



Operative Vs Non-Operative Management of Calcaneal Fractures -A Clinical Study of 40 Patients

Dr Avinash Tolani

Senior resident, Department Of Orthopaedics, LG Hospital, Maninagar, Ahmedabad, Gujarat.

ABSTRACT

Fractures of the calcaneum are very common after a fall from a height, The management of these fractures has always been a controversy. Both operative and non operative management of these fractures have been described in the literature. The following is a prospective study of 40 patients of calcaneum fractures that have been managed by both operative and non operative means and the results compared in terms of functional outcome and union.

KEYWORDS : Calcaneal fractures, fall from height, Essex-Lopresti, Harris axial view

1. Introduction

To fix or not to fix, that is the question regarding the management of intra-articular calcaneal fractures. Historically, displaced intra-articular calcaneal fractures were treated nonoperatively, as predictable operative reduction and fixation were not possible. Operative reduction became more popular as fracture care improved. Calcaneal fractures have a track record of being difficult to treat and have frustrated doctors for years. The problem in treating calcaneal fractures is in trying to rebuild the fracture so that healing may take place. The calcaneus is much like an egg; an outer firm shell and soft on the inside. As a result, the calcaneus often shatters when broken. Calcaneal repair not only requires re-apposition of multiple fracture patterns, but also requires restoration of the subtalar joint. The subtalar joint is the interface between the calcaneus and talus and is a primary load bearing joint of the foot. In some cases, additional joint surfaces may be affected (the calcaneal cuboid joint) but are of lesser importance due to their limited weight bearing roles.

2. Materials and Methods

The material for the present study was collected from patients who were admitted in Department of Orthopaedics with fractures of the calcaneum. 40 cases of either sex were included in the study. Patients were informed about the study and a written informed consent was taken from all the patients.

The period of follow up was 1 year and above. The results of 40 patients were analyzed and studied. The analyzed data was compared with other series in literature and discussed. A master chart dealing with all aspects has been designed and presented.

METHOD OF COLLECTION OF DATA

Inclusion criteria:

1. Patients with fractures of calcaneum.
2. Patients in age group of 15- 60 of either sex
3. Patients who are fit for surgery

Exclusion criteria:

1. Open fractures with gross contamination.
2. Undisplaced fracture calcaneum.
3. Patients presenting after 4 weeks of injury.
4. Patients not giving written consent for surgery.

Cases were selected by diagnosis on history, clinical examination, x-rays and routine investigations. Specific mention about the presence or absence of vascular or neurological deficits, open or closed injury, associated spine or extremity injuries were made. Performa specially made for this study was used. Clinical diagnosis was confirmed by Antero-Posterior, Lateral and Harris axial views. Special views were taken only when the interpretation of these routine x-rays were difficult. In all cases the opposite calcaneus was x-rayed for comparative studies.

All calcaneal fractures were classified and assigned to particular group based on Essex-Lopresti's classification system. The present study included 40 cases of fractures of calcaneum treated by operative and

non operative means.

3. Observation and Results

A total of 40 patients were included in the study out of which 20 were managed conservatively and 20 were managed surgically.

Age Distribution (Range: 15 yrs to 60 yrs)

AGE	CONSERVATIVE	OPERATIVE
0-20	4	6
21-40	10	12
41-60	6	2
TOTAL	20	20

SEX DISTRIBUTION

SEX	CONSERVATIVE	OPERATIVE
MALE	12	10
FEMALE	8	10
TOTAL	20	20

MODE OF INJURY

MODE OF INJURY	CONSERVATIVE	OPERATIVE	TOTAL
RTA	4	6	10
FALL FROM HT	14	12	26
OTHER	2	2	4
TOTAL	20	20	40

OPEN OR CLOSED FRACTURE

	CONSERVATIVE	OPERATIVE	TOTAL
OPEN	1	3	4
CLOSED	19	17	36
TOTAL	20	20	40

SIDE INCIDENCE

DEXTERITY	No Of Patients
Unilateral	36
Right	22
Left	14
Bilateral	4

RESULTS AND OUTCOME

Grade	CONSERVATIVE	OPERATIVE
Excellent	5	9
Good	9	7
Fair	5	4
Poor	1	0

4. Conclusion

Recent retrospective and small prospective studies have suggested that operative care of displaced intra-articular calcaneal fractures had a clear advantage over non operative care. Our prospective, randomized, controlled trial on 40 patients suggests that anatomic or near anatomic reduction provides a positive effect on outcome. To our knowledge, this is one of the few studies in the literature on calcaneal fractures that strongly suggests that a better reduction provides a better long-term outcome following an intra-articular fracture. In a previous clinical matched-cohort study, Buckley and Meek hinted that a better reduction, as measured by computerized tomography scanning, may result in a better patient outcome.

Reviewing the literature and our experience we conclude that uniform application of percutaneous reduction and fixation methods to all types of calcaneal fractures carries a considerable risk to inadequate joint reconstruction and re-dislocation. Intra-articular fractures in patients at increased risk from a formal open reduction can be treated safely with a minimally-invasive technique. Wound complication and non-union are relatively rare in percutaneously treated intra-articular fractures of calcaneum. Tongue-type fractures can be successfully treated using a minimally-invasive technique while joint depression fractures are generally difficult to reduce. Some intra-articular fractures in patients at increased risk from a formal open reduction can be treated safely with a minimally-invasive technique.

In extra-articular fractures treated with surgery the return to daily routine activities is good compared to the conservatively managed extra-articular fracture. Bohler's angle ratio was significantly lower in patients who had an unsatisfactory result, compared with those who had a satisfactory result. Subtalar Arthrodesis should be reserved as a salvage procedure only.

REFERENCES

1.Slatis PK, Kiviluoto O, Santavirta S. Fractures of the calcaneum. *J Trauma* 1979 ; 19 : 939-44 || 2.Aaron DA. Intraarticular fractures of the calcaneum. *J Bone Joint Surg* 1974 ; 56 : 567 || 3.Schofield RO. Fractures of the Os Calcis. *J Bone Joint Surg* 1936 ; 18 : 566-580 || 4.Fitzgibbons TC, McMullen ST, Mormino MA. Fractures and Dislocations of the Calcaneus. In: Bucholz RW, Heckman JD, editors. *Rockwood and Green's Fractures in Adults* Vol 2. 5th edition. Philadelphia: Lippincott, Williams and Wilkins; 2001. p.2133-2156 || 5.Pozo JL, Kirwan EO, Jackson AM. The long term results of conservative management of severely displaced fractures of the calcaneum. *J Bone Joint Surg* 1984 ; 66 : 386-390 || || || || 6.Zayer M. Fracture of the calcaneus. *Acta Orthop Scand* 1969 ; 40 : 530-542 || 7.Cotton FJ, Wilson LT. Fractures of the Os Calcis. *Boston Med Surg J* 1908 || || || || || 8.Bankart ASB. Fractures of the Os Calcis. *Lancet* 1942 ; 2 : 175-178