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Sports Trauma and Arthroscopy Free Papers
10:30-12:00
Hall 12

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PRESERVING THE CHONDROLABRAL JUNCTION REDUCES THE RATE OF CAPSULAR ADHESIONS
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The operative treatment of pincer type femoroacetabular impingement (FAI) has become an increasingly more common procedure. Classically, the labrum is incised at the chondrolabral junction (CLJ), or a concurrent tear is extended to allow access to the acetabular rim, facilitating acetabuloplasty. The labrum is subsequently repaired using suture anchors. More recently, acetabuloplasty has been performed without incising the labrum and negating the need to use suture anchors. The aim of this study is to determine whether preserving the CLJ reduces the incidence of revision hip arthroscopy for the treatment of capsulolabral adhesions.

This retrospective study compared two cohorts of patients undergoing hip arthroscopy for pincer type FAI from August 2002 to April 2015. The groups analysed were: patients undergoing acetabuloplasty with labral repair (LR) and those with no labral repair (NLR). The revision rates and causes for revision were compared using Chi Square analysis.

There were 1010 cases in total. Acetabuloplasty with LR was performed in 546 hips (519 patients), while acetabuloplasty with NLR was performed in 464 hips (431 patients). In the LR group, there were 54 (9.9%) revisions, 25 (46%) of which were due to capsulolabral adhesions. The NLR group had 36 (7.8%) revisions with six (17%) due to capsulolabral adhesions.

Preserving the CLJ, thereby avoiding the need for drilling and the insertion of suture anchors, when performing an acetabuloplasty for pincer type FAI, significantly reduces the rate of symptomatic adhesions requiring revision arthroscopy.

Disclosure: Nothing to disclose

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THE ARTHROSCOPIC LATARJET: A MULTI-SURGEON LEARNING CURVE ANALYSIS USING CONTINUOUS LEARNING CURVE MODELLING
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Introduction: The Latarjet is an established technique for patients with risk factors for failure following soft tissue stabilisation of the shoulder. Arthroscopic execution of the procedure has potential benefits but is a demanding technique to gain proficiency in. The aim of this study was to analyse the learning curve of the arthroscopic Latarjet using a more advanced learning curve modelling technique compared to previous studies.

Methods: Five hundred and twenty-three consecutive primary arthroscopic Latarjet procedures performed by 11 specialist shoulder surgeons from five countries with no prior experience of this procedure were included.

Data collected included: operative time, CT radiographic parameters, patient-reported outcomes (PROMs) and complications. A validated segmented linear regression technique with least-squares fit was employed to model the learning curve for the data set, enabling continuous learning curve analysis.

Results: Two surgeons showed steep learning and reached a plateau of 70 - 80 minutes operative time after 30 - 40 cases. Six surgeons who completed 20 - 30 cases showed learning but did not reach a plateau. One surgeon showed learning followed by an early plateau of 100 mins after 16 cases. Two low-volume surgeons (n < 14 each) did not demonstrate evidence of learning. One surgeon demonstrated improvement in operative speed at 43 cases, reaching a plateau at 134 procedures. Accuracy of bone-block positioning on postoperative CT demonstrated improvement for five surgeons, four of whom displayed significant improvement in subequatorial positioning of the bone-block over the first 30 cases. There was no change in patient-reported outcome measures (Rowe and Walch-Duplay scores), complications or reoperations with experience.

Conclusions: At least 30 cases are required to reach a plateau in operative time and efficiency when adopting the arthroscopic Latarjet procedure. There is some evidence that graft positioning improves over the same time frame. Consistent PROMs and a low rate of complications can be maintained during this learning period.

Disclosure: Nothing to disclose.

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RISK FACTORS FOR A LOSS OF EXTENSION AFTER ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION

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Introduction: Loss of extension (LOE) is common after the anterior cruciate ligament (ACL) reconstruction. It has been reported to associate with various factors including anterior placement of tibial tunnel. The purpose of this study was to determine whether tibial tunnel position, along with other factors, is associated with early loss of knee extension after ACL reconstruction.

Methods: Patients who have undergone ACL reconstructions in the United Christian Hospital (UCH) between January 2013 and March 2017 were retrospectively reviewed. They were excluded if they had revision ACL reconstruction, use of grafts other than the hamstring tendon, previous trauma or surgery in the ipsilateral knee, concomitant extra-articular procedure, or physiotherapy follow-up in other centres. LOE was defined as a loss of full extension of at least 5º from the anatomical zero position, and the range was retrieved from the physiotherapy progress note record at post-operative four weeks. Tibial tunnel position was determined by radiographic evaluation.

Results: Twenty-seven percent of 148 patients had LOE of the reconstructed knees. Only preoperative LOE was significantly related to LOE at four weeks postoperatively ($P = 0.032$). No statistical significance was found for other risk factors (gender, early surgery, preoperative flexion loss, concomitant injuries, preoperative rehabilitation, concurrent meniscal procedures, graft size, length of hospital stay, postoperative physiotherapy), including tibial tunnel position ($P > 0.05$).

Conclusions: LOE at four weeks after arthroscopic ACL reconstructions was significantly associated with preoperative extension loss. Anterior position of the tibial tunnel was not predictive for the postoperative extension lack.

Disclosure: Nothing to disclose.

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THE DEVELOPMENT OF CAM MORPHOLOGY DURING ADOLESCENCE: A LONGITUDINAL COHORT OF 228 ELITE FOOTBALLERS AND CONTROLS

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Objectives: Cam morphology develops during adolescence and predisposes individuals to future hip osteoarthritis. An improved understanding of cam development is required to determine whether the process is modifiable. The aim of this study was to characterise the risk factors, timing, and pathogenesis of cam formation.

Methods: Longitudinal observational cohort study over three years of individuals from football club academies and an age-matched control population aged nine to 18 years at baseline. Assessments included questionnaires, clinical examination, and MRI of both hips. Alpha angle and epiphyseal extension were measured on radial images.

Results: Cohort comprised male academy footballers (121 at baseline and 78 at follow-up) and male and female controls (107 at baseline and 71 at follow-up). Mean change in cartilage alpha angle was 12.4° (SD 8.4) for footballers, 7.3° (SD 6.0) for male controls and 4.0° (SD 4.1) for female controls. A positive correlation existed between physical activity questionnaire score and change in cartilage alpha angle (coefficient 1.523, p = < 0.001). The greatest change in cartilage alpha angle occurred in individuals aged 11 - 12 years at baseline (9.268 degrees, p< 0.001), with no significant change after 14 years of age. A positive correlation between mean cartilage alpha angle and lateral epiphyseal extension was seen ($r^2 = 0.294$, p = 0.029).

Conclusions: Males undertaking intense sporting activity during adolescence at greatest risk of developing cam morphology, but there is no significant change in hip morphology after 14 years of age. The results are consistent with physiological adaptation and epiphyseal extension in response to hip loading during skeletal immaturity.

Disclosure: Sion Glyn-Jones receives payment for lectures including service on speakers' bureaus from Zimmer-Biomet, Corin, and ConMed. All other authors have nothing to disclose.

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WHAT IS THE OPTIMAL ANGLE FOR THE TIBIAL TUNNEL WHEN ADOPTING THE SAMBBA TECHNIQUE FOR ACL RECONSTRUCTION? VARIATION IN THE ALIGNMENT OF THE ACL ON MAGNETIC RESONANCE IMAGING

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Introduction: Developments in anterior cruciate ligament (ACL) reconstructions have led to focus on anatomical reconstruction, and remnant preserving techniques, such as the single anteromedial bundle biological augmentation (SAMBBA). We reviewed the orientation of native ACLs on MRI scans to investigate if current equipment is adequate for anatomical reconstruction.

Methods: Fifty consecutive knee MRI scans with reported intact ACL and PCL were reviewed. Measurements were taken of a) angle of ACL and tibial plateau in the sagittal plane, b) angle of ACL and tibial plateau in the coronal plane, c) position of ACL insertion into tibia as a percentage of anterior-posterior width, d) position of ACL insertion into tibia as a percentage of medio-lateral width. Statistical analysis performed included intra and interobserver agreement. Commonly used tibial ACL guides were assessed for range of angles possible in use.

Results: The mean results for each measurement (+/- standard deviation) were a) 45°(4.4°), b) 69°(5.5°), c) 37.2% (5.5%) d) 47.4% (1.5%). Intra-observer and inter-observer reliability was satisfactory to excellent. Not all tibial guides were able to produce an angle < 45°.

Conclusions: Our study shows the footprint of ACL insertion remains consistent, but there is variation in the angle of ACL insertion in sagittal and coronal planes. Studies have demonstrated the importance of recreating an anatomical ACL reconstruction. This data can be used in planning the tibial tunnel using the SAMBBA technique, to orientate the tunnel in the natural alignment of the ACL. Most systems for ACL reconstruction include alignment guides to orientate the tibial tunnel, but not all include options to align at the natural angle of the ACL.

Disclosure: Nothing to disclose.

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DYNAMIC INTRALIGAMENTARY STABILISATION FOR PRIMARY REPAIR OF ACUTE ANTERIOR CRUCIATE LIGAMENT RUPTURE: EARLY RESULTS FROM THE EAST OF ENGLAND

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Background: Primary repair of an acute anterior cruciate ligament (ACL) rupture using dynamic intraligamentary stabilisation (DIS) has been proposed as an alternative to conventional ACL reconstruction. It supports ACL healing, providing a stable scaffold and, in theory, preserving the proprioceptive function of the native ACL.

Most existing studies are from designer centres. We document outcomes from a smaller independent centre.

Methods: Retrospective review of a consecutive series of 27 patients (median age 28, range 17-52 years, 59% male) who underwent acute primary ACL repair with DIS at 17 (11-29) days from injury between 2016 and 2019.

All cases were analysed for complications, revisions or other secondary surgeries and for those at ≥ 8 months functional outcomes were recorded.

Results: Three patients (11%) required revision ACL reconstruction. Two were for a failed repair and one for traumatic re-rupture at 10 months. Three patients (11%) required removal of the monoblock screw at six to seven months.

Of 13 patients at ≥ 8 months and median 18 (8 - 28) month follow up, excluding the revised cases above, two had a flexion deficit of 10 degrees and one had 1+ Pivot shift test but negative Lachman test. Mean single hop and triple cross over tests were 97% (90 - 100%) and 98% (90 - 100%), respectively.

Ten (77%) patients resumed their original sport. Mean Tegner activity level scores were 7.4 (5 - 9) pre-injury and 6.5 (3 - 9) at follow up. Lysholm knee, IKDC and VAS satisfaction scores were 93.2 (75 - 100), 91.9 (72.4 - 96.6) and 8.8 (7 - 10), respectively.

Conclusions: Direct early suturing of acute ACL ruptures with DIS shows promising initial results. In the hands of experienced ACL surgeons, the learning curve is small.

Implications: Primary acute ACL repair with DIS results from university development centres are reproducible in a district general hospital with a rapid knee injury referral pathway, appropriate patient selection and focused rehabilitation regimen.

Disclosure: Nothing to disclose.

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SURGICAL MANAGEMENT OF ACUTE SEMIMEMBRANOSUS INJURIES IN PROFESSIONAL ATHLETES - A PROSPECTIVE STUDY

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Background: Semimembranosus (SM) non-avulsion tears are career-threatening injuries in professional athletes and are associated with slow healing and high recurrence with non-operative management. The aim of this study was to measure various outcomes of surgical repair in these injuries.

Methods: This prospective single surgeon study included 20 patients undergoing surgical repair of acute SM non-avulsion tears operated within 6 weeks of injury. Following surgical repair, patients underwent a standardized postoperative rehabilitation. Predefined outcomes were recorded at regular intervals for minimum two years after surgery.

Results: Surgical repair of SMA injuries was associated with return to play at 16.2 ± 4.5 weeks following surgery with 95% players returning to their sport. At one year follow-up, patient satisfaction was 95%. Within same period, surgical intervention was associated with improved mean hamstring muscle strength at knee flexion of 0 degrees (48.4 ± 8.3% vs 92.3 ± 3.7%, p< 0.001), 15 degrees (52.3 ± 14.7% vs 91.9 ± 4.9%, p=0.007) and 45 degrees (66.7 ± 13.1% vs 92.3 ± 5.9%, p=0.013); increased mean passive straight leg raise (31 ± 7.2 degrees to 91.5 ± 9.3 degrees, p< 0.001) and greater median Lower Extremity Functional Scores (LEFS) (from 34 to 75, p< 0.001) compared to preoperative values. Median Marx Activity Related Scores (MARS) improved significantly between 3-month and 1-year follow-ups (4, IQR 4-8 vs 11, IQR 10-12, p=0.012). There was no evidence of recurrence or other complications during follow-up.
Conclusions: Surgical repair of SM injuries is associated with high patient satisfaction, increased muscle strength and flexibility, improved functional outcome scores and return to sporting activity with low risk of recurrence at short-term follow-up.

Implications: SM injuries are rare but serious injuries that have been scarcely studied in the present literature. This pioneer study gives an understanding of the potential in surgical treatment of these injuries.

Disclosure: Nothing to disclose

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MUSCULOTENDINOUS JUNCTION INJURIES OF THE PROXIMAL BICEPS FEMORIS: A PROSPECTIVE STUDY OF 64 PATIENTS TREATED SURGICALLY

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Background: Musculo-tendinous junction injuries of the long head of Biceps Femoris (MTJ-BFlh) comprise nearly 70% of all injuries to the hamstring-complex. Non-operative management of these injures is associated with high risk of recurrence. To our knowledge, the surgical management of MTJ-BFlh injuries has not been previously reported. The aim of this study was to ascertain if surgical repair of acute MTJ-BFlh injuries enables return to sporting activity with low risk of recurrence.

Methods: This is a Prospective study of 64 patients (42 males and 22 females) undergoing surgical repair of acute MTJ-BFlh injuries. Predefined outcomes (patient satisfaction, hamstring strength, passive straight leg raise angle, recurrence rates and functional assessment scores) were recorded at three months, one-year and two-years after surgery. All patients were operated within four weeks of injury.

Results: All study patients returned to pre-injury sporting. Mean time from surgery to return to sporting was 14.6 ± 4.1 weeks. Three patients (4.7%) suffered from reinjury at the operated site. At three months post-op, patients had improved mean passive straight leg raise (72.0° ± 11.4° vs 24.1° ± 6.8°, p < 0.001); increased mean isometric hamstring muscle strength at 0° (p < 0.001), 15° (p < 0.001) and 45° (p < 0.001) and higher median

Lower Extremity Functional Scores LEFS) (72, IQR; 70-74 vs 30, IQR; 25-34, $p < 0.001$) as compared to before surgery. Median Marx activity rating scores (MARS) improved to 12, IQR; 6-14 (at one year) from 6, IQR; 4-8, $p < 0.001$ (at three months). High patient satisfaction was maintained throughout following surgery.

Conclusion: Surgical repair of acute MTJ-BFlh injuries enables return to preinjury level of sporting with low risk of recurrence at short-term follow-up.
Implications: Present literature widely suggests MTJ-BFlh injuries to be treated non-operatively. But this study has shown that surgical treatment can significantly reduce recurrence rates in these injuries.

Disclosure: Nothing to disclose

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INJURY PATTERNS OF EQUINE-RELATED TRAUMA

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Background: Equestrian sports are popular in the United Kingdom (UK), with approximately 2.7 million people of all ages participating in equine-related sports in 2015. These sports are not without risk; the position of the mounted rider puts them at risk of injuries sustained by fall from a height, compounded by movement at speed. The aim of this study is to characterise demographics and injury patterns of equine-related trauma presentations at a major trauma centre in the UK.

Methods: From a trauma admissions database and electronic search of radiology requests including key words "equine", "equestrian", "horse", and "pony" with cross-referencing from ICD-10 coding, 144 patients were identified to have presented to an adult major trauma centre with equine-related injuries from falls while mounted over a three-year period.

Results: Females accounted for 86% of patients (n = 123). The most commonly presenting age group was ages 20 - 29, but most injuries occurred with patients ages 50 - 59. Spinal injuries accounted for 41% (n = 69) of all injuries and occurred in a similar proportion in all age groups. Upper limb injuries accounted for 100% of injuries in those aged 0-9. Thirty-nine percent (n = 56) of patients required operative management for their injuries.

Conclusions: We have been able to identify which body zones of injury are more at-risk in equine-related sports following falls from mounted riders, and recognize how certain injury patterns may be more prevalent in particular age groups. Spinal injuries have been demonstrated to be a new leading zone of injury, possibly due stricter legislation from government and industry leading to the relative reduction of head injuries. Reducing the number and severity of these injuries will not only improve patient outcomes, but reduce the burden on the healthcare system.

Disclosure: Nothing to disclose.