

A Case Report of Isolated Posterior Fracture Dislocation of Anatomical Neck of Humerus

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Abstract

Introduction: Fracture dislocation of anatomical neck of humerus is an extremely rare fracture. So, the best treatment for it and long term results are not well established. It is our duty to report each case of it to make material for a greater study.

Material and method: A 27 years old man who is a victim of car accident is presented with shoulder and pelvic pain. In X- ray, there was a hollow glenoid and in CT scan, the fractured anatomical head is rotated and angulated posterior to glenoid (Figure 1). It was treated with hemiarthroplasty of shoulder.

Results: By deltopectoral approach, we can remove head fragment and because there was no enough bone in subchondral region, we didn't fix it and exchange it with cemented hemiarthroplasty of involved shoulder.

Discussion: Because of complete dislocation of anatomical head of humerus and no soft tissue attachment to it, avascular necrosis of head of humerus can be highly anticipated. So, we choose hemiarthroplasty for him and we think because tuberosities are not detached, function will be good.

Keywords: Fracture; Dislocation; Anatomical neck; Humerus; Hemiarthroplasty

Introduction

Isolated fracture dislocation of anatomical neck of humerus is an extremely rare event [1] in the field of orthopedic trauma. It is always reported as case report, so we decide to report this case to make material for a greater study and to help in decision making if other colleagues have another case like this. Nonsurgical treatment [2] has no place in treatment of it. There are two options for surgical treatment, Open reduction and internal fixation (ORIF) [3] and arthroplasty [4]. Those who prefer saving the native head by open reduction and internal fixation of it, believe that even there is a great chance of Avascular Necrosis (AVN) of head of humerus [5], because shoulder is a non weight bearing joint, symptoms of AVN will appear very late and if happens, not compromise overall function [6]. But, in the other hand, those who choose hemiarthroplasty, believe that because fixation of a shell of cartilage and underlying thin layer of bone is difficult and secure fixation is not always possible, prolonged immobilization for union of head make shoulder stiff, but if hemiarthroplasty is done, because in these cases tuberosities are not fractured and remain attached to shaft of humerus [7], rehabilitation will be more successful [8] and there is no need to stay for fusion and union of tuberosities, so range of motion can be started sooner than usual. In one study with long term follow up, there is a good report of saving the head with fixation [9] of it but in other studies, results of arthroplasty seems not bad.

Material and Method

A 27 years old man who is a victim of motor car accident is brought to emergency room of Sina Hospital (Tehran, Iran). He was conscious but suffers from pain in his left shoulder and pelvis (Figure 2). He was hemodynamically stable and very soon was discharged from surgery and neurosurgery services. In physical examination, he has abrasions on forehead region and shoulder area but there was no open wound. Neurovascular examination of all four extremities was normal. In anteroposterior radiography of left shoulder there was empty glenoid and in lateral radiography of shoulder nothing was obvious, so we request CT scan of left shoulder in axial and sagittal and

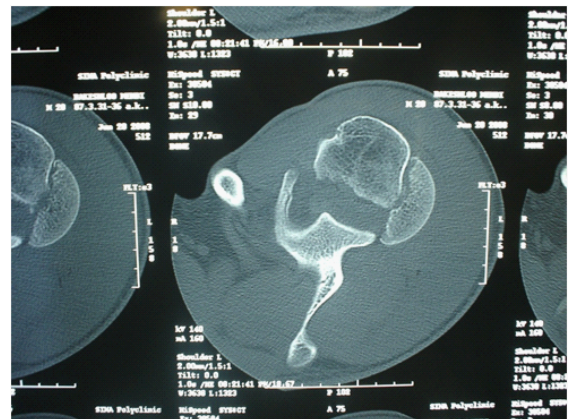


Figure 1: 3 D CT scan of injured shoulder.

coronal planes (Figure 3). There was isolated fracture of anatomical neck of humerus with dislocation of it to retroglenoid space. It was not only displaced posteriorly, but also angulated approximately 90 degrees. By subtraction of humeral head and shaft in reconstructed three dimensional CT scan of shoulder, there was a minor fracture of rim of glenoid. In pelvic X ray, there was nondisplaced unilateral fracture of pubic rami which shows a stable pelvic ring which needs no special treatment. After consultation with my colleagues and because

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of complete dislocation and displacement of humeral head, via anterior deltopectoral approach, after extraction of humeral head, a cemented shoulder hemiarthroplasty (Figure 4) was done for him.

Results

The operation was performed with the planned approach. Fortunately, the posteriorly positioned head fragment could be removed from anterior approach, so only one approach was used. As we suspected, there was not enough bone in subchondral region for secure fixation of head so we extracted it and replaced it with head prosthesis. Also, both tuberosities were remained attached to shaft fragment and surgery was done easily because in one hand there was no need for fixation of them and in the other hand, estimation of version was straight forward. Operation time was approximately 1.5 hour with less than 300 cc bleeding. In postoperative period, antibiotic therapy was continued for 48 hours (cephazoline and gentamycin) and drain was removed after 48 hours. Because of healthy tuberosities, we start physiotherapy sooner than usual.

Discussion

Because of complete fracture dislocation of anatomical head of humerus and because vascularity of head fragment was completely compromised, and because there was no remained soft tissue attachment to fractured head, we decided not to preserve and fix the humeral head. So, we extract the head and replace it with cemented

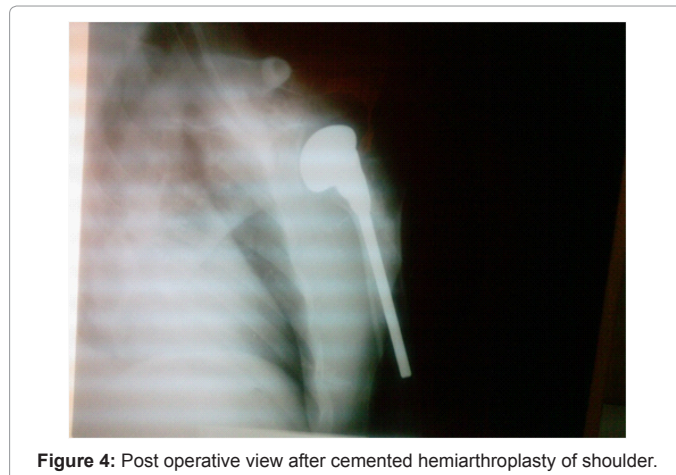


Figure 4: Post operative view after cemented hemiarthroplasty of shoulder.

shoulder hemiarthroplasty. It is a positive point that both lesser and greater tuberosities were remained attached to shaft fragment so we hoped that in postoperative period, rehabilitation would be more easy and can be started sooner than when there was fracture of them because there was no need to stay and postpone physiotherapy after union of tuberosities to each other and to shaft segment. In this case, because head was dislocated posterior to glenoid, we insert prosthesis in less retroversion than usual (25 degree instead of 35 degree). The head fragment was dislocated posterior to glenoid (posterior dislocation), so in preoperative planning, we thought about head removal from a posterior approach to shoulder joint and performing arthroplasty via another separate anterior approach. But, because posterior approach to shoulder is not routinely used and because we ultimately would need an anterior approach to shoulder for prosthesis insertion, we decide to try anterior approach first and with lateral displacement of shaft fragment, find head of humerus and extract it. Fortunately, as we thought, with lateral traction to shaft segment and with a kokher forcepse, we could find it and remove it from anterior approach without need to another approach. After removing head, we saw that head fragment had only a little cancellous bone in subchondral region and under cartilage (approximately 0.5 centimeter thickness), and we suspect that with osteosynthesis of it, we could not be able to fix it securely to other parts because insufficient treads of screws could grip the head bone and in the other hand, pin insertion could not produce rigid fixation. If rigid osteosynthesis would be possible, and if ultimately avascular necrosis of humeral head would be happened, because shoulder joint is a non weight bearing joint, it would not produce sever symptoms for many years and the shoulder joint might remain functional, but we thought with imperfect fixation, device failure would take place and shoulder arthroplasty would be necessary and reoperation would have worse results than primary arthroplasty.

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Figure 2: Anteroposterior view of left shoulder.

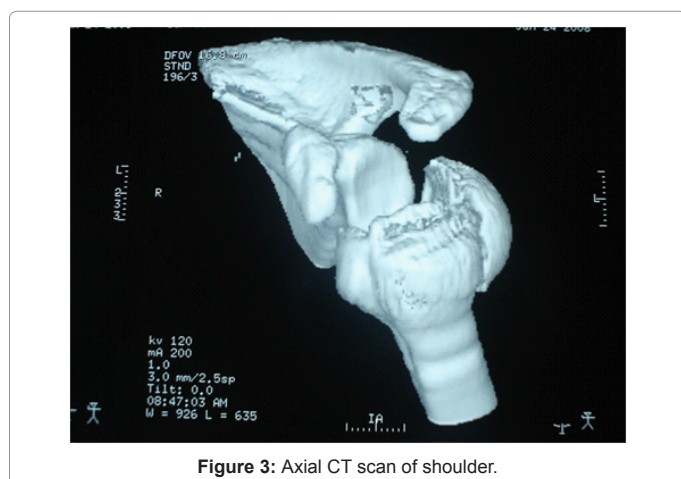


Figure 3: Axial CT scan of shoulder.

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