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A tertiary care centre-based investigation on Bipillar plating versus single extra articular humerus plate for distal humerus fractures

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Abstract

Background: Distal humerus fractures are complicated injuries that need to be treated with stable support and working joints next to the fracture. Open reduction and internal fixation with widely available modified implants can be used to treat distal humerus fractures.

Materials and Methods: There were 50 patients in the study, which ran from October 2015 to June 2016 and included a 6-month follow-up. All patients with humeral injuries who went to the orthopedics department of the tertiary care hospital Deccan College of Medical Sciences, Hyderabad, Telangana, India, were included in the study. Two groups of cases were made. People with humeral injuries who were treated with a single extra-articular plating were in Group A, and people with bipillar plating were in Group B.

Results: Male patients made up the majority of both categories. In all, there were fifteen female patients and thirty-five male patients. Age and gender were not distinguishing factors in either group. Various criteria are used to compare Group A and Group B. Group A's average operation duration was significantly shorter than Group B's. It met the criteria for receiving a score. Our investigation found that 27 students in Group B and 29 students in Group A achieved good grades. There was one high-scoring patient in Group A and three in Group B.

Conclusions: Our study shows that single extra-articular humerus plate is a patient-centred and cost-effective way to treat extra-articular distal humeral fractures. The two best options for this type of fracture treatment are bipolar plating and single extra-articular plating. But as it causes less discomfort to soft tissues, single extra-articular plating is preferable.

Keywords: Distal humerus fracture, bipillar plating, articular humerus plating, and health

Introduction

Approximately 33% of all humeral fractures are distal humeral fractures, which account for 2.4% of all fractures in adults. They affect 6.3% of the population annually. People were wounded most often when they fell from a standing position^[1-3]. Next on the list were car accidents. Just under 40% of distal humerus fractures and 3% of all adult fractures were due to extra-articular fractures^[2-4].

Conservative non-operative treatments, such as bracing and plaster casts, and surgical procedures, like as plating or medullary nailing, are typically used to treat distal humerus fractures. The primary objective was to achieve a completely functional and stable elbow joint. Some patients had side effects such as weakened legs, sore elbows, and stiffness after treatment. The distal extraarticular humeral component cannot be securely fastened with intramedullary nailing^[3-5].

Because it provides a more solid method of fixing the bone, double plating is commonly advised for treating certain types of fractures. The result is an elbow that has a lot of ROM from the get-go. On the other hand, it is associated with longer average working hours and more extensive cutting of soft tissues, which increases the likelihood of infection and improper healing following surgery^[4-6]. For this issue, an extra-articular distal humerus plate is a good option. Some have proposed using an additional non-articular distal humerus plate for fixation in order to decrease the usual duration of the procedure and the amount of soft tissue injury that occurs. The extra-articular distal humerus plate is believed to be the most effective

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treatment for distal humerus injuries [5-7]. The purpose of this research was to compare the efficacy of bipillar plating with that of single extra-articular plating in distal humerus fracture repair.

Materials and Methods

The study had 50 patients and was conducted from October 2015 to June 2016, including a 6-month follow-up period. All patients with humeral injuries who presented to the orthopaedics department at Deccan College of Medical Sciences, Hyderabad, Telangana, India, were incorporated into the study. Two sets of cases were created.

Inclusion Criteria

- Extra articular distal humerus fracture patients;
- Patients with recent trauma within two weeks;
- Patients with lost fractures

Exclusion Criteria

- Patients who are unwilling to take part;
- Those who are younger than 18 and older than 60;
- Open fractures

A cut was made in the skin 2.5 cm away from the elbow joint, between the lateral epicondyle and the olecranon, using a posterolateral method. The triceps were lifted and pulled back in order to get to the fracture spot. A periosteum lifter was used to separate the periosteum, and reduction clamps and plates were used to line up the proximal and distal humerus and prevent fractures. After radiological bone union, patients were allowed to start physical rehab and assisted activities.

Results

Fifty different cases were looked into. Mean age of patients in group A. Group B's patients were, on average, aged. The majority of cases in both groups were men. In total, there were 35 men and 15 women cases. Teenage and female members of both groups were about the same. According to our research, 27 people in Group B and 29 people in Group A got good grades. Three people in Group B and one person in Group A got good scores. Complications after surgery were lower in our group. One person had to have more surgery because the fracture did not heal. Two people who got infections after surgery were given higher amounts of antibiotics. No patient showed any signs of having hurt their radial nerve.

Table 1: Evaluation of Groups A and B based on their parameters

Sr. No.	Parameters	Group A	Group B
1	Average operation time	91.84	182.12
2	Average surgical blood loss	179	214.0
3	Weeks to fracture union average	22.8	21.3
4	Bone impingement	Absent	01 patient

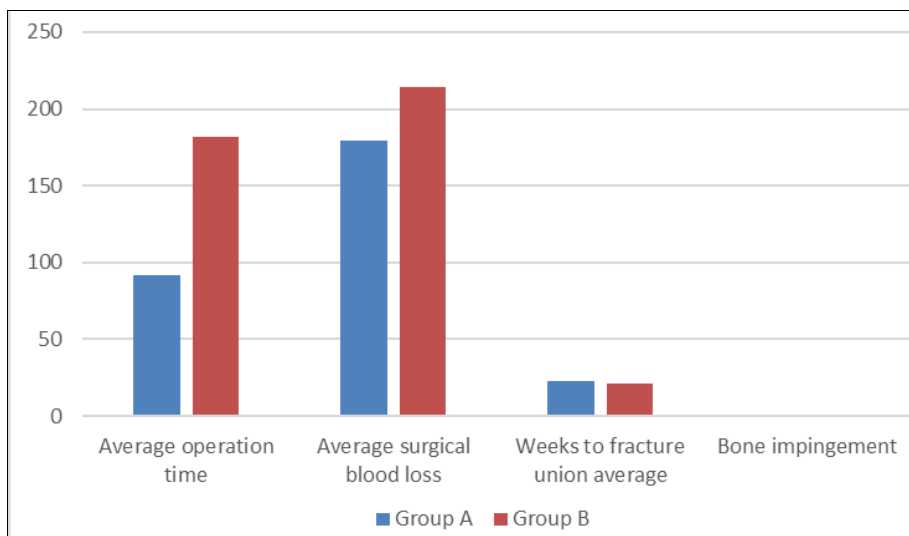


Fig 1: Parameter comparison of Groups A and B

Table 1 compares Group A with Group B on multiple dimensions. The positive appraisal was prompted by the observation that the average duration of operation in Group A was significantly shorter than that in Group B.

Table 2: Mayo Elbow Performance Score comparison of Group A and B

Sr. No.	Score for the Mayo Elbow	Interpretation	Group A	Group B
1	>90	Excellent	19	27
2	75-89	Good	01	02
3	60-74	Fair	00	01

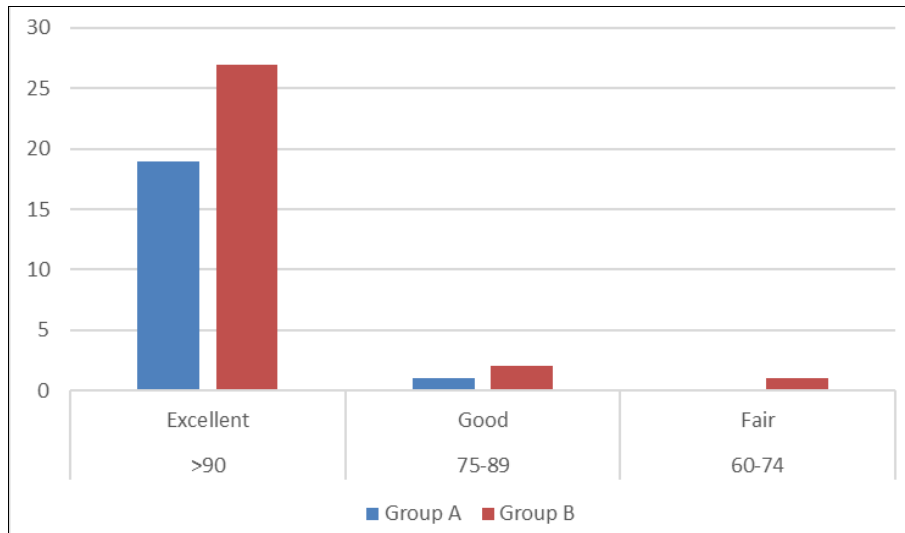


Fig 2: Mayo Elbow Performance Score Group A vs. B

Discussion

As we looked into it, the group whose mean surgery length was significantly shorter was called outstanding, and those with a number between 75 and 89 were called good. The results of our study showed that 27 people in Group B and 29 people in Group A got good grades. Three of the patients in Group B and one of the patients in Group A got good scores [8-10].

In our study, problems after surgery were lowered. One patient had to have more surgery because the fracture did not heal. Two individuals who got infections after surgery were given higher amounts of antibiotics. There were only two people who got an infection after surgery. There was no sign of useful bracing [11-13].

Stable fixation was essential for elbow joint fractures to facilitate early physiotherapy, rehabilitation, and joint mobility following surgery. In order to stabilize the fracture pieces at the extremities of the bone, previous studies recommended applying conventional plating 5 to 8 degrees off the long axis of the humeral shaft [14-16]. The plate wasn't level, though, thus the proximal attachment was limited. The dual plate method is commonly used to treat these types of fractures, but it is not without its dangers. These include increased likelihood of the fracture not healing, longer surgical times, and significant injury to soft tissues [17-19]. Shorter surgical times, reduced damage to soft tissues, and a lower risk of infection are only a few of the good results that have been observed in recent study on treating extra-articular distal humerus fractures with a single plating [18-20]. The typical healing time for a single-plate treated extra-articular distal humerus fracture is around 22.4 weeks. When a bone is fused, there is no pain at the fracture site and a bridge callus forms, which can be seen on both anteroposterior and side x-rays. All of the patients have excellent MEPS scores and good arm function for bending, straightening, rotating, and rolling inward and outward [21-23].

Similar results were seen in earlier research. There was no radial nerve paralysis in any of the people. The findings of a previous study were similar. It was easier for the single plating group to move around than for the dual plating group, which had a lot more problems overall [24-27].

Conclusion

One patient-centred and cost-effective method to treat extra-articular distal humeral fractures is with single extra-articular

humerus plating, according to our study. Bipillar plating and single extra-articular plating are both useful in this type of damage. On the other hand, single extra-articular plating has some advantages, such as being less invasive, quicker, less costly, and less harmful to soft tissues. As things stand, the best and most recommended approach to treating non-joint distal humerus fractures is this single plating procedure. For distal humerus fractures, single extra-articular humerus plating is preferable to bipolar plating due to its shorter surgical time, reduced blood loss, and higher performance rating.

Conflict of Interest

None

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Nil

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