

ROUNDUP³⁶⁰

Hip & Pelvis

Osteoporotic hip fractures – global trends

■ Osteoporotic hip fractures are a major part of the workload of many hospitals around the world. Yet are we all equally affected? Apparently not, says a study from **Vancouver (Canada)** that looked at the geographic trends and incidence of hip fractures globally. The authors undertook a comprehensive literature review to investigate the problem, ending up with 46 full-text articles spanning 33 countries and regions. The highest rates of hip fracture were found in Scandinavia and the lowest in Africa. There were comparable rates from North America, Australia and Europe, although not including Scandinavia. The diverse make-up of the Asian continent also resulted in very variable rates of hip fracture. These ranged from relatively high rates in Iran to low rates, comparable with those from Africa, in mainland China.¹ This is fascinating work, thinks 360, as there must be something that explains why the Chinese population suffer fewer fractured hips than the rest of the world. Whatever they have, we'll have some, please. This is also excellent information when it comes to the allocation of global healthcare resources.

Retrotrochanteric pain – look at the spine

■ An area of increasing interest to the hip surgeon is pain arising from the periarticular structures. Not everything is arthritis, impingement or fracture. Consequently, a review from **Tromsø (Norway)** of

the current knowledge surrounding retrotrochanteric pain is helpful. The authors acknowledge that the terminology in the literature can be confusing and these symptoms can be called 'greater trochanteric pain syndrome', 'trochanteric bursitis' and 'trochanteritis', to mention but a few. However, 360 feels this is a good review of the problem, free to access and supported by 100 references. The impact of different radiological assessments is discussed. Understandably perhaps, the authors recommend excluding pathology in the spine and pelvic area before following their suggested treatment algorithm for sciatica-like retrotrochanteric pain.²

Fibrin adhesive and reattachment of articular cartilage

■ Whether or not to repair articular cartilage is another hotly debated topic. Yet how about repairing it in the hip? Workers from **Cambridge (UK)** have reported on the three-year results of the use of fibrin adhesive to reattach chondral flaps arthroscopically. They looked at 43 patients for a mean of 28 months and found significant improvements in pain and function during this time.³ Whether or not this technique can prevent progression onwards to osteoarthritic change is another matter but as a method of reattaching articular cartilage it appears straightforward. Provided you can use a hip arthroscope, of course. Watch that space for the future, thinks 360.

Autologous bone marrow mononuclear cells and avascular necrosis

■ Avascular necrosis (AVN) of the femoral head continues to be a management dilemma, so 360 was pleased to read of the work by surgeons in **Chandigarh (India)**. The team was looking at the impact of autologous bone marrow mononuclear cell instillation on the recovery, or otherwise, of AVN of the femoral head. They took 51 hips (40 patients) with the condition and divided them into two groups as part of a randomised controlled study. There were 25 hips treated with core decompression alone and 26 that received autologous bone marrow instillation into the core tract after core decompression. The outcome between the two groups was then compared. The result? The clinical score and mean hip survival were significantly better for those who had received autologous bone marrow mononuclear cells than for those who had not. Patients with adverse prognostic features at initial presentation, for example a poor Harris hip score, radiological changes, oedema, and/or effusion on MRI also had a significantly better clinical outcome if they had received autologous bone marrow mononuclear cells.⁴ 360 likes this paper. The technique seems simple and if you are undertaking a core decompression anyway, is it really so difficult to add autologous bone marrow mononuclear cells? We think not.

Bearing surfaces – back to the old times?

■ 360 wonders how many surgeon hours are spent discussing bearing surfaces at orthopaedic meetings around the world. Whole conferences have been dedicated to the matter. However, what is the reality? Is any one bearing surface better than another? A fascinating study from **New York (USA)** has looked at this through a systematic review of clinical trials, observational studies and registries. The researchers amassed 3139 patients (3404 hips) in 18 comparative studies and over 830 000 operations in national registries. Wow! Although one clinical study reported fewer dislocations associated with metal-on-metal implants, in the three largest national registries there was evidence of higher rates of implant revision associated with metal-on-metal implants compared with metal-on-polyethylene. One trial reported fewer revisions with ceramic-on-ceramic compared with metal-on-polyethylene implants, but data from national registries did not support this finding.⁵ At 360 we have to suppress a slightly wry smile at the conclusion. As the authors report, there is limited evidence regarding comparative effectiveness of the various bearings. This study's results do not indicate any advantage for metal-on-metal or ceramic-on-ceramic implants compared with traditional metal-on-polyethylene or ceramic-on-polyethylene bearings. Is someone brave enough to say, "I told you so"?

Stability after total hip replacement – capsular repair is important

■ A problem that has plagued hip replacement surgeons for many years is what to do with the joint capsule. Do you remove it? Do you repair it? Do you leave it open? Hip stability after total hip replacement (THR) is clearly vital. Perhaps some guidance can be gained from research out of **Iowa (USA)** where researchers developed a fibre-direction-based finite element model of the hip capsule and integrated it with a three-dimensional model of impingement/dislocation. Model validity was established by close similarity to results from a cadaver experiment in a hip simulator. The researchers found that, depending upon the specific site, the resistance to dislocation could be reduced by more than 60% by certain capsular defects.⁶ They note, and **360** agrees, that their results underscore the importance of retaining or robustly repairing capsular structures in THR in order to maximise overall construct stability.

Digital templating – an easy way out

■ In our digital age, the templating of radiographs before THR can sometimes be difficult or impossible. The appropriate software is not always available. Surgeons from **Brisbane (Australia)** have looked at this and have described a scaling method for templating digital radiographs using conventional acetate templates independent of template magnification and without the need for a calibration marker. They determined the mean magnification factor for their radiology department. This was 119.8%. This fixed magnification factor was then used to scale the radiographs. The team then studied 32 femoral heads on post-THR radiographs, measured them and compared them with the actual size. They managed to measure within 0.5% of the actual head size.⁷ Good, simple work, thinks **360**, so straight down to our own radiology department we go.

Pelvic tilt after total hip replacement

■ An understanding of pelvic tilt associated with THR is important, a fact highlighted by work from **Yokohama (Japan)**. The researchers looked at three things. They first investigated changes in pelvic tilt after THR. Then they determined the correlation between pre- and post-operative pelvic tilt. Finally, they assessed the effects of changes in pelvic tilt on post-operative function and disability. Their study involved 149 patients over a follow-up period of one year. They compared post-operative pelvic tilt with pre-operative tilt on the basis of the anterior pelvic plane. The results suggested that patients with severe pre-operative pelvic tilt experienced greater post-operative changes in pelvic tilt. Those with pre-operative anterior pelvic tilt exhibited posterior changes in pelvic tilt after surgery, while those with pre-operative posterior pelvic tilt did not experience such a significant change post-operatively. The one-year post-operative function scores in patients with pre-operative anterior pelvic tilt were lower than those in patients with pre-operative posterior pelvic tilt.⁸ **360** senses this to be an important area and agrees with the authors. As pelvic tilt changes by varying amounts after THR, special attention must be paid when positioning the acetabular component, particularly in patients with severe pelvic tilt before surgery. A greater understanding of the post-operative changes in pelvic tilt may certainly improve the outcome of THR.

Custom-made sockets for developmental dysplasia of the hip

■ Surgeons can sometimes struggle to ensure a suitable fit of THR

components to their patients. No more so, perhaps, than when THR is performed for developmental dysplasia of the hip (DDH); tailor-made is seen by some as being best. The acetabular component can sometimes be a nightmare. A team from **Hohhot (China)** has thus reported on the preliminary application of a computer-assisted, patient-specific, acetabular navigational template in this scenario. Over a 12-month period they took 22 patients with unilateral DDH and scanned them with spiral CT pre-operatively. Before THR was performed, the patients were randomly assigned to undergo either a conventional replacement or navigation template implantation. In the navigation template group, three-dimensional (3D) CT pelvis image data were transferred



to a computer workstation and 3D models of the hip were reconstructed. A template that best fitted the location and shape of the acetabular component was then built from the 3D model, the rotation centre of the pathological hip being determined by mirroring that of the healthy side. Navigational templates were manufactured using a rapid prototyping machine, which then guided placement of the acetabular component.⁹ **360** is interested by this idea, as DDH can sometimes be very demanding. Will this work? Who knows? The longer-term results will be fascinating.

Dogs and THR

■ Anyway, who said that **360** had to be all about humans? How about dogs? Our Board happened across a paper from **Giza (Egypt)**, which reported a prospective clinical study of 15 dogs that had received a THR. The purpose of the study was to radiologically evaluate periprosthetic

femoral bone contrast and assess the alignment of the prosthetic stem after uncemented and cemented THR. Dogs were classified into uncemented (n = 8) and cemented (n = 7) THR groups. Radiographs were analysed using image-processing software in order to measure the femoral bone contrast in modified Gruen zone(s) immediately after surgery and four months later. Alignment of the prosthetic stem was also assessed immediately and four months post-operatively. Zone 1 showed a significant decrease in bone contrast four months after uncemented THR. However, no such difference was seen four months after a cemented THR had been performed. Furthermore, the number of limbs with a varus-aligned femoral stem markedly increased four months after uncemented THR.¹⁰ Have we not heard this somewhere before, ponders **360**? Cemented stems do best.

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