

ROUNDUP³⁶⁰

Hip & Pelvis

Is metal-on-metal really such a disaster?

■ The literature has been filled in recent months with the failure of metal-on-metal hip arthroplasties, be they of the resurfacing or total hip design. What so many authors fail to declare, however, are the many thousands of happy patients out there with metal-on-metal hips. Is everything made of metal really so bad, wonders 360? After all, traditional hip replacements fail, too. An interesting review article has appeared from **Oxford (UK)** that had us terrified by the end but which still makes valuable reading. It describes something of the background history to our current situation, considers metal erosion, design flaws, tumours and the inadequacies of registries.¹ 360 was depressed with this paper's clear message but nonetheless better informed. Do read it and form your own view.

Resurfacings with unexplained pain

■ Of course, when it comes to revising a failed hip arthroplasty we generally like to know why we are doing it, as a revision is not without risk. Consequently, a paper from **London (UK)** is fascinating. The authors took 55 patients who were undergoing a revision of a Birmingham Hip Resurfacing (BHR) and collected clinical data pre-operatively, intra-operatively, and after revision arthroplasty. The data included chromium and cobalt levels in whole blood, and component orientation, typically measured with CT scans. The

wear of the retrieved components was also quantified post-operatively. All parameters were compared with those in a comparable group of patients with a well-functioning BHR arthroplasty. 360 was astonished by the results. For those patients who underwent revision arthroplasty, 69% did so on the basis of unexplained hip pain. When compared with patients with a well-functioning arthroplasty, those who underwent revision arthroplasty had a higher inclination angle of their acetabular component, a smaller diameter to their femoral head and higher blood cobalt and chromium ion levels. However, almost 50% of the patients who underwent revision arthroplasty had blood metal ion levels below the clinical threshold of 7 ppb and low component wear rates. Nevertheless, in a large number of patients with unexplained hip pain leading to revision of a metal-on-metal hip arthroplasty, the orientation of the acetabular component was satisfactory and the rate of material loss was low.² It goes to show, thinks 360, that we still do not fully understand this thing called resurfacing and should perhaps proceed with caution before condemning it to the annals of history.

Large heads and high ion levels

■ Research into hip resurfacing is clearly global, as a paper from **Wuhan (China)** shows. The authors report on 127 cases of metal-on-metal hip resurfacing or large-diameter hip replacement

that were performed over a six-year period. They looked at the clinical and radiological results, reporting that an important cause of failure was fracture of the femoral neck. In common with other authors, they found that chromium and cobalt levels were higher after hip resurfacing than with a conventional metal-on-polyethylene total hip replacement. There were especially high ion levels with abduction angles > 45° and repetitive extreme hip movements.³ 360 notes that the authors describe their findings as novel and quite controversial. We disagree. They appear to be mirroring the results of other papers from around the world.

Hip arthroscopy for femoroacetabular impingement

■ Hip arthroscopic surgery is taking off speedily throughout the world, spurred by its use in the management of femoroacetabular impingement (FAI). Work from **Shanghai (China)** has been particularly helpful and interesting in this regard. The authors studied 31 patients who had undergone arthroscopic femoral osteoplasty for cam-type FAI and reviewed them at a mean final follow-up of 22.7 months. Outcomes were measured with a visual analogue scale, range of movement, impingement tests, alpha angle and the modified Harris hip score. 360 notes that the functional results were especially impressive. The range of flexion increased from 101° to 121°, and internal rotation in 90° of flexion from 5.0° to 30.1°. The alpha angle

reduced from 74.2° to 44.7° while the impingement test was negative in all patients at the final follow-up.⁴ Well done Shanghai, thinks 360. These are good results. Perhaps they might report their longer-term findings later?

Inaccuracy of clinical tests for impingement

■ When it comes to the diagnosis of FAI, much emphasis has been placed on the so-called impingement test. Yet how accurate is it? Researchers from **Arnhem (The Netherlands)** have looked at this through a large meta-analysis of 21 studies in which 18 different tests were described. For 11 of these tests, diagnostic accuracy figures were presented. Sensitivity was examined for all tests but other diagnostic accuracy figures were often lacking and, when available, were low. All articles describing tests had level IV or V evidence. All diagnostic studies, save one, had level II or III evidence.⁵ Tragically, this paper reaches the understandable conclusion that the quality of the studies investigating these tests is too low to provide a conclusive recommendation for the clinician. Thus, currently, no physical tests are available that can reliably confirm or dispute the diagnoses of FAI and/or labral pathology of the hip in clinical practice. Back to the drawing board we go, thinks 360.

Arthroscopic lengthening of iliopsoas

■ Of course, the hip arthroscope is now veering well outside the hip with a repertoire that grows ever

wider. Iliopsoas lengthening is one such technique, as highlighted by a paper from **New York (USA)**. The authors wished to understand something of the outcomes after an arthroscopic lengthening of a symptomatic, snapping psoas tendon in young patients. They took 67 consecutive patients with symptomatic coxa saltans who had undergone an arthroscopic psoas tendon lengthening through a transcapsular approach over a three-year period by a single arthroscopic hip surgeon. The patients were divided into low/normal femoral version and high femoral version groups and analysed for association of femoral version with clinical outcomes as measured by the modified Harris hip score (mHHS) and Hip Outcome Score (HOS) pre- and post-operatively with a minimum of six months' follow-up. Excessive anteversion ($> 25^\circ$) appeared to be associated with worse HOS sports subscale scores compared with low/normal anteversion. However, there was no difference in mHHS and HOS activities-of-daily-living subscale scores. The post-operative mHHS scores were significantly different for excessive anteversion as compared with low/normal anteversion. No association was seen between clinical outcome measures and any other clinical or demographic variable. Although this was a level IV study, it appears that patients with increased femoral anteversion may be at greater risk of worse clinical outcomes after arthroscopic lengthening of a symptomatic, snapping psoas tendon. The psoas tendon may be an important passive and dynamic stabiliser of the hip joint in these patients and release may result in a greater alteration of kinematics with high-demand activities, particularly terminal extension and external rotation when the tendon is typically at its highest tension.⁶ 360 feels this paper is likely to be very useful to the hip arthroscopic community. These results may help surgeons identify which patients may be at risk of a

worse clinical outcome after psoas lengthening. As with all surgery, it is best to know these things before you start.

OA hip – grading the radiograph

■ With osteoarthritis (OA) of the hip being so common, what is the best way of assessing radiographs in a clinical setting? Surely it is just a matter of eyeballing the film? Surgeons from **Oslo (Norway)** have reported this in a study of 49 patients (61 affected hips) with late developmental dislocation of the hip. The patients had a mean age at follow-up of 45 years. Three classification systems were used: the Kellgren and Lawrence, the Croft and a third classification that was based on narrowing of the joint space in the upper, weight-bearing part of the joint. This latter system defines OA as being present if there is less than 2 mm of joint space width at the narrowest part. To investigate this, two experienced observers - one radiologist and one orthopaedic surgeon - assessed and measured the radiographs. The best interobserver agreement was with the minimum joint space width. The Kellgren and Lawrence showed only moderate agreement, as did the Croft. Intra-observer agreement was better than interobserver agreement, irrespective of the grading system used.⁷ So we were right all along, thinks 360. The simplest and most reproducible classification to use as a criterion for OA is a joint space width of less than 2 mm. Out with those grading systems and in with simplicity.

The injured hamstring – football's most common injury

■ The single most common injury in professional football is

the hamstring injury. A similarly common problem is answering the question put to the surgeon by the player's manager of "When can he return to play?" MRI is commonly used to both confirm the diagnosis and provide a prognosis of likely lay-off time. Yet how accurate is it? A study from **Linköping (Sweden)** has investigated this with a prospective cohort study where 23 European professional teams were followed for a four-year period. In total, 516 hamstring injuries occurred; 58% of these were examined by MRI. Grade 0 injuries occurred in 13%, grade 1 in 57%, grade 2 in 27% and grade 3 in 3%. Grade 0 and 1 injuries accounted for 56% (2141/3830 days) of the total lay-off. The lay-off time differed between all four radiological grades of injury. Essentially, the higher the grade the worse the injury and the longer the lay-off time. The biceps femoris was injured in 83% of cases while 11% and 5% occurred to the semimembranosus and semitendinosus, respectively. Re-injuries comprised 16% of injuries, all of



them to biceps femoris.⁸ 360 is astonished by this study, not so much by the grade of injury but by the realisation that injured hamstrings cause 3830 days of lay-off in only 23 professional football teams in a four-year period. That is more than ten years' worth of football lost from this one injury. It must be a hugely expensive problem.

An algorithm for hip fracture surgery

■ 360 feels that disciplining orthopaedic surgeons is rather like herding cats, so treatment algorithms, particularly for hip fracture surgery, may not always be greeted with glee. However, we are apparently wrong, as shown by a large study

from **Copenhagen (Denmark)**. The authors looked prospectively at 2000 patients over the age of 50 years who were admitted and operated on because of a hip fracture. Of these, 1000 were included after implementation of the Hvidovre algorithm. Demographic parameters, hospital treatment, and reoperations within the first post-operative year were assessed from patient records. The Hvidovre algorithm recommends specific treatments for fractures of the femoral neck, basing these on fracture morphology and, at times, patient age. It includes mandatory supervision of junior registrars in the operating theatre. The results were fascinating as 931 of 1000 operative procedures were performed according to the algorithm, as compared with only 726 of 1000 before its introduction. This was a significant difference. After implementation of the algorithm, junior registrars still performed half of the operations, but unsupervised procedures declined from 192 of 1000 to 105 of 1000; again a significant difference. Meanwhile, the rate of reoperations declined from 18% to 12%, with a decline of 24% to 18% for intracapsular fractures and 13% to 7% for extracapsular fractures. The proportion of bed-days caused by reoperations was reduced from 24% of total hospitalisation before the algorithm was introduced to 18% afterwards.⁹ So, 360 notes, orthopaedic surgeons can be herded after all, and to the benefit of the patient. The Hvidovre algorithm both raised the rate of supervision and reduced the rate of reoperations, a benefit that saved many hospital bed-days.

Sparing piriformis at total hip replacement

■ We surgeons go through phases of undertaking time-tested operations through smaller and smaller incisions, so a paper from **Nedlands (Australia)** is particularly apt. This compared a piriformis-sparing approach for total hip replacement (THR) with a standard posterior approach. The authors took 100 patients awaiting THR and

randomly allocated them to either the piriformis-sparing approach or the standard posterior approach. Pre- and post-operative care programmes and rehabilitation regimes were identical for both groups. Observers were blinded to the allocation throughout and patients were blinded until the two-week assessment. Follow-up was at six weeks, three months, one year and two years. Although 11 patients died or were lost to follow-up, there was no significant difference between the two groups for any of the functional outcomes. However, for patients in the piriformis-sparing group there was a trend towards a better six-minute walk test at two weeks and greater patient satisfaction at six weeks. The acetabular components were less anteverted

and had a lower mean inclination angle in the piriformis-sparing group. However, in both groups the mean component positions were within Lewinnek's safe zone. Critically in 360's view, surgeons perceived the piriformis-sparing approach as significantly more difficult than the standard approach, particularly in obese patients. It thus appears that to perform a THR through a shorter incision while sparing piriformis is more difficult and only provides short-term benefits compared with the standard posterior approach.¹⁰ No surprises there, thinks 360.

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