

# ROUNDUP<sup>360</sup>

## Foot & Ankle

### Calcaneocuboid distraction arthrodesis with allograft for acquired flatfoot

■ A powerful method of reconstructing an adult-acquired flatfoot deformity is to perform a calcaneocuboid distraction arthrodesis. Surgeons from **Los Angeles (USA)** have looked at this in detail by undertaking a retrospective review of a small series of patients who underwent a calcaneocuboid distraction arthrodesis with a femoral head allograft. They identified 16 feet (14 patients) with a mean follow-up of 23 months and a mean patient age of 43 years. A calcaneocuboid distraction arthrodesis was performed with the allograft and secured with a three-hole one-third-tubular plate. The surgeons also supplemented seven of the grafts with platelet-rich plasma (PRP). Patients were kept non-weight-bearing for six weeks with an additional six weeks in a walking cast or boot. Plain radiographs and, if necessary, a CT or MRI were used to assess the degree of union. We were not bowled over by the results at 360 as seven of the 16 feet went on to develop a nonunion. Of these seven, five had not received PRP and two had received PRP. Consequently, we were pleased to learn that because of the unacceptably high complication rate of this procedure, the authors have now abandoned it. They strongly recommend that if an allograft is to be used for a calcaneocuboid arthrodesis, rigid locking fixation should be used, and with a longer period of protected immobilisation.<sup>1</sup>

### Direct repair of the plantar plate

■ Surgeons from **São Paulo (Brazil)** have undertaken an interesting study into the management of tears of the plantar plate. Anatomical dissection of the second metatarsophalangeal joint (MTPJ) suggests that the plate is the major stabilising structure of the joint because of its central location and multiple important attachments. Many surgical procedures have been recommended when conservative treatment has failed, but some have had limited clinical success. The aim of this prospective study was to show the results obtained in the treatment of a group of patients with plantar plate tears by direct repair through a dorsal approach combined with a Weil metatarsal osteotomy and a minimum follow-up of 12 months. The surgeons prospectively treated 28 patients (55 MTPJs) with lesser MTPJ instability. However, only 22 patients (40 MTPJs) were treated by direct repair of the plantar plate and were thus included in the study. All of the patients had initial complaints of acute forefoot pain with the subsequent development of deformity and instability of the MTPJs. All patients were also assessed clinically, radiologically (plain radiographs and MRI), and by MTPJ arthroscopy. With these data, a direct correlation between the clinical staging and the anatomical grading for plantar plate dysfunction of each patient was determined. The results showed that the plantar plate of the second MTPJ was the most

commonly affected joint (63%), and that a Grade III tear (transverse and/or longitudinal extension) was the most frequent type. With this surgical treatment, the authors were able to markedly improve the parameters studied (pain, medial or dorsomedial deviation of the toe, joint stability, muscle balance, and joint congruence) to acceptable levels. It thus appears, certainly in 360's view and that of the authors, that a direct repair of the plantar plate, combined with a Weil osteotomy and lateral soft-tissue reefing, can restore the normal alignment of the MTPJ, thereby reducing pain and improving function.<sup>2</sup>

### Thromboembolism after fixation of the fractured ankle

■ Thromboembolic events can be a major issue after both surgery and musculoskeletal injury, and an aspect of practice that most of us take very seriously indeed. However, different anatomical regions, and different situations, have different levels of risk associated with them. Consequently, 360 found the work published by surgeons from **Quebec (Canada)** particularly interesting. They reported on thromboembolic events in mobile patients with ankle fractures that had required open reduction and internal fixation. To do this, the researchers conducted a retrospective chart review of 2478 patients who underwent open reduction and internal fixation of an ankle fracture at any one of three university hospitals over a period of slightly more than eight years. There were 1540 patients who met the inclusion criteria and for whom

complete records (a minimum follow-up of six months) were available. The median age of the patients at the time of surgery was 46 years, and there were equal proportions of men and women. Fracture types included 45% unimalleolar, 31% bimalleolar, and 24% trimalleolar. Patient records were reviewed in order to identify thromboembolic events, risk factors (neoplasia, hormone use, pregnancy, blood dyscrasia, history of a previous thromboembolic event, history of smoking, obesity, dyslipidaemia, atherosclerotic vascular disease, or paralysis), and the use of thromboprophylactic agents. A thromboembolic event was defined as symptomatic when a deep-vein thrombosis was confirmed by Doppler ultrasonography or when a pulmonary embolism was confirmed by ventilation and perfusion scintigraphy or helical computed tomography. The incidence of thromboembolic events was 3.0% (46 patients), with 2.7% (41 patients) involving a deep-vein thrombosis and 0.3% (five patients) a nonfatal pulmonary embolism. There were no fatal pulmonary emboli recorded. This incidence did not differ between the three hospitals involved. Of the 1540 patients, 16.4% received thromboprophylaxis during their hospital stay. This was either for six weeks (for the 10.8% taking low-molecular-weight heparin) or three months (for the 5.7% taking warfarin) after discharge yet did not significantly modify the incidence of thromboembolic events (2.6% versus 2.4%, respectively). However, patients with

one or more risk factors had a greater risk of a thromboembolic event than those without any risk factors (3.6% versus 2.4%, respectively). The use of thromboprophylaxis had no apparent impact on the occurrence of thromboembolic events in patients who did or did not have risk factors (3.7% versus 3.6%, respectively). No significant correlation could be identified between the occurrence of thromboembolic events and fracture type, age, or gender.<sup>3</sup> 360 notes, and happily, that this work demonstrates clinically detectable thromboembolic events after surgical treatment of ankle fractures to be uncommon. They also do not appear to be influenced by thromboprophylaxis. As with other parts of our anatomy, patients with risk factors appear to be at higher risk of thromboembolic events. There is manifestly a need for prospective studies to now be undertaken in order to determine the efficacy of thromboprophylaxis after the surgical treatment of ankle fractures.

#### **Weight loss after ankle surgery – does it actually happen?**

■ How often have patients told us at 360 that their OA is preventing them from losing weight? “Once I have had my operation, doctor, all will be OK,” they assure us. Yet is that actually so? Surgeons from **British Columbia (Canada)** have helped us greatly with a study of overweight patients with OA of the ankle. They looked at 145 overweight (BMI between 25.1 and 29.9 kg/m<sup>2</sup>) or obese (BMI > 30 kg/m<sup>2</sup>) patients who had undergone a successful ankle replacement or ankle fusion, as defined by the absence of revision ankle surgery and a post-operative improvement in the Ankle Osteoarthritis Scale (AOS) score. The patients were taken from a retrospective cohort ankle database. Their BMIs at six months and one, two, and five years post-operatively were compared with their pre-operative BMI as the primary outcome measure. Perhaps it is unsurprising but there was no significant change in the mean BMI,

compared with its pre-operative value, at any time point, despite significant improvement in the AOS and Short Form-36 (SF-36) Physical Component Summary scores at all time points. The factor that most strongly correlated with post-operative BMI was pre-operative BMI. So 360 can only share the authors’ conclusion that pain and disability may be significantly reduced in overweight and obese patients after successful ankle replacement or fusion. However, despite this, the mean BMI remains unchanged after surgery, indicating that weight loss does not commonly occur after a successful ankle reconstruction in this patient population. Obesity is likely to be attributable to factors other than limited mobility caused by OA of the ankle. Now there’s a surprise.<sup>4</sup>

#### **Haglund’s syndrome and three-portal endoscopic surgery**

■ A calcaneal prominence associated with pain in the retrocalcaneal region is called Haglund’s syndrome, is recognised as a cause of posterior heel pain and is the topic of a paper from **Shanghai (China)**. Currently, open surgical correction of the calcaneal prominence has been a widely accepted approach for treating the condition. However, the open procedure is associated with several complications including skin breakdown, Achilles tendon avulsion, altered feeling, and stiffness, so the endoscopic technique has evident attractions. The researchers looked at 23 patients (25 heels) with a mean age of 27.7 years and assessed them pre and post-operatively for parallel pitch lines, the American Orthopaedic Foot and Ankle Society (AOFAS) score and the Ogilvie Harris score.



All the patients had undergone a three-portal endoscopic procedure. The mean follow-up was 41 months and there were no obvious complications. In 22 heels, post-operative lateral radiographs showed the achievement of negative parallel pitch lines. The mean AOFAS score improved from 63.3 points pre-operatively to 86.8 points at final follow-up. There were 14 excellent results, seven good, two fair and two poor. For the Ogilvie Harris score, there were 15 excellent results, seven good, one fair, and two poor.<sup>5</sup> So it works. The new three-portal endoscopic technique appears to be an excellent solution to Haglund’s syndrome. At 360 we will adopt it right away.

#### **A Keller’s reawakening?**

■ At 360 we were brought up on the Keller’s procedure, a form of arthroplasty that has been used for a painful first MTPJ for more than a century. However, that perhaps dates us as more recently the procedure has fallen out of favour. This is largely because of a high incidence of transfer metatarsalgia and poor function of the first MTPJ post-operatively. Surgeons from **Ilkeston (UK)** have looked at this by attempting to review the place for a Keller’s arthroplasty in the management of hallux rigidus by considering outcomes from the patient’s perspective. Over a nine-year period, 104 patients (131 feet) underwent a Keller’s excision arthroplasty for the treatment of hallux rigidus. All subjects were classed as Grade III on the Hattrup and Johnson scale of joint classification and had a primary complaint of a painful hallux rigidus. The AOFAS score was applied pre and post-operatively. There were 32 participants (42 feet) available for the final review at a mean of 7.6 years after surgery. The mean age at surgery was 62 years. Complete satisfaction was seen in 76% of participants, while 21.5% were satisfied with reservation and 2.5% were

dissatisfied. High levels of satisfaction were recorded for pain relief, activity levels and overall patient satisfaction. At the long-term follow-up, 95% of participants reported their symptoms were improved compared with pre-operatively. However, 9.5% of the group complained of transfer metatarsalgia and 19%, all female, were not happy with the cosmetic appearance of their foot. The mean pre-operative AOFAS clinical rating scale score was 38; at final follow-up the mean score was 89.<sup>6</sup> So perhaps at 360 we are not too out of date after all. This work shows that the Keller’s excision arthroplasty is a reliable procedure for the treatment of severe hallux rigidus. Furthermore, it is effective in achieving pain-free movement of the first MTPJ, but carries a risk of creating transfer metatarsalgia. However, for nearly 20% of participants the post-operative cosmetic appearance was disappointing.

#### **Arthroscopy of the first MTPJ**

■ No joint is safe from arthroscopic attention. Even the first MTPJ is a candidate. This has been highlighted by a report from **Seoul (South Korea)**, where authors analysed the results of 59 consecutive cases of first MTPJ arthroscopy in order to verify the efficacy and safety of the procedure. There were 59 patients who were followed for > 18 months after first MTPJ arthroscopic procedures. The mean duration of follow-up was 25 months. Clinically, the AOFAS hallux metatarsophalangeal-interphalangeal scale and the satisfaction of the patients were evaluated. Hallux valgus angle, first intermetatarsal angle, and medial sesamoid position were analysed in cases of hallux valgus. The AOFAS hallux metatarsophalangeal-interphalangeal scale score was increased from 69 points pre-operatively to 92 points post-operatively. Radiographically, the mean hallux valgus angle was reduced from 29.2° pre-operatively to 9.7° post-operatively. The mean first intermetatarsal angle decreased from 14.8° pre-operatively to 7.7° post-operatively. Meanwhile, the medial sesamoid position was improved

post-operatively and 95% of the patients were satisfied with the procedures. There was one case of a wound problem and one of a transient digital nerve injury as complications.<sup>7</sup> 360 was delighted to read the conclusions of this study that, based on the authors' experience, arthroscopy of the first MTPJ appears to be a safe and reproducible procedure.

### Doppler spectra in Charcot arthropathy

■ Charcot arthropathy of the foot and ankle is not particularly common but when it occurs it can be an immense challenge for the clinician. As surgeons from **Hsinchu City (Taiwan)** highlight, it is difficult to determine the safe timing of weight bearing or reconstructive surgery in patients with Charcot arthropathy of the foot and ankle. In their study, the Doppler spectrum of the

first dorsal metatarsal artery was used to monitor the activity of the disease and served as a guideline for management. A total of 15 patients (seven men and eight women) with acute diabetic Charcot arthropathy of the foot and ankle were immobilised in a non-weight-bearing cast. They were followed at two-week intervals and bilateral Doppler spectra of the first dorsal metatarsal arteries were obtained using a 10 MHz linear ultrasound probe. The patients were allowed to start bearing weight or 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. They 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.<sup>8</sup> This is helpful work, we feel at 360. The surgeons have shown that Doppler spectrum analysis of the foot may reflect the activity of the disease in patients with Charcot arthropathy, and may be used as a guide to begin bearing weight or undergo reconstructive surgery.

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