

ROUNDUP³⁶⁰

Wrist & Hand

Evolution – now it is the hand

■ The last few months have evidently stimulated research into the evolution of man in a number of different countries. This time it is the hand, with work from **Leipzig (Germany)** looking at the hand of *Australopithecus sediba*. The researchers undertook an analysis of a nearly complete wrist and hand of an adult female from Malapa (South Africa). Dating from 1.977 million years ago, the specimen suggested that *Au. sediba* had a strong flexor apparatus, perhaps implying that at least some of their life was spent in trees. Meanwhile there was a long thumb and relatively short fingers that indicated an ability to make a precision grip and, perhaps, to use stone tools.¹ Who knows, we think at 360, that there may have been a need for hand surgeons all those years ago.

■ It appears that stone tools have played a major part in the development of the human hand, a feature investigated in detail by researchers from **Calgary (Canada)**. Using portable force plates to simulate early stone tools they compared the magnitude of forces and joint stresses in the radial digits during hard-hammer percussion and flake use. The work showed that individuals with longer digits required less muscle force to stabilise the finger joints and were exposed to relatively lower contact joint stresses during the use of stone tools. This was in part because of the robust nature of metacarpals and phalanges

in humans as compared with chimpanzees. It appears that the evolutionary lengthening of the human thumb, its robust nature and the increase in thenar muscle mass, allowed man to produce more force and to withstand higher joint stresses when using tools.² No wonder osteoarthritis in the hand is such a problem.

Internally fixing the ununited scaphoid

■ Turning to more recent times, what ultimately happens to the ununited scaphoid fracture that eventually requires internal fixation? Surgeons from **Oslo (Norway)** have looked into this by retrospectively reviewing 50 patients who underwent open reduction and internal fixation a mean of 12.2 years earlier. Many also received a bone graft. The researchers found that 45 of the 50 fractures had united and a further two united after a second procedure. There were five who underwent salvage procedures. Grip strength, key pinch and active range of movement were slightly reduced compared with the uninjured side but generally the subjective outcome was good. Minor degenerative changes were seen in nine patients at surgery but in 22 at follow-up.³ 360 agrees with the authors that inter-

nally fixing a scaphoid does appear to allow return of good wrist function but takes slight issue with their statement that the procedure halts degenerative change in the majority. In purist terms it does. However, if nine patients have degenerative change at the start and 22 by the end, that means 44% ended up with degeneration despite surgery. That is clearly better than 100%, however.

■ When a surgeon internally fixes a scaphoid fracture, how it is done appears, perhaps understandably, to affect outcome. However, there is presently no information about what degree of deformity or malalignment can be tolerated without impairing

clinical function. Researchers from **Ludwigshafen (Germany)** studied 65 patients who had undergone scaphoid reconstruction and followed them up for a mean of 45 months. Scapholunate and radiolunate angles were measured on plain radiographs, in

addition to the intrascaphoid angle, dorsal cortical angle and the height/length ratio on CT scan. The result? Clinical outcome correlated with the correct restoration of bone morphology and carpal alignment. In addition, the radiolunate angle should not be more than 10°.⁴ Unsurpris-

ingly, the better the technical result the better a patient will fare. How often does 360 see this in orthopaedic and trauma surgery, irrespective of the operation concerned?

Diagnosing the broken scaphoid

■ It is not always easy to diagnose a scaphoid fracture. Repeat appointments, repeat radiographs and even CT scans are used by some to help with this. Wrist injuries are, after all, a common presentation to Accident and Emergency Departments. A team from **Sydney (Australia)** has investigated the role of CT scanning undertaken two weeks after wrist injury to exclude a scaphoid fracture. It was not the patients in whom a CT scan identified a fracture that were of interest, it was those for whom the CT scan was normal. Each patient had demonstrated a clinical suspicion of a scaphoid fracture at the time of presentation. The authors initially recruited 99 patients, of whom 72 had a negative CT scan. Of these 72, 40 completed follow-up 12 months later. Overall, 8% had severe disability and a further 15% had moderate disability by the final review.⁵ What is clear to 360 is that a normal CT scan does not mean a perfect end result. However, the large loss to follow-up for this study – 32 of 72 patients (44%) – perhaps suggests that the end result could be even worse. It thus appears that a painful snuffbox after injury, despite normal X-ray and CT scan, can still lead to persisting troubles many months later.



Wrist replacement

■ Little exists in the literature on the long-term outcome of wrist replacement, so a paper from **Bergen (Norway)** that uses data from the Norwegian Arthroplasty Register has been well timed. The register has recorded wrist replacements since 1994 and is now able to report the revision rates for wrist replacements for a 16-year period. During this time, 189 wrist replacements were registered, albeit of three different designs, the Biax, the Gibbon and the Elos. The five-year survival was 85% for the Biax, 57% for the Elos and 77% at four years for the Gibbon. Males did better than females while the number of wrist replacements performed for osteoarthritis increased over time.⁶ The 360 view? These wrist replacements seem to do as well as many other wrist replacements reported elsewhere in the literature but still nowhere near the results for most hips and knees.

Finger joint replacement

■ The finger joints can also be replaced, certainly so for rheumatoid disease. However, the results are not always universally successful. Surgeons from **Sunderland (UK)** reported their findings for 21 RM finger prostheses implanted and then followed up for a mean of 32 months. Within two years of surgery, 15 of the 22 (68%) had been revised.⁷ With a result like this, 360 can do no better

than note the authors' own conclusion that the RM finger prosthesis cannot be recommended for use, particularly in rheumatoid arthritis.

■ Failure of finger joint replacements has been reported from a number of different locations. One such is **Cincinnati (USA)** where surgeons reported on 31 pyrolytic carbon resurfacing arthroplasties of the proximal interphalangeal joint at a mean follow-up of 55 months. Although there were short-term gains in the initial post-operative period, there were many complications. These included implant fracture, dislocation, squeaking, loosening and contracture of the interphalangeal joint. There were six joints that required re-operation.⁸ All in all, not a good result in 360's view. The authors, too, have decided to no longer use this prosthesis in their practice.

Dupuytren's contracture

■ Keeping a Dupuytren's fasciectomy and/or fasciotomy simple appears to make sense, particularly for those who prefer to avoid open surgery. Researchers from **Silkeborg (Denmark)** have recently studied the effect of a percutaneous needle fasciotomy on primary Dupuytren's contracture in 149 patients. Of these, 92 were followed up for two years. No tendon ruptures or sensory nerve damage were seen and the period of rehabilitation was

short – a mean of only 0.6 days.

The authors found the treatment was best in Tubiana disease stages I and II and particularly good for the correction of metacarpophalangeal joint contractures. The conclusion can only be that this form of needle fasciotomy is ideally suited for the elderly, for those who may have severe comorbidity and, of course, for those who do not wish for open surgery.⁹

■ Yet would it not be good to avoid surgery altogether for Dupuytren's contracture? The use of collagenase clostridium histolyticum was approved by the US Food and Drug Administration in February 2010, so the results published from **Indianapolis (USA)** recently are particularly interesting. The intralesional use of clostridial collagenase was evaluated in 1082 patients (2630 injections) during its clinical development, including two large prospective, randomised, double blind, placebo-controlled studies. There was a significant reduction in contracture compared with placebo and serious adverse events were rare. Most improvement was seen in those with less severe contractures and contractures of the metacarpophalangeal joint. Injectable collagenase *Clostridium histolyticum* appears to be a safe and effective alternative to surgery for patients with Dupuytren's contracture.¹⁰

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