

and lower rates of bone loss needing porous augments (78% vs 94%). There is an important, simple, and self-evident message put forward by this paper: if you are not going to do the second stage, do not do the first stage, as outcomes are much worse.

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Sports

X-ref For other Roundups in this issue that cross-reference with Sports see: *Hip & Pelvis Roundup 5; Foot & Ankle Roundup 3; Shoulder & Elbow Roundup 5.*

How common are complications after paediatric anterior cruciate ligament reconstruction? X-ref

■ The ongoing concern surrounding paediatric anterior cruciate ligament (ACL) injury lies with the treatment complications, leaving those involved between a rock and a hard place. On the one hand, having an unstable knee leaves a growing child susceptible to further injury, including meniscal tear, osteochondral defects, and instability. On the other hand, while reconstruction will reliably solve the instability problem, surgery to a growing physis has its own range of complications, such as growth arrest and deformity. In recent years, the pendulum has swung towards operative intervention and the current literature does seem to support this. However, as with many diagnoses, research is limited and drawing inferences from a single paper is fraught with risk. The way forwards is through evidence synthesis and, here at 360, we were delighted to see this meta-analysis of paediatric ACL from **San Francisco, California (USA)**, which aimed to nail down the expected and likely complications in terms of type and frequency.¹ As part of their search strategy and review, the authors screened 160 potentially suitable studies. Of these, 45 studies were primarily utilized in the meta-analysis and reported the outcomes of 1321 patients with 1392 knees. The goal of the review was to assess complications inherent in this age group. In the skeletally immature patient, potential growth disturbance and

rerupture are the two main concerns. The authors report that a growth disturbance (valgus, varus, or limb-length discrepancies) could occur with any type of reconstruction and include shortening, overgrowth, and angular (mostly valgus). Overall, there was a low rate of growth disturbances (4%, n = 58/1392, of whom 16 required corrective surgery). While angular deformity rates were low (3.7%), limb-length discrepancy of at least 1 cm was relatively common (7.5%, n = 37). Rerupture occurred in 115/1329 patients (8.7%), of which over 90% required revision. The authors conclude that growth disturbance can occur, but it is apparent that these rates vary between techniques. Attention to a reconstructive technique that minimizes rerupture is equally important. This paper does highlight that ACL reconstruction in the immature skeleton is not without complications, and that, realistically, these should not be underestimated.

Lumbar disc herniation in athletes: decompression under the local anaesthesia? X-ref

■ Percutaneous endoscopic discectomy (PED) is a widely applied technique for acute lumbar disc herniation (LDH). Certain sports have a relatively high rate of acute lumbar disc prolapse, particularly those with spine-based throwing activity such as cricket, and the condition is both debilitating and fairly common in these athletes. The cited advantage of PED is a quicker return to activity. Small incisions and less soft-tissue damage mean a hypothesized earlier and easier return to function. This, if true, would be an important advantage for the athlete. These authors from **Hiroshima (Japan)** report their

retrospective clinical cohort series consisting of 21 athletic patients presenting with LDH who had undergone PED.² In this relatively high performing group of individuals, the clinical team started physiotherapy with the aim to return to sports immediately. Outcomes were assessed using the visual analogue scale (VAS) for leg pain and low back pain, the Oswestry Disability Index along with reported complications, and time to return to sports and activity. This clinical series was predominantly young men (18/21), with a mean age of 23 years (15 to 43). Prior to surgery, patients had a mean VAS of 64 mm (SD 2.7) for leg pain and 62 mm (SD 2.2) for back pain. These were reported to have improved significantly in both cases, to 12 mm (SD 1.4) and 11 mm (SD 1.1), respectively. In this admittedly small series, the authors reported that there were no complications, and that 95% of patients were able to return to the preinjury level of play by nine weeks after PED. These results are certainly encouraging and, given the young nature of the cohort, it is heartening to see that more modern, less invasive approaches can be used to precipitate a return to play at an appropriate time.

Anterior and rotational knee laxity does not affect patient-reported knee function two years after anterior cruciate ligament reconstruction X-ref

■ The past few years have been difficult for the evidence-based arthroscopic surgeon, as larger randomized controlled trials have not been entirely supportive of many arthroscopic procedures. There are two ways of interpreting these trials. One reasonable explanation is that there truly is no difference in outcomes between

patients. The other is that the patients put into these trials (where the surgeon is in equipoise so does not believe one intervention is better than another) do not benefit, but others do. One further potential explanation is that the outcome measures we use are not sensitive enough, and do not have the diagnostic power to distinguish between results. This has been addressed substantially over recent years with the implementation of more comprehensive and better-designed outcome measures. However, we still face problems regarding exactly what to measure. This point is ably made by this study from **Columbus, Ohio (USA)**, an investigation to establish what the outcomes are for patients with ongoing laxity after their anterior cruciate ligament (ACL) reconstruction.³ This has traditionally been considered a failure by surgeons. In this prospective multicentre nested cohort, the authors report a cohort of 433 patients. All patients are younger than 36 years, sustained their isolated ACL injury playing sports, and have a minimum two years' follow-up after primary ACL reconstruction. The patients were assessed for ongoing laxity using a KT-1000 arthrometer. Clinical stability was evaluated using Lachman's test and pivot-shift test, in addition to the Knee Injury and Osteoarthritis Outcome Score and subjective International Knee Documentation Committee (IKDC) score. The authors utilized multivariable models to see which factors were predictive of clinical outcomes at the two-year follow-up timepoint. The multivariate model they used was able to control for preoperative scores, age, sex, body mass index, smoking, Marx activity score, education, subsequent surgery, meniscal and cartilage status, graft type, and range of motion asymmetry. Interestingly, the authors found that patients with laxity after their ACL reconstruction have similar outcomes to those with more stable reconstructions. In this large case series, all predicted differences in outcome measures based on IKDC, when considering the presence of a pivot-shift or anterior tibial translation, were less than four points. Similarly, the authors were able to establish that anterior tibial translation of up to 6 mm is not associated with clinically relevant decreases in outcome measures. While this still does not help us determine whether the problem lies in unchanging outcome measures, or if the patients just do not improve, it does illustrate the point. Here we have a group of patients with an outcome that the surgeon would describe as far from perfect (persistent anterior draw of 6 mm) that does not translate into poorer outcome measures.

Gluteal muscle fatty infiltration and outcomes after hip abductor tendon repair X-ref

■ Hip abductor tendon repair is a procedure that has earned some encouraging early results. The difficulty, as with all tendinopathies – or indeed acute injuries – is working out who will benefit. A research team led from **Crawley (Australia)** report the outcome of their own investigation into the potential association of preoperative fatty infiltration (FI) of the abductor muscle mass and the outcomes of Ligament Augmentation and Reconstruction System (LARS) ligament augmented repair of the hip abductor tendons.⁴ This is a completely logical thing to do as there is plenty of research on the shoulder that suggests that fatty degeneration of tendons is associated with poorer outcomes following surgical repair. The authors of this study designed a case series of 84 patients, all of whom had undergone a hip abductor tendon repair. They were an older population with a mean age of 65 years (43 to 84). All patients underwent a surgical repair with LARS augmentation. Outcomes were assessed using the six-minute walk test, isometric hip abduction strength assessment, and patient-reported outcome measures, including the Harris Hip Score and Oxford Hip Score. These were completed presurgery and two years after surgery. Patient satisfaction and perceived improvement were assessed two years after surgery. Presurgery MRI scans were used to determine FI of the tendon on an ordinal scale (0 to 4). This was repeated at three locations in the gluteus medius and a combined FI score was calculated. Reassuringly, on average, all clinical scores across the groups improved with time. However, the improvement was not linear across the groups. FI was seen to be more pronounced in the gluteus minimus, and older age was associated with higher levels of FI; however, the duration of symptoms and body mass index were not. There were associations established between poorer postoperative strength recovery and higher levels of FI; however, no other significant associations were reported.

'Outside-in' or 'inside-out' of hip dysplasia

■ The common presenting feature of femoroacetabular impingement (FAI) is the loss of cartilage that leads to pain and disability. Traditionally, lesions have been classified into 'cam' and 'pincer' lesions depending on how the morphology caused the lesion. The common pathway is that these result in acetabular dysplasia, which causes

acetabular cartilage damage and subsequent chondral flaps seen during hip arthroscopy. At arthroscopy, it is common to divide pathology into the 'outside-in' and 'inside-out' subtypes. This paper from **Boulder, Colorado (USA)** sets out to compare morphology with clinical and radiographic parameters underlying FAI and hip dysplasia.⁵ In an interesting study methodology, the authors reviewed all intraoperative videos for patients undergoing hip arthroscopy. In all, 103 hips in 95 patients with an Outerbridge grade IV acetabular chondral flap were included in the study. The authors defined an inside-out lesion as an intact chondrolabral junction with a detached sleeve of chondrolabral tissue from the central acetabulum. Outside-in lesions showed centrally anchored flaps with a break in the chondrolabral junction. The 93 patients were divided into two groups: group 1, lateral centre edge angle (LCEA) > 20° with FAI; and group 2, LCEA ≤ 20° with or without cam FAI. The authors aspired to establish the associations between chondral flap morphology and clinical diagnosis. Perhaps unsurprisingly, they found that there was a significant relationship between chondral flap type and radiographic diagnosis. In group 1 hips, 78% exhibited outside-in type chondral flaps, while in group 2 hips, 72% were inside-out type chondral flaps. This is an important paper in that it links the pathophysiology, injury pattern, and radiological outcomes in a way that, although assumed by some, has not been explicitly linked before.

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