Acta Orthopaedica et Traumatologica Turcica xxx (2017) 1–4

Contents lists available at ScienceDirect

Acta Orthopaedica et Traumatologica Turcica

journal homepage: https://www.elsevier.com/locate/aott

Bilateral bony increased-offset reverse shoulder arthroplasty in rheumatoid arthritis shoulder with severe glenoid bone defect: A case report

Wan-Sun Choi [a], Kwang-Hyun Lee [b], Jin-Sung Park [b], Bong Gun Lee [b, *]

[a] Department of Trauma Surgery, Ajou University Hospital, Suwon, Republic of Korea
[b] Department of Orthopedic Surgery, Hanyang University College of Medicine, Seoul, Republic of Korea

ARTICLE INFO

Article history:
Received 30 October 2014
Received in revised form
27 February 2015
Accepted 28 March 2015
Available online xxx

Keywords:
Shoulder
Rheumatoid arthritis
Reverse shoulder arthroplasty
Bone graft

ABSTRACT

A 53-year-old woman presented with 10-year history of pain and limited range of motion in both shoulders. Radiographs of both shoulders showed severe shoulder osteoarthritis with glenoid bone defect. Very thin rotator cuff and superior migration of the humerus were also observed on computed tomography images. We performed bony increased-offset reverse total shoulder arthroplasty on her both shoulders. The patient had a good clinical outcome without any particular complication.

Recently, reverse shoulder arthroplasty (RSA) has emerged as a substitutive treatment for rotator cuff tear arthropathy in place of total shoulder arthroplasty (TSA), and favorable results have been reported. Furthermore, Young et al[1] reported good results of RSA with cancellous or structural bone graft for glenoid bone defects due to rheumatoid arthritis (RA). However, in their cases, structural bone grafting was limited to type A2 glenoids according to the Lévigne classification system.[2] We report on a case in which we restored the neutral lateral offset of the glenoid using a structural bone graft harvested from the humeral head and a modified long-peg glenoid baseplate (bony increased-offset RSA; BIO-RSA) in a patient with bilateral severe glenoid erosion and poor bone stock (Lévigne classification type C2 or D2) due to RA, which resulted in a good clinical outcome.

Case report

A 53-year-old woman presented with a 10-year history of pain and limited range of motion (ROM) in both shoulders. She had been on RA medication for >20 years. Initial radiographs of both shoulders showed severe arthritic changes with glenoid erosion, and her shoulders were classified as type D2 (right) and type C2 (left) according to the Lévigne classification system (Fig. 1).

Preoperative computed tomography arthrography (CTA) images of both shoulders demonstrated narrowing of the glenohumeral joint spaces and acromiohumeral distances, subchondral sclerosis, and multiple bony erosions in the glenohumeral joints and acromions. Very thin rotator cuff and superior migration of the humerus were also observed on CTA (Fig. 2).

The preoperative active shoulder ROMs were measured as follows: forward elevation, 100°/110°(right/left shoulder, respectively); abduction and external rotation, 70°/70°; external rotation at side, 30°/20°; and internal rotation, L3/L4. The passive ROMs were measured as follows: forward elevation, 160°/160°; abduction and external rotation, 80°/80°; external rotation at side, 30°/20°; and internal rotation, L3/L4. The preoperative visual analogue scale scores were 10 and 6 for her right and left shoulder pain, respectively.

We decided to perform BIO-RSA with structural humeral head bone grafting on the glenoid bone deficiency to restore the medialized glenohumeral joint line to neutral, and the surgery was firstly performed on the more painful right shoulder.

The surgery was performed under general anesthesia with the patient in the 30° beach chair position using the deltopectoral

* Corresponding author.
E-mail address: orthdr@naver.com (B.G. Lee).
Peer review under responsibility of Turkish Association of Orthopaedics and Traumatology.

http://dx.doi.org/10.1016/j.aott.2015.03.002

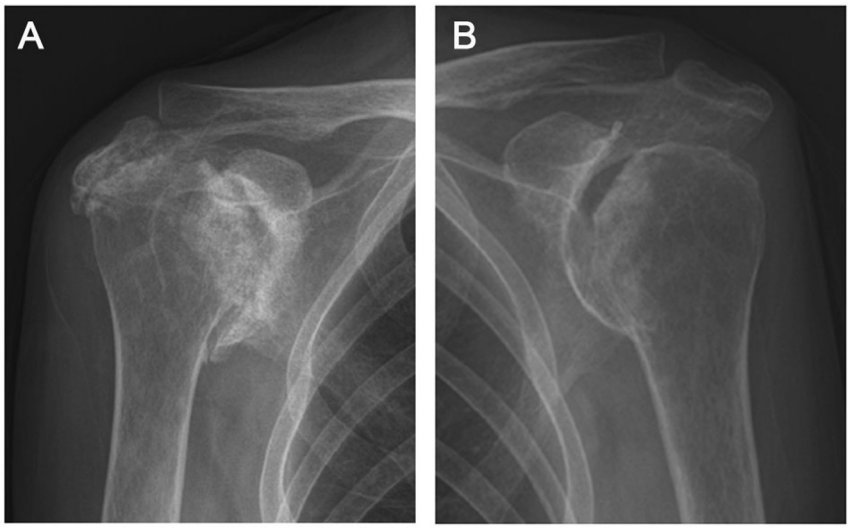

Fig. 1. Preoperative radiographs show severe arthritic changes with glenoid bone defects. The shoulders were classified as Lévigne type D2 (right) (A) and type C2 (left) (B), respectively.

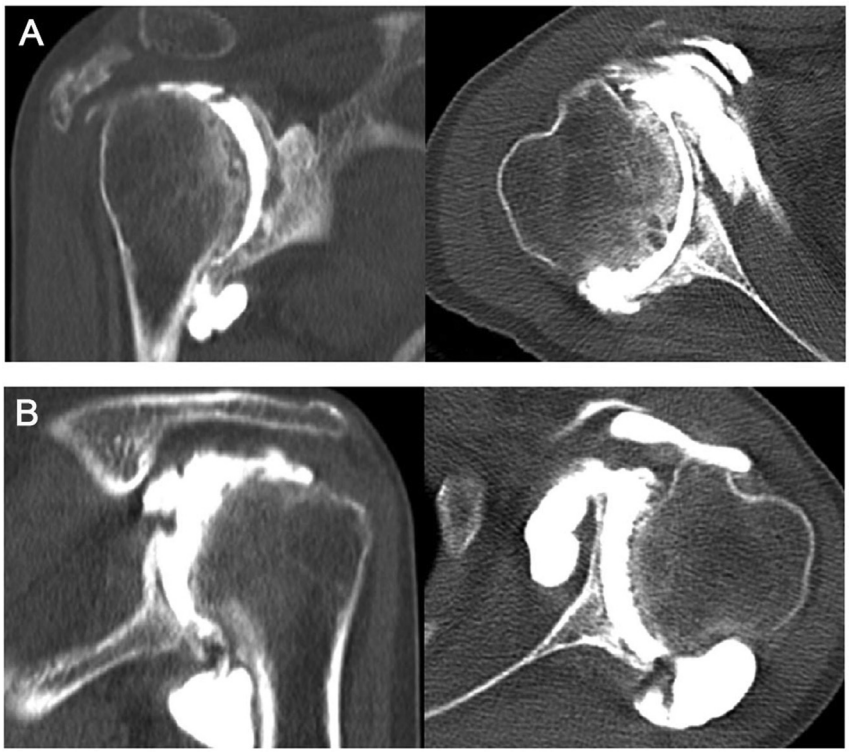

Fig. 2. Preoperative computed tomography arthrography images demonstrate severe rotator cuff thinning, glenoid erosion and bone loss in right (A) and left shoulder (B).

approach. Almost all the procedure was carried out on the basis of Bolieau's techniques.[3] We began with humeral osteotomy and graft harvesting. The humeral head was flattened until the subchondral bone was reached by using a graft reamer. Overreaming was avoided to preserve the hard subchondral bone. A cylinder of cancellous bone was obtained by using a bell saw. It was difficult to harvest sufficient structural humeral head bone because it was small and deformed. The harvested bone disc (8 mm in thickness) was inserted along the central peg. The cancellous portion of the bone disc was opposite the glenoid, and the subchondral portion of the bone disc was in contact with the medial surface of the baseplate.

For the glenoid preparation, osteophytes were removed to confirm the glenoid's shape. A small reamer flattened the glenoid surface until the cancellous bleeding bone was reached. The central hole was then bored. The harvested bone disc was trimmed to fit the size of the reamed glenoid. Then the baseplate (25 mm in diameter)—with the harvested disc of bone graft—was inserted into the center hole. Two locking screws and two cortical screws were used to fix the baseplate. However, the two cortical screws

Please cite this article in press as: Choi W-S, et al., Bilateral bony increased-offset reverse shoulder arthroplasty in rheumatoid arthritis shoulder with severe glenoid bone defect: A case report, Acta Orthop Traumatol Turc (2017), http://dx.doi.org/10.1016/j.aott.2015.03.002