

ROUNDUP³⁶⁰

Hip & Pelvis

The well-fixed acetabular revision

■ Amongst the myriad arthroplasty problems associated with increased longevity in Western society, the difficulty of revision in patients with well-fixed acetabular shells has received little attention from the scientific orthopaedic community. The newer generation of surface coatings and porous metal shells potentially poses a number of specific difficulties – the removal of such well-fixed shells to effect revision will often leave large bone defects and carry with it a massive morbidity burden with increased blood loss and operative times. There is little published data guiding the surgeon on how to surgically manage these patients as few long-term outcome studies exist. This study from **California (USA)** seeks to address this deficiency by examining the outcomes from one previously described solution: cementation of a liner inside a well-fixed shell.¹ The authors describe the outcomes of 32 cemented liners of various varieties followed up both clinically and radiographically. The study reports outcomes to a mean of 12.7 years and with revision taken as an end point, the surgeons were able to achieve a ten- and 15-year survivorship of 77.3% and 68.8%, respectively. While the numbers included in this study were relatively small, the authors made an attempt at subset analysis based on liner subtype. The authors suggest that the cross-linked polyethylene liners had the highest five-year survival at 100%, followed by metal liners

(81.3%) and high-density polyethylene (75%). Dislocation was a commonly reported mode of failure, and consideration should perhaps be made to cement constrained liners in patients who have a higher likelihood of instability after total hip revision. Overall, the experience described here suggests that this is an acceptable surgical technique, although longer-term larger studies are needed to continue following these patients.

Predicting complications in revision arthroplasty

x-ref Knee

■ As the revision arthroplasty burden in both hips and knees continues to rise, it is becoming increasingly important to develop our understanding of complication rates following these procedures.

Although ‘descriptive and predictive’ papers describing outcomes following arthroplasty and predictors of those outcomes are becoming de rigueur in orthopaedic journals, they do perhaps have more benefit than may be initially obvious. One area where perhaps this is more keenly felt than others is revision arthroplasty. Identification of potential predictors of complications and delayed discharge is key to successful care delivery, and investigators in **Montreal (Canada)** have undertaken an analysis of the American College of Surgeons’ National Surgery Quality Improvement database in an attempt to plug some knowledge gaps.² For the period between 2011 and 2012, the data for 5068 patient revisions (47.8% knee,

52.2% hip) were included in the study with outcome coded as major complications (death, life threatening events) at 3.0% for hips and 1.6% for knees. The lesser ‘minor’ complications were seen in 5.1% for hips and 3.6% for knees. Analysis of potential covariates suggested that in this population at least, the expected increase in complications associated with higher American Society of Anesthesiologists’ grade, age, and significant comorbidity (e.g. COPD) was seen. In addition, this study suggests that pre-operative anaemia has a strong positive association with both major complication rates and delayed discharge (defined here as > seven days). Although not groundbreaking, this study is of value in assessing complication rates and potential associations in a relatively large cohort. It is worth noting that the authors did not attempt to include dislocation in their hip analysis, rates of which probably average about 7% following revision surgery. This said, pre-operative anaemia is an eminently correctable risk factor and we do wonder if more pre-operative workup than the standard for these high-risk revision patients might be indicated.

Is infection associated with fixation?

x-ref Knee, Research

■ Infection is perhaps the most disastrous of complications associated with arthroplasty. There are few complications as devastating for surgeon and patient alike, and as such, the prevention of deep infection remains

a significant focus for scientists, surgeons and patients.

An area that perhaps remains under-evaluated is that of fixation method and research. Authors in **Seoul (South Korea)** have used fairly typical systematic review methodology to evaluate the existing English language literature (period covered: 1980 to 2013), comparing infection rates between cemented and uncemented total hip arthroplasty (THA).³ After applying fairly rigorous exclusion criteria to the 1090 papers they initially looked at, eight remained (two randomised controlled trials (RCTs), four observational studies and two registry studies). Perhaps surprisingly, after various different statistical methodologies were applied, they found a consistently higher rate of infection following cemented *versus* uncemented hips (it is not clear whether some of these were hybrids - odds ratio (OR) 1.53; in the RCTs alone, the OR was 5.04). Their comment that failure by previous studies to identify a similar outcome may be due to inadequate numbers is fair. In the current environment, where there are some who question the use of uncemented hips on the grounds of cost, it may be worth bearing these findings in mind given the socioeconomic implications of treating periprosthetic infection.

Front or back? An enduring question in hip surgery

■ Choice of surgical approach in hip arthroplasty remains a divisive issue. Proponents of both approaches make excellent and valid

arguments. Those with a preference for anterior approaches cite lower dislocation rates, while fans of the posterior approach argue that poorer exposure can lead to poor component placement that can compromise outcomes. To try and shed some light on the contemporary research supporting each approach, a review team from **Lebanon and Hanover (USA)** have undertaken a comprehensive



and well-conducted review.⁴ Their study examines outcomes from both patient-reported outcome measures and various radiological, intra- and post-operative comparisons. The study team screened and included studies comparing groups undergoing primary THA via either posterior or direct anterior approaches. The review team only selected studies that reported pre-operative data (pre- and post-operative pain and function patient-reported outcome measures data) as the primary outcome measure, with secondary outcome measures including radiograph parameters, blood loss, fracture and duration of surgery. The authors report 17 studies that met their inclusion criteria reporting the outcomes of 2109 patients (980 anterior approach and 1129 posterior). In keeping with other work published in this area, the only reported finding was a slightly improved early symptomatic and functional outcome benefit in the anterior approach group, and this was based on data from only five of nine studies, with the remainder showing no difference, even early

on. In the longer-term follow-up, outcome measures normalised. While the authors recommend further prospective studies to clarify the issue, we do wonder, here at 360, if this really is just a ‘horses for courses’ question. With no obvious differences between the approaches, either remains an acceptable option for the vast majority of surgery.

Muscle-sparing approaches? **x-ref Research**

■ There are more and more RCTs emerging with either primary end points associated with basic science outcomes or embedded studies within clinical trials. While these studies add a lot to the understanding of basic science, we do sometimes wonder, here at 360, what is added to clinical knowledge. Researchers in **Arendal (Norway)** set out to establish if, in their RCT of the anterior *versus* direct lateral approaches, there were any detectable differences in muscle damage (measured by C-reactive protein (CRP) and CK levels) after THA in addition to measuring pain scores.⁵ The surgical team recruited 83 patients undergoing THA to their study and randomised them to one approach or the other. The anterior approaches were a minimally invasive muscle-sparing approach and the direct lateral approaches a modified Hardinge-type approach. Outcomes were assessed on days one to four post-operatively. Interestingly, there were two completely conflicting findings. Those patients undergoing the anterior approach had higher levels of CK production (but not CRP), but lower levels of pain and analgesic use. This is an interesting observation in itself – pain obviously is not related to muscle damage – but this does illustrate the difficulties with RCT interpretation. The selection of outcome measure plays a large part in determining the findings of the study. Had the investigators chosen just one of these two measures, they would have reported a ‘positive’ trial with one approach

superior to the other. This study really does highlight to us here at 360 the importance of careful study design and evaluation of the study design by the reader.

Gabapentin as a post-operative analgesic adjunct

■ Post-operative pain relief is a key component of any surgical care pathway and has become more and more important in optimising post-operative care, both reducing length of stay and increasing patient satisfaction scores (keys to success in the modern healthcare economy!). As traditional analgesic regimes become less popular due to their side-effect profile, clinical teams are looking for suitable adjuncts to improve analgesic effects without compromising rehabilitation. One such potential adjunct is gabapentin, which is known to have profound analgesic effects on neuropathic pain. A study team from **Hamilton (Canada)** undertook their own RCT to investigate the efficacy of gabapentin as an adjunct to opioid analgesia in patients following THA.⁶ Patients were randomised to either standard care or a multimodal analgesic regime including pre- and post-operative gabapentin administration. Outcomes were assessed using the surrogate of morphine utilisation at 72 hours post-operatively. The simple answer to this study is that it makes no difference. Gabapentin does not appear to have a role to play in peri-operative analgesic regimes following joint arthroplasty.

An Indian take on AVN of the hip

■ In resource-poor healthcare environments, unusual treatments develop and often with some surprising results. This Indian paper from **Maharashtra (India)** perhaps verges on the blasphemous, from Western perspectives, but the authors make some interesting points.⁷ The paper describes a retrospective outcome series of 96 patients, all with a diagnosis of primary avascular necrosis (AVN)

of the hip. Patients included in the study were aged 30 to 59 years and all underwent primary bipolar hemiarthroplasty (rather than THA) for AVN of the femoral head. The key technical point they make is that there should be superficial reaming of the acetabular cartilage, and the femoral head should effectively be a press-fit – the aim being that the larger head does not move, with all movement occurring between the inner head and the inner aspect of the outer head. Although there is no comparator group, the mid-term results are reasonable in terms of both revision rate and clinical outcomes. Clinical outcomes were assessed using the Harris hip score (pre-operative value of 39.3) which improved to a post-operative score of nearly 90 (mean 89.12; range 74 to 96) at over seven years of follow-up. Although a poorer result than reported in many contemporary hip arthroplasty series, these were young patients, and the results are still respectable. The authors conclude that this is a potentially preferable option to THA due to reduced surgical trauma and easier revision. Although the study methodology is not particularly strong, the points made are certainly worthy of contemplation, even if only for subsequent rejection!

Weight loss and arthroplasty **x-ref Knee, Research**

■ The association between weight loss, arthroplasty and outcome is a complex one. Obese patients with severe hip or knee arthritis will often present to clinic complaining of being stuck in a vicious cycle. They will present seeking a total joint arthroplasty (TJA) so that they can become more active and lose weight, something they say the pain in their joints won’t allow. While the evidence is fairly clear that loss of weight improves joint pain, the counter has not always been found to be true. Can curing joint pain help patients lose weight? Researchers in **New York (USA)** set out to

establish if, in their experience, obese patients presenting requesting a TJA would in fact lose weight in the longer term.⁸ The study team used their institutional registry and identified all hip and knee arthroplasties performed over a two-year period (3893 THA and 3036 TKA). Patients were stratified by obesity class, type of arthroplasty and weight loss following their surgery. The vast majority of patients (73% of THAs and 69% of TKAs) underwent no eventual change in weight despite their surgery. However, patients who did go on to lose weight were more likely to have improved functional status, and potential predictors of likelihood to lose weight included female sex, undergoing a TKA and,

surprisingly, a greater pre-operative body mass index. The findings of this study corroborate other studies in the literature in that the vast majority of patients maintain the same weight after surgery, and some will even gain weight after surgery. The improved functional outcomes in patients undergoing TJA should provide encouragement to patients to lose weight after surgery, and we wonder if supplementation of surgeon-given advice with a dietitian and a trainer may help to facilitate this weight loss. This is going to become a more and more common issue, especially in nationalised healthcare systems where rationing of surgery based on patient correctable factors is already occurring.

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