

**X-ref** For other Roundups in this issue that cross-reference with **Research see: Hip Roundups 1, 5, 7; Knee Roundups 2, 3, 4; Wrist & Hand Roundup 5; Trauma Roundup 4, 5.**

## **Seronegative infections of the hip and knee X-ref**

■ Early diagnosis of periprosthetic joint infection (PJI) can have significant implications for its successful treatment. However, in some patients it can be difficult to arrive at a definitive diagnosis, and biochemical markers of inflammation including erythrocyte sedimentation rate (ESR) and the C-reactive protein (CRP) are routinely used as a diagnostic aide. There is some evidence to suggest that a normal CRP and ESR are sensitive enough to definitively rule out a PJI, although others have suggested that this will lead to a significant number of false negatives. The authors of this study from the **Mayo Clinic, Rochester (USA)** aimed to report on and identify the outcomes for patients treated for PJI, all with negative serology (ESR and CRP within normal limits).<sup>1</sup> The authors used their institutional database to identify the patients and pathogens most commonly implicated. Their institutional registry contained 952 PJIs and, of those, 38 (4%) had a CRP and ESR within normal limits and formed the basis for this study (17 THAs and 21 TKAs). In the majority of cases two positive samples for tissue culture were identified. In this cohort (perhaps unsurprisingly) the outcomes following two-stage revision were similar to published success rates. Across their whole cohort the authors calculated a sensitivity of ESR and CRP of 81% and 93%, respectively. However, when the CRP and ESR were combined with pre-operative joint aspiration, the sensitivity rose to 99.7%, including patients with a negative serology. Although the incidence of seronegative joint infections was low, this large study

highlights the importance of exercising extreme caution when excluding a definitive diagnosis of a PJI on just the ESR and CRP. A significant number of suspected patients will have a PJI despite normal inflammatory markers. It is therefore important to consider normal inflammatory markers in the light of a patient's clinical condition, and have a low threshold to perform a joint aspiration. If there is any doubt regarding patients with equivocal results, they should be discussed in a multidisciplinary team setting among clinicians with an interest in treating PJIs including senior microbiologists, infectious diseases consultants and pathologists. A missed or delayed diagnosis can have significant ramifications for the successful treatment of this challenging condition.

## **The lateral cutaneous nerve of the thigh X-ref**

■ There is no such thing as a free lunch. Economists have been using this phrase for years, indicating that there is always a trade-off for everything. Surgical approaches to total hip arthroplasty are no different. The posterior approach historically has a higher rate of dislocation, and the direct lateral approach has higher abductor weakness. While the direct anterior approach has been widely marketed and lauded as a 'muscle-sparing' approach, one of the key risks of this approach is damage to the lateral femoral cutaneous nerve (LFCN). It must be emphasised to patients that one third of individuals may be affected by numbness after surgery, and that there is the potential for femoral nerve damage affecting the quadriceps. This anatomic study from the **University of Zurich (Switzerland)** nicely highlights the course of the LFCN and reminds us that there are no free lunches when performing total hip arthroplasty.<sup>2</sup> The study team used a decent sample size of 28 cadaveric hemipelvises,

and the course and branches of the LFCN from the inguinal ligament through the thigh and onwards were established. The course of the nerve and its eventual branching pattern were noted and the relationship between the anterior superior iliac spine and the surgical plane of the anterior approach also identified. The authors describe three unique branching patterns, seen in roughly a third of patients. The sartorius pattern sees an anterior-dominant bundle running under the cover of the lateral border of the sartorius, the posterior type sees a dominant posterior branch, and the fan type has early multiple small branches which make the nerve branches difficult to identify. Given the proximal branching in around half of specimens, and the anatomic patterns seen, the authors conclude that it is impossible to approach the hip joint anteriorly without injury to the nerve in around half of patients.

## **Minimising complications with pre-operative haemoglobin X-ref**

■ There are any number of studies demonstrating that pre-operative anaemia leads to post-operative transfusion, and that post-operative transfusion is associated with complications. This may in part be due to transfusion triggers or an associative confounder (are patients at risk of complications more likely to be anaemic?). However, it is puzzling that there aren't any studies considering this question: if the pre-operative haemoglobin level could be corrected, would that reduce the complication rates in large joint arthroplasty? The arthroplasty group in **Edinburgh (UK)** have published their own study which takes a fresh look at the difficult-to-unpick topic of haemoglobin, transfusion, complications and arthroplasty.<sup>3</sup> Their study used data from 2284 patients undergoing total knee arthroplasty to explore any association between

pre-operative haemoglobin and transfusion. The authors established using a receiver operating characteristic (ROC) analysis that thresholds of 13.75 g/dl for males and 12.75 g/dl for females were associated with a sixfold increased risk of transfusion. The authors note that complication rates associated with anaemia include cardiac arrhythmia, deep infection, mortality and increased length of hospital stay. Although the authors boldly assert that their data can justify pre-operative optimisation of the haemoglobin prior to joint replacement, we do have a fundamental difficulty here at 360 with changing practice on papers like this that assert association, not causation – it is far from clear if patients with pre-operative low Hb are at risk of complications because of their Hb, or if in fact patients with comorbidities are at risk of complications and incidentally are also likely to have a low Hb.

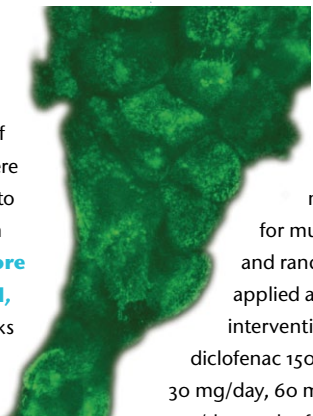
## **Thromboprophylaxis and aspirin X-ref**

■ The spectre of thromboprophylaxis continues to raise its ugly head. A thorny medico-legal issue with questionable national guidance based on dubious drug company-sponsored studies, it is easy to see why surgeons feel aggrieved about the widespread unselected use of low molecular weight heparin as a thromboprophylactic agent, with its inherent disadvantages. There are a number of different approaches to this problem, and we were delighted to read this report from **Belfast (UK)** concerning the use of aspirin thromboprophylaxis in 11 459 patients.<sup>4</sup> The study team undertook an analysis of the pulmonary embolism risks and 90-day mortality risk, both all-cause and pulmonary embolism related. Within the limits of the data presented, the authors were able to establish that pulmonary embolism was responsible for just 18% of deaths. Further to this, the

authors undertook a stratified analysis of those patients receiving aspirin and other forms of thromboprophylaxis. What they can be certain of is that there is no increased risk of death or thromboembolic events when aspirin is used in conjunction with individualised risk assessments. The use of aspirin appears to be safe as a thromboprophylaxis agent in primary arthroplasty, and is not associated with an increased incidence of DVT in a select group of low-risk patients.

### Preventing infection in total knee arthroplasty **X-ref**

■ Though periprosthetic joint infection after total knee arthroplasty remains a rare complication, it is associated with huge morbidity and spiraling healthcare costs. As prophylactic and therapeutic antibiotics become less and less effective, prevention (as they say) is always going to be better than cure. Sadly, despite the large health economic costs associated with periprosthetic infection and some of the prophylactic measures taken, there are still significant numbers of patients who suffer this most costly and disabling of complications. We were delighted here at 360 to read this analysis from authors at **North Shore Hospital (Auckland, New Zealand)** of risks factors for infection and their likely efficacy.<sup>5</sup> The paper concerns the outcomes of 64 566 joint arthroplasties from across New Zealand with outcomes assessed for early periprosthetic joint infection at six and 12 months of follow-up. The authors attempted to establish links between infections and common, easily definable patient, surgeon and surgical risks. Outcomes were assessed using multivariate logistic regression analysis and adjustment was therefore



made for potential confounders. The authors established that there was an association between male gender (OR 1.85), previous surgery (OR 2.45), ligament reconstruction (OR 1.85) and antibiotic cement (OR 1.93).

### Analgesics in osteoarthritis **X-ref**

■ Analgesics are the mainstay of treatment for osteoarthritis, with patients from all orthopaedic sub-disciplines requiring analgesics as part of their treatment regime. It was with some interest then that we read this paper from *The Lancet* by a meta-analysis team based at the **University of Bern (Switzerland)**. Using the most up-to-date network meta-analysis techniques they set out to establish what, if anything, were the differences between the various analgesic regimes for osteoarthritis.<sup>6</sup> The authors identified 74 randomised trials of at least 100 patients, each describing the outcomes of 58 556 patients, all reporting physical

function and pain outcomes following different analgesic regimens for osteoarthritis. The random effects models used allowed for multiple comparisons, and random effects were applied at a trial level. The interventions compared were diclofenac 150 mg/day, etoricoxib 30 mg/day, 60 mg/day, and 90 mg/day, and rofecoxib 25 mg/day and 50 mg/day, with comparison groups of paracetamol or placebo. Network meta-analysis allowed for more complex node comparisons, giving a more comprehensive result. The authors identified 23 nodes that were suitable to form part of the network based on the seven different drugs and dosage combinations. The meta-analysis comprehensively established that there was no real role for paracetamol, with

no discernible improvement over placebo in a comprehensive analysis. However, there was more substantial evidence for the use of NSAIDs, with diclofenac 150 mg/day providing the most robust analgesia of all the agents studied.

### Vitamin D ineffective in the treatment of knee osteoarthritis **X-ref**

■ There has been a trend to recommend a range of vitamins and nutritional supplementation to reduce the burden of osteoarthritis, and particularly to improve symptoms and long-term sequelae. However, despite this widespread adoption and often recommendation from the medical fraternity, there is in practice little evidence to support its use. Researchers from **Tasmania (Australia)** recently conducted their own randomised controlled trial publishing evaluations of the outcomes of vitamin D as a treatment for knee osteoarthritis in a study of over 400 patients.<sup>7</sup> Participants were randomised to either vitamin D supplementation or a placebo for a two-year period, and outcomes assessed with clinical scores (WOMAC) and an MRI-derived measure of tibial cartilage volume. The follow-up was 82% complete and the authors were therefore able to report the outcomes of 340 patients at two years. There were no differences in any of the reported outcome measures and thus, given the large size and careful methodology, it can be fairly conclusively surmised that vitamin D has no real benefits in knee osteoarthritis.

### Body mass in brief

■ In this big paper which recently garnered press coverage and was published in *The Lancet*, researchers in **London (UK)** reported on the global trends in body mass in 200 countries across the world.<sup>8</sup> While not an orthopaedic paper as such, it is worth a mention in brief with some obvious direct relevance

to orthopaedics. Amazingly, there are now more obese people on the planet than underweight people. Clearly the demand for surgical treatment of osteoarthritis is likely to become more challenging in future.

### REFERENCES

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