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Foot & Ankle

X-ref ***For other Roundups in this issue that cross-reference with Foot & Ankle see: Hip & Pelvis Roundup 7; Trauma Roundups 1 & 5; Children's orthopaedics Roundup 8; Research Roundup 2.***

Gastrocnemius tightness - assessing the extent and prevalence

There has been a much-increased interest in the role of gastrocnemius tightness in the development of a variety of orthopaedic conditions, especially in the foot and ankle. However, when does gastrocnemius tightness become pathological, and how tight is tight? In this interesting paper from a group at **Stanmore (UK)** this was put to the test.[1] The prevalence of gastrocnemius tightness, along with the degree of tightness when present, was investigated in patients with foot and ankle conditions and compared with the normal population. The authors undertook a prospective case-matched series with the intention of ironing out how much of a role gastrocnemius tightness has in the evolution of foot and ankle pathology. A total of 297 controls and 97 patients with foot and ankle pathology were recruited into this study and the authors excluded patients or controls with equinus contracture, neurological deficit, and ankle or hind foot arthritis. Using the modified lunge test, each participant had dorsiflexion measurements taken using an inclinometer attached to the ankle along the long axis of the fibula. Measurements were taken of maximum dorsiflexion achievable without the heel lifting from the ground, with the knee fully extended and then with the knee flexed (> 20°) to relax the gastrocnemius muscle. The difference between these measurements was recorded as the gastrocnemius tightness. The authors undertook a pre-study power analysis to detect a 2° difference in gastrocnemius tightness between the groups and recruitment targets were met to achieve this, using a definition of "normal" for gastrocnemius tightness of between two standard deviations from the mean of the control group (0° to 13°). Overall, the authors report that 21.6% of patients in the foot and ankle pathology group had gastrocnemius tightness. When the group of patients with gastrocnemius tightness were subdivided into "forefoot pathology" or "other foot pathology", there was again significant difference found between the two groups (10.3° *vs* 6.9°). There was no significant difference between the other foot pathology group and the controls. Using this method of measurement, a gastrocnemius contracture > 13° appears to be abnormal. Patients with forefoot pathology have the highest prevalence of gastrocnemius tightness, whereas there is no evidence to support its presence in other conditions based on this study. Further studies on larger groups of patients with forefoot pathology would perhaps be helpful here in the future to tease out the finer details. One limitation of this study, of course, is its generalizability into orthopaedic practice. Few people have access to this method of measurement in the day-to-day clinical setting. However, a goniometer is suggested as a substitute by the authors, and has also been reported previously.

Should we fuse both ankles?

While ankle fusion takes some beating (just look at the comparative literature for arthroplasty and fusion!), many patients present with bilateral hind foot pathology and it is not entirely clear whether bilateral ankle fusion is as satisfactory an option for our patients as the unilateral procedure. Fusing both ankles is controversial, as the bilateral loss of motion is widely thought to result in a much more profound subsequent gait abnormality than a single fusion. However, as the authors of this study from **Nara (Japan)** point out, it is easy to jump to the obvious conclusion, and in this case the evidence from comparative studies is significantly lacking.[2] The authors therefore performed a retrospective review of patients in whom a bilateral or unilateral arthrodesis was performed. In their small series, ten patients who had undergone a bilateral ankle fusion were matched with ten unilateral ankle fusion cases. Minimum follow-up for all cases was two years and the authors report their outcomes primarily in the form of patient-reported outcome measures (PROMs; Japanese Society for Surgery of the Foot scale and Self-Administered Foot Evaluation Questionnaire) preoperatively and at final follow-up. When comparing the outcome scores, there was no significant difference between the two groups. Analyzing the sub groups of the scores revealed a lower score for the bilateral arthrodesis group in the "social functioning" category only, although this can hardly be considered robustly valid given the small number of cases and multiple domains in each score. There was no difference in the categories for pain, physical functioning in daily life, shoe wearing, and general health. Accepting the limited sample size of this study, the results are still encouraging and it may well be an acceptable option to fuse both ankles. Given the obvious limitations, this study should only really be considered hypothesis generating. However, it certainly has made us reflect here at *360* – bilateral ankle arthrodesis may not be as bad as generally feared.

What is the most effective treatment for Morton's neuroma?

The humble Morton's neuroma is not the focus of major randomized controlled trials (RCT), or indeed much in the way of attention in the academic press at all. However, it causes significant and painful problems for large numbers people every year, and is often recalcitrant to simple methods of treatment. Akin with many conditions for which there is no truly successful treatment, there are a wide variety of different treatments currently in regular clinical use and available for a painful Morton's neuroma. Nonoperative therapies include orthotics, footwear modification, infiltration with steroid or alcohol, and radiofrequency ablation. Surgical treatment usually involves neurectomy or neurolysis

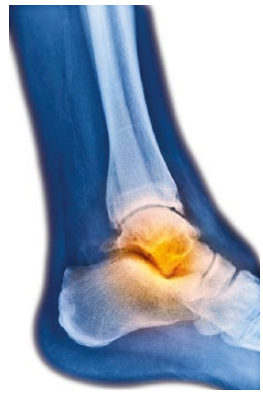
using a dorsal or plantar approach. In a systematic review article, this group from **Bellinzona (Switzerland)** undertook a large systematic review and analyzed 29 case series and RCTs taken as suitable from a total of 283 titles available from their original search.[3] Focusing on treatment outcomes, their review concludes that the most successful treatments were the operative ones, with an overall satisfaction of 89%. For the infiltrative therapies, the satisfaction rates were slightly lower, at an average of 81%, lower still for either radiofrequency ablation and alcohol injections (71%), and lowest for corticosteroid injections (51%). For operative treatment, no difference was found between dorsal and plantar approaches. The overall complication rate from surgery was 21%, compared with infiltrative therapy which was 3%. Complications were not highlighted in all studies. On the basis of the currently best available evidence, it seems that patients should ideally be offered either operative treatment or infiltrative therapies. However, the rate of complication from surgical treatment is high and this should be considered when offering initial treatments to patients.

PRP does not look promising in Achilles tendinopathy X-ref

■ Chronic achilles tendinopathy is an unfortunate condition, in that it is relatively common and has a long natural history, although, for the most part, it does settle down with physiotherapy. This, combined with the typical patient population of middle aged 'athletes', sometimes combines to create the perfect storm of a high-expectation patient who is anything but patient. This may explain why there has been such an uptake of the use of platelet-rich plasma (PRP) to treat this problem. There is plenty of evidence surrounding PRP use in a variety of indications; however, there is little clear evidence in the literature with many small conflicting trials. In light of this, it is welcome to see a review and meta-analysis put together by a review team in **Hangzhou (China)** who have undertaken a formal literature review and meta-analysis with the aim of answering a number of questions.[4] Specifically, they attempted to answer if PRP plus eccentric strength training results in greater improvements in Victorian Institute of Sports Assessment-Achilles (VISA-A) scores, differences in tendon thickness, or differences in colour Doppler activity compared with placebo. The authors identified four randomized controlled trials (RCT) reporting the outcomes of 170 patients: 85 placebo plus eccentric loading and 85 PRP plus eccentric loading. There were no apparent differences at baseline between the two groups, and the authors assessed the trials as unlikely to suffer from bias. The bottom line here is that there were no apparent significant differences in VISA-A score, tendon thickness, or Doppler activity on meta-analysis of all four studies. The authors go on to conclude that based on their results, "until or unless a clear benefit has been demonstrated in favor of the new treatment, we cannot recommend it for general use". This may somewhat throw the cat among the pigeons, as this is a therapy that has started to gain widespread traction. With the forthcoming publication of the PATH-2 trial, which looks at PRP in achilles tendon rupture (and we were fortunate enough to hear the first presentation of the results at the Orthopaedic Trauma Association Annual Meeting this October) also not looking promising, the role for PRP in achilles tendon problems may be at an end.

dHACM injection and plantar fasciitis X-ref

■ Plantar fasciitis like Achilles tendinopathy discussed in the previous round-up is one of those things that has a troubling history for sufferers and clinicians alike. Like all enthesopathies, the aetiology is unclear, the pathophysiology is



similarly somewhat opaque, and treatments, while varied, are usually relatively ineffective when compared with simple physiotherapy. We were delighted to see this level 1 randomized controlled trial (RCT) emerge from **Fresno, California (USA)** that aims to evaluate the use of micronized dehydrated human amnion/chorion membrane (dHACM) injection from a safety and efficacy perspective as a treatment for plantar fasciitis.[5] The authors conducted and reported a prospective, single-blind, randomized controlled trial at 14 sites in the United States. A total of 145 patients were randomly allocated to either an injection of micronized dHACM (n = 73) or a saline placebo (n = 72) Injections were conducted in an identical manner and sited directly into the clinically symptomatic area. Assessments were conducted at regular intervals and follow-up was up to 12 months. Outcome measures reported include the visual analogue scale (VAS) for pain, Foot Function Index-Revised (FFI-R) score, and a safety analysis for the presence of adverse events. In terms of the primary outcome measure of mean change in VAS score at three months, the results were impressively in favour of the treatment (76% *vs* 45% reduction in pain). There were also positive secondary outcome measures with a mean reduction of 60% *versus* baseline, whereas control subjects had mean reduction of 40% in the FFI-R scores. There were no dHACM-related adverse events.

Analgesia for ankle reduction X-ref

■ This paper from Regions Hospital **Saint Paul, Minnesota (USA)** takes an interesting look at the somewhat difficult problem of emergent reductions of ankle fracture dislocations.[6] Handed-down wisdom is that, due to the compromise via local ischaemia and pressure in addition to chondral damage sustained by dislocation, reduction should be undertaken as an emergent procedure in the A&E department. There are two strategies to achieve this, either sedation or local field block (usually by means of a haematoma block) then reduction and plasters. The present study evaluates the differences between the intra-articular haematoma block (IAHB) or procedural sedation (PS) options in just short of 350 patients in a retrospective case series. There were, as expected, unevenly matched groups with 221 patients who received a haematoma block and 114 who received procedural sedation. There were no apparent large differences in baseline characteristics between the groups and, using the outcome measure of successful reduction, there was no difference in how the two methods of analgesia performed. However, the authors did note that there was a significant difference in the time to reduction with the haematoma block group performing better, and this, the authors argue, makes it a more preferential approach – certainly for those with dislocated ankles. We are not entirely convinced here at *360* that the small reduction in time makes a difference; however, the authors also noted that orthopaedic surgeons had a higher 'first-time' reduction success than A&E doctors, and that when procedural sedation was used there was a higher likelihood of first-time reduction. Like many studies, the interpretation of the data is part of the challenge; and while the authors conclude that the reduced time to reduction should make the haematoma block the first time intervention, our preference here at *360* would be towards the procedural sedation

route, as repeated failed reductions tend to damage the skin, soft tissues, and joint surface more than a little extra time to reduction.

The hallux IPJ and MTPJ arthrodesis

■ The fusion of the first metatarsophalangeal joint (MTPJ) for hallux rigidus is a tried and proven procedure. There are few procedures that give as reliable pain relief and long-lasting function in any joint. Although there is a plethora of literature surrounding how best to achieve fusion and what position to aim for to achieve the best possible functional outcome, there is little surrounding the effects of a first MTPJ fusion on the surrounding joints. There is plenty of evidence in the foot and ankle, and elsewhere, to suggest that the adjacent joint disease following fusion procedures can be a problem. Slightly surprisingly, despite the frequency of the operation, there are few studies investigating the effects of MTPJ fusion on the adjacent interphalangeal joint (IPJ). This paper from **Durham, North Carolina (USA)** sets out to investigate the outcomes of IPJ arthrodesis following MTPJ fusion.[7] The authors postulate that, due to the more proximal fusion the outcomes of IPJ, fusion may not be as good due to the increase stress across the IPJ in the perioperative period. The authors report a series of 42 patients, all of whom had an IPJ fusion, of whom 17 had had a prior MTPJ fusion and 25 had not. The MTPJ fusion group had on average a 54-month gap between procedures and suffered a 35% nonunion rate (n = 6/17), compared with 8% (n = 2/25) in the isolated IPJ fusion group. This was also reflected in the retrospective assessment of rate of bone healing, with 4.8 times longer required to achieve fusion. It appears, from this straightforward paper with a simple message, that care should be taken in patients requiring an IPJ fusion who have previously undergone MTPJ fusion due to the significantly increased rates of nonunion and delayed union in that group.

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Wrist & Hand

Distal radius fractures with and without ulnar styloid fractures: a meta-analysis X-ref

■ The treatment of pathology of the ulnar side of the wrist presents a slight paradox. We suspect that most general orthopaedic surgeons feel comfortable treating distal radius fractures but, in comparison, relatively few feel as comfortable treating the ulnar side, and less still managing distal radial ulnar joint (DRUJ) pathology. An ulna styloid fracture accompanying a distal radial fracture is not uncommon, and a team from **Amsterdam (The Netherlands)** have performed a thorough meta-analysis examining functional outcomes as measured by the Disabilities of the Arm, Shoulder and Hand (DASH), QuickDASH, or Patient-Rated Wrist Evaluation (PRWE) score following either isolated distal radial fractures, or those with an accompanying (but untreated) ulna styloid fracture.[1] Of the 511 articles that were screened, 12 articles were analyzed. The 12 articles reported results in 1196 patients with an ulna styloid fracture and 1047 patients without. The meta-analysis failed to demonstrate statistically significant differences in the PRWE score, the presence of ulna-sided wrist pain, overall range of movement, or grip strength associated with the presence or absence of an ulnar styloid fracture. There was, however, a statistically significant difference in the observed DASH (and combined QuickDASH) scores of 3.4 points favouring no ulna styloid fracture. This was noted to be well below the mean clinically important difference and therefore not clinically relevant. Furthermore, there was no relevant difference in scores between ulna styloid base and tip fractures. For the above reasons, this meta-analysis is slightly flawed and these problems are readily acknowledged by the authors in the manuscript, as no adjustment was made for the method of treatment of the distal radial fracture. It seems plausible that the subtle differences in outcome, which may be secondary to the ulna styloid fracture, are lost in the noise of the variable outcomes known to happen following a distal radius fracture. Moreover, the meta-analysis excluded articles reporting surgically treated ulna styloid fractures. Could this group have performed more or less favourably? While demonstrating no significant or clinically meaningful difference in functional outcomes depending on presence and level of ulna styloid fracture, the authors were unable to comment on the effect on DRUJ stability as this was not addressed in the included papers. We previously reported on another similar meta-analysis including fewer patients that also reached the same conclusions.[2] What is really required is a means to identify whether there is a group benefitting from surgical intervention to the styloid, without those with frank DRUJ instability. Until this group is identified, our advice is unchanged: leave these fractures alone.

Recall and the QuickDASH score

■ Patient-reported outcome measures (PROMs) are commonplace in practice and research. Not only used for measuring disease progression and efficacy of intervention, PROMs are being utilized as adjuncts to clinical decision making. However, there is still much to learn about which PROM is best, how and when that PROM should be measured, and the weight that the PROM should be given in relation to objective clinical measurements. Researchers from **Trondheim (Norway)** have looked specifically at the QuickDASH, the abbreviated version of the Disabilities of Arm, Shoulder and Hand (DASH) questionnaire, which is likely familiar to most *360* readers.[3] While the