healthcare funders will soon suggest that knee surgeons hang up their arthroscopes. After all, physiotherapy is a lot cheaper – even at 12 sessions.

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Foot & Ankle

X-ref ***For other Roundups in this issue that cross-reference with Foot & Ankle see:*** *Research Roundup 1.*

Cuboid fractures revisited

■ Though infrequent, a fracture of the cuboid is a potentially devastating injury. The loss of the integrity of the lateral column can lead to significant disruption of the midfoot and its function, and in some cases consequent forefoot deformity due to the altered midfoot. Authors from **Sheffield (UK)** undertook an extensive review of their own series of patients, all with cuboid fractures.[1] The study team identified their patients based on radiographic reports and were able to review 192 such fractures. Their study focussed on the patterns of injury and subsequent management, rather than outcomes *per se*. The authors reviewed the records and radiograph reports such that they were able to sub-classify the fractures into five different patterns. The most common were simple avulsion fractures of the capsule of the calcaneocuboid joint — often reported by radiologists but managed conservatively in practice — which constituted nearly 50% of these injuries. Isolated extra- and intra-articular injuries confined to the cuboid constituted a further 20% of cases, with the remainder involving disruption of the midfoot and tarsometatarsal fractures (18.2%), and the final group including a column injury to either the lateral or to both columns (13.5%). The authors present a fairly rudimentary management strategy that is hardly controversial. They describe a mixture of open reduction and internal fixation for the isolated cuboid injuries, and bridging fixation for the column injuries. Significant midfoot injuries including cuboid fractures are complex injuries that require difficult decision-making. This paper serves to helpfully classify the injuries, with the authors making the division between a column injury, cuboid fracture and avulsion. It would be helpful to know what the implications of these different types of injury are on the eventual outcomes, and the success of various interventions.

Cast *versus* symptomatic treatment for base of fifth metatarsal fractures

■ Fractures of the fifth metatarsal base are commonly presented injuries to the emergency department and orthopaedic clinic. Treatment strategies differ widely between surgeons and may include cast immobilisation, walker boots, stiff-soled shoes and compression support bandages. In some cases, when the fracture is widely displaced or in cases of nonunion, operative intervention may be contemplated. In a randomised controlled trial from a team in **Sheffield (UK)**, patients with a fifth metatarsal avulsion fracture (Lawrence and Botte type 1) were recruited into the study comparing the lightweight, below-knee walking cast with the double elasticated bandage worn under normal footwear (symptomatic treatment).[2] Unusually, this study was powered for non-inferiority – perhaps to the cynical among us this suggests that the authors had a preconceived idea about which outcome they would prefer to see as positive. Despite the issues with correct decision-making, great variations in clinical practice and the relatively common nature of the injury, there is little in the way of evidence to support one treatment over the other. The 60 patients enrolled in the study were randomised to either a lower limb plaster or double tubigrip and the patient's usual shoes. Both groups underwent treatment for four weeks. Outcomes were assessed using the visual analogue scale - foot and ankle (VAS-FA) and a patient-reported outcome measure (PROM); assessments were made at presentation and subsequently at four weeks, three months and six months post-injury. Blinded data analysis was undertaken; however the loss to follow-up was significant with a rate of 43% at six months and, as such, the analysis revolves around the results of just 26 patients. The investigators concluded that cast immobilisation of these fractures provided no benefit over symptomatic treatment during the follow-up period. We would, however, inject several notes of caution to this. The study was set up as a non-inferiority study and, as such, only non-inferiority has been demonstrated. Given the final follow-up numbers, it may be that even non-inferiority has not been established.

Metatarsal transfer lesions after distal chevron osteotomy for hallux valgus correction

■ Transfer lesions at the lesser metatarsal heads are a recognised complication of hallux valgus surgery. One of the neatest explanations as to what might be causing them is that shortening leads to increased plantar pressure and pain over the heads of the lesser metatarsals. Without doubt, metatarsal shortening is a contributing factor, but other factors such as dorsal displacement and the potential for rotation introduced by some osteotomies can also contribute. Preservation of first metatarsal length during metatarsal osteotomy is considered an important part of the surgical technique; however, only a scarf osteotomy truly preserves the metatarsal length. In a study of 185 feet undergoing a first metatarsal distal chevron osteotomy, a team from **Gyeonggi-do (South Korea)** investigated the occurrence of second metatarsal transfer lesions in their large post-operative cohort of patients.[3] The study team defined a transfer lesion as metatarsalgia, a painful callosity, or a painless callosity which developed post-operatively. The incidence rate of transfer lesions using their technique at a mean follow-up of 28 months was found to be only 2.7% (five feet). The authors went on to examine the relationship between the presence of transfer metatarsalgia and any metatarsal shortening. While the authors do accept that measuring metatarsal

length can be inexact using plain film radiographs, the authors used two previously described methods to do this. However in their series of 185 feet, no correlation was found between metatarsal shortening and the development of transfer lesions in their cohort. Using distal chevron osteotomy does not, however, lead to a great amount of shortening, which was limited to less than 5.8 mm in this series.

When is it safe to bear weight after ankle fracture fixation? X-ref

■ There is some significant variability between orthopaedic surgeons in post-operative weight-bearing recommendations after ankle fracture fixation. The theoretically beneficial effect of non-weight bearing in reducing the chances of secondary displacement and fixation failure is reason enough to be cautious in how early we mobilise our patients, particularly in diabetic and osteopenic patients. However, as a group from **Baltimore, Maryland (USA)** point out, there is little evidence for this clinically, and no biomechanical study has been performed in order to evaluate the effects on the fracture fixation of early weight-bearing after open reduction and internal fixation of unstable ankle fractures.[4] The study team undertook a cadaveric study using 24 fresh frozen lower extremities. The study team created bimalleolar and trimalleolar fractures in the cadaveric specimens and then undertook fixation. The specimens were then subjected to repetitive axial compressive loads. The study protocol aimed to simulate five weeks of full weight-bearing. In all groups, the average motion at all fracture sites was significantly less than 1 mm. There were no fixation failures in any of the groups. The authors suggest that more clinical work could be done to investigate the potential for early weight-bearing after this type of injury, given their findings in this simulated model. In many centres, early weight-bearing is undertaken with a cast, and while clearly it is feasible, it is also important to remember that not all ankle fractures are equal – in those simple fractures where direct reduction and lag screw compression can be achieved, superior outcomes in terms of stability are possible, where bridging fixation has no intrinsic stability. Similarly, not all patients are made equal, and for those with diabetes, severe osteoporosis, vascular disease, neuropathy or those taking steroids, a return to full weight-bearing is likely to be a completely different prospect to that of the healthy individual. The benefits of early weight-bearing after ankle fracture surgery have been demonstrated previously,[5,6] hence this practice can be applied where appropriate. Here at *360* we eagerly await the reporting of current studies.

Implant survival for first metatarsophalangeal joint hemiarthroplasty

■ Osteoarthritis of the first metatarsophalangeal joint (MTPJ) remains a tricky problem to treat. Although the first MTPJ fusion is almost universally successful and leads to excellent pain relief, the associated stiffness can affect footwear choices (high heels become impossible) and can impede sporting activities, lead to a 'cock-up toe' and transfer pains to the lesser rays. Joint arthroplasty for the first MTPJ is an attractive-sounding alternative, with the option to maintain joint range of motion and forefoot function. Sadly, however, as yet the published series has not reported the anticipated improved functional results, and as for longevity, survival of total joint arthroplasty implants has been a concern, and as such there is now an increasing move towards hemiarthroplasty as a potential solution. A team from **Edinburgh (UK)** present their results of a relatively large cohort study (n = 97 toes in 80 patients) using a great toe proximal phalangeal metallic hemiarthroplasty (BioPro, Inc; Port Huron, Michigan).[7] All patients had end-stage osteoarthritis of the first MTPJ (hallux rigidus). The cohort age ranged between 22 and 74 years, and as would be expected there was a preponderance of women, representing 61 of the 80 patients. Their series focuses on success rates in terms of survival and is much more encouraging than previous series. The all-cause rate of survival at five years using this implant was 85.6%. As would be expected in all joint arthroplasties, their results suggest that being younger in age was a significant predictor of revision. In terms of clinical outcomes, the authors report a significant improvement in the Manchester Oxford Foot Questionnaire of 13.9 points and in the physical component of the SF-12 score of 6.5 points. In terms of cost per quality-adjusted life year (QALY), while the intervention reached (accounting for a 14% revision rate) a cost ranging between £4431 and £6361 depending on the complexity and morbidity of the patient.

Posterior malleolus through the posterolateral approach X-ref

■ Staying with the ankle fracture theme, a group from **The Hague (The Netherlands)** present their results of the posterolateral approach to the ankle for supination-external rotation type IV injuries.[8] The large posterior malleolar shear fractures seen in these injuries do not lend themselves biomechanically to reverse lag screws from the anterior tibia; however this has been the treatment of choice for many surgeons due to the ease of insertion. There is an increasing trend towards posterior approaches and either true lag screws or buttress plating of the posterior tibia. Like many shifts in practice, this has mostly happened because 'it seems right', but without the evidence to back it up. While it does stand to reason that a better reduction and more secure fixation will improve outcomes in ankle fracture fixation, there are few series reporting the accuracy of reduction achievable with this approach. We were delighted to see this paper which aimed to establish if anatomic reduction of the posterior malleolus was a successful predictor of eventual clinical outcome. This paper is based

on the evaluation of 52 patients, all with significant posterior malleolar fractures of between 10% and 52% of the joint. The authors reduced and fixed the fragment with a posterolateral approach achieving < 1 mm step in all cases. In this series, the majority of syndesmotic injuries were successfully stabilised with fixation of the posterior malleolus (82%). The complication rates reported were low, with a single wound infection and no healing problems. This paper makes a key point regarding the importance of reducing the posterior malleolar fragment in these injuries to normalise the contact pressures within the joint after injury. The depiction of the method shown to access the posterior fibula via this approach does raise a discussion point, and highlights a contradiction in the literature. The authors show the peroneal muscles displaced medially to access the fibula; this correlates with the description given by the Association for the Study of Internal Fixation (AO) group. However, some surgeons displace them laterally, and there is no consensus within the literature. The complications of this approach have been discussed previously,[9] highlighting the prevalence of lateral flap skin necrosis, although this was not seen here. The authors of this earlier report recommend a medial approach to the fibula, leaving the lateral interval between peroneal muscle and skin intact to avoid this. A consensus is clearly needed, with technical details of the safest way to perform the approach. However, it does seem to be an effective method for addressing these fractures.

Simultaneous subtalar fusion and total ankle arthroplasty

It is now known that the nonunion rate of subtalar fusions is higher in feet with a pre-existing ankle fusion.[10] This biomechanical study from The Hospital for Special Surgery, **New York, New York (USA)** demonstrates the relationship between this time by simulating subtalar fusion and measuring rotation and contact pressures in the ankle.[11] The conclusion of the basic science evidence appears to be that external rotation forces are increased across the ankle joint after simulated subtalar fusion. The addition of Chopart's joint fusion segments are not thought to contribute to these changes. However, knowing this doesn't really help the foot and ankle surgeon in deciding how to proceed for the patient with widespread hindfoot arthritis. This study from **Milan (Italy)** adds a lot to the application of current knowledge[12]. The authors present the results of 24 subtalar fusions performed with a synchronous total ankle arthroplasty as a treatment alternative to a tibiotalocalcaneal nail for widespread hindfoot degeneration This type of hybrid reconstruction is becoming more common as surgeons seek to avoid a poorly-tolerated pantalar fusion as a solution to widespread hindfoot degeneration. Although ankle arthroplasty clearly has its shortcomings, in carefully selected patients arthroplasty and fusion offer the tantalising potential for preserving motion, avoiding nonunion and possibly avoiding the dreaded pantalar fusion. Although a small, elementary study, these authors report a 92% fusion rate of the subtalar joint at 12 months and significant improvements in visual analogue pain scale (VAS) of between 8.6 mm and 2.1 mm, and American Orthopedic Foot and Ankle scores of between 27.9 and 75.1 points as a result of their intervention.

The Achilles and sural nerve

This article reports a retrospective review of MRI scans in patients both with and without Achilles tendon ruptures. The authors set out to establish simply what the anatomical relationship was between the Achilles tendon and the sural nerve, in addition to visualising the well-publicised 'twist' in the tendon with the eventual aim of establishing the safest and most effective form of percutaneous Achilles tendon release. Their observational study from the Hospital for Special Surgery, **New York, New York (USA)**[13] established convincingly that the Achilles tendon was externally rotated in both rupture and non-rupture, with rotations of around 15° by the point at which the tendon reaches the ankle. However, there is no rotation at 10 cm proximal to the insertion. At the distal end, the sural nerve was close to the tendon anteriorly, lying laterally further in the ruptured tendons. Clearly there is an important message here for those undertaking a percutaneous Achilles tendon repair, as although the anatomy is relatively constant in the uninjured tendon, the relationships change during tendon rupture and the recommendations of external rotation of 11° at the proximal end of the rupture and 16° at the distal end when using percutaneous and limited-open Achilles tendon repair devices, are likely at the very least to reduce the rate of sural nerve injury, and may also increase the chances of tendon capture. Useful if you are going to undertake a percutaneous repair, but perhaps the bigger question remains, should one be undertaking a percutaneous repair at all?

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Wrist & Hand

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

Collagenase works for Dupuytren's - but with caveats

The use of collagenase clostridial histolyticum for Dupuytren's disease has (notwithstanding funding issues in many strained health systems) become part of the palette for treating this common condition. Offering the potential advantages of avoiding wound complications and providing a quick, simple and potentially acceptable option to many patients, the debate perhaps no longer surrounds whether it is appropriate in selected cases, but rather which cases, and when. A research group from **Southampton (UK)** have reported their prospective study of 237 patients.[1] Their study examines whether its efficacy can be translated to more complex cords involving more than one joint or more than one finger at a time. The take home message from their paper is that it is in fact possible to treat complex cords, although with experience, surgeons' use of repeated injections became less likely. Less severe pre-intervention contractures tended to correct more successfully. However, the authors found a high complication rate, which may cause alarm. Skin splits were more likely with more severe pre-injection deformity. The same group also surveyed 213 of their patients for satisfaction.[2] While three quarters were satisfied and would have the injection again, as time passed and the disease started to recur, satisfaction and willingness to have the injection again fell. Here at 360 we would promote the concept of careful consent when using collagenases in Dupuytren's contracture, warning patients that complications can be alarming and recurrence is common. A forewarned patient is more likely to be a happy patient.

What else is new in treating Dupuytren's contracture?

While collagenase clostridium histolyticum (CCH) has been taking much of the Dupuytren's limelight recently, other potential advances are emerging and starting to jostle for position in the treatment of Dupuytren's contracture. The accumulated evidence reporting short- and longer-term results for