

Radiological Long-Term Follow-up After Arthroscopic Bankart Repair: Results on Prevalence and Risk Factors of Glenohumeral Osteoarthritis at a Minimum of 10 Years Follow Up

Johannes E. Plath, MD, GERMANY

Mohamed Aboalata, MSc, GERMANY

Julia Juretzko, MBBch, GERMANY

Simone Waldt, MD, GERMANY

Stephan Vogt, MD, GERMANY

Andreas B. Imhoff, MD, Prof, GERMANY

Sport Orthopedic Department, Technical University
Munich, Bavaria, GERMANY

Summary:

The number of dislocations before arthroscopic bankart-repair seems to be more relevant for long-term glenohumeral joint degeneration than time from primary dislocation to surgery.

Abstract:

Introduction:

Glenohumeral osteoarthritis is a well-documented long-term complication of open stabilization procedures. However to our knowledge only a single report has been published on long-term outcome after arthroscopic repair considering degenerative changes.

What remains unknown is whether cartilage changes are due to the trauma, the episodes of instability or caused by the stabilization procedure itself.

The purpose of this study was to investigate the radiological outcome of arthroscopic bankart repair in a large number of patients at a minimum follow-up of 10 years with particular attention to risk factors for the development of osteoarthritis.

Material and Methods:

AP and lateral radiographs were obtained to evaluate the prevalence and grade of osteoarthritis according to the Samilson-Prieto classification. All X-rays have been examined by an orthopedic surgeon and an experienced musculoskeletal radiologist. Patients were also assessed clinically using the constant score to correlate osteoarthritic changes and clinical outcome.

Time from initial dislocation to surgery, number of dislocations pre-operatively, external rotational deficit at time of follow-up, age at time of surgery and at first dislocation, number of anchors used and subjective stability of the patient have been assessed as risk-factors for development of glenohumeral osteoarthritis.

Statistical analyses were performed using SPSS software version 20 for mac (SPSS Inc., Chicago, Illinois, USA). The level of significance was set at $p < .05$.

Nonparametric tests (Mann-Whitney-U-Test or Kruskal-Wallis) were used for group comparison. Spearman correlation coefficients (ρ) and level of significances were calculated to assess correlation between prevalence and grade of osteoarthritis and possible risk factors.

Results:

69 Patients (51 male / 18 female) treated between April 1996 and November 2001 have been examined in this study with a mean follow-up of 12,8 years. The average constant score was 90,8 (SD 10,5).

32 patients (46%) showed no sign of osteoarthritis, 24 patients (35%) a grade I, 9 patients (13%) a grade II and 4

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patients (6%) a grade III glenohumeral osteoarthritis. 15 patients (22%) experienced a recurrent instability with a dislocation in 8 patients (12%) and subluxations in 7 patients (10%).

Revision surgery was necessary in 6 patients.

Shoulders with recurrent instability did not show a higher prevalence or higher rate of osteoarthritis compared to stable shoulders ($p>0,05$).

Age at first dislocation correlated significantly with prevalence ($p=0,001$, $\rho=0,378$) and grade of osteoarthritic changes ($p=0,002$, $\rho=0,374$).

A significant correlation was also seen for age at time of surgery ($p=0,001$, $\rho=0,379$ and $p=0,001$, $\rho=0,408$ respectively).

Furthermore a significant correlation between prevalence and grade of osteoarthritis and number of dislocations before stabilization procedure ($p=0,034$, $\rho=0,255$ and $p=0,045$, $\rho=0,242$ respectively) could be detected.

Also the number of anchors used intraoperatively correlated to the grade of glenohumeral osteoarthritis in the long term ($p=0,050$, $\rho=0,242$).

Time from initial dislocation to surgery, external rotational deficit at time of follow-up and subjective stability of the patient showed no significant correlation to prevalence or grade of osteoarthritis ($p>0,05$).

Glenohumeral osteoarthritis did not correlate with the clinical outcome ($p>0,05$).

Discussion:

With more than half of our patients showing degenerative changes the prevalence of glenohumeral osteoarthritis more than 10 years after arthroscopic bankart repair is high and comparable to open procedures. However most degenerative changes are mild and with an excellent average constant score of more than 90 and no correlation between constant score and osteoarthritis these degenerative changes are well tolerated by the patients.

The number of dislocations before surgery seems to have a relevant effect on the long-term development of glenohumeral osteoarthritis. In terms of time from primary dislocation to surgical stabilization, however, no influence could be detected. Thus avoiding preoperative dislocations seems to be more relevant for the prevention of osteoarthritis than short-term treatment.

In our patients no correlation between an overly tight anterior repair with loss of external rotation and development of osteoarthritis could be seen. The number of anchors used, however, and thus the number of knots and foreign material seems to be a predictor for the long-term development of osteoarthritis.

Surgeons should keep that in mind when performing arthroscopic stabilization.

In our study we could detect a highly significant correlation between age at time of primary dislocation and at time of surgery and osteoarthritis. This is not very surprising as osteoarthritis is a problem of elderly people.

As we could not obtain preoperative X-rays from all patients we do not know the prevalence of degenerative changes at the time of surgery. Thus it is impossible to state how much the trauma and consecutive surgery did speed up the natural joint degeneration.

The lack of complete preoperative imaging is the major weakness of this study.

Nevertheless this is the largest number of patients and the longest follow-up examination on arthroscopic bankart repair yet.

Conclusion

There is a high prevalence of degenerative changes in the long-term follow up after arthroscopic bankart repair. The changes, however, are usually mild and do not affect clinical outcome.

The number of dislocations before surgery seems to be more relevant for joint degeneration than time from initial dislocation to surgery.