Research Paper

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A Clinical Study To Assess The Functional Outcome of Ankle Fractures Treated With Various Surgical Modalities In Adults

Medical Science

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Anil Prakash Senior Registrar, B.J Medical College, Ahmedabad

Introduction

"Ankle is the most injured joint of the body but the least well treated. Ankle injuries gain importance because body weight is transmitted through it and locomotion depends upon the stability of this joint. They are usually mixed injuries, ligamentous and bony and each injury is an end result of the sequence of ligamentous and bony failure due to deforming forces. Malleolar fracture have varied presentations which have given rise to a wide variety of classification systems, of which two are in vogue Lauge Hansens and Danis - Weber classification. Malleolar fractures are one of the most common fractures in orthopaedic traumatology. As with all intra articular fractures, malleoli fractures necessitate accurate reduction and stable internal fixation. When malleolar fractures are not reduced accurately they may lead to post traumatic painful restriction of motion or osteoarthritis or both. Many of the fractures which are stable are reduced by conservative treatment and have given good result. The other unstable displaced and open fractures required internal fixation. The superiority of ORIF over closed treatment has been thoroughly demonstrated in literature. However all studies have not obtained good results in cases of bimalleolar fractures.

The purpose of this study is to assess the functional outcome and results of surgical treatment of malleolar fractures

AIMS AND OBJECTIVES

This study is undertaken with the following aims and objectives,
To study radiological and functional outcome of surgical fixation of ankle fractures
To compare the results of cases managed by different treatment methods
In this study I have collected 30 cases of ankle fractures operated at the Department of Orthopaedics, C U Shah Medical College and Hospital, Surendranagar, with a view to analyse

- The mechanism of injury
- The fracture patterns
- The mode of treatment employed
- The difficulties encountered in its use
- The complications and
- The final results

RESULTS AND OBSERVATIONS

All the fractures were followed until fracture union occurred. Results were analysed both clinically and radio graphically. All most all fractures united at the end of 10 weeks.

Majority of patients i.e. 11 (36.67%) were from 16- 30 years age group, followed by 8(26.67%) patients in 41-50 age group. The youngest patient was 17 years old and oldest was 82 years of age. The mean age in our study was 43.83 years. The fracture was more predominant in males (63.34%) than females (36.67%) in our study. The major cause of fracture in our study was road traffic accidents in 17 (56.67%) and in 9 (30%) patients fracture was due to slipping and stumbling. The rest 4 (13.34%) patients had fractures due to fall from height. Right ankle was involved in 16 (53.34%) patients and in 14 (46.67%) patients left ankle was involved. In the present series 16 (53.34%) patients had pronation and external rotation injuries which was the majority, followed by 12 (40%) patients having supination external rotation and 2

(6.67%) patients had supination adduction injuries. Open reduction and internal fixation was done in twenty two of the twenty nine fractures of medial malleolus with perfect anatomical reduction achieved after clearing the periosteum from the fracture site on seven instances closed reduction was opted as stable reduction was achieved and did not warrant the necessity of opening the fracture site.

Open reduction and plating was done in all fractures of fibula except in three cases were closed reduction and rush nail was done as in these cases medial malleolus was fixed first and perfect anatomical reduction was achieved and the simple fracture pattern of the fibula was spontaneously reduced.

Open reduction was done in all three cases of posterior malleolus as it had a large posterior fragment involving greater than 25% of the articular surface. Majority (80%) of the patients had excellent results devoid of complications 6(20%) cases developed complications. In two cases hardware prominence was seen with superficial infection on long term follow-up for which implant removal and debridement was done. The five cases of infection were superficial and resolved within two weeks. Non-union and post traumatic arthritis was seen in one case. In one case there was syndesmotic instability as syndesmotic screw was not fixed.

Composite Score:

In the present study of 30 patients with ankle fractures treated by open reduction and internal fixation. Excellent results were achieved in 17 (56.67%) patients, good in 8 (26.67%), Fair in 4 (13.34%) and Poor in 1 (3.34%) patient. Excellent results were observed in all isolated medial malleolar fractures and majority of bimalleolar fractures. The patient with poor result had non-union of medial malleolus with post traumatic arthritis and severe restriction of motion, ankle arthrodesis was done in this patient.

Composite Score	No. of Patients	Percentage
Excellent (96-100 Points)	17	56.67%
Good (91-95 Points)	8	26.67%
Fair (81-90 Points)	4	13.34%
Poor (0-80 Points)	1	3.34%

CONCLUSION

In this review of 30 patients with ankle fractures that were treated surgically:

1. Majority of them were caused by pronation external rotation injuries. The most common etiology being road traffic accident.
2. There was male predominance with male: female ratio of 19:11
3. Understanding the mechanism of injury is essential for good reduction and internal fixation.
4. The bend of the lateral malleolus should be reproduced when the plate is being used.
5. The fibular length has to be maintained for lateral stability of

the ankle.
6. Anatomical reduction is essential in all intra articular fractures, more so if a weight bearing joint like ankle is involved. Open reduction and internal fixation guaranteed high standard of reduction besides eliminating the chances of loss of reduction.
7. The operative results were eminently satisfactory in 83.34% of patients
8. More severe injuries were followed by least satisfactory results.
9. Chances of non-union of medial malleolus due to periosteal inter position and that of fibula due to soft tissue interposition are avoided with open reduction and perfect anatomical alignment.
10. Most of the complications faced were minor which resolved by 2 weeks. Hardware prominence is a frequent complaint after fixation of medial malleolus and may warrant implant removal.
11. Tension band wiring is the method preferred for small fragments and osteoporotic bones of both medial and lateral malleolus.
12. Plaster slab for a period of 3 weeks does not reduce the final outcome; Rehabilitation is quick because immobilization of the joint is for relatively short period.
13. Open reduction of medial malleolus resulted in better outcome with similar operative time as compared to closed reduction and latter is advisable only in case of severe soft tissue compromise.

In conclusion surgical fixations of ankle fractures are associated with good results with shorter term of immobilisation and better patient compliance. Open reduction of both medial and lateral malleolus is preferred to remove the soft tissue and periosteum interposition in the former and rotational and length correction in the latter. Severity of initial trauma and the resulting cartilage and soft tissue damage is more deterrent to favourable outcome rather than fracture pattern. Associated co-morbities like fracture of talus and resulting ankle and sub-talar arthritis is associated with poor outcome. Hardware prominence is a common complaint after fixation of medial malleolus and may warrant implant removal. Poorly controlled diabetes mellitus [57] is associated with poor wound healing and infection.

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