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1 CHARACTERISTIC FEATURE OF ANTERIOR TYPE PARTIAL ROTATOR CUFF TEAR IN THROWING INJURY OF THE SHOULDER
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The purpose of present study was to clarify the characteristic feature of anterior type partial rotator cuff tear in throwing injury of the shoulder. According to the cite of tear, there were anterior type tear in 13 and posterior type tear in 20. Concealed type tear, which was intratendinous degenerative tear with residual articular-side superficial capsular portion, was representative lesion in anterior type tear. Posterior capsular tightness significantly related to anterior type tear. The presence of greater tuberosity notch was rare in anterior type tear. The mechanism of anterior type tear was suggested to be different from posterior type.

2 SURGICAL TREATMENT FOR ROTATOR INTERVAL LESION IN THE THROWING INJURY
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We reported the feature of arthroscopic findings and surgical results of rotator interval lesion (RIL) in the throwing injury. We operated on 14 baseball players (mean age: 24.7 y). RIL were repaired by Nobuhara’s method. Surgical results were evaluated according to JSS Sports Score. Mean follow up period was 2.9 years. The score improved from 41.6 to 86.6 points. Although various findings were seen arthroscopically, it seemed that RIL was main lesion and other findings were occurred by instability caused by RIL. Surgical repair was effective.

3 A COMPARISON OF THE SHOULDER RANGE OF MOTIONS BETWEEN ELEMENTARY SCHOOL AND HIGH SCHOOL BASEBALL PLAYERS
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We investigated the differences of range of motions of the shoulder between elementary school and high school baseball players. We studied 35 elementary school players (group ES) and 46 high school players (group HS). In both groups, internal rotation with the shoulder abduction 90° (2nd IR) was statistically less in the dominant shoulders than in the nondominant shoulders. 2nd IR in group HS is statistically less than group ES. It seems that the 2nd IR decrease in the dominant shoulders in group HS was caused by not only retroversion of the humeral head but also severer posterior shoulder tightness than in group ES.

4 SHOULDER RANGE OF MOTION IN PRIMARY AND JUNIOR HIGH SCHOOL BASEBALL AND SOCCER PLAYERS
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The purpose was to compare the side-to-side difference in shoulder rotation in baseball and soccer players. Subjects were 1089 baseball and 423 soccer players. External rotation of dominant shoulder was greater than nondominant shoulder from age 10 to 15 in baseball players, and in age 11 and age 12 soccer players. Internal rotation of dominant shoulder was less than nondominant shoulder from age 10 to 15 in baseball players, and from age 10 to 12 in soccer players. There was side-to-side difference in shoulder motion in primary school baseball and soccer players, and in junior high school baseball players.

5 MEDICAL CHECK FOR THE BASEBALL INJURIES OF THE SHOULDER JOINT IN JUNIOR AND SENIOR HIGH SCHOOL STUDENTS IN KOCHI PREFECTURE
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We performed medical check of baseball injuries of the shoulder joint on 432 junior and 525 senior high school students in Kochi prefecture during 1997 and 2002. They were investigated by means of a questionnaire and physical examination. Almost 30% of the players showed a painful condition and overused states of their shoulder joint in 1997 and 1998. The ratio of the painful condition of the baseball players decreased every years. Our results suggest that an early search for shoulder injuries in young baseball players is useful for treating throwing injuries of the shoulder joint.

6 THE CHARACTERISTIC OF THE TRUNK ROTATION IN THE THROWING ATHLETES
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Purpose: To know the characteristic of the trunk rotation in the throwing athletes.

Method: We examined the trunk rotation of the 105 baseball players (throwing group) and 54 football players (non-throwing group). We considered the subjects showing clear differences between the rotation to the throwing side and the other positive.

Results: All positive subjects showed the restriction to the throwing side. In the throwing group, 47 subjects of 105 were positive, while in the non-throwing group, 10 of 56 were positive (P < 0.05).

Conclusion: This restriction of the trunk rotation to the throwing side will cause the throwing shoulder more stress.
7 THE EFFICIENCY OF RADIAL PLANE OF MR ARTHROGRAPHY FOR SUPERIOR LABRAL LESIONS IN PAINFUL THROWING SHOULDER
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We investigated the efficiency of radial plane of MRA of superior labral lesions in twelve painful throwing shoulders. After we performed a radial localizing imaging, intensity and morphological changes in the labrum through full o'clock positions of the glenoid rim were evaluated. The findings on the MRA were correlated with arthroscopical findings. This study showed 81.3% of accuracy. Radial MRA was useful to diagnose the superior labral lesion.

8 ARTHROSCOPIC CAPSULAR RELEASE FOR THROWING SHOULDER WITH REFRACTORY POSTERIOR CAPSULAR TIGHTNESS
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Arthroscopic posterior-inferior capsular release was indicated on throwing shoulder resisting against conservative treatment and with over 20° loss of internal rotation in the dominant shoulder with the shoulder at 90° abduction (2nd IR) or at 90° flexion (3rd IR). Five baseball players were retrospectively studied. The mean age at the surgery was 23.7 years. Four of five patients could return to baseball after surgery at over 80% level of pre-injury performance. The mean loss of IR significantly improved from 30° to 7° in 2nd IR and from 24° to 5° in 3rd IR.

9 MEASUREMENT OF THE INTERNAL SHOULDER ROTATION ANGLES WITH THE ELBOW BEING EXTENDED
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The internal shoulder rotation angles were measured with the elbow being extended using a rod applied to the front of the elbow and an original measurement plate on 40 shoulders of 20 volunteers. Measurement was performed 3 times each in the unit of 5 degrees. The median angles were 80–120°. The difference of the values in the three times measurements was 0° in 19 shoulders and 5° in 21 shoulders. Conventional measurement with elbow being flexed cannot represent the maximum range because the examinee’s trunk is in the way. Our method may be an optional measuring tool.

10 IMMOBILIZATION OF EXTERNAL ROTATION AFTER LABRUM INJURIES IN YOUNG PATIENTS
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Teenagers run high risks of recurrent dislocation. We treated teenage patients using immobilization of external rotation (30 degrees and 4 weeks) in order to protect recurrent dislocation. Subjects consisted of 13 teenage cases with injured labrums, and were observed for over one year. MRA showed anterior and inferior parts of labrums improved well. No cases showed leakage into improved parts. However anterior superior labrum was not improved. The fulcrum test was positive up to 5.8 weeks. Subjects’ Rowe’s scores were excellent. Furthermore a sling was needed for 2 additions weeks after the end of the external immobilization period.

11 CLINICAL RESULTS OF AN ARTHROSCOPIC BANKART REPAIR USING ABSORBABLE ANCHORS FOR TRAUMATIC RECURRENT ANTERIOR INSTABILITY
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We examined the clinical results of 35 shoulders with arthroscopic Bankart repair using absorbable anchors. Their average age was 27 (16–64) and the average follow-up period was 22 (9–47) months. In principle, this procedure was performed when anterior band of the inferior glenohumeral ligament with sufficient width was clearly observed. 4 shoulders underwent dislocation again after surgery resulted from another injury during snowboarding. In the residual 32 shoulders, slight feeling of instability and obvious restriction of external rotation remained on 3 shoulders respectively. Good functional results may be expected, but the recurrence may occur in case of another traumatic episodes.

12 ANALYSIS OF FACTORS RELATED TO THE RECURRENT AFTER SURGICAL REPAIR OF RECURRENT ANTERIOR SHOULDER DISLOCATION

Seventeen shoulders with reoperation of recurrent anterior shoulder dislocation were examined. The initial surgical procedures were Bankart repair in 8 shoulders. In 10 shoulders, the redislocation was caused by a traumatic event. At reoperation, the findings were detached labrum in 16 shoulders and bone defect in 17, which were more than 20% in 7. Failed procedure was found in 8 shoulders. Statistical analysis was performed among these factors. Significant factor hastening redislocation and related to redislocation without a traumatic event was not found. The only significant fact is that 8 Bankart repairs had larger bone defect than remaining 9 procedures.

13 QUANTITATIVE ASSESSMENT OF JOINT VOLUME IN SHOULDERS WITH TRAUMATIC ANTERIOR INSTABILITY
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The usefulness of measuring anterior joint volume in shoulders with traumatic anterior instability using 3DCT was evaluated. Seventy three shoulders were included, with an average age of 22 years old (14–35), in which pre-operative CT double contrast evaluation revealed anterior instability. The average rates of anterior superior and anterior inferior volume were 18.2 ± 6.2% (7.7–32.6) and 35.7 ± 7.9% (21.0–48.4). These results revealed that anterior joint cavity expands in an inferior direction in shoulders with traumatic anterior instability. The measurement of the shoulder volume is a valuable method to estimate the enlargement of the capsule.

14 ANALYSIS OF THE AIRBORNE MICROORGANISMS IN ROOM AIR AS A CONTRAST MEDIUM NEGATIVE OF SHOULDER ARTHROGRAPHY

Purpose: The purpose of this study is to investigate the airborne microorganisms in environments where shoulder arthrography is performed.

Material and Methods: Using an air sampler measured the
bacterial count of airborne microorganisms in an imaging room, a
general operating room and a bio-clean operating room (OR).

Results: The bacterial number of the imaging room while in use
was the largest number in comparison with other places.

Discussion: These results suggest that when injected air is used
in a joint as a contrast medium negative, there is a need to consider
carefully the conditions of the collected air.

15 HUMERAL SHORTENING AND SHOULDER SUBLUXATION AS A SEQUEL OF SEPTIC ARTHRITIS OF THE SHOULDER IN INFANTS
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The purpose of this study is to clarify a sequel of septic arthritis in infants. Sixteen shoulders in 15 patients were retrospectively evaluated from clinical records and plain radiographs. Mean follow-up term was 11.3 years. Arthroscopy was performed in 10 shoulders and remaining 6 shoulders were managed conservatively. In the latest follow-up radiographs, inferior subluxation of the shoulder was observed in 5 shoulders. Humeral shortening was significantly related with inferior subluxation and 3 cm-shortening seemed to be critical. Early drainage by arthroscopy was thought to be necessary to avoid humeral shortening and consequent subluxation of the shoulder.

16 ARTHROSCOPIC SURGERY FOR PRIMARY OSTEARTHROTHRIS OF GLENOHUMERAL JOINT
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5 shoulder patients, all Japanese females with mean age of 75.5 years, underwent arthroscopic surgery after primary osteoarthritis of the glenohumeral joint without rotator cuff tear was detected. Synovectomy, detached articular cartilage resection and loose body debridement following subchondral bone resection arthroplasty, was performed arthroscopically in the glenohumeral joint. There were excellent results in 3 cases and good results in 2 of the 5 cases, after a follow-up of mean 2.1 years. Arthroscopic surgery is a low-invasive and useful procedure before performing prosthesis for disorders where conservative treatments are not effective.

17 COMPARISON OF CLINICAL RESULTS BETWEEN OPEN AND ARTHROSCOPIC REPAIRS OF ROTATOR CUFF TEARS
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We compared the clinical results and duration of arthroscopic repair for rotator cuff tears with those of open repair. Ten shoulders of 10 patients with mean age 61.5 years underwent open repair using Panalok™ RC anchors. In another ten shoulders of 10 patients with mean age 59.8 years treated, cuff tear was repaired by arthroscopic technique using Fastin™ anchors. The clinical results of arthroscopic repair were almost the same as those of open repair. Mean durations for arthroscopic repair were longer than those for open repair. Arthroscopic repair is minimally invasive but required a longer duration of surgery.

18 CLINICAL COURSE OF EACH AGE GROUP FOLLOWING HEMIARTHROPLASTY FOR DISPLACED FRACTURE OF PROXIMAL HUMERUS,
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We investigated shoulder function of 15 shoulders in 13 patients (one man and 12 women) aged more than 70 years old who suffered displaced fracture of proximal humerus and underwent surgery by hemiarthroplasty, at 3 months, 6 months and 12 months postoperatively. We divided 15 shoulders into 3 groups by age at injury (the seventh decade, the eighth decade, and the ninth decade). Functional recovery improved until 12 months postoperatively and outcome was the most excellent in the seventh decade group. Remarkable functional recovery was not obtained after 6 months postoperatively in the eighth and the ninth decade groups.

19 SURGICAL TREATMENT FOR THE COMMINUTED FRACTURES OF THE GLENOID OF THE SCAPULA

Ten patients with the comminuted fractures of the glenoid were treated surgically. Associated injuries in the shoulder girdle were anterior dislocation of the shoulder (1 case), posterior dislocation of the shoulder (4 cases), acromioclavicular dislocation (3 cases), clavicular fracture (5 cases), fracture of the coracoid process (4 cases) and fracture of the acromion (1 case). The intraarticular bone fragments were fixed with screws and the glenoid and the scapular body was connected with screws or plate. Finally the associated injuries were reduced and fixed. All the cases healed primarily and showed good results. Average JOA score was 96.4 points.

20 EVALUATION OF THE SUPRASPINATUS MUSCLE BELLY USING MRI OF ROTATOR CUFF TEARS

The purpose of this study is to examine whether thickness and fatty degeneration of the supraspinatus muscle is recovered by the operation. McLaughlin’s procedure was performed on consecutive 126 shoulders with the rotator cuff tear. MR images were used for measuring the thickness of the supraspinatus muscle belly and classifying the degree of fatty degeneration preoperatively and 2 years postoperatively. Cases where the tear size was smaller and cases where there was a low degree of the fatty degeneration preoperatively improved significantly (p < 0.05). Therefore, the surgical repair should be performed at the early stage.

21 HIDDEN LESIONS OF THE SUBSCAPULARIS TENDON: CLINICAL EVALUATION USING CT-ARTHROGRAPHY
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We investigated CT-arthrography for evaluation of hidden lesions in 72 complete cuff tear cases. CT-arthrography and MRI were performed preoperatively, and subscapularis tendon insertion and biceps pathology were fully evaluated during surgery. The sensitivity, specificity, and accuracy of CT-arthrography for preoperative diagnosis of subscapularis tendon rupture were 83.3%, 91.7%, and 86.7%, respectively, with CT-arthrography accuracy higher than that of MRI. Further, CT-arthrography sensitivity when using only the oblique sagittal plane was higher than that using only the axial plane. CT-arthrography was found to be a reliable method for diagnosis of hidden lesions, especially when using the oblique sagittal plane.
22 ARTHROSCOPIC SUBACROMIAL DECOMPRESSION FOR SMALL ROTATOR CUFF TEARS
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Purpose: We report the results of ASD for small rotator cuff tears (RCT).
Subjects and Methods: The subjects were 10 patients (10 shoulders), 7 male and 3 female, with a mean age of 56.9 years and a mean postoperative follow-up of 54.7 months. Surgery was indicated for patients with RCT measuring 2 cm or less in diameter in whom active elevation was possible (including that after injection of a local anesthetic).
Results: The mean preoperative and postoperative JOA scores were 64.8 and 92.9 points.
Conclusion: ASD alone may achieve good results in patients with small RCT when it is adequately indicated.

23 COMPARISON OF ARTHROSCOPIC AND OPEN ROTATOR CUFF REPAIR
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The purpose was to compare the results of all-arthroscopic repair of full-thickness rotator cuff tears (50 patients) with those of open repairs (50 patients). The mean follow-up period was 49 months. Seven patients had a small tear, 63 a medium tear, 17 a large tear, and 13 a massive tear. Two groups were statistically similar in terms of age, gender, trauma incidence, tear size, duration of symptoms, and the preoperative shoulder scores. Arthroscopic repair of small-to-massive tears had outcomes equivalent to those of open repair. Outcomes in large-to-massive tears were inferior to those in small-to-medium tears, regardless of repair method.

24 ARTHROSCOPIC ROTATOR CUFF REPAIR: CLINICAL OUTCOME COMPARED WITH OPEN REPAIR
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The purpose of present study was to clarify the differences of clinical course and functional recovery between arthroscopic (ARCR) and open (ORCR) rotator cuff repairs. Thirty patients with ARCR and 30 with ORCR, who had even backgrounds were evaluated pre/postoperatively using Japanese Orthopaedic Association (JOA) Shoulder scores. Symptoms, active ROM and JOA Shoulder scores of all patients improved after surgery (p < 0.0001). Postoperative external rotation in the ARCR group improved better (28.3 to 61.0) than ORCR group (19.3 to 51.3). The ARCR group tended to have less perioperative pain, improved quickly in the immediate postoperative period and less frequently complicated CRPS.