

# ROUNDUP<sup>360</sup>

## Wrist & Hand

### Imaging of scaphoid fractures

■ Scaphoid fractures can be exceedingly tricky to diagnose, and given the range of recent papers on the limited roles of CT, MRI, bone scan (if any) and interval radiographs, we were not surprised to see a new meta-analysis summarising the current state of play for diagnostic accuracy in these fractures. Researchers from **Tianjin (China)** have performed a meta-analysis of the available papers with the aim of calculating the diagnostic accuracy of each modality. The authors used studies with more than one imaging modality included, and performed latent class analysis to determine the accuracy of each investigation. The authors included 30 studies, all reporting multiple imaging modalities, and were able to estimate the sensitivity and specificity of follow-up plain radiographs (91.1%, 99.8%), bone scanning (97.8%, 93.5%), MRI (97.7%, 99.8%) and CT (85.2%, 99.5%). The authors identified heterogeneity in the results for plain radiographs and follow-up CT, suggesting the interpretation of these varies between centres and studies. As there is no reference gold standard diagnostic test it is difficult to interpret these results.<sup>1</sup> As with all things clinical, correlation is important, however, it appears to us at 360 that in light of this study, perhaps we should be avoiding interval radiographs. If MRI remains the most accurate test perhaps an interval MRI should be the first port of call when trying to reach a definitive diagnosis of scaphoid fracture.

### Splinting no help in Dupuytren's disease

■ Dupuytren's disease remains a difficult and tricky condition to treat, recurrence rates are high (some series suggest 100%), and rarely do surgeons achieve a complete correction. The attraction of splinting as a post-operative strategy is obvious, allowing a patient to start directed hand therapy, and then wear the splint subsequently to maintain the correction. Recently, there has been a number of naysayers in the hand surgery community who have suggested splintage makes no difference. A research team from **Amsterdam (The Netherlands)** has stepped into the gap with a pilot randomised controlled trial (Level I evidence) to establish the effect of splintage as an adjunct to hand therapy in the post-operative period. They recruited 54 patients to the study, all of whom had proximal interphalangeal joint contractures. The patients all received supervised hand therapy and, in addition, the intervention cohort underwent three months of splintage. Outcome measures included extensor lag, perceived effect, pain score, and complications of both surgery and splintage were assessed. Follow-up was to one year post-operatively. The outcomes were assessed on an intention to treat analysis and there was a non-significant reduction in the extensor lag in the intervention group of 8° (from 29° to 21°). There were no other differences in any measured parameters.<sup>2</sup> The authors of this study have produced a well

conducted pilot study demonstrating an efficacy benefit of splintage over no splintage. While this difference was not significant, when a pilot study reports a potential benefit the next logical step would be a power analysis and a higher powered study. We do wonder, though, what the patients would prefer? If the benefit is only marginal, it may be that patients decide to avoid three months of wearing a splint. It seems to us here at 360 that the jury is still very much out and we look forward to reading more results in due course.

### Quality of life after nerve transfers

■ Brachial plexus injury can be catastrophic, and the treatments complex and drawn out. In the case of complete nerve injury requiring nerve transposition or reimplantation the treatment can be a difficult course for the patient. Due to the scarcity of these injuries and the broad spectrum of surgical options, little is known about the quality of life for patients post-operatively. Surgeons in **Dublin (Ireland)** set out to establish the health-related quality of life (HRQoL) and functional outcomes after nerve transfers for upper brachial plexus injuries. They assessed a cohort of 21 consecutive patients undergoing nerve transfers, following traumatic brachial plexus injuries. This represents one of the largest reported series of specific plexus injuries with a single treatment. The investigators reported functional outcome measures including the MRC power grade, SF-36, DASH score, and Shoulder and

Hand questionnaire, and pain was assessed with a visual analogue scale. Patients included in the study had a mean age of 29.8 years and were followed up for nearly four years with all outcome scores. The investigators aimed for an MRC power grade greater than 3/5, and defined this as a good result. By this measure they achieved a good result in 17/21 patients' elbows, 14/19 shoulders and 11/15 shoulders in external rotation. The research team further investigated post-operative residual neuropathic pain and found that the injury severity score and smoking were associated with higher pain scores. Interestingly, the investigators also found that delayed surgical repair correlated with poorer quality of life outcomes.<sup>3</sup> Here at 360 we enjoyed this interesting paper, which gives an insight into a difficult group of patients to manage, with generally poor outcomes. The authors have provided a good benchmark for outcomes, and have additionally started to unpick the causes of a good or poor result.

### Early failure of Moje thumbs

■ These days it seems that every joint has its own multiplicity of arthroplasties; from toes to thumbs, ankles to sternoclavicular joints, orthopaedic surgeons are replacing them. Keeping track of what does and does not work is becoming increasingly complex. While the larger joints have their own arthroplasty registers, and some implant manufacturers commission their own independent studies, sadly many implants are released onto

the market with very few actually reported as part of a study. The base of the thumb carpometacarpal joint (CMC) also has its own array of arthroplasties such as the Moje thumb. A compact series of 12 patients has been reported by surgeons in **Heidelberg (Germany)**, all of whom have undergone a Moje thumb CMCJ replacement. Patients were reported as a case series (Level IV evidence) with an impressive 50 months of follow-up. All patients included within the series presented prior to final follow-up with one of the radiological signs of loosening, migration or failure. The symptoms associated with these were significant enough in five (42%) of the patients to undergo revision arthroplasty. Unsurprisingly, the authors do not recommend the use of the Moje thumb arthroplasty.<sup>4</sup> For us at 360, this paper puts into perspective the genuine concerns raised over metal-on-metal arthroplasty, where an failure rate of approximately 5% in some patient subgroups has received widespread media, surgeon, public, and scientific attention. While we are not advocating the use of a prosthesis with such an astoundingly high failure rate it does make one realise how successful hip and knee arthroplasty actually are.

#### **Electra CMCJ arthroplasty**

■ The Electra CMC prosthesis is also available for use in the base of the thumb and in a startlingly similar report to that for the Moje thumb, researchers from **Hellerup (Denmark)** have reported an independent prospective series (Level III evidence) of 39 cases performed with the prosthesis. The researchers included a consecutive series of 39 prostheses in 37 patients, followed up for a mean of four years. Their patients had osteoarthritis in the majority of cases and were followed up with clinical scores, pain scores and radiographs. Although the mobility and grip strength were high, the prosthesis was plagued by early failures. At three years 24% had been revised, rising to 44% at

six years. The majority of failures were due to failure of fixation at the trapezoid component.<sup>5</sup> What can we say? None of us at 360 will be dashing out to get our thumb CMCJs replaced after reading these two reports, although we are certain many still will.

#### **Proximal interphalangeal joint replacement**

■ In the world of joint replacements none are smaller than the proximal interphalangeal joint (PIPJ) replacement. In what has been a bonanza of arthroplasty-related articles this past two months, researchers from **Munich (Germany)** designed a prospective randomised controlled trial (Level I evidence)

to compare three types of PIPJ arthroplasty. Reasoning that the three main types of PIPJ arthroplasty, titanium-polyethylene (TP), pyrocarbon (PY) and silicone (SI) have no good quality comparative evidence, they designed a study to compare these. The researchers randomised patients to one of the three types of replacement, and results were measured with numerous outcome measures (range of movement, strength, pain, disability scores and radiological outcomes). Patients underwent assessment at regular intervals and the study was to three years post-operatively. The investigators randomised 62 joints (43 patients) into the three groups (18 SI, 26 TY, 18 PY) at three participating centres. The mean follow-up was to 35 months and all implants significantly improved pain scores from the pre-operative baseline, and marginally improved pinch strength. The investigators found no significant increases in range of movement between the devices. The failure rates varied greatly

between devices, between 11% (SI), 27% (TP) and 39% (PY). While the surface replacement prostheses (TP and PY) demonstrated slightly improved ROM, this came at a cost of almost double the revision rate.<sup>6</sup> The discrepancy in numbers between prosthesis type despite randomisation is accounted for by the use of the same prosthesis in those patients requiring multiple

PIPJ replacements.

It is important to remember that although the majority of these patients did not see an increase in the range of movement in their IP joints, these prostheses are most commonly used in patients with a diagnosis of rheumatoid arthritis, where pain is often the issue.

For these patients, this study would certainly still support the use of the silastic implants.

#### **Pronator quadratus repair in distal radius fractures**

■ The physiological function of pronator quadratus (PQ) is debatable, particularly whether one should repair it after distal radius fracture surgery. We have seen, and indeed performed, both a careful PQ repair and simple skin closure, here at 360. Researchers in **Burlington (USA)** have designed a study to assess if PQ can be successfully repaired, and function post-operatively. This innovative prospective cohort study (Level III evidence) utilises intra-operative placement of ligaclips either side of the repair to assess the success of PQ repair on post-operative radiographs. The researchers enrolled 24 patients and were able to effect a PQ repair in 23. All patients underwent a volar plating for a distal radius fracture through a Henry approach. The investigators lifted the PQ en masse from the radial border

of the radius. Prior to elevation the researchers graded the damage to the muscle belly. Following surgery the PQ was repaired with sutures, and a ligaclip marker placed on either side of the repair. The positions of the ligaclip markers were measured on two-week, six-week and three-month radiographs, and failure defined as movement of the ligaclips more than 1 cm apart. The researchers also graded the type and extent of PQ injury intra-operatively, although they found no link between injury type and outcomes. They were able to show that PQ repair is reliable and does not appear to fail.<sup>7</sup>

#### **Osteoporosis and wrist fractures**

■ The management of wrist fractures is fraught with uncertainty. With multiple randomised controlled trials, many of which have proven to be inconclusive and some contradictory, it is difficult to tease out exactly what the current best practice of care is. However, there are factors other than the fracture pattern and treatment that affect outcomes. Researchers from **Boston (USA)** investigated the effect of bone mineral density on outcomes following fixation of a distal radius fracture. They designed a prospective cohort study to establish if bone mineral density (BMD) affected the outcomes of patients undergoing ORIF for distal radius fractures. The researchers recruited 64 patients who were followed up for 12 months. The researchers recorded demographic and comorbidity scores to allow them to undertake a multiple linear regression analysis and determine the effect of BMD on clinical outcomes. The researchers identified that patients with osteoporosis at one year post-operatively had average DASH scores which were 15 points poorer than their osteopenic counterparts.<sup>8</sup> We were interested to see this result here at 360. When researchers have struggled to demonstrate significant differences in large RCTs between treatment modalities, it may be unknown confounders that are affecting the results, such as osteoporosis.



## REFERENCES

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