radiographs which essentially demonstrate the dynamic position of the ankle under stress.[7] The authors report on the outcome of 132 patients, all of whom had undergone surgical reconstruction for injuries to either their anterior talofibular ligament (ATFL) or their calcaneofibular ligament (CFL). All patients also underwent MRI scanning and stress radiography. The individual MRI scans were reviewed for previously recognised signs of ligament injury on a MRI scan, including findings of ligament attenuation, visible discontinuity, "wavy" profile and high signal intensity on T2. In just 4% of ankles, the ATFL appeared normal whereas the CFL was normal in around a third. The commonest abnormality seen was thickening and attenuation of the ligaments, while wavy or irregular contours were seen in just short of half of ankles. Perhaps most surprisingly, just 14% of ankles demonstrated increased signal intensity of either ligament. There are no other papers in the literature which describe the MRI findings following ankle ligament injury in such detail, and certainly none where the results are correlated to operative findings and stress radiographs. Sadly, diagnostic studies like this are not undertaken terribly often, yet the information they yield is crucially important in clinical decision making.

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Wrist & Hand

X-ref *For other Roundups in this issue that cross-reference with Wrist & Hand see: Trauma Roundup 1.*

Is bone scanning helpful in the diagnosis of CRPS?

Complex Regional Pain Syndrome (CRPS) remains an enigma. While all agree that the condition exists and causes ongoing refractory pain combined with disabling loss of function, the cause and pathophysiology are unclear. There is a broad agreement that, although imperfect, the Budapest Criteria , reached as a consensus statement, represent the most reliable way of reaching the diagnosis of CRPS type 1. However, clinicians from around the globe also use a range of other criteria, and innately we all feel more comfortable with an investigation to 'confirm the diagnosis', especially in this somewhat nebulous condition. There is controversy associated with the use of bone scintigraphy, and the possibility of the 'imperfect reference test' effect having an impact on the overall accuracy of the diagnostic test. With this in mind, this review team from **Zurich (Switzerland)** did their utmost to establish the diagnostic accuracy of bone scintigraphy in the diagnosis of CRPS.[1] They designed a systematic review of the literature and Bayesian meta-analysis to allow for estimation of the test accuracy of bone scintigraphy, and were able to account for the potential contamination of the results due to the imperfect nature of the Budapest Criteria, which in this case is the reference test. The results require a little untangling, however, they essentially establish that the sensitivity and specificity appear to be about 0.80 and 0.85, respectively, when the inaccuracy of the reference test is taken into account. Although this might make bone scanning seem appealing, when the authors turned the question on its head and repeated the analysis just using studies that included the reference test, they found a significantly lower sensitivity (0.55) but much higher specificity (0.94). This suggests that bone scintigraphy cannot be used to reach a diagnosis, however, it may be very useful in order to rule out a diagnosis of CRPS.

Do injections other than steroid work for tendinopathies? X-ref

Tennis elbow and other tendinopathies are usually self-limiting, but in the meantime symptoms can be very troublesome (as, on occasion, can be the patients suffering with them!). Patients regularly present to the hand clinic complaining of everything from tennis elbow to de Quervain's tenosynovitis. Short of surgery, which has mixed results in the literature, there are many non-operative options available, but do they work? We are now in the good position that enough small studies are reported that reasonable conclusions about efficacy, indications and side effects can be reached through metanalysis. There are a number of systematic reviews concerning conservative management that deserve our attention. In a study from **Taipei (Taiwan)**, the review team set out to establish the comparative effectiveness of botulinum toxin and placebo in the treatment of lateral epicondylitis.[2] There were six randomised trials suitable for this review reporting the outcomes of 321 participants. The trials were a mixture of those comparing botulinum toxin with placebo and those comparing botulinum toxin with steroid injection. Outcomes assessed in the review included pain relief and grip strength reduction at various timepoints. When compared with placebo, there was a significant improvement in pain at all three timepoints, however, efficacy was similar to that of corticosteroid. The authors found that botulinum toxin was superior to placebo and could last for 16 weeks. Corticosteroid and botulinum toxin injections were largely equivalent, except the corticosteroid injections yielded superior pain relief in the early stages and were associated with less weakness in grip in the first 12 weeks. A group from **Wuhan (China)** conducted their own investigation into the efficacy of platelet-rich plasma (PRP) in the same cohort of patients.[3] This review was able to include the results of eight randomised controlled trials reporting the outcomes of 511 patients. The results of this study are somewhat curious. In the short term (up to six months), the authors established that the steroid injection provided superior pain relief and functional results. However, in the longer-term there was an about-turn and PRP then went on to provide a better result in terms of both function and pain relief. The authors go on

to recommend PRP based on this finding. Nonetheless, perhaps more thought is required; the natural history of lateral epicondylitis may be important here. Previous studies[4] have shown that just 1:10 patients are symptomatic at six months, and therefore require progression to surgery. More investigation of this finding is clearly required. With regard to the final of the alternates stem cells, a review team from **Amsterdam (The Netherlands)** have set out to evaluate the effectiveness of stem cells in a variety of tendinopathies.[5] As some would perhaps think fitting, given the early stage that stem cell therapies are at, the authors of this review were only able to find four published trials and three pending trials reporting the outcomes of 70 patients. Although these trials did report some benefits in rotator cuff arthropathy and lateral epicondylar tendinopathy, there are few who would pay much heed to such a hotchpotch of studies with little in the way of efficacy data. We are not surprised given what data is available in the literature that uptake for stem cell therapies has been somewhat slow.

Does therapy help contractures?

■ It is almost impossible to go through a hand clinic as a patient with a genuine problem without being treated by the hand therapist and, as often as not, this will be to tackle the difficult problem of stiffness in the hand. The therapist will usually effect a programme of stretches, occasionally supplemented by a splint. Despite the almost ubiquitous use of hand therapy and stretching, the evidence may not quite match up with current practice. A review team from **Sydney (Australia)** undertook a Cochrane review to establish if there was benefit in stretching as a treatment for contracture.[6] In one of the largest reviews we have seen, the authors were able to identify 49 studies with relevant results reporting the outcomes of 2135 participants. Impressively, overall the majority of studies were at low risk of bias. The take home message is very clear. In those studies available for inclusion in the review, there was no evidence of benefit in patients with neurological conditions (mean difference 2°; 26 studies with 699 participants) or non-neurological conditions (0.2°; 19 studies with 925 participants). It turns out that in the literature as it stands (which is of reasonable quality), there is no clinically important effect of stretching exercises on joint mobility. So perhaps much time and effort and unrealistic hope could be saved by reconsidering this omnipresent but perhaps fruitless intervention.

Who does well following post-operative decompression?

■ Generally, it is said that the earlier decompression surgery for entrapment neuropathy is done, the more favourable a clinical outcome will be obtained, however, there may be more to it than just timing. Surgeons in **Aichi (Japan)** report their outcomes of 83 patients, all of whom underwent surgical decompression for cubital tunnel decompression.[7] Although the authors rather enthusiastically state "this retrospective study was designed to investigate prognostic factors for postoperative outcomes for cubital tunnel syndrome using multiple logistic regression analysis with a large number of patients", for this kind of analysis 83 patients really isn't very many. The authors undertook a thorough review of the literature and established that potential prognostic factors for outcomes include demographic factors (sex, age, BMI, workers' compensation status), surgical factors (type of surgery, disease duration) and some comorbidities (cervical lesion, presence of diabetes mellitus), along with pre-operative severity. Outcomes were assessed two years following surgery, and Messina's criteria were used as the outcome measure. The bottom line is that the authors were able to demonstrate pre-operative severity as the only independent variable associated with poor prognosis. None of the other factors demonstrated any significant association with poor prognosis. While this paper has been correctly written and the statistics are appropriate, the significant limitation of such a small number of patients with so many covariates included in their analysis means that the results have very little meaning.

Mobility of the scaphoid in casts X-ref

■ The basis of non-surgical treatment of fractures is reduction and immobilisation in plaster casts. Providing analgesia, reduction and stability to the fracture and surrounding soft tissues. The vast majority of fractures the world over are treated with plaster casts, and it is difficult to think of a fracture that you couldn't, should you wish, treat in a plaster. The scaphoid is one of those fractures that divides opinions, and discussions about treatment can motivate the usually austere and thoughtful hand surgical community into bitter argument. If one is to treat scaphoid fractures in plaster, the argument runs that the union rates in selected cases are equivalent and that there are no downsides to plaster treatment as patients are not functionally disadvantaged by wearing a plaster and they also avoid the risks of surgery. A research team in **Itami (Japan)** published their findings in answer to the question: does plaster immobilisation actually immobilise a scaphoid fracture in any case?[8] They designed a cunning investigation using ten healthy male volunteers and immobilised them either in a short arm plaster with a thumb extension or in the more limited 'gauntlet' cast. These were then CT scanned with the forearm in different positions of rotation. Interestingly, the scaphoid was not immobilised to any significant amount in either cast, with both showing maximal motion in extension and over 5° during forearm rotation. However, the casts themselves were comparable, and this is another piece of evidence confirming the suggestion that more limited casting is equivalent to a more extensive cast in scaphoid treatment.

Collagenase under the randomised trial spotlight

■ There has been much published and discussed in the medical literature, and gracing the pages of *360*, concerning the value or otherwise of collagenase clostridium histolyticum (CCH) injection. Although much has been written and many healthcare dollars have been spent on this topic, one of the difficulties that we face in establishing the benefit or otherwise of CCH is the lack of a well conducted randomised controlled trial (RCT). Clinical trialists in **Silkeborg (Denmark)** have stepped up to the plate, and published their own direct head-to-head comparison with needle fasciotomy.[9] Fifty patients were recruited into the study and results were available at final follow-up of two years. The needle fasciotomy group (n = 21) had percutaneous needle fasciotomy of their isolated proximal interphalangeal joint Dupuytren contractures, while the CCH group were treated with collagenase injections. The primary outcome measure was clinical improvement in objective contracture measurement. The authors also recorded secondary outcome measures of change in contracture, recurrence, adverse events, complications, and Disabilities of the Arm, Shoulder, and Hand (DASH) questionnaire score. We were surprised, given the size of the trial, that the authors identified some definite differences between the two groups. A greater than 50% improvement in

contracture was maintained in 29% of needle fasciotomy patients, and in just 7% of collagenase patients, at two years of final follow-up. There was also a significant benefit in complication profile favouring the needle fasciotomy (24% complications *versus* 93%). The data presented here, although from a small study with some obvious issues with randomisation procedure, do suggest that in the longer term the needle fasciotomy is a better option.

Carpal coalitions

■ One of the most common normal variants in the hand are carpal coalitions. These are usually an incidental finding, although they can on occasion cause symptoms as they can interfere with the normal biomechanics of the wrist and hand. Given the frequency of these coalitions, there is relatively little known about them, and, in particular, how many are incidental findings and how many identified due to their symptoms. A study team in **Boston, Massachusetts (USA)** undertook the mammoth task of searching through 1119 posteroanterior wrist radiographs to identify carpal coalitions and what the indications for the radiographs were.[10] They divided their patients according to indication for radiograph: wrist pain (623 wrists); non-traumatic wrist pain (175 wrists); and other reasons (321 wrists). Perhaps surprisingly, 8.8% of patients had a carpal coalition, and they were equally frequent in patients with wrist pain, be it traumatic or atraumatic. However, wrist pain was less common in patients with no trauma or pain. Given the findings here, although carpal coalitions were seen on wrist radiographs, it seems unlikely that many were symptomatic – especially given the equal incidence in traumatic and atraumatic painful wrists. The lower incidence in the third (non-painful) group requires a little more research to unpick. However, for the time being we would caution clinicians and patients alike who attribute painful wrists to a coalition, as there may be another occult underlying pathology which will be ignored.

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Shoulder & Elbow

X-ref ***For other Roundups in this issue that cross-reference with Shoulder & Elbow see: Wrist & Hand Roundup 2, Trauma Roundups 1, 2 and 6; Research Roundups 2 and 7.***

Humeral shaft fractures: the neglected long-bone fracture? X-ref

■ Fractures of the humeral shaft remain a management dilemma. Although there is plenty of literature to support a non-operative approach, much is from a single unit and published under the watchful eyes of Gus Sarmiento. The data supporting non-operative management are thus from older literature that has not been consistently reproducible.[1] We were delighted to see this excellent prospective randomised controlled trial from **São Paulo (Brazil)** exploring operative *versus* non-operative treatment for humeral shaft fractures.[2] These authors randomised 110 patients, all with an isolated closed fracture of the humeral shaft. The authors designed their study to compare surgery using a minimally invasive bridge plate technique with non-operative management with a functional brace. Outcomes were assessed at six months using the Disabilities of the Arm, Shoulder and Hand (DASH) score. With regard to the primary outcome measure, although a statistically superior DASH score was found following surgery at six months (10.9 *vs* 16.9, respectively), this six-point difference in the DASH score does not reach the minimally clinically important difference and, as such, should not be considered clinically relevant. Perhaps most striking was a marked difference in union rates between surgery (0%) and non-operative management (15%). No difference was reported between arms with regard to a range of secondary outcome measures of the SF-36 score, the Constant-Murley shoulder score and pain levels. The authors report a relatively frequent incidence of minor complications (12%), although none of these were significant (one case of superficial infection, two transient radial neuropraxia and four hypertrophic scars). The surgical technique used in this trial is not universal, and there are concerns in some quarters about the benefits of bridge plating in these cases, it is a well conducted randomised controlled trial demonstrating a marked difference in union rates between treatment modalities. Without doubt, the humeral shaft is the 'neglected' long-bone fracture, and more prospective trials in this area are needed.

Humeral shaft fractures: non-operative in the severely injured? X-ref

■ After a paucity of papers concerning the humeral shaft, we were delighted to be able to present a second worthwhile paper this month in *360*. While the previous paper will go some way to re-opening the debate surrounding operative treatment of isolated humeral shaft fractures, there is certainly a reasonable body of experts who would argue that a clear indication for surgery in these cases would be the multiply injured patient; the rationale being that stabilisation (appropriately) of long-bone fractures reduces the second