

ROUNDUP³⁶⁰

Hip & Pelvis

Xref For other Roundups in this issue that cross-reference with **Hip & Pelvis** see: *Knee Roundups 1 and 6; Trauma Roundups 5 and 9; Oncology Roundup 2; Children's Orthopaedics Roundup 5; Research Roundups 3 and 5.*

Recent arthroplasty no bar to flight **Xref**

■ A common post-operative request is for patients wishing to take a holiday as part of their recuperation period, or wishing to get back to work which includes travelling by air. While clinicians are expected by their patients and institutions to offer advice about flight and thromboprophylaxis following arthroplasty, there is little in the literature to support any particular advice. An excellent retrospective review of a large cohort of patients performed by researchers in **New York (USA)** aimed to establish if there is an increased risk of thromboembolic disease with flight in the early post-operative period. At the researchers' institution (Rush University), a large number of patients fly in to have their joint replacement surgery performed, and then are anxious to fly back home to complete their rehabilitation. This retrospective study included 1465 consecutive total joint replacements. Of these, a subgroup of 220 patients who flew at a mean of 2.9 days after hip and knee replacement were compared with a control population of 1245 patients who did not fly. The authors found no difference in the reported rates of symptomatic DVT or PE between the two groups.

This study suggests that flying after total joint replacement may not lead to a higher risk of symptomatic venous thromboembolic disease.¹ Until this study, it was unknown if air travel is safe in the early post-operative period and it has long been assumed that patients are at higher risk for DVT and/or PE after orthopaedic surgery, should they choose to fly. However, these results should be treated with caution as the event rates for significant PE are low and there is certainly the possibility of underpowering and a type II error here.

That squeak could be a fracture...

■ Squeaking is a poorly understood complication after ceramic-on-ceramic total hip arthroplasty. While it is an annoyance to patients and to surgeons, until this study, the latter have not necessarily thought of its occurrence as a sign of potential bearing failure.² In this retrospective review on a small number of patients (four) who presented to The Hospital for Special Surgery, **New York (USA)**, patients all presented with painful squeaking and underwent revision surgery. All patients were found at the time of surgery to have a fractured ceramic liner. The authors concluded that squeaking associated with pain may be a sign of ceramic fracture, and further workup of these patients should be performed in this setting. The authors caution that ceramic fracture of this nature may not be visible on traditional radiographs and that further imaging may be required.

Squeaking more common than previously thought

■ Researchers in **Canberra (Australia)** have tackled the often thorny subject of squeaking ceramic-on-ceramic arthroplasties. Using a combination of meta-analysis and analysis of the Australian Arthroplasty Register, this excellent study was able to include over 16,000 patients to determine the incidence of squeaking after THA with a ceramic-on-ceramic bearing. This information is critical for orthopaedic surgeons who perform ceramic-on-ceramic total hip arthroplasty to better counsel their patients on this risk.³ In their large meta-analysis, the incidence of squeaking was found to be 4.2% and the incidence of revision for squeaking was 0.2%. However, not all prostheses were equal and the incidence of squeaking in patients receiving the Accolade femoral stem reached the worrying heights of 8.3%, with 1.3% undergoing revision for squeaking. Thus, while squeaking is relatively common (4%), the number of patients who require revision for squeaking is relatively low. Clearly, given these figures, the possibility of a squeak and the rare (but possible) requirement for revision surgery should be discussed with the patient as part of the informed consent process.

Diagnosing early infected hip arthroplasty

■ The diagnosis of periprosthetic joint infection after total hip arthroplasty can be challenging, particularly in the early post-operative period. In the first six weeks after surgery,

it is normal for patients to have a certain degree of pain and swelling. Furthermore, it is also known that the CRP, ESR, and synovial fluid WBC count are elevated after surgery, regardless of whether there is an infection or not. Picking out patients in whom there is greater than expected pain and swelling, or higher than expected inflammatory markers, can be a tough call. The authors of this study from **Chicago (USA)** have revisited threshold values for common biochemical markers of infection (ESR, CRP, synovial fluid WBC count and differential) to aid orthopaedic surgeons in making the diagnosis of a periprosthetic joint infection in the first six weeks after surgery, which will prove to be very helpful.⁴ They designed a retrospective review of a little over 6,000 consecutive primary THRs. Of these, 73 patients underwent re-operation for any reason within the first six weeks post-operatively. Thirty-six were diagnosed as infected using the Musculoskeletal Infection Society criteria, and 37 were not infected. The research team used ROC analysis to establish the strength of association and the best threshold values for each tested variable. It was found that the best test for the diagnosis of PJI was the synovial fluid WBC count (AUC = 98%; optimal cut off value 12,800 cells/ μ L) followed by the CRP (AUC = 93%; optimal cutoff value 93 mg/L), and synovial fluid differential (AUC = 91%; optimal cutoff value 89% PMN). These values can now be used to help diagnose deep infection after THA.

Impaction grafting at a decade

■ Impaction grafting is one method for restoration of acetabular bone stock. It has been in use for nearly 30 years, but large long-term follow-up studies are still lacking. This outstanding retrospective study of acetabular impaction grafting from the **Exeter (UK)** group reports the results of acetabular impaction grafting at a minimum of ten years of follow-up. The Exeter group have been leading proponents of impaction grafting over the last few decades and in an era of highly porous coated metals, impaction grafting is often “a forgotten procedure” in some institutions, despite its published success over the last 30 years.⁴ This large retrospective review of 304 patients, all with both cavitory and segmental acetabular defects of all Paprosky grades, were all managed with impaction grafting. Segmental defects were converted to contained defects through use of mesh and vigorous impaction grafting of morcelised cancellous bone. Kaplan-Meier survival with revision for aseptic loosening as the endpoint achieved 85.9% survival (95% CI 81.0 to 90.8) at 13.5 years. The success of acetabular impaction grafting continues to be phenomenal, and its use in challenging acetabular revisions should be considered.

Femoral offset associated with post THR outcomes

■ The impact of femoral offset has long been discussed in the literature, but its effect on post-operative pain and patient quality of life is unknown. While pre-operative templating and computer navigation have improved our ability to judge offset pre- and

post-operatively, it is often difficult to judge offset intra-operatively. Some surgeons tend to prefer higher offsets to increase stability, range of motion and improve abductor strength. However, the impact that this has on patient quality of life is unknown. Charnley, with his original low-friction arthroplasty, aimed for precisely the opposite, medialising the acetabular component and performing a trochanteric advancement to reduce the femoral offset, and therefore the frictional torque on the prosthesis. Researchers in **Kiel (Germany)**

reviewed 362 patients and accurately categorised them as low offset, normal offset, or high offset based on review of post-operative calibrated radiographs. The femoral offset was calculated using the known dimensions of the implants to control for femoral rotation. Outcomes were assessed using the Western Ontario and McMaster Universities osteoarthritis index (WOMAC) as both a raw score and a change in pain subscale. Outcomes were assessed at three, six, 12 and 24 months, and adjustment made for confounding variables.⁶ The amount of femoral offset was associated with the mean WOMAC pain subscale score at all points of follow-up. Furthermore, the low-offset group reported less pain (on WOMAC) than the normal or high-offset groups. Thus, we may be doing our patients a disservice by increasing their offset

under the assumption that they will be mechanically better. We need to continue to find better ways to judge offset intra-operatively, so that we can recreate our patients' normal offset.

Periprosthetic fracture stabilisation Xref

■ With the combination of the ageing population and ageing implants, there is a potent melting pot of loose implants and osteopaenic bone. The result, as we all know too well from our trauma conferences, is an increase in the rates of periprosthetic fracture. Despite this ticking timebomb, there is little known about the biomechanical properties of the various implants and strategies that can be employed to fix these fractures. Researchers in **Münster (Germany)** set about establishing the biomechanical properties of two implants designed to be used around the stems of periprosthetic hip fractures; the locking attachment plate (DePuy Synthes) and the variable angle non-contact bridging plate (Zimmer). They conducted a cadaveric study using a periprosthetic hip fracture model. Femora were randomly assigned to either of the two implants following fracture. Each construct was then cyclically loaded to failure. While the two constructs both provided stable fixation, the non-contact bridging plate had significantly higher loads to failure and was stiffer than the locking attachment plate.⁷ It is not completely clear from this study



which is the preferred implant. While the non-contact bridging plate offers the significant advantage of higher loads to failure, the increased stiffness may be detrimental, particularly when used as a bridging construct and relative stability is the aim. Both systems clearly offer more flexible fixation options than the traditional lateral locking plate. Time will tell which is the more successful strategy.

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