

ROUNDUP³⁶⁰

Foot & Ankle

The Achilles tendon Total Rupture Score (ATRS)

■ Outcome measures abound in orthopaedic surgery and the ruptured Achilles tendon is no exception. *360* was thus interested to read the paper from **Coventry (UK)** that sought to further assess the validity of the relatively new Achilles tendon Total Rupture Score (ATRS). This score was first introduced in 2007 but had not been validated outside its originating centre. The Coventry team analysed the score for internal consistency, convergent validity, floor and ceiling effects and relative efficiency as compared with the Disability Rating Index and the EQ5D scores. It seems the ATRS did well. It demonstrated high internal consistency and correlated significantly with the Disability Rating Index albeit with wide confidence intervals. In addition, the ATRS was better at detecting clinically important changes over time (responsiveness) than the Disability Rating Index or the EQ5D.¹ Perhaps this is the way forward for a suitable outcome measure for the ruptured Achilles tendon, thinks *360*? The Coventry research certainly provides support for this new outcome measure.

Endoscopic treatment of Haglund's syndrome

■ Haglund's syndrome is a calcaneal prominence associated with retrocalcaneal pain and is the subject of a paper from **Shanghai (China)**. Researchers from the city's Huashan Hospital wished to understand the results of the endoscopic treatment of this condition using a new three-

portal technique. Open surgical treatment, although widely performed, is apparently associated with several complications such as skin breakdown, avulsion of the Achilles tendon, or altered feeling and stiffness. The researchers thus took 23 patients (25 heels) with a mean age of 27.7 years and followed them for a mean of 41 months after endoscopic surgery. By using two scores, that from the American Orthopaedic Foot and Ankle Society (AOFAS) as well as the Ogilvie Harris score, they had up to 15 excellent results, seven good, one fair and two poor.² To *360*, the authors' conclusion seems perfectly fair. Their endoscopic technique appears safe and effective in the treatment of Haglund's syndrome.

Is it worth removing that metalwork?

■ It is extremely common for orthopaedic surgeons to recommend metalwork be removed a set time after foot or ankle surgery. Yet is this actually worthwhile? Surgeons from **Oldham (UK)** have looked at this by studying 27 consecutive patients who had undergone metalwork removal over a four-year period at a mean of 18 months after implantation. They wished to know whether there was any difference felt by the patient in terms of pain, function or shoe-wear related outcomes. Using a validated Visual Analogue Scale – Foot and Ankle questionnaire, they established that, for the whole group, only moderate satisfaction was noted after metalwork removal. However, scores were better for those who had

their metalwork removed after first ray surgery. For metalwork implanted elsewhere in the foot and ankle the authors recommend that further investigation may be needed.³

Hyaluronic acid injection no better than saline

■ Intra-articular injections of hyaluronic acid are widely performed in the management of osteoarthritis, so *360* was interested to read of the work undertaken by a group from **Philadelphia (USA)** into the effects of hyaluronic acid on the osteoarthritic ankle. The investigators aimed to compare a single intra-articular injection of hyaluronic acid with a single injection of intra-articular saline and used the AOFAS score at six and 12 weeks after injection. The study reported on 64 patients with osteoarthritis of the ankle, although eight patients withdrew. At the six-week point the placebo group had actually worsened. However, by 12 weeks both groups had improved significantly, leading to the conclusion that a single intra-articular injection of hyaluronic acid is not demonstrably superior to a single intra-articular injection of saline.⁴ Now what about looking at the other joints in our degenerating bodies, thinks *360*?

Thromboembolic events after fracture fixation in the ankle

■ Thromboembolic events are frequently associated with musculoskeletal injury, so work from **Quebec (Canada)** is worthwhile. Researchers looked at 2478 patients who had

undergone open reduction and internal fixation of an ankle fracture at any one of three university hospitals over an eight-and-a-half-year period. There were 1540 that met the inclusion criteria. The median age of the patients was 46 years at the time of surgery, while the fracture types included unimalleolar (45%), bimalleolar (31%) and trimalleolar (24%). The incidence of thromboembolic event was 2.99% (46 patients), split into 2.66% (41 patients) with a deep-vein thrombosis and 0.33% (five patients) with a non-fatal pulmonary embolism. The use of thromboprophylaxis seemed to make no appreciable difference, whether or not patients had risk factors present.⁵ Pleasingly, *360* notes, it appears that thromboembolic events are uncommon after the surgical treatment of ankle fractures. However, as this was a level III study, perhaps a prospective study on the role of thromboprophylaxis in this situation might be indicated? The authors certainly think so.

Surgeons are as good as CT scans for OCD of the talus

■ Osteochondral defects of the talus can sometimes be difficult to reach arthroscopically, a problem highlighted by work from **Amsterdam (The Netherlands)**. Here, researchers attempted to determine whether a pre-operative CT of the ankle joint in full plantar flexion was sufficiently reliable and accurate to assess the anterior arthroscopic accessibility of talar osteochondral defects (OCDs). The authors looked at 20 patients; each

had an OCD of the talar dome and each underwent a CT scan of the ankle in full plantar flexion. Accessibility of the OCD was defined as the distance between the anterior border of the OCD and the anterior distal tibial rim being measured on sagittal CT reconstructions by two investigators. The reference standard was the distance between the same landmarks measured during anterior ankle arthroscopy by an orthopaedic surgeon who was blinded to the CT scans. Intra- and interobserver reliability of CT, as well as the correlation and agreement between CT and arthroscopy, were calculated. The results? The measured distance between the anterior border of the OCD and the anterior distal tibial rim ranged from -3.1 mm to 9.1 mm on CT and from -3.0 mm to 8.5 mm on arthroscopy. Meanwhile, there was an excellent correlation between CT and arthroscopy.⁶ 360's query? If CT and arthroscopy correlate so well, why do a CT at all?

Proximal fractures of the fifth metatarsal

■ From **Munich (Germany)** comes a detailed literature review on one of the more common foot injuries, the fractured proximal fifth metatarsal. The most common classification is that of Lawrence and Botte. This describes three fracture zones and offers recommendations for treatment. The aim of this Munich study was to re-evaluate the classification and recommendations by using the highest level of evidence available. Through a wide, systematic literature review, the authors identified six prospective trials either comparing the same treatment for different fracture entities or different treatments for the same fracture entity. Their analysis revealed that "tuberosity avulsion fractures" (Lawrence and Botte Zone 1) heal well using functional treatment. Even multifragmentary, displaced and intra-articular fractures in Zone 1 give good results. Treatment with a short leg cast leads to a significant delay in return to pre-injury level

when compared with functional treatment. Meanwhile, "Jones' fractures" (Zone 2) also demonstrate good-to-excellent results and complete bone healing when treated functionally. In contrast, "diaphyseal stress fractures" (Zone 3) at the distal limit of the fourth-fifth intermetatarsal articulation demonstrate a higher rate of treatment failure when treated non-operatively in a non-weight-bearing short leg cast. Early intramedullary screw fixation leads to a significantly shorter time to bone healing and return to sport. The authors concluded that acute fractures of the proximal fifth metatarsal should be subdivided into two entities only: first, metaphyseal fractures not extending beyond the distal end of the fourth-fifth intermetatarsal articulation; these should be treated functionally. Second, meta-diaphyseal fractures at the distal end of the fourth-fifth intermetatarsal articulation or beyond; these require early intramedullary screw fixation.⁷ 360 likes this paper. It offers simple, clear guidelines for a common fracture and could be useful to us all.

Nerve blocks for hallux valgus surgery – complications not unknown

■ A widely used method of offering pain relief in surgery for hallux valgus is the continuous peripheral nerve block. Yet, as authors from **Lyon (France)** report, this is not without complication. Neuropathic problems can arise. To investigate this further the authors identified 15 sciatic continuous peripheral nerve blocks. In 69, ultrasound guidance and neurostimulation were used. However, from this series, there were three patients (1.91%) who developed common superficial peroneal and sural nerve injury, leading to motor and/or sensory dysfunction.



This is a higher prevalence than in other studies, which raises the question of either methodological bias or technical difficulties. It appears that the peroneal and sural nerves are at risk, not so much the tibial. 360 notes the authors' conclusion that further studies are needed in order to determine the ideal anaesthetic procedure.⁸ What is clear, of course, is that the surgeon is not always the sole cause of complications associated with hallux valgus surgery.

Chronic osteomyelitis in the non-diabetic patient

■ Although chronic osteomyelitis of the foot and ankle is frequently seen as a result of diabetes mellitus, this problem can also occur in isolation.

Surgeons from **Seoul (South Korea)** have reported 15 patients treated for chronic osteomyelitis involving the foot and ankle over an approximately two-and-a-half-year period. Their patients did not have diabetes mellitus. The authors reported on the cause of osteomyelitis, sites of occurrence, causative pathogens, and any invasion of the adjacent joint(s). The clinical characteristics were also assessed and MRI undertaken to clarify the extent of infection and invasion of an adjacent joint. Surgical management included wide debridement, dead space control and arthrodesis if there was invasion of an adjacent joint. The mean post-operative follow-up was 3.3 years. Extrinsic causes accounted for 86.7% of the chronic osteomyelitis cases involving the foot and ankle. The most common cause of osteomyelitis was trauma, with ten cases being created by complications after fractures or dislocation. Methicillin-resistant *Staphylococcus aureus* and *Pseudomonas* were the most common pathogens. In 46.7% of the patients, the adjacent joint was involved and an arthrodesis was performed. The mean length of hospital stay was 39.1 days and the mean number of surgeries was two. Impressively, certainly in 360's view, was the finding that 14 of the 15 patients had no recurrence at

all. It thus appears that for the successful treatment of chronic osteomyelitis involving the foot and ankle, an arthrodesis, should there be invasion of the adjacent joint, as well as wide debridement and dead space control, are successful treatment methods.⁹

Charcot arthropathy – indicators of activity

■ In many parts of the world a Charcot arthropathy of the foot is an uncommon diagnosis. So 360 was interested to find a paper from **Hsinchu City (Taiwan)** that reported on 15 patients with an acute diabetic Charcot arthropathy of the foot and ankle. The affected areas were immobilised in a non-weight-bearing cast and the patients then followed at two-week intervals with bilateral Doppler spectrum analysis of the first dorsal metatarsal arteries using a 10 MHz linear ultrasound probe. The patients were allowed to start bearing weight or to undergo surgery after the Doppler spectrum had returned to a normal pattern. The Doppler spectra in the unaffected limbs were triphasic in pattern, whereas those in limbs with active Charcot arthropathy showed monophasic forward flow and returned to normal after a mean of 13.6 weeks of immobilisation. There were three patients who underwent a pantalar arthrodesis in order to correct gross instability and deformity.¹⁰ This is a helpful paper, we feel at 360, as it allows a method (Doppler spectrum analysis) whereby the activity of the disease in patients with Charcot arthropathy can be measured, thereby acting as a guide to begin weight-bearing or to undergo reconstructive surgery.

REFERENCES

1. Kearney RS, Achten J, Lamb SE, Parsons N, Costa ML. The Achilles tendon total rupture score: a study of responsiveness, internal consistency and convergent validity on patients with acute Achilles tendon ruptures. *Health Qual Life Outcomes* 2012;10:24.
2. Wu Z, Hua Y, Li Y, Chen S. Endoscopic treatment of Haglund's syndrome with a three portal technique. *Int Orthop* 2012;(Epub ahead of print) PMID:22415722.
3. Wadia F, Sundar M. Metalwork removal in elective foot and ankle practice: does it make any

difference to the patient? *Foot (Edinb)* 2012;(Epub ahead of print) PMID:22265450.

4. DeGroot H 3rd, Uzunishvili S, Weir R, Al-omari A, Gomes B. Intra-articular injection of hyaluronic acid is not superior to saline solution injection for ankle arthritis: a randomized, double-blind, placebo-controlled study. *J Bone Joint Surg [Am]* 2012;94-A:2-8.

5. Pelet S, Roger ME, Belzile EL, Bouchard M. The incidence of thromboembolic

events in surgically treated ankle fracture. *J Bone Joint Surg [Am]* 2012;94-A:502-506.

6. van Bergen CJ, Tuijthof GJ, Blankevoort L, et al. Computed tomography of the ankle in full plantar flexion: a reliable method for preoperative planning of arthroscopic access to osteochondral defects of the talus. *Arthroscopy* 2012;(Epub ahead of print) PMID:22342200.

7. Polzer H, Polzer S, Mutschler W, Prall C. Acute fractures to the proximal fifth

metatarsal bone: development of classification and treatment recommendations based on the current evidence. *Injury* 2012;(Epub ahead of print) PMID:22465516.

8. Hajek V, Dussart C, Klack F, et al. Neuropathic complications after 157 procedures of continuous popliteal nerve block for hallux valgus surgery: a retrospective study. *Orthop Traumatol Surg Res* 2012;98:327-333.

9. Jeong JJ, Lee HS, Choi YR, Kim SW, Seo JH. Surgical treatment of non-diabetic chronic osteomyelitis involving the foot and ankle. *Foot Ankle Int* 2012;33:128-132.

10. Wu T, Chen PY, Chen CH, Wang CL. Doppler spectrum analysis: a potentially useful diagnostic tool for planning the treatment of patients with Charcot arthropathy of the foot? *J Bone Joint Surg [Br]* 2012;94-B:344-347.