

Original research article

A study on functional outcome of surgical fixation of proximal humerus fracture with philos plating in adults

¹Dr. A. Ajay, ²Dr. V.V. Narayana Rao, ³Dr. K. Kiran

¹Associate Professor, Department of Orthopedics, Government Medical College, Ongole, Andhra Pradesh, India

²Professor, Department of Orthopedics, Government Medical College, Ongole, Andhra Pradesh, India

³Assistant Professor, Department of Orthopedics, Government Medical College, Ongole, Andhra Pradesh, India

Corresponding Author:

Dr. A. Ajay

Abstract

Aim: This study aims to analyze the functional and radiological outcome of fractures involving the proximal part of humerus treated with PHILOS plate in 12 patients.

Methodology: This is a Hospital based prospective study conducted in the Department of Orthopedics, Guntur medical college, Guntur, from July 2018 to December 2019, in the Sample of 12 adult patients who presented with proximal humerus fractures.

Results: In the present study, of the 12 patients, 1(8.3) patient had excellent outcome, 5 (41.6) had good outcome, 5 (41.6) had satisfactory outcome, while the remaining 1 (8.3%) had a poor outcome. people with age < 50 years had a better range of movement ranging over 120. In patients aged > 50 years, the range of movement was restricted to an average of 100, the overall DASH scores were better in the younger patients when compared with the elderly patients.

Conclusion: This study concluded that accurate anatomical reduction and early fracture fixation are more important to get a good final functional outcome.

Keywords: Proximal parts of humerus, DASH score, fracture fixation

Introduction

It is the commonest fracture affecting the shoulder girdle in adults, which ranks the third. About 80% of the fractures are undisplaced, which can be managed conservatively. The management of displaced fractures is controversial and challenging for the surgeon ^[1-5].

Non-operative treatment can be given for 2-, 3-, and 4-part proximal humeral fractures in geriatric patients, but pain, stiffness & loss of function have been reported in a high percentage of patients.

There are different types of fixations available for proximal humerus fracture like, K-wires, screw fixation, T-butress plate, conventional plate, locking plate and prosthetic replacement. Every fixation has its own advantages and disadvantages ^[6-10].

Consequently, in recent years, angular stable plates have been evolved to maintain anatomic reduction with anchorage, especially in osteoporotic bone. Among them, the 3-dimensional anatomically adjusted Proximal Humerus Internal Locking Osteosynthesis System (PHILOS) plate provides a multidirectional locking system for its proximal part contacting the humeral head. These implants can withstand the physiological loads (muscular force) in the osteoporotic bone. Highly complex 3-& 4-part fractures can be reconstructed with rotator cuff sutural ties through the holes in the plate and thereby enhancing the functional outcome ^[11, 12].

This study aims to analyze the functional and radiological outcome of fractures involving the proximal part of humerus treated with PHILOS plate in 12 patients.

Aims and Objectives

1. To study the effectiveness of PHILOS in anatomical reduction and stability of fixation of displaced proximal humeral fractures.
2. To analyse the functional outcome of management of displaced proximal humeral fractures by PHILOS by evaluating pain, activities of daily living, range of motion and muscle power.

Materials and Methods

This is a Hospital based prospective study conducted in the Department of Orthopedics, Guntur medical college, Guntur, from July 2018 to December 2019, in the Sample of 12 adult patients who presented with proximal humerus fractures.

Inclusion criteria

Patients above 20years of either sex with closed proximal humerus fracture with injury less than 6 weeks of duration.

Exclusion criteria

Compound fractures and those medically unfit for surgery.

Method: Patient was in Supine position, in Delto-pectoral approach, reduction of fracture fragments and internal fixation with Philos plates was done in our study. They were followed up post operatively for a period of minimum of 6 months and maximum of 18 months. Assessment of the functional outcome was done with the DASH score after 6 months of post operative period.

Results

Of the 12 patients, 1(8.3) patient had excellent outcome, 5 (41.6) had good outcome, 5 (41.6) had satisfactory outcome, while the remaining 1 (8.3%) had a poor outcome. people with age < 50 years had a better range of movement ranging over 120° . In patients aged > 50 years, the range of movement was restricted to an average of 100° , the overall DASH scores were better in the younger patients when compared with the elderly patients.



Fig 1: Radiographs of shoulder joints

Discussion

The treatment of complex humeral 3- or 4-part fractures represents a challenge. The surgeon must obtain an exact anatomical reduction and stable fixation and at the same time minimize the iatrogenic risk of screw penetration and avascular necrosis of the humeral head by maximal protection of the soft tissues surrounding the shoulder joint [13-20].

Poor results in these complex fractures are due to following causes:

1. Inadequate fracture reduction especially medial cortex.
2. Unstable fixation.
3. Incorrect positioning of the fixation devices.

In this prospective hospital-based study, we have analyzed 12 cases of proximal humerus fractures treated surgically using PHILOS plates in our hospital.

In the 12 patients, the neck-shaft angle at (Day 1) post op was in the range of 130° to 137° , with an average angle of 133.2° .

Post-surgery, after 3 weeks this neck-shaft angle reduced to the range of 124° to 132° (Day 21 follow-up), with an average of 128.5° and this did not make any difference in the final outcome.

It was observed that people with age < 50 years had a better range of movement (e.g.: abduction and forward flexion of the shoulder joint) ranging over 120° . In patients aged > 50 years, the range of movement was restricted to an average of 100° .

In our study patient who had attended regular physiotherapy sessions and who adhered to 3 phase rehabilitation protocol had better DASH score and range of movement than patient who did independent

exercises at home.

Patients whose fracture were fixed earlier than 2 weeks had good and satisfactory outcome while in one patient when fracture was fixed later than 2 weeks had poor outcome in our study.

We have seen few complications in our study. All fractures united and the average time taken for union was approximately ten weeks. One patient with 4- part fracture went into non union.

Emphasis is placed on complete and accurate diagnosis and formulation of safe and simple techniques for restoration of anatomical stability, fracture union, cuff integrity, range of motion and adequate muscle strength.

Conclusion

- Accurate anatomical reduction and early fracture fixation are more important to get a good final functional outcome.
- Use of shorter screws than sub-chondral screws closer to the joint surface which prevents penetration of the screws.
- One of its greatest applications is in osteoporotic fractures where it may provide a solution to the age-old problems of screw cut out, late collapse, and mal-alignment since the stability of the construct does not entirely depend on the quality of the bone.
- Adherence to regular and graduated rehabilitation program is the key for good functional outcome.

Conflict of interest: None.

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