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Case Report

Range of motion evaluation of the patients after total shoulder arthroplasty in Dr. Saiful Anwar general hospital: case series

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ABSTRACT

The hemiarthroplasty is most commonly used after a fracture or musculoskeletal tumor of the shoulder where the blood supply to the ball portion (the humeral head) of the humerus is damaged. Since then, hemiarthoplasty has been used in many shoulder diseases including osteoarthritis, avascular necrosis, rheumatoid arthritis, cuff-tear arthropathy, and fracture sequele. Methods are authors evaluated 2 patients who had shoulder hemiarthroplasty on October 2017. The first patient is 53-year-old male, surgery due to primary bone tumor right proximal humerus suspected chondrosarcoma and the second is 72-year-old female with closed fracture dislocation of left glenohumeral joint after traffic accident. The patients followed up until 2 years and get routine medical rehabilitation on outpatients' workup. ROM of shoulder joints which had operated evaluated 2 years post-operative. Results are First patient, active ROM extension is 20o, flexion is 10o, abduction is 30o, adduction is 20o, external rotation is 10o, internal rotation is 40o, while passive ROM extension is 150o, flexion is 30o, abduction is 110o, adduction is 40o, external rotation is 30o while internal rotation is 50o. Second patient, active ROM extension is 60o, flexion is 20o, abduction is 40o, adduction is 40o, external rotation is 20o, internal rotation is 60o, while passive ROM extension is 10o, flexion is 45o, abduction is 160o, adduction is 45o, external rotation is 30o while internal rotation is 80o. Conclusions are Careful and long-term post-operative care including Rehabilitation plays an important role in functional outcomes after Shoulder hemiarthroplasty.

Keywords: Follow-up, Functional outcomes, Post-operative care, Range of motion, Rehabilitation, Shoulder arthroplasty

INTRODUCTION

The hemiarthroplasty is most commonly used after a fracture or musculoskeletal tumor of the shoulder where the blood supply to the ball portion (the humeral head) of the humerus is damaged.[1] Since then, hemiarthoplasty has been used in many shoulder diseases including osteoarthritis (OA), avascular necrosis (AVN), rheumatoid arthritis (RA), cuff-tear arthropathy (CTA), and fracture sequele.[2-4] The first case series of shoulder hemiarthroplasty was reported by Neer in 1970.[1]

There are several type of shoulder Arthroplasty such as Total shoulder arthroplasty, Reverse total arthroplasty, Humeral head resurfacing, and Hemiarthroplasty, the using of each other is based on patient condition.[5] The number of studies reporting on hemiarthroplasty is low (only 5) and there is a wide spread in results, with good and excellent results reported in 36 to 88% of cases.[6] Lanting et al, recently published a systematic review of treatment modalities for proximal humerus fractures; they included 13 studies reporting on hemiarthroplasty.[6] Compared to open reduction and internal fixation, the

results of hemiarthroplasty in their review are less favourable regarding range of motion in three-part fractures and are comparable in four-part fractures. Arthroplasty resulted in significantly fewer complications.[7]

CASE REPORT

Authors evaluated 2 patients who had shoulder hemiarthroplasty on October 2017 (Figure 1 and 2). The first patient is a 53 years old male, surgery due to primary bone tumor right proximal humerus suspected chondrosarcoma and the second is a 72 years old female with closed fracture dislocation of left glenohumeral joint after traffic accident (Figure 4 and 5). The patients followed up until 2 years and get routine medical rehabilitation on outpatients' workup. ROM of shoulder joints which had operated evaluated 2 years post-operative.

Figure 1: X-ray pre-operative of 1st patient.

Figure 2: X-ray post-operative of 1st patient.

From the first patient, active ROM extension is 20 degrees, flexion is 10 degrees, abduction is 30 degrees, adduction is 20 degrees, external rotation is 10 degrees, internal rotation is 40 degrees, while passive ROM extension is 150 degrees, flexion is 30 degrees, abduction is 110 degrees, adduction is 40 degrees, external rotation is 30 degrees while internal rotation 50 is degrees (Figure 3).

Figure 3: Range of motion of 1st patient post-operative.

Figure 4: X-ray pre-operative of 2nd patient.

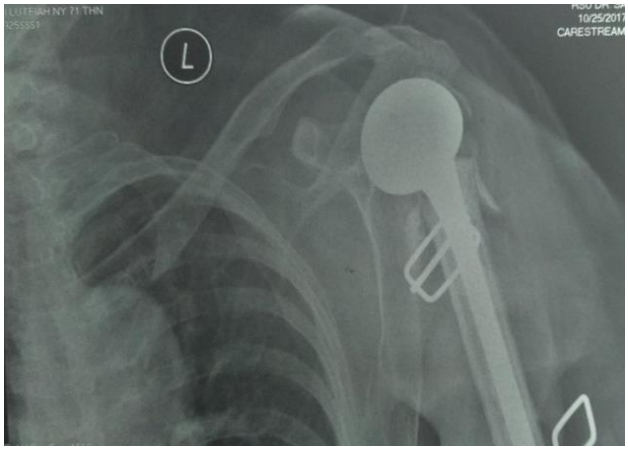

Figure 5: X-ray post-operative of 2nd patient.

For the second patient, active ROM extension is 60 degrees, flexion is 20 degrees, abduction is 40 degrees, adduction is 40 degrees, external rotation is 20 degrees, internal rotation is 60 degrees, while passive ROM

extension is 10 degrees, flexion is 45 degrees, abduction is 160 degrees, adduction is 45 degrees, external rotation is 30o while internal rotation is 80 degrees (Figure 6).

Figure 6: Range of motion of 2nd patient post-operative.

DISCUSSION

Shoulder hemiarthroplasty remains a valuable option in the treatment of complex proximal humeral fractures in the elderly. However, Neer's initial optimism regarding the results should be mitigated. Most authors report little pain after hemiarthroplasty for acute fractures, while mobility and strength remain limited.[8] Shoulder Arthroplasty has been documented to provide between 90% to 95% of pain relief for individuals with arthritis of the glenohumeral joint, Regardless of underlying pathology, the soft tissue reconstruction is crucial for a good shoulder arthroplasty outcome. Surgical technique, type of prosthetic used, as well as the quality of the bony and soft tissue structures impact the post-operative anatomical reconstruction and soft tissue balance. Both of these factors need to be restored optimally possible to allow for good stability and adequate functional range of motion.[9] Since Shoulder Arthroplasty surgery is largely a soft-tissue operation, a large part of the success of the procedure is the post-operative rehabilitation. Overall recovery may take up to 1 year, and outcomes are primarily based on the soft-tissue constraints. Most Rehabilitation programs for TSA are based on Neer's basic protocol.[10] Most programs appear strictly structured with constant supervision by the therapist and primary surgeon. However, Boardman et al, challenged that traditional treatment process by looking at the effectiveness of a home based therapeutic exercise program following TSA. Overall, their results were reported to be quite favorable in that 70% and 90% of patients maintained range of motion (ROM) in elevation and external rotation, respectively over a two-year follow-up period. Average elevation ROM was found to be 148 degrees in the osteoarthritic group and 113 degrees in the osteonecrotic group. These values are quite good compared to many other outcome studies. However, looking at only ROM does not allow one to really assess how well a patient did post-operatively; and how well the rehabilitation program was. What was the quality of their movement, what was their level of pain, and how did their function actually improve? These should be the indicators of just how successful a procedure and rehabilitation program are.[11] This case series is too small to challenge the results of the patients because very short follow up in time. The functional outcomes in these series were only fair overall, most notably regarding range of motion, although the results on pain were satisfactory, the cause of the different range of motion outcome in these patients is disease severity before surgery, post-operative treatment, and the level of patient compliance.

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