million per year. Clearly, this is another case in which prevention is indeed better than cure.

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Foot & Ankle

X-ref ***For other Roundups in this issue that cross-reference with Foot & Ankle Ankle see: Trauma Roundups 1 & 3.***

Allograft *versus* autograft in talar defects

Osteochondral lesions of the talus are a relatively common presentation. Arthroscopic evaluation of ankles following fracture has suggested that upwards of 30% of patients present with an osteochondral defect – and this is aside from those presenting with large traumatic osteochondral defects of the talus or with degenerative changes to the talus. The results of regenerative surgery, be it microfracture or osteochondral grafting, have been mixed. This paper from **New York, New York (USA)** compares two of the available options to treat osteochondral defects: allograft and autograft.[1] The authors undertook a retrospective analysis of 16 patients who received allograft and 25 patients who received autograft for an osteochondral defect of the talus. Outcomes were assessed using radiographs, clinical records, and outcome scores, including the Foot and Ankle Outcome Score (FAOS) and the 12-Item Short-Form Health Survey (SF-12) score. Where available, MRI scans were assessed using the Magnetic Resonance Observation of Cartilage Repair Tissue (MOCART) score. Outcomes were assessed at a mean follow-up of just over two years, and there were no differences to be found between the cohorts in terms of demographic factors. However, this was not the case with the functional scores, for which the authors established that the patients in the autograft group did better in almost every outcome measure. The FAOS was significantly better in the autograft group (81.9 *vs* 70.1), as was the SF-12 (74.7 *vs* 61.2). From the imaging perspective, the authors established that the MOCART scores were also reflective of superior outcomes in the autograft group (87.1) than in the allograft group (75.5). Based on a comprehensive assessment of their relatively large (but non-randomized) series, the authors conclude that autograft is superior to allograft in almost every postoperative outcome you can think of. There is, of course, the donor site morbidity to consider, but at present, this represents one of the best comprehensive assessments of these two competing approaches.

Achilles tendon: operative or not? X-ref

One of the perennial conundrums in orthopaedic surgery is the management of Achilles tendon injuries. While the concept of leaving a tendon to heal on its own (which we don't do with any other tendon rupture) seems to defy orthopaedic logic, the results continue to point towards almost equivalent outcomes without the difficulties of complications. This has sparked much debate and a large number of randomized trials. Adding to the literature, this review team from **Utrecht (The Netherlands)** report their own systematic review and meta-analysis.[2] While we may not have expected this study of operative *versus* nonoperative management of Achilles tendon ruptures to be published in the *BMJ*, we are nevertheless pleased to see the journal including more orthopaedic research. The authors undertook a thorough literature search using all of the major indexes of orthopaedic literature. Outcomes were pooled where possible and random effects models were used to analyze the pooled data. The review team identified 29 studies for inclusion, of which ten were randomized trials and 19 were observational studies. The results are fairly unsurprising, with the authors identifying a reduction in re-ruptures after operative treatment (2.3%) *versus* nonoperative treatment (3.9%). Those patients who underwent an operation ran the risk of a higher complication (4.9% *vs* 1.6%), which was attributable mostly to infection (2.8%) in the operative group. The authors conclude that: "The final decision on the management of acute Achilles tendon ruptures should be based on patient specific factors and shared decision making." So, we still don't have a conclusive answer one way or the other. The surgical fixation approach, while it may appear attractive on the surface, does not completely remove the risk of re-rupture (far from it), and carries a significant risk of infection. It seems unlikely that adding any extra studies to the accumulated evidence base will adjust the estimates of risks here.

Failure patterns in ankle arthroplasty retrievals

With just 800 ankle arthroplasties a year undertaken in England and Wales, it is unsurprising that there is little evidence to support one implant design over another. In particular, the best design features are not clearly described and supported with clinical data, although inferences can be made from the difference in survivals of specific joint arthroplasties. The authors of this study from **Hanover, New Hampshire (USA)** have presented one of the few retrieval studies of ankle arthroplasty components, the results of which shed some light on the failure patterns of different implant designs.[3] This paper revolves around retrieval analysis and laboratory analysis of 70 ankle components of seven different designs. Analysis was undertaken for wear and component damage, along with fixation analysis for metallic components and oxidation of polyethylene components. There were higher rates of loosening seen with fixed-bearing designs, which occurred in this series after a shorter interval. The presence of fatigue failure and cracking was related to the level of oxidation measured in the retrieved component. This, in turn, was associated with gamma sterilization of the polyethylene during its manufacture process. Some of this is self-evident and mirrors findings related to total knee arthroplasties. However, this is one of the first retrieval studies in this area and, with a sufficient range of implants and designs assessed to be able to draw some conclusions, it is a worthwhile read for anyone with more than a passing interest in ankle arthroplasty.

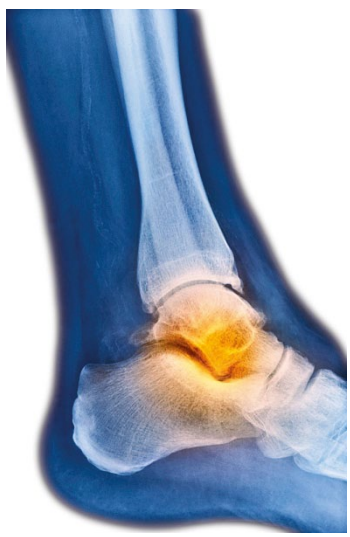
Approaches in calcaneal fractures

The debate surrounding calcaneal fractures now centres mostly on the complication rates.

While significant complication rates have been reported, case series and smaller trials have suggested that there is the potential for improved functional outcomes with fixation. There is a reasonable presumption that if complication rates could be reduced, then fixation may offer a better outcome for some patients. This has resulted in renewed interest in alternative surgical approaches. Investigators in **Daejeon (South Korea)** set out to establish the potential benefits of the extended sinus tarsi approach (ESTA) over the extended lateral approach (ELA) as a method for treatment of displaced calcaneal fractures.[4] Their retrospective study involved over 100 fractures in a retrospective comparative cohort study. The authors reported the results of 52 fractures treated with the ELA (46 patients) and 64 fractures treated with the ESTA (56 patients). Outcomes assessed were pain, patient-reported functional outcomes, satisfaction, and postoperative complications, which were investigated at the three-year timepoint. The authors also evaluated the pre- and postoperative radiographs, although one of the irrefutable outcomes from the United Kingdom Heel Fracture Trial (UKHeFT) is that accuracy of radiological reduction does not relate to clinical outcome to the extent that surgeons would like to think it does. The authors conclude that, from a radiological perspective, there was no difference in calcaneal width or Böhler angle at three years of follow-up. However, they do report a more accurate reduction in terms of posterior facet step-off in the ESTA group. The ELA group suffered more wound complications and nonunions, a finding that was mirrored by the improved Foot Function Index (FFI) and self-reported satisfaction rates in the ESTA group. In terms of surgical complications, the authors report four instances of superficial peroneal nerve injury in the ESTA group but none in the ELA group. Here at *360*, we would agree with the authors' conclusion that the ESTA now represents a well-recognized approach associated with fewer wound complications.

Just minimal or minimal and better?

A few years ago, both expert opinion and some early series suggested that minimally invasive first ray surgery could lead to lower rates of wound complications, albeit with the potential for inadvertent damage of structures, difficulties involved with achieving the same result, and increased cost required for the special instrumentation. For these reasons, minimally invasive first ray surgery has not made the leap to 'standard care' that many hoped it might. For some procedures, however, it certainly offers the potential of reduced soft-tissue complication, with the added benefit of a smaller scar. A surgical team from **Newport (UK)** have shared their results of minimally invasive dorsal cheilectomy in 98 patients with hallux rigidus, all of whom had failed conservative management.[5] Patients were an average of 54 years old, and outcomes were assessed using the Manchester-Oxford Foot Questionnaire (MOxFQ) scores and visual analogue scale (VAS) for pain scores. There was no comparator group, so it is somewhat difficult to draw any inferences about relative effectiveness with other interventions. However, the results are a compelling addition to the evidence base for minimally invasive cheilectomy. The authors established that postoperative swelling was reduced in five weeks; there were two infected wounds and four neurological injuries (of which two were permanent). The VAS pain scores improved from 8 preoperatively to 3 following surgery, while the MOxFQ summary index score improved from 58.6 to 30.5 postoperatively. As would be expected with any series reporting on cheilectomy, there was a significant reoperation rate of 12%, which was accounted for by seven metatarsophalangeal joint fusions, four repeat cheilectomies, and one removal of loose bone. Overall, this series serves to establish the potential benefits of the minimally invasive approach to dorsal cheilectomy, although it cannot be used to justify one approach over another.



Are we giving the correct antibiotics for foot and ankle surgery? X-ref

The biggest change in terms of reducing postoperative infections in orthopaedic surgery has been the introduction of preoperative antibiotic prophylaxis. This has allowed the development of successful joint arthroplasties, has reduced the incidence of osteomyelitis and acute infection following fracture surgery, and is now considered mandatory in any surgical procedure involving implants. The authors of this systematic review from **Amsterdam (The Netherlands)** set out to investigate the effectiveness of antibiotic therapy and evaluate the current dosage regimen for foot and ankle surgery, for which the rate of postoperative infection is higher than in other branches of surgery.[6] Specifically, the review sought to establish what tissue dosage cephalosporins reach. The authors' literature search identified 14 trials that reported pharmacokinetics for foot and ankle surgery. The papers variably reported tissue concentrations in the hip (eight papers), knee (eight papers), shoulder (one paper), and foot (one paper). Although there were few papers and pooling was only available for the hip and knee, with a single study dealing with the foot and ankle, the authors effectively established that there were higher tissue concentrations in the hip than more peripherally from the same antibiotic dosage, with a mean difference of 4 ug/g. The authors conclude that there is evidence that prophylaxis may not be adequate distal to the hip for orthopaedic surgery, but that the limited evidence for higher dose prophylaxis is limited at best.

Still a STAR after all these years? X-ref

Of the older ankle arthroplasty designs, the Scandinavian Total Ankle Replacement (STAR) system is one of the most successful. Long-term follow-up data suggest reasonable survival for the implants, and, in a number of independent series, the STAR system has been shown to offer an acceptable survival for patients with ankle arthritis. Given that there are few studies with long-term follow-up of any ankle arthroplasty system, this series from **Wigan (UK)**, which provides data on 200 arthroplasties (in 184 patients) to 15 years of survival, is worthy of mention.[7] This large cohort study reports the survival of the arthroplasties and, where available, evaluates radiological and clinical data, including the American Orthopaedic Foot and Ankle Society (AOFAS) hindfoot scoring system and revision rates. Survival estimates were calculated using the Kaplan–Meier method; 87 arthroplasties in 84 patients were alive at final follow-up. This was a relatively high-demand series, with an approximately 50:50 split between rheumatoid and osteoarthritis, and a mean age at the time of surgery of 54 years. In total, 16% of implants required a revision at a mean interval of 80 months from primary surgery. At just over 15 years, overall survival was 76%. The increase in AOFAS score (from 28 preoperatively) was maintained with an average score of 61 at final follow-up.

The calcaneus: have we changed fracture practice? X-ref

The authors of this epidemiological study from **Cambridge (UK)** utilized the Hospital Episode Statistics system to evaluate the treatment of calcaneal fractures across England before and after the publication of the UK Heel Fracture Trial (UKHeFT).[8] The aim of the study was to establish whether the publication of that randomized controlled trial in 2014 really did change practice. The UKHeFT was a large pragmatic trial of operative *versus* nonoperative treatment for calcaneal fractures. The finding of this trial was that there was no apparent advantage for fixation in terms of subtalar arthritis or health economic outcomes in the population studied. Over the 17 years of the UKHeFT trial, 62 858 patients were admitted to English hospitals with a calcaneal fracture. The mean annual incidence reported was 10.5/100 000 population for men and 3.8/100 000 for women. The overall operative intervention rate was around 7.3% for the whole period of this study, and did not change after the publication of the UKHeFT. The authors go on to make a number of more refined analyses and comment that, although the proportions of patients being offered fixation did not change during the period of the study, the type of fixation undertaken did. The authors noted a doubling in the use of minimally invasive fixation (rising from 7.7% (292/3792) to 13.29% (71/534) after publication of the UKHeFT. The interest in subtalar approaches and percutaneous fixation methods may or may not be entirely due to the higher-than-expected complication rates reported by the UKHeFT. This approach has been very much gaining traction around the world, including in territories and countries that do not change practice based on trials based in the United Kingdom. Whatever the explanation, this seems to be a real shift in practice, and one that needs careful evaluation.

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Wrist & Hand

Immobilization and pain control following volar plating X-ref

There have been a wealth of randomized controlled trials assessing the treatments for distal radial fractures; here is one that takes a different tack. This team from **São Paulo (Brazil)** have designed their trial with the aim of examining whether postoperative splinting following volar plate fixation of distal radius fractures provides superior pain relief over early mobilization in a bandage.[1] Adults undergoing volar locking plate fixation of intra-articular distal radial fractures sustained over a 30-day period were prospectively randomized to receive either a postoperative non-elasticated bandage over a gauze dressing, or a plaster splint, which was removed at two weeks postoperatively. The outcomes assessed were: a simple visual analogue scale (VAS) pain score at 12, 18, and 24 hours postoperatively and then daily for seven days and at 2, 6, 12, and 24 weeks; inpatient and outpatient tramadol usage; the Disabilities of the Arm, Shoulder and Hand (DASH) scores; and wrist range of movement at 12, 18, and 24 weeks postoperatively. The study was apparently powered to detect a two-point difference in the VAS with 17 patients per arm. The authors were able to recruit 39 patients with 19 receiving no postoperative splint and 20 receiving a plaster splint, with 17 in the no-splint group and 19 in the splint group completing follow-up. The mean age for patients included in this trial was 49.3 years, and all had general anaesthetic and regional block. There were no statistically significant or clinically relevant differences in recorded pain scores between the two groups at any time in the first 24 weeks postoperatively. The highest VAS scores were seen at 18 hours postoperatively as the block wore off, but peaked at a mean of 4.5 points. More patients in the no-splint group required tramadol but this did not reach statistical significance. No difference in postoperative function in terms of DASH score or range of movement was observed. It is somewhat surprising that there appears to be no difference; intuitively, we would expect a freshly operated wrist to be more comfortable in a rigid splint than just in a bandage. The drive to reduce opioid use is important in all diagnoses and the authors here observe that the rate of tramadol usage was higher in the no-splint group, but not significantly so; therefore, this conclusion cannot be drawn. However, it may be that there is an effect and that the study was underpowered to detect it. While the pain scores were similar, the authors ask if this is because the no-splint group were taking more analgesia, although again the study was underpowered to detect this conclusion. The functional scores were no different between the groups, so is there little harm in applying a backslab postoperatively? Many would say so, but given the small number of patients in this trial, this may again be a type II error and, although intuitively reasonable, we would like to see a larger trial to increase our confidence in this conclusion.

Revisions for failed trapeziometacarpal joint arthritis surgery

The existence of a number of accepted surgical options for a given indication suggests both variation in practice and the absence of a 'clear winner'. Nowhere is this truer than in surgical treatment of