

The use of Reverse Shoulder Arthroplasty for treatment of Chronic Shoulder Dislocations

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Abstract

Background: The chronic shoulder dislocation is a serious condition that cuts the upper limb function and puts it in a bad position for use of the elbow and hand. The mechanical changes due to the time that the joint is dislocated are irreversible and difficult to management. The surgical procedure for treatment this condition is generally salvaging procedures and has limited results mostly when the patient has limited healing capacity by age.

Methods: We evaluated three (3) patients with anterior chronic dislocation of the shoulder that underwent surgical treatment with Reverse Arthroplasty. The average age was 68 years, with the youngest patient 64 years old and the oldest, 77. The average period in which the shoulders were dislocated was 15 months (minimum of 4 and maximum of 24 months). The mean postoperative follow-up was 29.3 months (12 months minimum).

Results: Surgery was performed with a mean time of 123 minutes and one patient (33%) required blood transfusion. An average active flexion of 103 degrees and an average of 10 degrees of external rotation was reached. Internal rotation of the upper limb reaching the spinous process of the L4 was achieved in average. The mean UCLA index was 24 and 66% of patients were capable of activities of daily living. The complication rate was 33% with a transient axillary neuropraxia for 30 days.

Conclusion: The self-stabilization of the Reverse Shoulder Arthroplasty can lead to the short-term satisfactory results in the treatment of anterior chronic dislocation in elderly people.

Keywords: Reverse shoulder arthroplasty; dislocation; fractures, sequelae; posttraumatic; shoulder dislocation; shoulder replacement.

Introduction

Dislocation of the scapular-humeral joint is a condition that, when neglected, becomes an unwieldy condition where the prognosis is poor [1-5]. It is classified as type 2 of Walch Fracture-Sequela Classification [6]. Literature is controversial about the definition of chronic dislocation of the shoulder joint (CSD). Schultz et al [7] considered CSD 24 hours after the trauma. Rowe and Zarins [8] recognized as chronic the dislocation with at least three weeks of evolution. Postacchini and Facchini [9] defined as chronic the dislocation diagnosed after 45 days. The treatment of this condition is divided between anatomical and arthroplastic

surgical procedures. Anatomical procedures preserve bone stock and try to maintain the reduced joint functional. The arthroplasty procedures require the use of the musculocapsular stabilizing envelope, which is damaged, making it difficult to maintain a stable and functional joint [1,10-13]. The objective of the study is to evaluate the médium-term result of the treatment of CSD with Reverse Shoulder Arthroplasty (RSA).

Methods

From January 2013 to September 2014, three patients presenting chronic anterior dislocation of the shoulder joint underwent surgical treatment by using RSA at the

Shoulder and Elbow division of our institution. Patients, on the occasion of their admission for surgery, were informed and consented the use of their medical records data

for scientific research. There was the release of the ethics committee of the institution involved in the study.

The average age of the sample was 68 years and the average length of shoulder dislocation was 15 months (minimum of four and maximum of 24 months). The preoperative physical examination demonstrated, by inspection, a characteristic deformity of the anterior shoulder dislocation, function limited by the blockade of motion and the anomalous position of the upper limb. The patients had no neurological deficit (Fig. 1). The surgical procedures were performed by the same surgeon in the "beach chair" position by a deltopectoral access. The brand of the arthroplasty was Exactech in two cases and Zimmer in one case. Two humeral stems were cemented and one uncemented. It was not possible to perform the closing of Subscapularis tendon in the three cases. The average operative time was two hours and three minutes (123 minutes) and there was the need for blood transfusion in one patient (33%) (Fig. 2). The variables used for the study were: age,

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Figure 1: Pre-operative Xray. A, AP view, and B, P View.

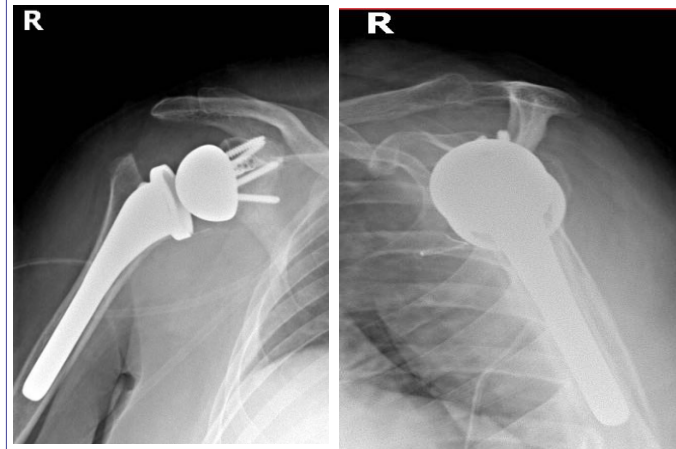


Figure 2: Postoperative Xray. A, AP view, and B, P View

sex, operated side, range of motion, the index of UCLA and presence of alcoholism. The data were analyzed by the arithmetic averages and proportions.

Results

The average age of patients included in the study was 68 years. The youngest patient was 64 and the oldest, 77 years old. Two patients were male and one was female. The operated side was the right side in all patients and all patients were right handed. Postoperative clinical evaluation was performed with an average of 29 months, with a minimum of 12 months. The average active forward flexion was 103 degrees, the average of external rotation was 10 degrees and the average internal rotation reached the L4 spinous process. Two patients (66%) was able to perform the daily activities (Fig. 3).

The UCLA index was different for the three patients. One patient presented UCLA 14 (bad), another one presented UCLA 28 (regular) and the other patient UCLA 30 (good).

It was shown, by post-operative physical

examination, the emergence of transient neuropraxia of Axillary Nerve in one patient (33%) that was solved at the end of 60 days.

Discussion

Chronic dislocation of the scapular-humeral joint is a difficult condition to be handled because of structural damage to the joint anatomy caused by the anomalous position of the humeral head [1-5, 12, 14]. The elapsed time since the trauma seems to increase the destruction of bone and capsuloligamentar tissue by compression and traction respectively[3,4, 12, 14]. The literature is controversial and shows intervals ranging from 24 hours to 45 days after injury to consider a CSD[7-9]. Having in mind that the elapsed time since the trauma makes the changes of capsuloligamentar tissue and bone, less and less reversible. It is known that primary soft tissue healing is as long as than 21 days, in average[15]. Thus the author will consider chronic dislocations those presenting the timeframe higher than 21 days. In our study, the most recent dislocation was 4 months. The CSD is classified according to the

direction in anterior and posterior and it is considered as type 2 Walch Fracture-Sequela Classification[6]. All patients included in the study had anterior CSD, which is less tolerated by the non-functional position of the upper limb[1] and the compression of the brachial plexus by the proximal humerus[16].

The bone and capsuloligamentous changes are generally definitive, irreversible and determine a poor prognosis of treatment[5,12,14,17,18]. Therapeutic options are resection arthroplasty (Jones Surgery)[19]; surgical reduction with the attempt to repair the rotator cuff or greater tuberosity fixation [20,21]; surgical reduction with reconstruction of soft tissue and bone, association or not of grafts; infra-spinatus' Ramplissage [22,23,24]; surgical reduction followed by coracoid transfer to the anterior glenoid[5]; partial and total arthroplasties[4,25,26] and the simple observation of the evolution of the patient (supervised neglect)[17].

Metha[27] evaluated a case of CSD with six weeks of evolution that underwent surgical reduction and reconstruction of the humeral head with osteochondral graft. The case had a satisfactory outcome.

Li et al[5], evaluated the capacity of Latarjet procedure to keep the reduction in 35 patients with CSD. The dislocation recurrence rate was approximately 50%. Abdelhady[24] analyzed a series of four patients with CSD which held surgical reduction and Ramplissage of infra-spinatus in the Hill-Sacks defect. It was reported that one case (25%), with deficiency of the anterior glenoid bone stock, required a Latarjet as an additional procedure.



Figure 3: 2 years postoperative result showing good functional result

Venkatachalam et al[25] reported a case of CSD in a young patient (58 years) where an anatomical hemi-arthroplasty was held as well as bone reconstruction and biological resurfacing of the glenoid with enhanced anterior capsule allograft. They reported satisfactory outcomes for the procedure. Rassi et al[28] reported a case of a 22-year-old bench press athlete with bilateral CSD who refused surgical treatment and had no pain and his arc of movement was considered functional with evolution. Treatment of CSD has worsened its prognosis when it involves patients with advanced age, where the healing capacity and adaptation of soft tissue is compromised. These patients usually have poor rotator cuffs, therefore it is not possible to guarantee function when one chooses to use the conventional shoulder prosthesis[17,26].

The literature is also controversial when analyzing the CSD in patients with advanced age. Galano et al[29] reported a more than 70-year-old patient with 15 days of shoulder dislocation submitted to closed reduction of the joint and arthroscopic suture of the rotator cuff. Yu et al[20] evaluated the surgical reduction of the CSD in seven patients with an average age of 74 years. Patients achieved improved active forward flexion without redislocation. Jong-Hun Ji et al[14], reported a case of a 68-year-old patient presenting 4 months of CSD and rotator cuff injury that underwent a successful RSA.

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Raiss et al[30], in a multi-center study, evaluated the largest series of cases in the literature. They studied the results of 22 CSD with average age of 71 years treated with RSA. They found an improvement in the Constant score, improvement on range of motion in flexion and external rotation. The range of motion achieved in this study was similar to that achieved in our patients. Another similarity factor of our series was the complication rate around 30%. They concluded that the RSA may be indicated in elderly patients with CSD and that bone deficiency in the glenoid is a poor prognostic factor.

The Reverse Shoulder Arthroplasty have had their indications extended in order to try to solve several serious joint disorders[13,14,30,31]. Its self stabilization's characteristic may decrease the chances of redislocation, presented in other types of treatment for the CSD. The shoulder function can be satisfactorily restored through this procedure in patients who present missing damaged or insufficient rotator cuff, [30]. Kurowicki et al.[32] analyzed a serie of 24 patients with an average age of 76 years, with severe anterior shoulder instability and glenoid bone loss that evolved into RSA. They observed that patients' pain was mitigated and functions were improved after RSA. They also noted that this type of indication to RSA results in less arc of forward flexion than the classical indication for cuff arthropathy. Lower functional score rates

and higher incidence of acromion fractures was found as well.

The initial assessment of the patient with CSD in general shows no neurological damage[17,18]. In our cases, the neurovascular examination was normal at the time of hospital admission for surgery. The alcohol addiction predisposes the patient to falls and convulsive states, increasing the likelihood of shoulder dislocation[1,32,33]. Checchia et al.[4] showed an incidence of 23% of alcoholism among patients with CSD in their study. Habermayer et al.[26] did not show alcohol consumption as a factor related to dislocation in their 12 patients with CSD. Two of our patients were alcoholics (66%), therefore, we consider important to mention alcoholism as a variable in the study because they are patients with limited commitment to the physiotherapy postoperative program. We consider bias in our study the limited number of cases, although it is a rare disease.

Conclusion

The characteristic of self stabilization of the Reverse Shoulder Arthroplasty can lead to medium-term satisfactory results for Chronic Shoulder Dislocations in elderly patients.

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