from trees. The vast majority of falls occurred from fruit trees (mango, guava, apple and nut trees) with the bulk of these (>85%) occurring in individuals younger than 20. The overwhelming majority resulted in fractures (92%), with just 3% being accounted for by dislocations. This simple but interesting paper illustrates to us here at 360 how in lower income countries the search for food among children may lead to higher rates of injury. Public health policy and education in developing world settings do need to take into account local customs.

### Corticosteroid injection and ulnar neuropathy

#### x-ref [Shoulder And Elbow](#)

■ There is some doubt about the benefit of corticosteroid injection in ulnar neuropathy. Although widely given, the evidence basis is a little shaky. Clinical trialists in [The Hague \(The Netherlands\)](#) set out to establish what exactly the benefit (if any) was of local corticosteroid injection in patients with ulnar neuropathy at the elbow.<sup>3</sup> Their double-blinded randomised placebo-controlled trial included patients with ulnar neuropathy at the elbow who received an ultrasound-guided injection of corticosteroid (methylprednisolone) or saline. Outcomes were assessed with the subjective patient's assessment of 'change in

symptoms' at a three-month interval. Secondary outcome measures included electrophysiological assessments and changes on ultrasonography. Fifty-five patients were recruited into the study and randomised to one treatment or the other. There were no differences in the primary outcome measure between the two groups with almost exactly 30% reporting subjective improvements in symptoms in both groups. The secondary outcome measures did not show any clinically relevant differences either and the authors made the not unreasonable assertion that any perceived beneficial effects from these interventions were clinically negligible. The relapsing and remitting course of ulnar neuropathy (and other mono-neuropathies) in combination with the investigation and education occurs as part of a comprehensive assessment. The placebo and intervention effect here are around 30%. Although it is tempting to regard this study as negative (certainly steroid injection clearly has no treatment advantage in this case), we would venture that given adequate investigation and patient investigation in combination with three months of time yields a 30% improvement rate. It is therefore sensible to be a little cautious in proffering surgery, as one third will improve spontaneously.

### Moral decision-making: the secret skill?

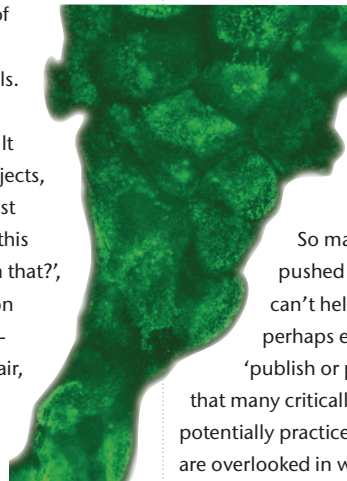
■ Moral reasoning is not even a dirty word in orthopaedic circles – it just isn't mentioned at all. For a

specialty in which critical decision-making under pressure is evaluated and is a prized aspect of a selection process, it is curious that candidates' moral reasoning skills are not formally assessed in any selection process we at 360 are aware of. Despite this oversight in the US selection process, at least moral reasoning is a key component of the guidelines of the Accreditation Council for Graduate Medical Education for professionalism competency. A study team in **Minneapolis (USA)** set out to determine if the current selection process gave an adequate assessment of moral reasoning skills.<sup>4</sup> They therefore used the revised version of the Defining Issues Test (DIT-2) to assess applicants and determine if there is a relationship between the match rank order and moral reasoning skills. The DIT-2 tool has been developed and validated against the moral reasoning process in more than 30 000 individuals, and the research team used a voluntary assessment on selection day over a four-year period to assess candidates' moral reasoning skills. The study encompassed 124 medical students, all of whom took part in the five-part aggregate interview method for ranking applicants for the match list, including a focused interview station presenting ethical dilemmas. Each applicant's post-conventional score was then compared with their overall match rank order. Interestingly, there were great variations in applicants' moral reasoning skills as assessed by DIT-2, but these did not correlate with the match rank order. This current assessment process does not result in moral reasoning playing a large part in the determination of final match rank. What is not clear from the work presented is if the DIT-2 has anything to add, or if the current process does just fine. What we do know is that moral reasoning skills do not appear to contribute to the current selection processes.

### Just common sense? Biomechanical studies under the spotlight

#### x-ref Trauma, Hip, Knee, Shoulder & Elbow, Spine

■ There are seemingly endless biomechanical studies available in the literature, literally clogging the pages of everything from trauma to hip journals. A great number are produced as the result of higher-degree projects, with many at the most basic level asking 'is this construct better than that?', be it a fracture fixation construct, hip arthroplasty or tendon repair, along with many other types of construct. Methods of testing vary greatly, from the easiest saw bone model to the more complex finite element analysis. To the eyes of authors in **Boston (USA)**, however, much of this wealth of research is simply answering basic questions to which the answers are obvious. The research team constructed a novel study with the aim of establishing whether bone testing of fracture fixation constructs actually adds anything to scientific understanding.<sup>5</sup> They devised a web-based survey with orthopaedic surgeons of varying experience. Medical students were asked to predict the outcomes of 11 biomechanical research papers recently published in this area, asking the controversial question, 'Are a subset of biomechanical studies comparing fixation constructs simply documenting common sense?'. Unsurprisingly given the tongue in cheek nature of the study, there was an excellent response to the survey with 247 orthopaedic surgeons and 81 medical students predicting the answers to 11 studies. The accuracy of prediction of outcomes was 80% or greater for the vast majority



of the studies (n=10/11), with no 'experience effect seen' although there were substantial differences in regional variation and only a moderate reliability in terms of inter-rater reliability. Although perhaps more than a little playful, this paper does underline for us here at 360 perhaps one of the most pressing issues in academic publishing: over-publication. So many papers are pushed out (and, one can't help thinking, perhaps encouraged by the 'publish or perish' mantra), that many critically important and potentially practice-changing papers are overlooked in what has become a very crowded marketplace.

### Anaesthetic risk and hip replacement

#### x-ref Hip, Trauma

■ The safety of anaesthetic methods is a much studied topic in both elective and trauma hip surgery. However, with on-table death rates low, establishing safety for most studies requires surrogate primary endpoints. In an interesting randomised controlled trial, researchers from **Erzurum (Turkey)** have set out to establish the relative safety of two different anaesthetic regimes using the outcome measure of haemodynamic stability.<sup>6</sup> The researchers studied 70 patients over the age of 60, all with American Society of Anaesthesiologists' (ASA) grade 3+ who were undergoing anaesthetic for hip arthroplasty. Patients were randomly allocated to either a combined psoas compartment-sciatic nerve block with continuous spinal anaesthetic. Patients in the combined block group had significantly higher MAP, both initially and at time intervals to 20 minutes. Even more significantly, more patients required vasopressor

support in the spinal anaesthesia group. Although there were no differences seen in the outcomes of anaesthesia in terms of oxygen saturations and heart rate in the peri- and intra-operative period, the requirement for vasopressor support in order to achieve safe anaesthesia varied significantly between the two groups (13 patients in the spinal groups vs four in the psoas compartment sciatic block group). There are many studies comparing anaesthesia administration regimens in attempts to demonstrate differences in safety. The results are for the most part the same as in this case – no eventual differences in outcome, but often less supportive therapy is required with regional techniques as they do not suffer from the same negative inotropic and chronotropic effects of volatile and other general anaesthetic agents.

### REFERENCES

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