

PROCEEDINGS OF THE XV INTERNATIONAL POZNAN UPPER LIMB SURGERY COURSE – SHOULDER, ELBOW AND THE 4TH CONGRESS OF THE POLISH SHOULDER AND ELBOW SOCIETY, 2–4 MARCH 2023, POZNAŃ, POLAND

STRESZCZENIA Z XV MIĘDZYNARODOWEGO POZNAŃSKIEGO KURSU CHIRURGII KOŃCZYNY GÓRNEJ – BARK, ŁOKIEĆ I IV ZJAZDU POLSKIEGO TOWARZYSTWA BARKU I ŁOKCIA, 2–4 MARZEC 2023, POZNAŃ, POLSKA

SHOULDER

1. Smoking as an additional risk factor in arthroscopic rotator cuff repair among type 2 diabetics.
2. Increased humerus retrotorsion is not associated with humeral head decentering.
3. Biomechanical evaluation of scapular movement in dominant versus non-dominant upper extremity.
4. Massive rotator cuff tears with coexisting posterior dislocation of the long head of the biceps around the humeral head is a predictor of a poor functional outcome – case series' results of arthroscopic treatment.
5. What types of shoulder pain most commonly affect sleep quality? A scoping systematic review.
6. Arthroscopic arthrodesis of the shoulder in advanced degenerative changes of the joint – literature review and case report.
7. Psychological background affects functional recovery after rotator ring surgery.
8. Psychological background affects functional recovery after surgical treatment of shoulder instability.
9. All arthroscopic “v shaped” superior capsule reconstruction with lhb autograft for massive, irreparable rotator cuff tears.
10. Comprehensive arthroscopic management (CAM) procedure in selected patients delays necessity of shoulder replacement in follow-up 2–12 years.
11. Return to work after rotators cuff repair correlates with patients reported outcomes in the polish population.
12. The functional and radiological outcome of acute acromioclavicular joint dislocation treatment by arthroscopic-assisted triple button technique.
13. Long head biceps tendon as superior capsular reconstruction (LHBT-SCR) augmentation for massive rotator cuff repair – “The Chinese and Polish (Podlasie's) Way”. Our own experience.
14. Arthroscopic Transosseous Rotator Cuff Repair: 1-year Outcomes.

FRACTURES

1. Humerus shaft pseudoarthrosis treated with double-plate fixations – case series analysis.
2. Reconstruction of the distal humerus using allograft after complex high energy open fracture.

ELBOW

1. Physiotherapy following elbow release surgery – case report.
2. Mixed reality supports superior precision and accuracy in humerus osteotomy: validation study.
3. Measuring proprioception using inertial motion sensors – checking for reliability and validity.

4. The resisted hook test for diagnosing partial distal biceps tendon tears.
5. Open versus arthroscopic elbow arthrolisis for posttraumatic elbow contracture after min. 2 years follow-up – comparative study.
6. Polish cultural adaptation of elbow assessment scores: oxford elbow score, American shoulder and elbow surgeons-elbow, Mayo elbow performance score and summary outcome determination questionnaire.

INJURIES

1. An analysis of shoulder and elbow injuries in offshore sailing.
2. Migration of kirschner wire into the cervical spine area, as a late complication of acromioclavicular joint repair. A case report and review of the literature.
3. Arthroscopic arthrodesis of the shoulder joint in the course of advanced degenerative changes – a case report.
4. Synthetic LARS ligament as a chance for express biceps brachii function recovery – case report.

MISCELLANEOUS

1. Arm function after arthroscopic decompression of the suprascapular nerve at the spino-glenoid notch and suprascapular notch in volleyball players.
2. Intramuscular lipoma: an uncommon condition disguised as a distal biceps brachii tendon rupture. A case study.

INSTABILITY

1. Distal clavicular osteochondral autograft (DCOA) procedure as an alternative to coracoid or iliac bone block – preliminary results of 10 patients.
2. Understanding biomechanics of atraumatic shoulder pain and instability in eds and hsd.
3. Psychological background affects functional recovery after surgical treatment of shoulder instability.
4. Reliability of anterior glenoid deficiency measurement using 3d multiplanar reconstruction (MPR) of magnetic resonance imaging (MRI) in patients with shoulder instability.
5. Intra- and inter-observer comparison of reliability using multiplanar reconstruction (MPR) of magnetic resonance imaging (MRI) in patients with shoulder instability.
6. Arthroscopic non- perfect reposition of the anterior glenoid rim fracture – a mid-term follow-up results.
7. Effect of practice on reliability of anterior glenoid deficiency measurement using 3d multiplanar reconstruction (MPR) of magnetic resonance imaging (MRI) in patients with shoulder instability.

SMOKING AS AN ADDITIONAL RISK FACTOR IN ARTHROSCOPIC ROTATOR CUFF REPAIR AMONG TYPE 2 DIABETICS

Mikołaj Podsiadło, Wojciech Solecki, Roman Brzóska, Hubert Laprus, Adrian Błasiak
Szpital Św. Łukasza, Bielsko Biała, Polska

Introduction

Rotator cuff tear is a common condition that affects majority of people at some point during lifetime.

Aim

The purpose of this study was to investigate if smoking minimum 1 pack year before arthroscopic rotator cuff repair is an additional risk factor for lesser outcomes among patients suffering simultaneously of diabetes type 2.

Material and methods

40 patients Aged 41–74 operated on between 2017–2020 at St. Luke's Hospital by the same team, were divided into 2 groups. 26 of them suffered diabetes mellitus t. 2 prior to surgery and 14 apart from DM t.2 declared additionally current smoking for at least 1 pack year before the repair. The patients were then assessed pre-op and at 3 and 6 months post-op using QuickDASH score and VR-12 questionnaire. The patients were also investigated for early complications rate within 90 days post-op as well as for secondary hospitalization within 30 days post-op.

Results

Using standard statistical procedures, the study revealed significantly worse repair outcomes in the smokers group confirming the hypothesis. None of the patients regardless of smoking status and comorbidities suffered any complication or secondary hospitalization during first 3 months post-op.

Conclusion

In conclusion current smoking at least 1 pack year prior to arthroscopic rotator cuff repair is an additional factor for lesser outcomes.

Keywords: arthroscopy, shoulder, smoking, diabetes

INCREASED HUMERUS RETROTORSION IS NOT ASSOCIATED WITH HUMERAL HEAD DECENTERING

Adrian Góralczyk¹, Doruk Akgün², Jonas Pawelke³, Krzysztof Hermanowicz⁴, Matthias Flury⁵, Laurent Audigé⁶, Philipp Moroder⁶

¹Department of Orthopaedics, Humana Medica Omeda, Białystok, Poland

²Department of Shoulder and Elbow Surgery, Center for Musculoskeletal Surgery, Charité – University Medicine Berlin, Berlin, Germany

³Experimental Trauma Surgery, Faculty of Medicine, Justus Liebig University of Giessen, Giessen, Germany

⁴Ortim Orthopaedic Clinic, Białystok, Poland

⁵Center for Orthopedics & Neurosurgery, In-Motion, Wallisellen, Switzerland.

⁶Department for Shoulder and Elbow Surgery, Schulthess Clinic, Zürich, Switzerland

Introduction

Glenohumeral and scapulohumeral decentering of humeral head may lead to non-uniform cartilage wear pattern and thus, development of early osteoarthritis.

Aim

To determine the influence of increased humerus retrotorsion on glenohumeral and scapulohumeral humeral head centering in a long-term follow up.

Material and methods

The data of 36 shoulders of 18 patients diagnosed with chronic recurrent anterior shoulder instability treated unilaterally with an internal rotation subcapital humerus osteotomy according to Weber between 1984 and 1990 were enrolled in the study. All CT scans including the surgical and healthy side of all patients performed after a mean follow-up of 14 (12–18) years were retrospectively analyzed in term of humerus torsion, glenoid version, glenoid offset, glenohumeral subluxation, scapulohumeral subluxation and rotator cuff action lines and compared.

Results

In addition to Weber osteotomy 15 patients had following procedures performed: capsular shift according to Neer in 12, open Bankart repair in 2 and subscapularis tendon raphy in 1 patient. The mean intraoperative correction of humeral retrotorsion written in postoperative report was 25° (20–30°). The analysis of follow-up CT scans revealed a significantly higher mean humeral retrotorsion in the operated side compared to healthy side ($41.6^\circ \pm 14^\circ$ vs. $20.7^\circ \pm 8.2^\circ$, $p < 0.001$). All other measured parameters did not differ significantly between groups.

Conclusion

An increased humeral retrotorsion of 20–30° did not affect glenohumeral and scapulohumeral centering in patients with a Weber osteotomy after long-term follow-up compared to healthy side.

Keywords: humerus retrotorsion, Weber osteotomy, glenohumeral centering, scapulohumeral

PHYSIOTHERAPY FOLLOWING ELBOW RELEASE SURGERY – CASE REPORT

Andrzej Frankiewicz^{1,2}, Bartosz Wysoczański²

¹Gruca Orthopaedic and Trauma Teaching Hospital, Rehabilitation Clinic, Otwock, Poland

²Jozef Pilsudski University of Physical Education, Rehabilitation Department, Warsaw, Poland

Introduction

The Patient was struck by a car while riding a bicycle. Due to an accident, she had a fracture in her right, proximal radial bone. She underwent surgical treatment and then physiotherapy. In patient opinion the clinical effects, were not good enough, so she decided to undergo another surgery.

Aim

The aim was to present the physiotherapy process and its effects after elbow contracture release surgery.

Material and methods

49 years old female, hospital nurse, after elbow contracture release surgery, admitted to a Rehabilitation Clinic for 20 days.

Results

After surgery the contracture decreased but remained significant in every movement. Physiotherapy sessions contained of manual therapy, exercise, stretching, occupational therapy, low-level laser therapy and cold. Each session lasted approximately two hours. During the stay in Rehabilitation Clinic patient received two collagen injections. All rehabilitation modalities combined decreased the contracture in every movement to 5–10° each. Despite the fact, that contracture is still noticeable, whole upper extremity is now fully functional. The Patient admitted that the effects of the surgery and rehabilitation process will allow her to get back to work.

Conclusion

Surgery and physiotherapy combined, allowed the Patient to reach full functional level of the upper extremity despite of the lack of full range of motion.

Keywords: contracture, release surgery, physiotherapy, manual therapy, exercise, elbow

AN ANALYSIS OF SHOULDER AND ELBOW INJURIES IN OFFSHORE SAILING

Joanna Forycka¹, Julia Wojtowicz¹, Kornelia Kołodziejczyk¹, Jędrzej Lesman², Marcin Mostowy²

¹Uniwersytet Medyczny w Łodzi

²Klinika Ortopedii i Traumatologii, Uniwersytecki Szpital Kliniczny im. Wojskowej Akademii Medycznej w Łodzi

Introduction

Offshore sailing yields injury risk. Given the physical demands of offshore sailing, shoulder and elbow injuries were hypothesized to be common.

Aim

To determine the epidemiology and etiology of shoulder and elbow injuries in offshore sailing.

Material and methods

Observational study of self-reported offshore sailing-related injuries using an internet-based, multiple-choice survey completed by 568 people. Data were analyzed statistically using Shapiro-Wilk test, Mann-Whitney U-test, Chi-square test and double-tailed Fisher exact test.

Results

Among 793 cruises reported by 568 people, 141 were with injury (17.8%). Shoulder injuries accounted for 5.56% of all injuries, whereas elbow for 2.84% (being the least frequently injured body part). Types of shoulder injuries reported in the study were: joint sprain or dislocation (62.5%) and contusion (37.5%), while the most common type of elbow injury was skin lesion or laceration (50%). Shoulder injuries were most often sustained because of tripping/falling (50%) and using ropes (25%), whereas elbow injuries were caused by tripping/falling (50%) or using ropes (50%). None of the analyzed potential risk factors achieved significant association with risk of shoulder and elbow injury: sex, $p = 0.36$; age, $p = 0.26$; sailing experience, $p = 0.10$; number of offshore sailing days, $p = 0.99$; type of rigging, $p = 0.99$; harness wearing rules, $p = 0.83$. Sailors perceived as risk factors: inattention/distraction (50%), difficult weather conditions (33.3%), fatigue/lack of sleep (16.7%) and equipment failure (16.7%).

Conclusion

Shoulder and elbow injuries are rare among offshore sailors, regardless of demographic, injury and voyage characteristics. Multifactorial nature of injuries poses a challenge in implementing safety measures.

Keywords: injury, sailing

BIOMECHANICAL EVALUATION OF SCAPULAR MOVEMENT IN DOMINANT VERSUS NON-DOMINANT UPPER EXTREMITY

Joanna Forycka¹, Marcin Mostowy², Kornelia Kołodziejczyk¹, Aleksandra Czechowska³, Magdalena Fronczek³, Karolina Kopacz³, Gianluca Padula³, Sebastian Żabierek²

¹Uniwersytet Medyczny w Łodzi

²Klinika Ortopedii i Traumatologii, Uniwersytecki Szpital Kliniczny im. Wojskowej Akademii Medycznej w Łodzi

³Uczelniane Laboratorium Ruchu i Wydolności Fizycznej Człowieka „DynamoLab”, Uniwersytet Medyczny w Łodzi

Introduction

Postural asymmetry of the shoulder is quite common with the dominant shoulder typically positioned lower than the nondominant shoulder. However, research on scapular movement asymmetry in healthy, non-overhead athletes is lacking, hindering interpretation of clinical relevance of scapular movement asymmetry.

Aim

To assess and compare the movement of dominant versus non-dominant scapula.

Material and methods

Ten men (9 right-handed and 1 left-handed) without previous history of shoulder pain, injury or surgery participated in the study. Shoulder flexion, abduction, external rotation with 0° abduction and external rotation with 90° abduction were analyzed using optoelectronic system in intervals of 15° as well as on the beginning and the end of range of motion.

Results

Almost all of the variables (alpha angle between the trigonum spinae, inferior scapula angle and spinous process of Th8; beta angle between inferior scapula angle, spinous processes of Th8, and C7; and distance between inferior scapula angle and the spine) had a normal distribution, except for the total change of alpha angle in flexion. When using standard statistical significance threshold of 0.05, the only statistically significant difference between dominant and non-dominant limb was the total change of beta angle in external rotation performed with 0° abduction. However, after using the Bonferroni correction to establish proper statistical significance threshold, none of the differences turned out to be statistically significant.

Conclusion

Scapular biomechanics does not differ between dominant and non-dominant side in healthy male individuals, supporting the interpretation of scapular movement asymmetry as pathological.

Keywords: scapula, shoulder, biomechanics, movement

ARM FUNCTION AFTER ARTHROSCOPIC DECOMPRESSION OF THE SUPRASCAPULAR NERVE AT THE SPINOGLENOID NOTCH AND SUPRASCAPULAR NOTCH IN VOLLEYBALL PLAYERS

Hubert Laprus, Adrian Błasiak, Patryk Kłaptocz, Wojciech Solecki, Roman Brzóska
Szpital Św Łukasza, Bielsko-Biała, Polska

Introduction

Suprascapular nerve (SSN) entrapment in volleyball players leads to infraspinatus muscle (ISP) atrophy and weakness of abduction and external rotation of the shoulder.

Aim

The aim of this study is to assess functional outcome following arthroscopic extended decompression of SSN in the spinoglenoid notch and suprascapular notch in a group of volleyball athletes.

Material and methods

Volleyballers who underwent arthroscopic SSN decompression were retrospectively analyzed. Assessment tools consisted of range of motion and external rotation (ER) strength on Lovett's scale (LS) and postoperative ER strength measured by dynamometer, Constant-Murley score (CMS) and visual evaluation of infraspinatus muscle recovery by assessing muscle bulk.

Results

There were 10 patients including 9 males and 1 female. The mean age was 25.9 (19–33) years and mean follow-up was 77.9 (7–123) months. The mean range of post-operative ER at 90° abduction (ER2) was 105.6° (88–126) and 108.5° (93–124) for contralateral side, while ER2 strength was 8 ± 2.6 kg and 12.65 ± 2.8 kg ($p < 0.01$) respectively. Mean CMS was 89.9 (84 to 100). In 5 cases there was complete recovery of infraspinatus muscle atrophy whereas 2 patients had partial recovery and 3 had none.

Conclusion

This study has shown that arthroscopic SSN decompression in volleyballer athletes improves shoulder function, but results of infraspinatus recovery and ER strength are variable.

Keywords: suprascapular nerve, arthroscopy, shoulder, athletes

MIXED REALITY SUPPORTS SUPERIOR PRECISION AND ACCURACY IN HUMERUS OSTEOTOMY: VALIDATION STUDY

Przemysław Lubiowski^{1,2}, Szymon Stupnicki^{1,2}, Jan Niziński^{1,2}, Piotr Tuczyński^{1,2}, Jakub Stefaniak², Alex Green³, Kamil Roszak³, Bartłomiej Lubiowski³

¹University of Medical Sciences in Poznan, Sport Trauma and Biomechanics Unit

²Rehasport Clinic

³RSQTechnologies

Introduction

Humeral deformities can lead to abnormal glenohumeral joint alignment and dysfunction. New systems based on mixed reality allow for placement and manipulation of virtual objects and provide surgical guidance.

Aim

The purpose of this study is to perform study comparing 3 methods of osteotomy control: visual (eyeballing-EB), printed wedge (PW) and holographic wedge (HW).

Material and methods

30deg. closed wedge osteotomy was performed using porcine femur by 3 methods: group EB – using visual estimate, group PW- using printed 30deg wedge and group HW – with mixed reality viewing system (RSQ HOLO, RSQ Technologies, Poznan, Poland) and A holographic wedge tool using 30degholographic wedge. Angle of removed bone wedge and bone alignment after osteotomy (AP and lateral) were measured.

Results

Means, standard and average deviations are presented below:

- wedge angle: EB 31(2.7; 2.3), PW 32.1(3.8; 3), HW 29 (2.7; 1.8); 30EB vs 30H p = 0.05; 30H vs 30W p < 0.004,
- AP bone angle: EB 150.5 (6.8; 5.4), PW 149.1(5.5; 4.6), HW 155.1(5.2; 3.9); 30EB vs 30W p = 0.02; 30H vs 30W p = 0.003,
- Lateral bone angle: 170.5 (6.5; 5.2), PW 169.8 (4.4; 3.2), HW 175.3(5.1; 4); 30EB vs 30W p = 0.01, 30H vs 30W p = 0.003,
- HP showed lowest and closest to the planned values with lowest variability comparing to EB and PW. Lateral alignment was best controlled with holographic support.

Conclusion

Augmented reality provides superior precision and accuracy comparing to both visual control and printed wedge guides in osteotomy of long bones.

Keywords: mixed reality, Elbow, holographic, deformity, osteotomy, RSQholo

DISTAL CLAVICULAR OSTEOCHONDRAL AUTOGRAFT (DCOA) PROCEDURE AS AN ALTERNATIVE TO CORACOID OR ILIAC BONE BLOCK – PRELIMINARY RESULTS OF 10 PATIENTS

Natalia Pawłuś¹, Michał Kanak², Sebastian Żabierek³, Marcin Domżański³

¹Uniwersytet Medyczny w Łodzi, Wydział Nauk o Zdrowiu, Łódź

²Uniwersytet Medyczny w Łodzi, Wydział Lekarski, Łódź

³Uniwersytecki Szpital Kliniczny im. Wojskowej Akademii Medycznej – Centralny Szpital Weteranów, Klinika Ortopedii i Traumatologii, Łódź

Introduction

Major acetabular bony deficits remain a challenge during shoulder instability treatment.

Aim

The purpose of this study was to investigate early results among patients operated arthroscopically with DCOA transfer for shoulder instability with a bony deficit larger than 20%.

Material and methods

10 patients were operated with arthroscopic DCOA technique for unilateral shoulder instability. Inclusion criteria were unilateral anterior shoulder instability, bony deficit greater than 20% measured with PICO method, without other shoulder pathologies.

All patients were checked preoperatively and then 3, 6 and 12 months postoperatively. The Rowe Score, Simple Shoulder Test (SST) and VAS. The data were collected prospectively analyzing medical documentation and on clinical examination before and after the procedure. The Shapiro-Wilk test was used to assess the normality of the distribution. Non-parametric data were compared using the Friedman test. Post-hoc analysis within groups was performed using the Nemenyi test.

Results

The data obtained were characterized by a non-normal distribution and are presented as medians and interquartile ranges. The p-values of the Friedman test were 0.746, < 0.01 and < 0.01 for VAS, Rowe Score and SST, respectively. A post-hoc analysis between the pre-operative value and the value at 6 and 12 months after surgery within: (1) the Rowe Score showed $p = 0.003$ and $p = 0.001$, respectively and (2) SST showed $p = 0.004$ and $p = 0.004$, respectively.

Conclusion

After 12 months after the surgery (1), the DCOA technique does not reduce the VAS score, but (2) improves functional scores on the Rowe Score and SST scales at 6 and 12 months after surgery.

Keywords: autograft, shoulder, instability, clavicle

MASSIVE ROTATOR CUFF TEARS WITH COEXISTING POSTERIOR DISLOCATION OF THE LONG HEAD OF THE BICEPS AROUND THE HUMERAL HEAD IS A PREDICTOR OF A POOR FUNCTIONAL OUTCOME – CASE SERIES' RESULTS OF ARTHROSCOPIC TREATMENT

Paweł Norwa^{1,2}, Wojciech Ananicz¹, Michał Janyst³, Maciej Otworowski⁴, Bartłomiej Kordasiewicz¹

¹Idea Ortopedia w Warszawie

²Szpital Praski p.w. Przemienienia Pańskiego, Warszawa

³Samodzielny Publiczny Szpital Kliniczny im. Prof. Adama Grucy CMKP w Otwocku

⁴Szpital Południowy w Warszawie

Introduction

Long head of biceps tendon (LHBT) dislocations are most often medial, seen in patients with subscapularis tendon tear. Posterior LHBT dislocations (PLHBTD) around the humeral head are rare, described only in a few case reports. These lesions are most often associated with anterior shoulder dislocation or subluxation and are coexisting with massive rotator cuff tear (MRCT).

Aim

The aim of this study is to present the results of arthroscopic treatment in MRCT with coexisting PLHBTD.

Material and methods

The results of four male patients, average age at surgery 56.5 years, operated from 2011 to 2022 due to pseudoparalytic shoulder with MRCT and PLHBTD were analysed. Median time from injury to surgery was 15 weeks. All patients underwent arthroscopic LHBT tenotomy and partial (in 2 patients) or full (in 2) rotator cuff repair. Preoperative and postoperative clinical results were evaluated: range of motion (ROM), pain in Visual Analog Scale (VAS) and Subjective Shoulder Value (SSV).

Results

The mean follow-up time was 61 months. Preoperative patients' functional results were poor: mean VAS was 6, SSV 20% and ROM: flexion 45°, abduction 35°, external rotation with arm at the side 0°. Postoperative subjective patients results were good despite poor range of motion. VAS was 0 in all patients, mean SSV 72.5%. Mean ROM was respectively: 125°, 120° and 20°, so mean improvement was respectively 80°, 85°, 20°.

Conclusion

Posterior LHBT dislocation around the humeral head associated with MRCT is a challenging injury. Arthroscopic treatment is recommended as pain and functional results are good, however patients present limited improvement in ROM.

Keywords: Long head of biceps tendon posterior dislocation, massive rotator cuff tear, anterior shoulder dislocation, anterior shoulder subluxation, LHBT tenotomy

HUMERUS SHAFT PSEUDOARTHROSIS TREATED WITH DOUBLE-PLATE FIXATIONS – CASE SERIES ANALYSIS

Maciej Otworowski¹, Michał Janyst², Paweł Norwa³, Wojciech Ananicz⁴, Maciej Kiciński⁵, Bartłomiej Kordasiewicz⁵

¹Oddział Chirurgii Urazowo-Ortopedycznej, Szpital Południowy, Warszawa

²Klinika Chirurgii Urazowej Narządu Ruchu i Ortopedii, SPSK CMKP, Otwock

³Oddział Chirurgii Urazowo-Ortopedycznej, Szpital Praski, Warszawa

⁴Oddział Chirurgii Urazowo-Ortopedycznej, Szpital Bielański, Warszawa

⁵Idea Ortopedia w Warszawie

Introduction

Bone union in the treatment of the humeral shaft fractures is achieved in 85% to 95% of the patients. Malunion occurs rarely, but if it does it poses a significant challenge for the surgeon.

Aim

The goal of this study was to analyse the outcomes of revision surgery with double plate fixation of the humeral shaft nonunions.

Material and methods

The inclusion criteria was revision surgical treatment of the humeral shaft nonunions using two locking compression plates. Patients were operated on from 2017 to 2020.

Results

Three patients were included in the study – 2 males and 1 female at the average age of 47 years (from 28 to 62). The average time from the injury to nonunion treatment was 4, 5 years. 3 patients had 8 procedures before the indicated surgery. In 2 (66%) patients the bone union was achieved in an average time of 4 months. Two neurological complications and one deep infection was reported.

Conclusion

In the literature the humeral nonunion treatment is associated with a success rate between 46% and 100%. These results are achieved in primary nonunion treatment, mostly after failed conservative approach. The most challenging are recalcitrant nonunions which, as in all patients in this study. It is a probable explanation of less favorable results (66%).

Nonunion in this study was associated with initial multiple surgeries before the last revision surgery and additional infectious complication. The best timing to use double plate fixation for the humerus nonunion seems to be the first or second surgical treatment.

Keywords: fracture

MEASURING PROPRIOCEPTION USING INERTIAL MOTION SENSORS – CHECKING FOR RELIABILITY AND VALIDITY

Szymon Stupicki, Łukasz Żytka, Przemysław Lubiatowski
Sport Traumatology and Biomechanics Unit, Rehasport Clinic, Poznań University of Medical Sciences, Poznań.

Introduction

Inertial motion sensors function is based on the inertial measurement units (IMU) system. Each sensor contains an accelerometer, magnetometer and gyroscope, which enable orientation in three-dimensional space. These three components measure position of reference object by process of sensory fusion created with specialized mathematical algorithms. It can be used to assess proprioception, athlete's basic movement patterns, checking for kinesitherapy according to given movement patterns or as an orthopedic protractor.

Aim

The purpose of this study was to check for reliability and validity of RSQ Motion inertial motion sensors in measuring proprioception

Material and methods

We recruited 10 healthy patients. Study was directly performed by 2 researchers. Elbow joint was the one we analyzed in this study. Patients performed 2 modules of proprioception testing: active proprioception and passive proprioception. In each module patients had to reproduce previously shown reference angle of elbow flexion or extension. There were 3 angles we assessed: 50, 70 and 110 degrees of elbow flexion. Starting position was 90 degree of elbow flexion. Each angle was repeated 3 times, both limbs were screened (9 measurements in each limb, in each module). Every patient was examined 3 times in order to assess intra and inter-rater reliability.

Results

Average measurement difference, standard deviation and 95% CI were good in context of intra and inter rater reliability.

Conclusion

Preliminary results suggest good intra and inter-rater reliability, however a further group of 10 more patients is needed to assess significance and validity. Study will be updated.

Keywords: proprioception sensors, proprioception measurement, inertial measurement units

UNDERSTANDING BIOMECHANICS OF ATRAUMATIC SHOULDER PAIN AND INSTABILITY IN EDS AND HSD

Marta Jokiel^{1,2,3}, Aleksandra Bartkowiak^{2,3}, Anna Madziewicz^{2,3}, Ewa Bręborowicz², Leszek Romanowski²

¹Pracownia Ortopedii, Traumatologii i Fizjoterapii Narządu Ruchu w Chorobach Rzadkich

²Katedra i Klinika Traumatologii, Ortopedii i Chirurgii Ręki Uniwersytetu Medycznego im. Karola Marcinkowskiego w Poznaniu

³Zakład Fizjoterapii, Uniwersytetu Medycznego im. Karola Marcinkowskiego w Poznaniu

Introduction

Despite a recent increase in knowledge regarding Ehlers-Danlos Syndrome (EDS) and Hypermobility Spectrum Disorder (HSD) the management of resultant shoulder instability is still a major challenge for medical practitioners. Understanding the pattern of unstable shoulder biomechanics is crucial for appropriate patient assessment and clinical decision making involving therapeutic management options.

Aim

This study aims to assess biomechanical parameters of EDS and HSD during isokinetic muscle contraction and to compare these parameters with clinical examination.

Material and methods

144 patients were examined, after preliminary test 39 patients with hEDS and 35 patients with HSD were qualified to the study. Patients underwent shoulder clinical examination and rotator cuff biomechanical examination on Biodex System 4 Pro with isokinetic protocol.

The protocol was composed of 4 trials with adjustable resistance so each of patients regarding the severity of instability was able to finish the biomechanical tasks.

Patients were also assessed with ASES and DASH questionnaires and hEDS questionnaire developed by EDS Society.

Results

We observed significant decrease in both examined groups of external rotator cuff biomechanical parameters ($p < 0.005$) in comparison to the internal rotators. Average muscle balance ratio was 46% in all examined trials in both groups. The decrease of biomechanical parameters was correlated with clinical examination Results tests, MRI.

Conclusion

The lack of shoulder stability and its dislocations in hEDS and HSD cases may be connected with lack of shoulder muscles balance. Knowledge about muscles parameters decrease may be crucial for planning proper rehabilitation protocol.

Keywords: EDS, HSD, shoulder, instability

MIGRATION OF KIRSCHNER WIRE INTO THE CERVICAL SPINE AREA, AS A LATE COMPLICATION OF ACROMIOCLAVICULAR JOINT REPAIR. A CASE REPORT AND REVIEW OF THE LITERATURE

Agata Węgrzyniak¹, Ireneusz Kotela², Piotr Modzelewski², Dorota Kamińska²

¹Państwowy Instytut Medyczny MSWiA w Warszawie

²Państwowy Instytut Medyczny MSWiA w Warszawie, Klinika Ortopedii, Traumatologii i Medycyny Sportowej

Introduction

Kirschner (K-wires) wires have been used in orthopaedic and trauma surgeries for decades. Whence, acromioclavicular (AC) joint dislocation treated by transarticular fixation using K-wires is one of the several techniques for the management of the injury, with different opinions. One disadvantage among others is the migration of the K-wires even into distant areas, which might be symptomatic or even life-threatening.

Aim

Presentation out of the common complication of management using K-wires, after upper extremity injury, specifically acromioclavicular joint dislocation. Additionally literature analysis in similar medical cases.

Material and methods

A 41-year-old male patient presented to the emergency room (ER) with neck pain in the left area. He had a history of acromioclavicular dislocation nine years ago, treated with two K-wires and tension band wiring. Additionally, five years after trauma failed attempt at fixation removal after one of the K-wires breakages. CT scan showed 80mm K-wires migrated into the surrounding of the cervical spine. The medial end of the wire ended behind the posterior surface of the left transverse process C7. There were no features of pseudoaneurysms or pathological extravasation of blood vessels.

Results

Surgical removal of migrated K-wire was done with help of a neurosurgeon and vascular surgeons from the second cutting in the right supraspinatus region. K-wire was removed entirely. No vascular damage was found.

Conclusion

Patients should be informed and alerted about the complications after K-wire fixation. Regularly X-rays and visiting the outpatient clinic are as well significant. In cases of dislocation and migration, K-wires should be removed as early as possible.

Keywords: Kirschner wire (K-wires) migration, bone wires complication, Acromioclavicular joint dislocation

SHOULDER PAIN IS A COMMON SYMPTOM OF MULTIPLE PATHOLOGIES AND IT IMPAIRS SLEEP QUALITY

Natalia Pawluś¹, Zuzanna Granek¹, Marcin Domżański², Michał Kanak³

¹Health Science Faculty, Medical University of Łódź; Łódź, Poland

²Department of Orthopaedics and Traumatology, Veterans' Memorial Teaching Hospital in Łódź, Medical University of Łódź, Poland

³Medical Faculty, Medical University of Łódź; Łódź, Poland

Aim

To analyze most common reasons of shoulder pain which decrease sleep quality.

Material and methods

From September to December 2022 two independent researchers searched following databases: PubMed, Scopus, Science Direct and Google Scholar according to PRISMA guidelines. Terms: "shoulder pain"; "sleep deprivation"; "sleep initiation maintenance disorders" and "sleep quality" were used. All English-language articles pertaining to the topic regardless of the year of its publication were included. Non-peer reviewed publications were excluded from the search.

Results

The initial search identified 1446 articles. After removal of duplicates 401 articles were screened by the title and abstract. 276 articles were excluded because they did not fulfilled the inclusion criteria. In the end 125 articles were included in the review. Each of the included articles was sorted into one of the following groups: injuries and pathologies (69 articles), post-operative pain (24 articles), psychologic factors (18 articles), neck and head related pain (9 articles) or sleeping position and bedding system (5 articles).

Conclusion

Shoulder pain may have highly diverse etiology. Proper diagnosis of its origin and problem-specific therapy may effectively increase sleep quality.

Keywords: shoulder pain, sleep disorders, orthopedics, sleep deprivation

RECONSTRUCTION OF THE DISTAL HUMERUS USING ALLOGRAFT AFTER COMPLEX HIGH ENERGY OPEN FRACTURE

Ewa Kowalów¹ Anna Ferdynus, Michał Górecki², Maciej Bręborowicz²

¹Student Research Group of Hand Surgery, Poznań University of Medical Sciences

²Department of Traumatology, Orthopedics and Hand Surgery, Poznań University of Medical Sciences

Introduction

High-energy trauma with major tissues loss in the upper extremity may result in significant limb functional limitation causing difficulties in work and daily activities. All treatment options, including allograft, arthroplasty, arthrodesis, and prosthetic composite, should be discussed with the patient and be individually chosen to satisfy the patient considering their work and daily activities.

Aim

The aim of the study is present a patient with massive bone loss of the distal humerus after high energy open fracture who underwent reconstruction using a lyophilized allograft.

Material and methods

Our case is a patient with a loss of approximately 1/3 distal humerus, severe radius fracture, and elbow damage after a motor vehicle accident which was originally treated with external fixation. There was no neurological deficit in hand function.

Patient had an infected fistula on the olecranon level, which was treated with antibiotics and surgical removal. Due to significant bone loss, the elbow was unstable with active flexion to 70deg and passive extension to 15deg. Elbow arthrodesis was not an option because patient work required elbow motion. It is why we performed distal humerus reconstruction with lyophilized allograft covering the junction with autogenous grafts and plate stabilization.

Results

Patient reports improved elbow motion without pain; nevertheless, uses an adjustable elbow brace for work. We will monitor the patient and adjust future treatment. We do not exclude arthrodesis or endoprosthesis in the future.

Conclusion

Allografts can be used successfully on patient with significant loss of distal humerus. Nevertheless, they should be monitored for infections and possible loosening of stabilization.

Keywords: allograft, elbow fracture, elbow instability, bone loss, distal humerus, Fracture

ARTHROSCOPIC ARTHRODESIS OF THE SHOULDER IN ADVANCED DEGENERATIVE CHANGES OF THE JOINT – LITERATURE REVIEW AND CASE REPORT

Michał Górecki, Piotr Ogrodowicz

Department of Traumatology, Orthopedics and Hand Surgery, Poznań University of Medical Sciences

Introduction

The gold standard of degenerative changes in the shoulder joint is arthroplasty. In rare cases, stiffening of the joint is performed like arthrodesis. Then the main effect of treatment is to get rid of the pain.

Aim

This study aims to present an alternative to shoulder endoprosthesis – shoulder arthrodesis, which was performed in a minimally invasive technique using an arthroscope and percutaneous stabilization.

Material and methods

A 74-year-old female patient was admitted to the Department of Hand Surgery on an elective basis because of pain and limitation of range of motion of both shoulders during advanced degenerative changes caused by long-standing rheumatoid arthritis. The patient did not consent to the endoprosthesis. Shoulder arthrodesis was proposed to relieve the pain.

The surgery was performed using a minimally invasive technique. The articular surface of the humeral head and scapular acetabulum were removed arthroscopically. Percutaneous stabilization with three cannulated screws was applied. Additionally, allogeneic bone grafts were used. After surgery, the patient was immobilized in a brace.

Results

After three months, a preliminary bony fusion was obtained, confirmed by X-ray. The arthrodesis was clinically stable, indirectly evidenced by the fact that a humeral head fracture occurred after a fall from one's own body and not at the site of the surgery.

Conclusion

Although shoulder endoprosthesis is the standard treatment for advanced degenerative changes, the results of this study suggest that shoulder arthrodesis may be an alternative in exceptional situations. Performed in a minimally invasive manner, it reduces tissue traumatization, and the initial clinical effect is satisfactory.

Keywords: shoulder arthrodesis, arthroscopy, joint degeneration

PSYCHOLOGICAL BACKGROUND AFFECTS FUNCTIONAL RECOVERY AFTER ROTATOR RING SURGERY

Elżbieta Sawicka-Garbarek, Jakub Kaszyński¹, Paweł Cisowski¹, Marta Ślęzak^{2,1}, Emilia Soroko³, Przemysław Lubiowski^{2,1}

¹Rehasport Clinic sp. z o.o., Poznań

²Katedra i Klinika Traumatologii, Ortopedii i Chirurgii Ręki, Uniwersytet Medyczny im. Karola Marcinkowskiego w Poznaniu

³Zakład Psychologii Zdrowia i Psychologii Klinicznej; Wydział Psychologii i Kognitywistyki; Laboratorium Badań Jakościowych i Mieszanych w Psychologii Klinicznej; Uniwersytet im. A. Mickiewicza w Poznaniu

Introduction

In the salutogenetic approach, the tendency to recover depends on the amount of resources available to the individual. In this study, it was hypothesized that the greater the amount of psychological resources, the quicker the recovery after rotator ring surgery.

Aim

To test whether the psychological factor can be an indicator of recovery after rotator ring surgery.

Material and methods

The scores of 34 patients 4 months after rotator ring surgery were used for the analysis. A quantitative study of psychological resources was carried out using seven questionnaires covering the thematic areas most frequently mentioned in the context of health: personality, stress, sense of efficacy and coherence, social support, locus of health control. Six of them relate to fixed traits, which don't change much under the influence of the experience of the moment.

The psychological test results were correlated with the questionnaires measuring patient recovery after shoulder surgery: Constant Score, UCLA, ASES and WOSI.

Results

4 of the psychological characteristics have the significant correlations with function: tendency to rivalry (Constant $r = -0.35$), comprehensibility (Constant $r = 0.45$), social inhibition (UCLA $r = -0.36$) and sense of efficacy (ASES $r = 0.36$).

Pain is particularly associated with negative affectivity (UCLA $r = -0.36$ and ASES $r = 0.4$) and also with an internal locus of health control (Constant $r = 0.34$).

4 months after surgery, recovery as examined with the WOSI has the significant relation with: negative affectivity ($r = -0.41$) and comprehensibility ($r = 0.44$).

Conclusion

There is a relation between psychological resources and postoperative outcomes of patients after rotator ring surgery. Understanding it may represent an opportunity to improve patients' recovery.

Keywords: salutogenetic model, psychological resources, rotator ring, pain, function, recovery

PSYCHOLOGICAL BACKGROUND AFFECTS FUNCTIONAL RECOVERY AFTER SURGICAL TREATMENT OF SHOULDER INSTABILITY

Elżbieta Sawicka-Garbarek, Jakub Kaszyński¹, Paweł Cisowski¹, Marta Ślęzak^{2,1}, Emilia Soroko³, Przemysław Lubiowski^{2,1}

¹Rehasport Clinic sp. z o.o., Poznań

²Katedra i Klinika Traumatologii, Ortopedii i Chirurgii Ręki, Uniwersytet Medyczny im. Karola Marcinkowskiego w Poznaniu

³Zakład Psychologii Zdrowia i Psychologii Klinicznej; Wydział Psychologii i Kognitywistyki; Laboratorium Badań Jakościowych i Mieszanych w Psychologii Klinicznej; Uniwersytet im. A. Mickiewicza w Poznaniu

Introduction

In the salutogenetic approach, the tendency to recover depends on the amount of resources available to the individual. In this study, it was hypothesized that the greater the amount of psychological resources, the quicker the recovery after shoulder instability (SI) surgery.

Aim

To test whether the psychological factor can be an indicator of recovery in SI.

Material and methods

The scores of 22 patients 4 months after SI surgery were used for the analysis.

A quantitative study of psychological resources was carried out using seven questionnaires covering the thematic areas most frequently mentioned in the context of health: personality, stress, sense of efficacy, and coherence, social support, locus of health control. Six of them relate to fixed traits, which do not change much under the influence of the experience of the moment.

The psychological test results were correlated with the questionnaires measuring patient recovery after shoulder surgery: Constant Score, UCLA, ASES and WOSI.

Results

4 months after surgery, recovery (WOSI) has correlations with: negative affectivity ($r = -0.52$), currently perceived level of stress ($r = -0.57$), sense of resourcefulness ($r = 0.61$) and meaningfulness ($r = -0.52$).

The function (Constant Score) is negatively influenced by the currently perceived level of stress ($r = -0.49$) and the tendency to rush and rivalry ($r = -0.51$). The sense of resourcefulness (manageability) has a positive impact on it ($r = 0.46$).

Pain is particularly associated with lack of perceived social support (UCLA Pain $r = 0.49$).

Conclusion

There is a relation between psychological resources and postoperative outcomes of patients with SI. Understanding it may represent an opportunity to improve patients' recovery.

Keywords: salutogenetic model, psychological resources, shoulder instability, function, pain, recovery

RELIABILITY OF ANTERIOR GLENOID DEFICIENCY MEASUREMENT USING 3D MULTIPLANAR RECONSTRUCTION (MPR) OF MAGNETIC RESONANCE IMAGING (MRI) IN PATIENTS WITH SHOULDER INSTABILITY

Sebastian Rauhut^{1,2,3}, Jan Niziński^{1,2,3}, Bartosz Antonik^{1,2,3}, Piotr Tuczyński^{1,2,3}, Agata Kaczmarek^{1,2,3}, Filip Jakubowski^{1,2,3}, Julian Sławski^{1,2,3}, Jakub Stefaniak³, Przemysław Lubiowski^{1,2,3}

¹Sport Trauma and Biomechanics Research Group

²Sport Trauma and Biomechanics Unit, Department of Traumatology, Orthopaedics and Hand Surgery University of Medical Sciences in Poznan

³Rehasport Clinic

Introduction

Shoulder instability is a common condition that occurs especially in an sportive group of patients. Especially where recurrent it has been associated with humeral head and glenoid bone loss. Accurate measurement of the glenoid bone loss can be assessed by CT or MRI multiplanar imaging and is crucial to the pre-operative planning. Several measurements including Pico method have been used for quantifying the extent of the glenoid bone loss.

Aim

The aim of the study is to compare intra and inter-observer reliability of glenoid deficiency measurement using MRI.

Material and methods

MRI images of 80 patients with history of shoulder dislocation were reviewed with Osirix software. Six observers with basic experience (medical students) measured width, height, area of the glenoid, erosion edge length, area of bone loss of all 80 cases twice, with at least one week interval between measurements. Reliability and repeatability was calculated using intra-class correlation coefficient (ICC) and minimal detectable change with 95% confidence (MDC95%).

Results

Intra and Inter-observer ICC and MDC95% for width and height were excellent. For erosion edge length and area of the glenoid were good/acceptable. Area of bone loss was associated with good ICC, but very poor MDC95%.

Conclusion

3D MPR MRI measurement of anterior glenoid lesion is a sufficient tool for simple parameters, like glenoid width or height. The more complex the measurement, the less reliable 3D MPR MRI is. Pico index is not reliable using this method, as the area of bone loss is characterized with very high variability.

Keywords: instability, shoulder, reliability, glenoid, deficiency, Magnetic resonance imaging

INTRA- AND INTER-OBSERVER COMPARISON OF RELIABILITY USING MULTIPLANAR RECONSTRUCTION (MPR) OF MAGNETIC RESONANCE IMAGING (MRI) IN PATIENTS WITH SHOULDER INSTABILITY

Agata Kaczmarek, Bartosz Antonik, Sebastian Rauhut, Piotr Tuczyński, Jan Niziński, Filip Jakubowski, Julian Sławski, Jakub Stefaniak, Przemysław Lubiowski
Sport Traumatology and Biomechanics Unit, Rehasport Clinic, Poznań University of Medical Sciences, Poznań

Introduction

Shoulder instability is a common condition that occurs especially when recurrent shoulder dislocation has been associated with humeral head and glenoid bone loss.

MRI imaging is important in measuring glenoid bone loss during the pre-operative planning process.

Aim

The aim of the study is to compare the intra- and inter-observer reliability of glenoid deficiency measurement (Bankart lesion) using MRI multiplanar imaging and Pico method.

Material and methods

We reviewed MRI images of 80 patients with a history of shoulder dislocation using the Osirix software. Six observers measured the width, height and area of the glenoid erosion edge length, as well as the area of bone loss of all 80 cases twice. The interval between measurements was kept at a minimum of one week. Reliability and repeatability were measured using intra-class correlation coefficient (ICC) and minimal detectable change with 95% confidence (MDC95%).

Results

Excellent results in intra- and inter-observer ICC and MDC95% for width and height were achieved. Outcomes for erosion edge length and area of the glenoid were good/acceptable. Area of bone loss was associated with good ICC but very poor MDC95%. The Pico index had good ICC but the MDC95% was not acceptable. Inter-observer reliability remained unchanged, while intra-observer improved with time.

Conclusion

MRI measurement of the anterior glenoid lesion is good for glenoid width or height. Pico index measurement is not reliable using this method, as the area of bone loss is characterized by very high variability. The learning curve between the observers is very individual.

Keywords: Bankart lesion, shoulder instability, glenoid bone loss, pico method, multiplanar reconstruction

ALL ARTHROSCOPIC “V SHAPED” SUPERIOR CAPSULE RECONSTRUCTION WITH LHB AUTOGRAFT FOR MASSIVE, IRREPARABLE ROTATOR CUFF TEARS

Maciej Kiciński, Bartłomiej Kordasiewicz

Idea Ortopedia, Warszawa

Introduction

Massive, irreparable rotator cuff tears are incessantly a challenge for a shoulder surgeon. Plethora of procedures has already been developed, yet none has proven to be satisfactory. One group of those procedures include superior capsule reconstruction with long head of biceps autograft.

Aim

In pursuit to further improve superior capsule reconstruction procedure with LHB autograft we describe an “all arthroscopic” V shaped SCR reconstruction, providing better humeral head graft coverage and stability.

Material and methods

Patient in beach chair position. A standard arthroscopy is performed with peripectoral, arthroscopic LHB tenodesis. Proximal part of LHB is then released providing us with a graft tissue. In a next step a standard, second LHB tenodesis is performed at a central part of the greater tuberosity dividing the proximal LHB stump in two parts. The first, proximal, creates an anterior limb of a V shaped reconstruction. The second, distal, is pushed back to a joint and stabilised with an all suture ancre just posterior to a supraglenoid tubercle and creates a posterior limb of a V shaped SCR. If possible, the rotator cuff is mobilised, advanced and stabilised onto SCR thus prepared.

Results

This method improves a coverage of a humeral head performing SCR with LHB autograft, as well as provides the better options to stabilise a remaining stumps of a cuff.

Conclusion

In conclusion yet another, improved option is available to address an irreparable, massive rotator cuff tears.

Keywords: SCR, irreparable cuff tear, LHB graft, arthroscopic peripectoral tenodesis

COMPREHENSIVE ARTHROSCOPIC MANAGEMENT (CAM) PROCEDURE IN SELECTED PATIENTS DELAYS NECESSITY OF SHOULDER REPLACEMENT IN FOLLOW-UP 2–12 YEARS

Karolina Skarysz, Hubert Larus, Aleksander Łapaj, Paweł Florek, Roman Brzóska
Szpital Św. Łukasza, Bielsko-Biała

Introduction

The CAM procedure is one of the options of joint-preserving treatments for glenohumeral arthritis (GHOA) in appropriately selected patients. The aim of this procedure is to reduce the pain, improve shoulder function and delay arthroplasty.

Aim

This study shows surgical outcomes of 51 patients with advanced glenohumeral arthritis who underwent comprehensive arthroscopic management (CAM) procedure.

Material and methods

Patients with advanced GHOA who underwent CAM procedure were retrospectively analysed. Inclusion criteria was GHOA confirmed radiologically and patients' no consent for the joint replacement. CAM involves combination of glenohumeral chondroplasty, removal of loose bodies (if present), humeral osteoplasty, osteophyte resection, capsular release, subacromial decompression and biceps tenolysis. Functional outcomes measured postoperatively included range of motion (ROM), Constant and SST (short shoulder test) scales and pain measurement in VAS (visual analogue scale). For survivorship analysis, failure was defined as progression to shoulder arthroplasty.

Results

Data of 51 patients was analysed. Mean age was 48.7 years (range 35.3 to 62.1) and mean follow-up was 47.2 months (range 13–144). Significant improvement of ROM was observed in internal rotation: mean preoperative/final IR were 48/59.6° respectively. Constant, VAS and SST Scores improved: Constant pre-op 55.7 to 79.6 post-op, VAS from 6 to 2.1 postoperatively. SST scored from 40.4% to 82.8% post-op. Failure rate was 4/51 (7.8%), in 47 no case of progression to arthroplasty.

Conclusion

The CAM procedure reduces pain, improves function and IR, delays arthroplasty in properly selected patients with GHOA.

Keywords: arthroscopy, shoulder, arthroplasty

ARTHROSCOPIC NON-PERFECT REPOSITION OF THE ANTERIOR GLENOID RIM FRACTURE – A MID-TERM FOLLOW-UP RESULTS

Wojciech Ananicz^{1,2}, Paweł Norwa^{3,2}, Wojciech Ananicz¹, Michał Janyst^{4,2}, Maciej Otworowski², Bartłomiej Kordasiewicz²

¹Centrum Chirurgii Specjalistycznej Ortopedika, Warszawa

²Idea Ortopedia w Warszawie

³Szpital Praski p.w. Przemienienia Pańskiego, Warszawa

⁴Szpital im. Adam Grucy, Otwock

Introduction

Anterior shoulder dislocation is often associated the anterior glenoid rim fractures. In acute cases, arthroscopic repair seemed to be the recommended. Small bony fragments associated with bone deficit can be repositioned using anchors alone but provide non- perfect reposition of the anterior glenoid rim fracture.

Aim

Aim of this study was to investigate the outcomes after arthroscopic non-perfect reposition of bony Bankart lesion.

Material and methods

Inclusion criteria to the study were: first- time anterior shoulder dislocation associated with an anterior rim fracture with small bony fragment (so fixation with the screws were impossible) and arthroscopic bony Bankart repair using anchors. 24 patients (19 males and 5 females) operated on from 2012 to 2022 were included into the analysis. Mean age of patients in group was 41 years (18–66). In 80% of cases injury occured in dominant extremity. Patients' results were evaluated using visual analog scale (VAS) and simple shoulder value (SSV).

Results

20 patients (83% of 24) were available to evaluation. Mean followup was 45 months (11–137). Mean function (SSV) was 95% (80–100%), compared to the function before the injury. Mean VAS score: 0.25 (0–2). Patient general satisfaction after the surgery was 98% (90%–100%). None of the patients had recurrence of instability.

Conclusion

Non-perfect reposition of bony fragments in acute Bony Bankart lesion provide very good results with no recurrence in mid-term follow-up.

Keywords: Anterior glenoid rim fracture, Bony Bankart lesion, anterior shoulder dislocation

ARTHROSCOPIC ARTHRODESIS OF THE SHOULDER JOINT IN THE COURSE OF ADVANCED DEGENERATIVE CHANGES – A CASE REPORT

Mikołaj Lewandowski¹, Jędrzej Jabłoński¹, Michał Górecki², Piotr Ogródowicz²

¹Student Research Group of Hand Surgery, Poznań University of Medical Sciences

²Department of Traumatology, Orthopedics and Hand Surgery, Poznań University of Medical Sciences

Introduction

Arthrodesis is an operation that permanently immobilizes a joint. The operation eliminates pain, corrects alignment, and provides a supportive function to the limb. In recent years, the number of indications for performing shoulder arthrodesis surgeries has decreased due to the development of shoulder endoprosthesis operations, which has proven more effective.

Aim

To present an alternative to shoulder endoprosthesis – shoulder arthrodesis, which was performed in a minimally invasive manner using an arthroscope and percutaneous stabilization.

Material and methods

A 74-year-old female patient was admitted to the Department of Hand Surgery on an elective basis because of pain and limitation of range of motion of both shoulders in the course of advanced degenerative changes caused by long-standing RA. The patient did not consent to endoprosthesis placement. Therefore shoulder arthrodesis was proposed to relieve the pain. The surgery was performed using a minimally invasive technique. The articular surface of the humeral head and scapular acetabulum were removed arthroscopically. Percutaneous stabilization with three cannulated screws was applied.

After the surgery, the patient was immobilized in a brace.

Results

After 3 months, a preliminary bony fusion was obtained, confirmed by X-ray, the arthrodesis was clinically stable, indirectly evidenced by the fact that a fracture of the humeral head occurred after fall from own height, and not at the site of the surgery.

Conclusion

Although shoulder endoprosthesis is the standard treatment for advanced degenerative changes, the results of this study suggest that shoulder arthrodesis may be an alternative in exceptional situations. Performed in a minimally invasive manner, it reduces tissue traumatization. Clinical effect is satisfactory after only 3 months.

Keywords: shoulder, shoulder arthrodesis, arthroscopy, RA, degenerative changes

EFFECT OF PRACTICE ON RELIABILITY OF ANTERIOR GLENOID DEFICIENCY MEASUREMENT USING 3D MULTIPLANAR RECONSTRUCTION (MPR) OF MAGNETIC RESONANCE IMAGING (MRI) IN PATIENTS WITH SHOULDER INSTABILITY

Bartosz Antonik¹, Jan Niziński¹, Agata Kaczmarek¹, Sebastian Rauhut¹, Filip Jakubowski¹, Piotr Tuczyński¹, Julian Sławski¹, Jakub Stefaniak², Przemysław Lubiowski²

¹Uniwersytet Medyczny im. Karola Marcinkowskiego w Poznaniu

²Rehasport Clinic Poznań

Introduction

Shoulder instability is a common condition that occurs especially in an sportive group of patients. It arises out of the detachment of the humeral head from the shoulder joint and coincides with the glenoid bone loss. Accurate measurement of the glenoid bone loss can be assessed by CT or MRI and is crucial to the pre-operative planning.

Aim

Showcase the effect of practice on reliability of anterior glenoid lesion measurement using 3D MPR MRI.

Material and methods

Six inexperienced observers (medical students) measured width, height, area of the glenoid, erosion edge length, area of bone loss, Pico index on MRI images of 80 patients with history of shoulder dislocation using Osirix software. Measurement of each patient was taken twice, with at least one week interval between measurements. Afterwards, intra-class correlation coefficient (ICC) and minimal detectable change with 95% confidence (MDC95%) were compared between the first 30 and last 30 reviewed patients.

Results

Intra-observer ICC and MDC95% values improved in all of the parameters, on the other hand inter-observer ICC and MDC95% values remained practically unchanged or worsened in most of the parameters. There were significant differences between observers.

Conclusion

As the method is practiced the intra-observer reliability improves. The pace of learning between the observers is very individual. With practice the differences in measurements between each observer became worse or remained mostly unchanged which suggest that experienced specialists might be needed to get accurate results.

Keywords: shoulder instability, glenoid bone loss, Magnetic resonance imaging, multiplanar reconstruction, reliability

RETURN TO WORK AFTER ROTATORS CUFF REPAIR CORRELATES WITH PATIENTS REPORTED OUTCOMES IN THE POLISH POPULATION

Katarzyna Kwas¹, Adam Kwapisz¹, Mateusz Kosior¹, Joanna Piwnik², Marcin Piwnik²

¹Klinika Ortopedii i Ortopedii Dziecięcej, Uniwersytet Medyczny w Łodzi

²Uniwersytet Medyczny w Łodzi

Introduction

Rotator cuff tears may cause shoulder joint dysfunctions which disenable work and physical activity. It is highly important to reclaim patients' presurgical health state. However, there is no literature regarding patients return to work after rotator cuff repair in Polish population.

Aim

The study aimed at analyzing the mean time of returning to work and activity, its correlation with patient reported outcome measurements.

Material and methods

Inclusion and exclusion criteria were used to prove the study group. Adult patients with rotator cuff repair surgery who agreed to take part in the study with minimum of one year follow-up were chosen for the research. Patients were assessed by single assessment numeric evaluation (SANE), global rating of change score (GROC) and simple shoulder test (SST) after the surgery. Statistical analysis was performed, bioethics committee approval was obtained.

Results

35 adult patients with mean age 58.2 years (SD = 8.9) were included in the study. Mean time of return to work was 4.5 months (SD = 3.6). Mean time of return to activity was 6.6 months (SD = 2.8). 54.8% of patients were pensioners, 17.4% had office job and 28.5% had physical job. Mean GROC for the study group was 4.7 (SD = 2.9), mean value of SANE was 70.3 (SD = 19.9) and mean value of SST was equal 8.8 (SD = 3.6). Time of returning to work was positively correlated with SST ($p = 0.033$). The dependence between time to return to activity and SANE score ($p > 0.0001$) and GROC score ($p = 0.004$) were statistically significant.

Conclusion

According to the assessment scales used, patients were satisfied with the postsurgical results.

Keywords: rotator cuff tear, arthroscopic repair

THE FUNCTIONAL AND RADIOLOGICAL OUTCOME OF ACUTE ACROMIOCLAVICULAR JOINT DISLOCATION TREATMENT BY ARTHROSCOPIC-ASSISTED TRIPLE BUTTON TECHNIQUE

Aleksander Łapaj, Hubert Laprus, Roman Brzóska, Wojciech Solecki, Adrian Błasiak
Oddział Ortopedyczno-Urazowy, Szpital św. Łukasza Bielsko-Biała

Introduction

ACJ dislocations qualifying for surgical repair most often occur during sports. Surgery is indicated to restore proper joint function. There is no gold standard method and many techniques were already proposed.

Aim

To analyze shoulder function and radiological outcome after the surgery which aims to restore anatomical ACJ stability.

Material and methods

Patients with type III or V dislocation treated by arthroscopic fixation with 3 endobuttons system between September 2014 and April 2022 were retrospectively analyzed. Correlation between radiological and functional outcome (using Constant-Murley Score), correlation between radiological outcome (vertical elevation of acromial end of clavicle in mm) and increasing time of follow up were analyzed. We evaluated the type of dislocation and its function and radiological outcome ($p > 0.05$).

Results

There were 34 patients, (33M/1F) with mean age of 36 years (youngest 17/oldest 52 y.o.). The mean follow up was 9 months (shortest 3m./longest 35m). Twenty two dislocations involved the dominant and 11 the non-dominant limb. Thirteen were type III and twenty were type V dislocations. The study showed no recurrence of ACJ dislocation, improvement of joint function in CMS score and all patients returned to previous sports. The postoperative X-Ray on the last FU visit revealed a good reduction of the ACJ dislocation on average 1.7 mm (min: 0, max: 5mm, $p = 0.041$). We had 2 cases lost in follow up.

Conclusion

Arthroscopic assisted triple button technique provides very good functional and radiological outcome with full return to sport in short to mid time follow up.

Keywords: AC joint separation, endobutton system, arthroscopic reconstruction, Acromioclavicular joint dislocation

SYNTHETIC LARS LIGAMENT AS A CHANCE FOR EXPRESS BICEPS BRACHII FUNCTION RECOVERY – CASE REPORT

Michał Urbaś^{1,2}, Hubert Makowski¹, Sebastian Żabierek^{3,4}

¹Uniwersytet Medyczny w Łodzi

²Ogólnopolskie Studenckie Towarzystwo Ortopedyczne

³Uniwersytet Medyczny w Łodzi – Katedra Ortopedii i Traumatologii

⁴Uniwersytecki Szpital Kliniczny im. Wojskowej Akademii Medycznej

Introduction

Distal biceps tendon rupture is a rare injury accounting for approximately 3% of all biceps injuries. It generally occurs due to sudden excessive eccentric contraction of the biceps brachii. Among the risk factors we can distinguish; use of anabolics, nicotine and male gender. In most cases, reinsertion of the ruptured tendon is sufficient, auto- or allograft is rarely required.

Aim

CaseReport

Material and methods

A 35-year-old man, was admitted to the orthopaedic department for scheduled reinsertion of the distal biceps tendon. The procedure was started with dual incision technique but subtotal absence of the tendon was revealed. It was decided to extend the procedure to tendon reconstruction using LARS ligament, which one side was sewn into distal biceps, the other was attached to the tuberosity of the radial bone using two bone anchors.

Results

The only complaint reported after the procedure was the stiffness of the fingers caused by the tight dressing. The patient was discharged the day after the surgery, ignored the doctor's recommendations and two weeks after the operation started to fully load the operated limb.

Only supination was reduced by 20% in the first 6 weeks after surgery. After 3 months, range of motion and strength returned to pre-injury state and are symmetrical with the unoperated limb.

Conclusion

The described case suggests that the use of the LARS ligament in the reconstruction of the distal biceps tendon may be a method that brings spectacular and quick results – therefore, it is worth considering in the group of patients awaiting quick full recovery.

Keywords: biceps brachii, Distal Biceps Injury, Distal Biceps Tendon reconstruction, LARS, OSTO

THE RESISTED HOOK TEST FOR DIAGNOSING PARTIAL DISTAL BICEPS TENDON TEARS

Michał J. Harasymczuk^{1,2}, Jorge L. Rojas Lievano¹, Anthony M. Vaichinger¹, Graham D. Pallante¹, James S. Fitzsimmons¹, Shawn W. O'Driscoll¹

¹Department of Orthopedic Surgery, Biomechanics Laboratory, Mayo Clinic Rochester MN, United States

²Department of Traumatology, Orthopaedics and Hand Surgery, Poznań University of Medical Sciences, Poznań, Poland.

Introduction

The hook test is a highly sensitive and specific test for assessment of complete distal biceps tendon (DBT) avulsions. The hook test was modified by adding active supination against resistance to improve the diagnosis of partial DBT tears.

Aim

Evaluate efficacy of resisted hook test in diagnosing complete vs partial DBT tears in surgical patients.

Methods

The resisted hook test was performed by a single surgeon in a cohort of 64 patients (66 repairs) undergoing surgical exploration of DBT. The results can be classified into three categories: (1) intact – normal tendon; (2) abnormal – partial tear; (3) absent – complete avulsion. The surgical findings were used as the gold standard to which the resisted hook test results were compared.

Results

Of the 66 repairs, 45 were complete avulsions and 21 partial tears. Among the 45 complete avulsions, the resisted hook test revealed the biceps tendon to be absent in 44, abnormal in 1. Among the 21 partial tears, the resisted hook test revealed the biceps tendon to be abnormal in all 21. The probability that a patient with an absent result had a complete avulsion was 98% and the probability that a patient with an abnormal result had a partial tear was 100%.

Conclusions

In patients with a high suspicion of a DBT tear and in instances where surgical treatment was recommended, the resisted hook test results were highly predictive for diagnosis of complete and partial DBT tears, and for and discrimination between the two.

Keywords: muscle injuries; general sports trauma; anatomy; clinical assessment/grading scale

Acknowledgements:

This study was funded by the Mayo Foundation for Medical Education and Research. The authors gratefully acknowledge the editorial assistance of Grace K. Chaney.

OPEN VERSUS ARTHROSCOPIC ELBOW ARTHROLYSIS FOR POSTTRAUMATIC ELBOW CONTRACTURE AFTER MIN. 2 YEARS FOLLOW-UP – COMPARATIVE STUDY

Marta Ślęzak^{1,2}, Maciej Bochenek^{1,2}, Joanna Wałęcka¹, Przemysław Lubiowski^{1,2}

¹Upper Limb Unit, Rehasport Clinic, Poznań, Poland

²Department of Traumatology, Orthopaedics and Hand Surgery, Poznań University of Medical Sciences, Poznań, Poland

Introduction

Contracture of the elbow is a common result of elbow trauma. This significantly impairs activities of everyday life

Aim

The purpose of this study was to compare the final outcome of patients with elbow contracture caused by joint trauma after arthroscopic and open elbow release.

Material and methods

The two groups of patients with traumatic elbow contracture (2009–2016), followed prospectively for 6 months with final retrospective evaluation at min. 2 year follow-up. Group I (ASK) after arthroscopic elbow release (30 patients) and group II (OPEN) after open arthrolysis (27 patients). The mean age: ASK 35.5 ± 14.1 (5–70) y.o. OPEN 34.5 ± 14 (9–58) y.o.; minimal follow-up 2 years.

Results

The average preoperative range of motion (ROM) of ASK was significantly better than in OPEN respectively: extension 35.1° vs. 50.0° ($p = 0.003$); flexion 119.5° vs. 10.7° ($p = 0.03$); arc of motion (ARC) 84.6° vs. 55.7° ($p < 0.001$). There was no significant difference in the intraoperative ROM between the groups.

In 2 years follow-up functional improvement (MEPS) was significantly better in ASK 89.5 ± 17.9 vs. OPEN 74.6 ± 15.9 ($p = 0.004$).

Both arthroscopic and open release provided similar results in moderate and minimal contractures. However, in severe and very severe contractures arthroscopic release was superior. In this group final gain of ARC comparing to intraoperative: ASK (91.4°) > OPEN (65.8°) ($p = 0.03$); loss of ARC between intraoperative and final: ASK ($0.8 \pm 17.2^\circ$) < OPEN ($27.1 \pm 18.0^\circ$) ($p = 0.02$).

Conclusion

In both types of surgery, effectiveness to restore intraoperative ROM was similar, although the loss of achieved ROM was greater for open release. Effectiveness of final results throughout the study period in moderate and severe contractures was similar. However, arthroscopic technique had better outcomes in very severe and severe limitations of ROM, likewise in final functional improvement.

Keywords: elbow contracture, elbow stiffness, arthrolysis, joint release, trauma, arthroscopy

INTRAMUSCULAR LIPOMA: AN UNCOMMON CONDITION DISGUISED AS A DISTAL BICEPS BRACHII TENDON RUPTURE. A CASE STUDY

Viktor Gałęcki¹, Anita Szymańska¹, Michał Górecki², Piotr Ogrodowicz²

¹Student Research Group of Hand Surgery, Poznań University of Medical Sciences

²Department of Traumatology, Orthopedics and Hand Surgery, Poznań University of Medical Sciences

Introduction

Lipomas are benign neoplasms commonly encountered by physicians and typically located subcutaneously. Nevertheless, their unusual location may be misleading and delay the right diagnosis and treatment.

Aim

This scientific paper depicts a rare case of an intramuscular lipoma discovered in the left biceps brachii of a 54-year-old man.

Material and methods

The patient was urgently admitted to the Hand Surgery Department due to a rapidly growing tumor in the left arm. After he had first noticed the lesion two years before, it was treated conservatively as a distal biceps brachii tendon tear. However, due to a significant increase in the left upper arm circumference over the previous few months, the patient reached out for further help. He reported ipsilateral hand pain and finger numbness exacerbated by the prolonged activity of the affected limb. Palpation revealed a soft, movable, and painless lesion. The ultrasound examination revealed its solid, hypoechogenic, well-demarcated structure.

The lesion was treated surgically with the use of anterolateral access. The encapsulated tumor was extracted from the biceps brachii's head and transferred for histopathological examination. The patient was discharged from the hospital on the next day as the initial healing of the wound was optimal.

Results

Two weeks later, no postoperative complications were observed, and the wound healing was optimal. Histopathological examination confirmed the diagnosis of lipoma of dimensions 13×6×10 cm.

Conclusions

Intramuscular lipomas are unlikely to be considered as a differential diagnosis in case of an arm circumference enlargement. Ultrasonographic imaging may enhance the detection of such lesions.

Keywords: lipoma, case report, biceps brachii, intramuscular, hand surgery

LONG HEAD BICEPS TENDON AS SUPERIOR CAPSULAR RECONSTRUCTION (LHBT-SCR) AUGMENTATION FOR MASSIVE ROTATOR CUFF REPAIR – “THE CHINESE AND POLISH (PODLASIE’S) WAY” OUR OWN EXPERIENCE

Robert Pełka, Krzysztof Otwinowski, Rafał Namysłak, Maciej Kuśnierkiewicz, Wojciech Marek
Center of Advanced Orthopedic and Arthroscopic Surgery NZOZ „Ortopedia” Głucholązy/Opole

Introduction

Long head of biceps tendon (LHBT) is one of the most investigated structures in the human shoulder. LHBT tenotomy or tenodesis are usually done during a rotator cuff repair, but recently many studies dedicated to using LHBT as a patch or an element of SCR (superior capsule reconstruction) have been published. The new option of using LHBT is a procedure known as the SCR. Newly described methods are technical modification of SCR utilizing LHBT as patch and bridge at the same time. Study was performed in our clinic during course of 3 years using two surgical methods so called “Chinese way” and “Podlasie’s way”.

Method and technique:

LHBT-SCR procedure have been adopted in 2017 in our clinic. During course of 3 years (till December 2020) 42 patients were qualified for procedure. 5 surgeons performed surgeries. Every surgery was an arthroscopic procedure utilizing one of two methods where LHBT is used as patch/bridge for rotator cuff lesion. “Chinese way” with LHBT tenotomized in the middle of the bicipital groove, shifted posterior and then tenodesed above tenotomy. “Podlasie’s way”, where LHBT is tenotomized posterior to bicipital groove and suturing to rotator cuff without tenotomy.

Results

Data used for evaluation has been gathered before surgery and after surgery during follow up (average 6 months, longest 20 months). Pre and post surgical data included sex, operated side, leading arm, UCLA shoulder scale, X-ray with Hamada scale arthropathy evaluation, acromiohumeral interval (X-ray). No complications have been reported. Early results showed meaningfully improved ROM of operated joint and great reduction of pain.

Conclusion

The advantages of using a biceps tendon autograft to augment rotator cuff repairs and superior capsule include the use of truly biologic material that may enhance healing and scar formation.

The limitations to these techniques include longer operating time, tedious graft preparation, and the lack of a long-term follow-up.

Considering results, it can be assumed that bridging grafts are effective in maintaining force coupling of the rotator cuff. However, the compared groups – biceps and other patches showed high healing failure rates.

Further clinical trials are needed to investigate the long-term benefits of this technique, as well as to determine the best indications for this procedure.

Keywords: long head biceps tendon , superior capsule reconstruction, massive cuff tear, tenodesis, tenotomy.

POLISH CULTURAL ADAPTATION OF ELBOW ASSESSMENT SCORES: OXFORD ELBOW SCORE, AMERICAN SHOULDER AND ELBOW SURGEONS-ELBOW, MAYO ELBOW PERFORMANCE SCORE AND SUMMARY OUTCOME DETERMINATION QUESTIONNAIRE

Jakub Kaszyński¹, Joanna Wałęcka¹, Marta Ślęzak¹, Agata Imirowicz¹, Marcin Wyrwiński¹, Przemysław Lubiowski^{1,2}

¹Rehasport Clinic, Poznan, Poland

²Department and Clinic of Orthopaedics, Traumatology and Hand Surgery, Poznan University of Medical Sciences, Poznan, Poland

Introduction

Elbow pain and related problems are commonly seen in doctors' or physiotherapists' general practice. Patient-rated questionnaires are a helpful tool in quantifying functional abilities and subjective feelings of patients who struggle with elbow problem. To the authors knowledge up to date there are no Polish versions of questionnaires related to elbow problems.

Aim

The purpose of this study is to translate and adapt four elbow questionnaires to suit Polish patients: Oxford Elbow Score (OES), American Shoulder and Elbow Surgeons-Elbow (ASES-E) and Mayo Elbow Performance Score (MEPS) and Summary Outcome Determination (SOD). This is initial phase and in the next, adapted questionnaires will be validated.

Materials and methods

Cultural adaptation of the selected questionnaires to the Polish culture has been conducted in five stages according to the international guidelines and was supervised by committee. Cultural adaptation process included translating each score from English into Polish, reverse-translation and testing of created version on a group of 30 people.

Results

There have been no major difficulties during cultural adaptation process. The only problem was certain words which had no equivalents in Polish. Testing of the prefinal versions did not bring any objections.

Conclusions

In conclusion, new Polish versions of OES, ASES-E, MEPS and SOD score will be very useful in elbow assessment, in daily practice of doctors and physiotherapists. They will help to unify evaluation of the patients and give a possibility of comparing the results of different treatment methods.

Keywords: Polish cultural adaptation, elbow, OES, ASES-E, MEPS, SOD

ARTHROSCOPIC TRANSOSSEOUS ROTATOR CUFF REPAIR: 1-YEAR OUTCOMES

Filip Hudecek

1st Department of Orthopaedics, St. Anne's University Hospital Brno, Faculty of Medicine of the Masaryk University, Brno, Czech Republic

Introduction

There is a growing body of evidence that arthroscopic transosseous rotator cuff repairs achieve equivalent clinical outcomes as suture anchor repairs or even better clinical outcomes. There is an earlier reduction of postoperative pain. Healing is more biological due to better vascularity, larger footprint coverage and clinically optimal biomechanical strength.

Aim

The purpose is to present the technique, postoperative pain levels and clinical outcomes at 1 year after repair of symptomatic rotator cuff tear operated with a novel transosseous suture-passing device designed for arthroscopic use.

Material and methods

Between February 2021 and December 2021, 44 patients underwent arthroscopic transosseous rotator cuff repair. During the postoperative period, the patients rated their pain (on the VAS scale) twice a day, in the morning and in the evening, for 4 weeks, based on which the average values per each week were calculated. At the baseline and 1 year patients were assessed for ASES Score.

Results

The patients reported rapid reduction of postoperative pain. Average VAS was first week 4.21, second week 2.32, third week 1.68, fourth week 1.22. ASES score significantly improved between baseline and 1 year. At 1 year the minimally clinically important difference for ASES was met by 93.2% patients.

Conclusion

The study confirmed the data published so far on early relief of postoperative pain. We also proved improvement in clinical function at 1 year after arthroscopic transosseous repair technique.

Keywords: arthroscopic transosseous rotator cuff repair, postoperative pain, clinical outcomes, ASES