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# A comparative study of functional outcome in treatment of diaphyseal humerus fractures with open reduction and internal fixation by two different approaches, anterolateral and posterior

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**Abstract**
**Introduction:** The humerus diaphyseal fractures account for 3% all bone fractures. Humerus diaphyseal fractures occurs in young adults because of high velocity injuries like road traffic accidents, fall from height, assaults and heavy machinery injuries, humerus diaphyseal fractures occurs in old age patients because of simple falls due to osteoporotic bones.
**Methods:** A retrospective review was conducted of patients with humerus diaphyseal fractures. In all 26 patients were enrolled in the study, of which 13(50%) were treated with anterolateral approaches and the 13(50%) with posterior approaches. In this study we treated diaphyseal humerus fractures with open reduction and internal fixation by two different approaches, anterolateral and posterior, and compared results and functional outcome.
**Results:** Out of all the 26 patients with diaphyseal humerus fracture 13 patients were operated with open reduction and internal fixation by plate osteosynthesis by anterolateral approach 10(38.46%) patients had excellent result, 1(3.84%) patient had good result and 3(11.53%) patients had poor result. And Out of all the 26 patients with diaphyseal humerus fracture 13 patients operated with posterior approach 9(34.61%) patients had excellent result, 4(15.38%) patients had good result and none had poor result.
**Conclusion:** in our study we conclude that both approaches are equally effective for diaphyseal humerus fractures treatment in terms of fracture union, functional outcome and complications. Posterior approach to shaft humerus fracture is beneficial because with mobilization of radial nerve 76% of humerus shaft is exposed. In preoperative radial nerve palsy with diaphyseal shaft fractures posterior approach is better choice for nerve exploration. And anterolateral approach is better option for upper third and middle third diaphyseal humerus fractures and posterior approach is better option for distal third diaphyseal humerus fractures.

**Keywords:** Diaphyseal humerus fracture, anterolateral approach, posterior approach

## Introduction
The humerus diaphyseal fractures account for 3% all bone fractures [1]. Out of all humerus fractures upper third humerus fractures account for 50%, distal third humerus fracturs account for 36% and middle third humerus fractures account for 14% [2]. Humerus diaphyseal fractures occurs in young adults because of high velocity injuries like road traffic accidents, fall from height, assaults and heavy machinery injuries, humerus diaphyseal fractures occurs in old age patients because of simple falls due to osteoporotic bones. Diaphyseal humerus fractures mostly occurs in age group of 21-30 and 70-80 years of age.
By definition Fractures involving middle 3/5$^{th}$ of the humerus, extending from the upper end of the insertion of pectoralis major to supracondylar region distally are called diaphyseal humerus fractures [3].
Diaphyseal humerus fractures have been treated conservatively since ages with 90 to 100% union rates. Sir John Charnley in his thesis stated that diaphyseal humerus fractures are easiest long bone fractures to be treated conservatively [1]. In the earliest surgical texts dating back to 1600BC, reduction using traction, followed by bandaging with linen and other conservative measures provided excellent union rates of 90 to 100% [4]. In early era, diaphyseal humerus fractures were treated with hanging cast and functional braces.

The surgical management of diaphyseal humerus fractures include intramedullary flexible nail, intramedullary interlock nail and plate fixation. Plate osteosynthesis with stable fixation and direct visualization, which is known to provide an accurate anatomical reduction can reduce the risk of malunion. Open reduction and internal fixation by plate osteosynthesis for diaphyseal humerus fracture can be done by anterolateral approach, posterior approach or minimal invasive plate osteosynthesis. There have been few trials or studies conducted to see which approach is most suitable for diaphyseal humerus fractures.

In this study we treated diaphyseal humerus fractures with open reduction and internal fixation by two different approaches, anterolateral and posterior and compared results and functional outcome.

**Applied surgical anatomy**

- The shaft of the humerus presents a number of unique anatomic features which have a bearing on the current rationales of therapy.
- As the humerus functions principally as a lever and is not a weight bearing bone, compression forces are not a problem in the management of humeral fractures.
- Realignment of fracture fragment is facilitated by physiological dependent position under the influence of gravity. The axillary nerve runs at a distance of 4.56 cms from the tip of acromion. It may be injured while applying the proximal locking screw.
- The radial nerve accompanied by the profunda brachial vessels runs around the posterior aspect of the humerus in the radial groove flanked by the medial and the lateral head of the triceps. Occasionally it may get entrapped in the fracture, ending up with radial nerve palsy.
- Radial nerve is least mobile as it passes through lateral intermuscular septum in distal third of arm. Holstein and Lewis described that an oblique fracture in distal third is typically angulated laterally and the distal fragment is displaced proximally. Radial nerve, fixed to proximal fragment by lateral intermuscular septum, is trapped between fragments when closed reduction is attempted.

**Material and method**

We have done a prospective study of twenty six patients with diaphyseal humerus fracture treated with plate osteosynthesis by anterolateral and posterior approaches.

Fracture was reduced and fixed with 4.5 narrow dynamic compression plate (DCP), limited contact dynamic compression plate (LC-DCP), distal humerus extra-articular locking plate and locking compression plate (LCP) with minimal of three cortices on either side of fracture, total of seven cortices. Plates were given a mold according to surface they were put on in both anterolateral and posterior approaches (fig 1).

**Fig 1:** Definitive Procedure

Definitive management of diaphyseal humerus fracture by open reduction and internal fixation by anterolateral approach:

The patients were placed on supine position on an operating table with the arm in abduction on arm board. The entire limb was prepared by exposing both shoulder and elbow.

Supraclavicular block or general anaesthesia administered in all patients. Affected limb scrubbed, draped and prepared. The landmarks in this approach include the biceps brachii muscle and the flexion crease of the elbow. It is begins proximally at the deltopectoral interval and extends distally between the deltoid and biceps brachii. Following the lateral edge of the biceps, the incision then curves medially to end in the interval between the distal insertion of the biceps and the mobile wad. (Fig 2).

There is no true internervous plane, because both the brachioradialis muscle and the lateral half of the brachialis muscle are supplied by the radial nerve proximal to the area of the incision. Proximal extension of the incision may denervate part of the brachialis, but this is of no clinical significance, because the radial nerve supply to the brachialis is minor and, probably, only proprioceptive. For this reason, the plane is both safe and extensile.

**Fig 2**

Care should be taken during dissection down to the deep fascia; the lateral cutaneous nerve of the forearm runs roughly in the line of approach and should be retracted clear of the incision, in conjunction with the biceps. Carefully avoiding the radial nerve and staying on its medial side, incise the lateral border of the brachialis muscle longitudinally, cutting down to bone. Incise the periosteum of the anterolateral aspect of the humerus longitudinally and retract the brachialis medially, lifting it off the anterior aspect of the bone by subperiosteal dissection (fig 3).

**Fig 3**

The anterior aspect of the distal humeral shaft now is exposed. Incision.

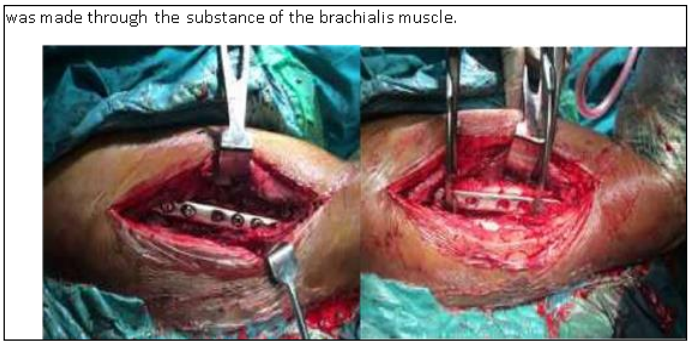


**Fig 4**

After the humerus was exposed, the fracture was reduced with manual manipulation and plate was placed in such a way that appropriate part of plate was on fracture site, that is the middle segment of the plate without holes. Plate was held in place with help of plate holding clamps. Transverse fractures were fixed in compression mode and oblique fractures were fixed in neutralisation mode with lag screws across the fracture site through the plate or separately (fig 4).

Definitive management of diaphyseal humerus fracture by open reduction and internal fixation by posterior approach:

All the patients were operated in lateral position. Supraclavicular block or general anaesthesia was administered in all patients. Affected limb was scrubbed, draped and prepared. Make a longitudinal incision in the midline of the posterior aspect of the arm, from 8 cm below the acromion to the olecranon fossa (fig 5).

**Fig 5**

There is no true internervous plane; dissection involves separating the heads of the triceps brachii muscle, all of which are supplied by the radial nerve. Because the nerve branches enter the muscle heads relatively near their origin and run down the arm in the muscle's substance, splitting the muscle longitudinally does not denervate any part of it. In addition, the medial head (which is the deepest head) has a dual nerve supply consisting of the radial and ulnar nerves; splitting the medial head longitudinally does not denervate either half. Incise the deep fascia of the arm in line with the skin incision.

The key to superficial dissection lies in understanding the anatomy of the triceps muscle. This muscle has two layers. The outer layer consists of two heads: the lateral head arises from the lateral lip of the spiral groove and the long head arises from the infraglenoid tubercle of the scapula. The inner layer consists of the third head, the medial (or deep) head, which arises from the whole width of the posterior aspect of the humerus below the spiral groove all the way down to the distal fourth of the bone. The spiral groove contains the radial nerve; thus, the radial nerve actually separates the origins of the lateral and medial heads. To identify the gap between the lateral and long heads, begin proximally, above the point at which the two heads fuse to form a common tendon.

Proximally, develop this interval between the heads by blunt dissection, retracting the lateral head laterally and the long head medially. Distally, the muscle will need to be divided by sharp dissection along the line of the skin incision. Many small blood vessels cross the muscle at this level; these need to be coagulated individually. The medial head of the triceps muscle lies below the other two heads; the radial nerve runs just proximal to it in the spiral groove. Incise the medial head in the midline, continuing the dissection down to the periosteum of the humerus. Then, strip the muscle off the bone by epi-periosteal dissection. The plane of operation must remain in a epi-periosteal location to avoid damaging the ulnar nerve, which pierces the medial intermuscular septum as it passes in an anterior to posterior direction in the lower third of the arm. Detach as little soft tissue as possible to preserve blood supply to the zone of injury.

The radial nerve is vulnerable in the spiral groove. After it is identified, however, the nerve is safe. To avoid problems, never continue the dissection down to bone in the proximal two thirds of the arm until the nerve has been identified positively. The ulnar nerve lies deep to the medial head of the triceps in the lower third of the arm and may be damaged if that muscle is elevated off the humerus in anything but an epi-periosteal plane. The profunda brachii artery lies with the radial nerve in the spiral groove and is similarly vulnerable.

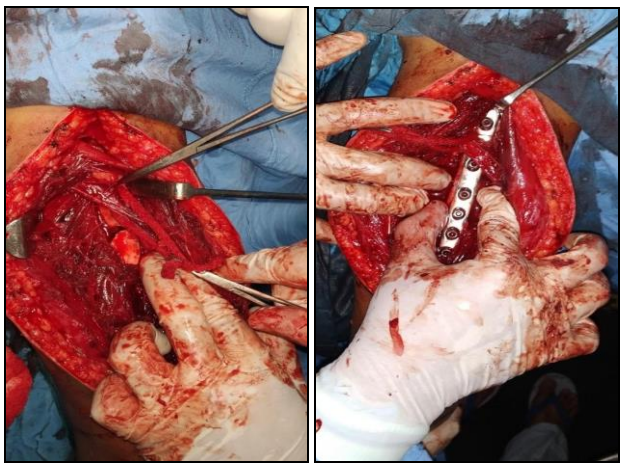

**Fig 6**

After the humerus was exposed and the radial nerve was isolated, the fracture was reduced with manual manipulation and plate was placed in such a way that appropriate part of plate was on fracture site that is the middle segment of the plate without holes. Plate was held in place with help of plate holding clamps. Transverse fractures were fixed with screws in compression mode and oblique fractures were fixed in neutralisation mode with lag screws across the fracture site through the plate or separately (fig 6).

A compression plate produces a locking force across a fracture site to which it is applied. The effect occurs according to Newton's Third Law (action and reaction are equal and opposite). The plate is attached to a bone fragment. It is then

pulled across the fracture site by a device, producing tension in the plate. As a reaction to this tension, compression is produced at the fracture site across which the plate is fixed with the screws. The direction of the compression force is parallel to the plate [39].

Role of compression

- Compaction of the fracture to force together the interdigitating spicules of bone and increase the stability of the construct.
- Reduction of the space between the bone fragments to decrease the gap to be bridged by the new bone
- Protection of the blood supply through enhanced fracture stability.
- Friction, which at the fracture surfaces resists the tendency of the fragments to slide under torsion or shear. This is advantageous as plates are not particularly effective in resisting torsion.

Dynamic compression is phenomenon by which a plate can transfer or modify functional physiological forces into compressive forces at the fracture site. When functional activity begins, the physiological forces, which are normally destabilizing for a fracture, are converted to a stabilizing and active force by the same plate, which now acts as a tension band. A dynamic compression is thus exerted at the fracture site. With cessation of physiological activity, this dynamic compression force will cease but the static compression force will continue to act.

**Postoperative protocol**

After surgery the shoulder was immobilised in a universal shoulder immobiliser. Appropriate antibiotics as well as analgesics given. Post-operative check radiographs were taken. Sutures removed by 14$^{th}$ day. Depending upon the pain, pendulum exercises begin as soon as possible. At first week passive range of motion started. Active range of motion was started at 2-4 weeks postoperatively, depending on stability of osteosynthesis. At fourth to sixth week immobilization is discontinued. Active assisted movements started up to 90 degree abduction with no forced external rotation. At sixth to eighth week- full range of movements with active exercises and full weight bearing started. At the end the patients were examined clinically and radiologically, assessed for range of motion and bony union and complications. The patients with shoulder stiffness were given physiotherapy for 1 to 2 weeks on outpatient basis.

**Complications**

**Early:** post-operative pain, superficial infection, neurovascular deficit, failure of fixation.

**Late:** infection, non-union, malunion, delayed union, residual pain.

**Final follow up:** Follow-up of patients was done at six weeks, three months and six months and patients were assessed using American shoulder and elbow surgeon's scoring system.

**Observation and results**

**Observation**

In this study of the twenty six cases of diaphyseal humerus fractures treated with open reduction and internal fixation by plate osteosynthesis by anterolateral and posterior approaches in our series, the youngest patient was 20 years old and oldest patient was 72 years old. In our study we had minimum follow up of 7 months to maximum follow up of 24 months.

The commonest age group affected was 21-30 years (50%) and maximum number of patients were below the age of 40 years (65%) (Table 1).

In our study out of twenty six patients, twenty two (84.63%) patients were male and 4(15.38%) patients were female (Table 2).

In this study out of twenty six patients, we had eighteen (69.23%) patients with right sided diaphyseal humerus fracture and 8(30.76%) patients had left sided diaphyseal humerus fractures (Table 3).

Most common mode of injury was road traffic accidents with fifteen (57.69%) patients. With fall on outstretched arm with 9(34.61%) patients being second most common (Table 4).

In our study eight diaphyseal humerus fractures were at the level of upper third of diaphysis, 8 diaphyseal humerus fractures were at the level of middle third of diaphysis and 10 diaphyseal humerus fractures were at the level of lower third of diaphysis. (Table 5).

In our study of diaphyseal humerus fractures, simple transverse fractures were the most common type of fracture with 9(36.91%) patients (Table 6).

In our study thirteen (50%) patients with diaphyseal humerus fractures operated with open reduction and internal fixation with anterolateral approach and thirteen (50%) patients with diaphyseal humerus fractures operated with open reduction and internal fixation with posterior approach (Table 7).

**Table 1**

| Age group (years) | No of patients | Percentage |
|---|---|---|
| 20-30 | 13 | 50% |
| 31-40 | 4 | 15.38% |
| 41-50 | 6 | 23.07% |
| 51-60 | 1 | 3.84% |
| 61-70 | 1 | 3.84% |
| 71-80 | 1 | 3.84% |

**Table 2**

| Sex | No of patients | Percentage |
|---|---|---|
| Male | 22 | 84.62% |
| Female | 4 | 15.38% |
| Total | 26 | 100% |

**Table 3**

| Side | No of patients | Percentage |
|---|---|---|
| Right | 18 | 69.23 |
| Left | 08 | 30.76 |
| Total | 26 | 100 |

**Table 4**

| Mode | No of patients | Percentage |
|---|---|---|
| Road traffic accidents | 15 | 57.69 |
| Fall from outstretched | | |
| Arm | 9 | 34.61 |
| Heavy machinery trauma | 2 | 7.69 |
| Gunshot injuries | 0 | 0 |

**Table 5**

| Level | No of patients | Percentage |
|---|---|---|
| Upper third | 8 | 30.76 |
| Middle third | 8 | 30.76 |
| Lower third | 10 | 38.46 |

**Table 6**

| AO Type | No of patients | Percentage |
|---|---|---|
| A1 – Simple spiral fracture | 4 | 15.38 |
| A2 – Simple Oblique fractures | 3 | 11.53 |
| A3 – Simple transverse fracture | 9 | 36.61 |
| B1 – Spiral wedge fracture | 2 | 7.69 |
| B2 – Bending wedge fracture | 3 | 11.53 |
| B3 – Fragmented wedge fractures | 3 | 11.53 |
| C1 – Complex spiral fracture | 2 | 7.69 |
| C2 – Complex segment fracture | 0 | 0 |
| C3 – Complex irregular fracture | 0 | 0 |
| Total | 26 | 100 |

**Table 7**

| Approach | No of patients | percentage |
|---|---|---|
| Anterior | 13 | 50% |
| Posterior | 13 | 50% |

## Results

In our study out of twenty six patients with diaphyseal humerus fracture treated with plate osteosynthesis with anterolateral or posterior approaches, we had 18(69.23%) patients with excellent results, 5(19.23%) patients with good results and 3(11.53%) patients with poor results. (Table 8).

Out of all the twenty six patients with diaphyseal humerus fracture thirteen patients were operated with open reduction and internal fixation by plate osteosynthesis by anterolateral approach 10(38.46%) patients had excellent result, 1(3.84%) patient had good result and 3(11.53%) patients had poor result. And Out of all the 26 patients with diaphyseal humerus fracture 13 patients operated with posterior approach 9(34.61%) patients had excellent result, 4(15.38%) patients had good result and none had poor result. (Table 9).

Of the twenty six cases treated in our series, fourteen (53.84%) patients had shown radiological union signs within 8-9 weeks, 10 patients had shown radiological union signs within 10-16 weeks. Out of all the 26 patients Out of all the 26 patients with diaphyseal humerus fracture treated with plate osteosynthesis the mean union time was 9.84 weeks (Table 10).

In our study out of all the patients, twenty one(80.76%) patients had ASES score between 81-100, 2(7.69%) patients had ASES score between 7180 and 3(11.53) patients had ASES score between 61-70(Table 11).

In our study we had three (11.53%) patients with residual pain, two (7.69%) patients had radial nerve palsy and one (3.84) patient had infection (Table 12).

In our study, out of all the twenty six patients with diaphyseal humerus fracture treated with open reduction and internal fixation by plate osteosynthesis by anterolateral and posterior approaches, more complication were encountered with anterolateral approach (15.38%) than posterior (7.69%) (Table 13).

**Table 8**

| Functional outcome | No of patients | Percentage |
|---|---|---|
| Excellent | 18 | 69.23 |
| Good | 5 | 19.23 |
| Poor | 3 | 11.53 |

**Table 9**

| Result | Anterolateral approach | Posterior Approach |
|---|---|---|
| Excellent | 10 | 9 |
| Good | 1 | 4 |
| Poor | 3 | 0 |

**Table 10**

| Time in weeks | No of patients | Percentage |
|---|---|---|
| < 10 weeks | 14 | 53.84 |
| 10 – 16 weeks | 10 | 38.46 |
| 16 – 20 weeks | 2 | 7.69 |
| 20 – 24 weeks | 0 | 0 |
| 24 – 30 weeks | 0 | 0 |
| 30 – 36 weeks | 0 | 0 |

**Table 11**

| ASES score | No of patients | Percentage |
|---|---|---|
| 81-100 | 21 | 80.76 |
| 71-80 | 2 | 7.69 |
| 61-70 | 3 | 11.53 |
| 51-60 | 0 | 0 |
| <50 | 0 | 0 |

**Table 12**

| Complication | No of patients | Percentages |
|---|---|---|
| Infections | 1 | 3.84 |
| Delayed union | 0 | 0 |
| Nonunion | 0 | 0 |
| Iatrogenic radial nerve | | |
| palsy | 2 | 7.69 |
| Residual pain | 3 | 11.53 |

**Table 13**

| Approach | No of patients | Percentage |
|---|---|---|
| Complication with | | |
| Anterolateral approach | 4 | 15.38 |
| Complications with | | |
| Posterior approach | 2 | 7.69 |

## Discussion

In our study of diaphyseal humerus fracture treated with open reduction and internal fixation with plate osteosynthesis by anterolateral and posterior approaches, we included 26 patients, ages 20-72years with mean age of 36.42 years. This indicates high rates of diaphyseal fractures in younger age group. Similar age distribution pattern was noted in study of Singisetti K. *et al*. [5] the maximum incidence was between age group 21-30 and 31-40.

In our study majority of patients were male (22) compared to female (4). Male to female ratio was high as 5.5:1. Similar observations have been described by McCormack *et al*. [6] (4:1) and Rommen's *et al*. [7] (5:1). The male preponderance in this study can be explained by mode of injury that is road traffic injuries and fall from height where involvement of males is common.

In our study out of twenty six patients, eighteen (69.23%) patients sustained right sided diaphyseal humerus fracture and 8(30.76%) patients had left sided diaphyseal fracture. Out of 26 patients 20(76.92%) patients were right side dominant and 6(23.07%) patients were left side dominant. Out of 20 right side dominant patients 16(61.53%) patients had right sided diaphyseal humerus fracture and 4(15.38%) patients had left sided diaphyseal humerus fracture and out of 6 left sided dominant patients 4(15.38%) patients had left sided diaphyseal humerus fracture and 2(7.69%) patients sustained right sided diaphyseal humerus fracture. These results were similar to results observed by Gichunge P *et al*. [8].

In our study most common mode of injury was road traffic accidents with 15(57.69%) patients followed by fall on outstretched arm had 9(34.61%) patients. In studies conducted

by Crates *et al*. [9] out of 75 patients, 48 presented with history of road traffic accidents. In Romans *et al*. [10] out of 39 patients, 21 presented with history road traffic accidents.

In our study we had eight (30.76%) patients with upper third diaphyseal fractures, 8(30.76%) patients with middle third diaphyseal fractures and 10(38.46%) patients with lower third diaphyseal fractures. These results were not conclusive with previous studies.

In our study we had nine (36.61%) patients with simple transverse diaphyseal humerus fracture. This results were similar to study by Mccormack RG, *et al*. [6].

In our study out of all the twenty six patients with diaphyseal humerus fracture treated with plate osteosynthesis with anterolateral or posterior approaches, we had 18(69.23%) patients with excellent results, 5(19.23%) patients with good results and 3(11.53%) patients with poor results. This results were similar to studies by Mccormack RG, *et al*. [6].

Out of all the twenty six patients with diaphyseal humerus fracture thirteen patients were operated with open reduction and internal fixation by plate osteosynthesis by anterolateral approach 10(38.46%) patients had excellent result, 1(3.84%) patient had good result and 3(11.53%) patients had poor result. And Out of all the 26 patients with diaphyseal humerus fracture 13 patients operated with posterior approach 9(34.61%) patients had excellent result, 4(15.38%) patients had good result and none had poor result. There was limited literature found regarding comparison of approaches of diaphyseal humerus fracture treatment with plate osteosynthesis.

In our study most of the patients had fracture union between 8-9(53%) weeks. Followed by 10-16(38%) weeks. The mean union time was 9.84 weeks. These results were comparable with the studies by Lin *et al*. [11] (8.6 weeks) and Lal *et al*. (8.38 weeks). There was no case of non-union.

In our study we used American Shoulder and Elbow Surgeons (ASES) Score system. We had 21(80.76%) patients with ASES score between 81-100, 2(7.69%) patients with ASES score between 71-80 and 3(11.53%) patients with score between 61-70. This scores were similar to studies done by Ginchunge *et al*. [8]. The mean ASES score for plating with anterior approach was 86.30 and with posterior approach was 90.61. The mean ASES score for the both approaches were comparable. These findings show that, plating with anterolateral and posterior approaches yield comparable functional outcomes as measured by ASES score. This study suggests that both groups had predictable results and neither of them is markedly superior.

In our study twenty (77%) patients did not develop any complications.

Residual pain was most common complication seen in 3(11.53%) patients, 2(7.69%) patients developed radial nerve palsies. These results were similar with study by Abalo *et al*. [12] which reported 8.7%. Another study by Bernard de Dompsure *et al*. [13] reported radial nerve palsy at 4.7%.

In our study we encountered patients having infection of 3% with anterior approach and none with posterior approach. Results were comparable in both approaches. Overall infection rate was low in our study which was similar to studies at Foster R *et al*. [14] of 3% and McCormack *et al*. [6] of 5% of the patients. Infection is associated with extensive soft tissue exposure and extensive periosteal stripping.

In our study we treated eight upper third and five middle third diaphyseal humerus fractures with anterolateral approach and 10 lower third and 3 middle third study was also applied by Nowak *et al*. [15].

**Summary and conclusion**

This is a prospective study of twenty six diaphyseal humerus fractures treated with plate osteosynthesis by anterolateral and posterior approaches.

All patients were evaluated clinically and radiologically before and after the surgery.

We studied patients from ages 20 to 72, with a minimum follow up of seven months to maximum follow up of twenty four months.

There were twenty-one male patients and five female patients.

Fourteen patients had right sided fracture and twelve patients had left sided fracture.

All the fractures were closed.

Fifteen patients sustained fracture following road traffic accident, nine cases had fall on outstretched arm and two patients had fracture due to occupational hazard.

In this study, eight fractures were upper third diaphyseal, eight fractures were middle third diaphyseal and ten were lower third diaphyseal humerus fractures.

Thirteen patients were operated with anterolateral approach and thirteen patients were operated with posterior approaches.

Fracture union rate was 100% with most fractures showing union sign as early as 8-9 weeks.

Post operatively three patients developed residual pain, two patients had iatrogenic radial nerve palsy and one patient developed deep infection.

By evaluating ASES score, eighteen (69.23%) patients had excellent results, 5(19.23%) patients had good results and 3(11.53%) patients had poor results.

**Conclusion**

This study involves observations of twenty cases of diaphyseal humerus fracture treated with plate osteosynthesis. Out of 26 cases 13 cases were treated with anterolateral approach and 13 were treated with posterior approach and we compared results of both of the approaches and conclude that both approaches are equally effective for diaphyseal humerus fractures treatment in terms of fracture union, functional outcome and complications. Posterior approach to shaft humerus fracture is beneficial because with mobilization of radial nerve 76% of humerus shaft is exposed. In preoperative radial nerve palsy with diaphyseal shaft fractures posterior approach is better choice for nerve exploration.

In finale our study conclude that anterolateral approach is better option for upper third and middle third diaphyseal humerus fractures and posterior approach is better option for distal third diaphyseal humerus fractures and previous literature also supports our study.

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