ACL injury from childhood to adult life X-ref

■ Despite the humble anterior cruciate ligament (ACL) tear being one of the most common injuries in sports medicine, it is somewhat disappointing to review the literature on its long-term outcomes. There is little known about the impact of the injury itself in terms of long-term arthritis development or functional and quality-of-life scores, let alone the likely outcome of the various treatment options. While there is much focus on the paediatric reconstructive options in acute knee injury and the potential effects on return to play and growth plate disturbance, the longer-term outcomes following these injuries do not receive the same amount of attention. We were therefore delighted, here at *360*, to read this paper from **Oslo (Norway)**, which reports on a series of 44 patients, all of whom sustained an ACL injury before their 13th birthday.[1] Patients were followed up to an average of eight years following injury and were treated with rehabilitation and, if necessary, a delayed reconstruction. Patients were evaluated with a range of clinical and patient-reported outcome measures (PROMs) including the hop tests, isokinetic muscle strength, the Knee Injury and Osteoarthritis Outcome Score (KOOS), and the International Knee Documentation Committee (IKDC) Subjective Knee Form, supplemented with clinical examination. In terms of the need for reconstruction, just over half of the patients (n = 24) had opted to undergo ACL reconstruction during the study follow-up period. The functional results were good for the cohort, with > 90% symmetry seen in hop tests; 68% achieved relative symmetry in muscle strength testing. There were no overall differences in either of the recorded PROMs; however, although over 90% of patients remained playing sports, two-thirds had restricted their activity.

Return to sports after *in situ* arthroscopic repair of partial rotator cuff tears X-ref

■ Partial-thickness rotator cuff tears resulting in pain and loss of function are common in athletes, but the preferred treatment strategies remain controversial. In this population, while conservative management remains the consensus for initial treatment, failure leads to a progressive tear and results in some surgeons advocating the repair of the tear *in situ* (preserving intact tendon). Others support completing the tear with a subsequent primary repair. A study team from **Buenos Aires (Argentina)** retrospectively evaluated and reported the outcomes of 72 patients who had undergone arthroscopic *in situ* repair of partial-thickness rotator cuff tears that had failed conservative management.[2] Outcomes reported included return to sport, range of movement, American Shoulder and Elbow Surgeons (ASES) score, visual analogue scale for pain, and complications. Mean age and follow-up were 42.2 years and 54 months, respectively. In total, 87% of patients returned to sports at a mean of 5.6 months, with 80% returning at the same level as prior to injury. Active range of movement, visual analogue scale (VAS) pain score, and ASES score improved significantly. No differences were identified between articular and bursal partial-thickness tears. These results demonstrated significant improvement and return to sports in this young population with partial-thickness rotator cuff tears after *in situ* repair, but no control was used for comparison. Therefore, while *in situ* repair demonstrates good outcomes in this population, superiority to tear completion with primary repair remains controversial and is not demonstrated by this investigation. Further comparative studies are needed to answer the question of whether *in situ* repair or tear completion with primary repair is superior for athletes with partial-thickness rotator cuff tears.

The shape of your plateau and ACL reconstruction outcomes X-ref

■ This paper from **Boston, Massachusetts (USA)** examines the potential contribution of other factors to outcomes following anterior cruciate ligament (ACL) reconstruction – namely, in this case, the anatomical geometry of the tibial plateau.[3] The authors hypothesized that there are a range of anatomical factors that will impact on the success, or otherwise, of an ACL reconstruction. These included the presence of a narrow femoral notch, increased posterior and coronal slopes, and decreased plateau concavity as predictors of poor outcomes. This series of 44 patients, all of whom had unilateral ACL reconstruction, were followed-up for seven years after surgery. Their plateau geometry in terms of notch width (after notchplasty), posterior slopes of the medial and lateral tibial plateau, maximum depth of the medial tibial plateau, and coronal tibial slope were measured from standardized MRIs. These were then correlated to the outcomes of interest (namely anteroposterior laxity and the Knee Injury and Osteoarthritis Outcome Score (KOOS)). Despite the relatively small number of patients in this series, the authors were able to draw some useful conclusions. Those patients with increased posterior slope had increased variations in knee laxity between the reconstructed and native side. This was also reflected in differences in the KOOS and Osteoarthritis Research Society International (OARSI) scores. A similar pattern was seen in patients with increased coronal slope and decreased medial tibial depth. These were the only factors that appeared to be associated with outcomes, and notch width (despite the attention paid to it in the literature) was not related to outcome in this series.

The 11+ Kids injury prevention programme

■ As children play more sports and suffer the associated injuries that can be expected in an immature skeleton, there has been a greater focus on injury prevention programmes in children. As the age-old adage goes, prevention is better than cure – but is it always cheaper? Investigators in **Basel (Switzerland)** set out to establish whether the potential reduction in injury-related healthcare costs offset the financial implications of the '11+ Kids' injury prevention programme.[4] They compared the intervention against the usual warm-up in children's football, and a cost-effectiveness analysis was undertaken as part of a cluster randomized controlled trial. The investigators had access to a range of data from the trial including injuries, healthcare resource use, and football exposure hours. Direct healthcare costs were calculated in Swiss Francs (CHF) per 1000 hours of football; this was then used to establish the potential cost-effectiveness based on both the trial itself and the prediction of a national implementation. The financial costs were calculated based on the 1002 players who participated in the study, with a mean age of 10.9 years (SD 1.2). The study observed 76 373 hours of football, during which 99 injuries occurred. The overall costs were lower in the intervention group than in the conservative group (CHF469 *versus* CHF228). The financial model suggested that the national implementation of the 11+ Kids programme would reduce healthcare costs in Switzerland by CHF1.48

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.