

**Original article:**

## **Comparison of treatment of fracture calcaneous with stim. pin VS functional cast in rural population**

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**Abstract:**

**Introduction:** During last 6 years study on fracture calcaneous was carried out in PDVVPE's medical college and hospital, orthopaedic department total 92 patients of fracture calcaneous were treated conservatively.

**Materials and methods:** Minimum intervention with K wire and Stinman Pin and surgical treatment with plating the results of conservative care i.e. closed manipulation under anaesthesia and cast Vs minimum invasive surgery with K wires and Stinman pin was studied during period 2010 to 2014. Total No. of 92 fracture were out of which 30 bilateral , Rt. Side 42 and left side 20 were observed. Our aim was to compare the treatment outcome over these cases in rural area setup and conclude the results.

**Results:** Overall study revealed that Gr.I and Gr. II type of patient responds well ( 85%) to functional cast manipulation and Stinman pin minimum invasive treatment.

**Conclusion:** Results are superior when Stinman pin manipulation and cast with K wire fixation was done

**Keywords:** Calcaneous fracture, functional cast

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**Introduction:**

During last 6 years study on fracture calcaneous was carried out in PDVVPE's medical college and hospital, orthopaedic department total 92 patients of fracture calcaneous were treated conservatively, minimum intervention with K wire and Stinman Pin and surgical treatment with plating the results of conservative care i.e. closed manipulation under anaesthesia and east Vs minimum invasive surgery with K wires and Stinman pin was studied during period 2010 to 2014. Comparison of results of calcaneous by conservative and minimum invasive means was selected for study. As patient coming to us are poor and cannot afford surgical intervention charges. Hence, patients where Bohler's angle and Gissan angle were maintained ;were selected for conservative care. While fracture involving intra articular # with change in Bohlers angle and Gissom angle were selected for Stinman pin and closed manipulation and cast under anesthesia. Many authors claim better results with operative treatment and However post-operative wound complications remain a problem.<sup>1,2</sup>

**Aim:**

1. To get recovery early
2. To get procedure done in minimum expenses
3. To reduce the chances of infection
4. Early mobilization and weight bearing.
5. To avoid subtalar arthritis
6. To avoid post operative thickening of bone.

**Material & methods:**

During 2010 to 2014 all those cases were studied. X rays were done lateral and axial of both heels. To compare with normal and to study bilateral cal caneous. .

Total fracture - 92

Bilateral - 30

Unilateral – 42( Rt) + 20 ( Lt)

Males - 60

Females - 32

Mechanism of injury

1. Fall from height - 55
2. High speed injury direct - 15
3. Motor cycle accident - 12

Some patient C.T. Scan and while Plain and 3D scan were done whenever needed as per emergency.

Methods

1. Patients were give S/A or G/A closed manipulation and cast was done in O.T. under Image intensifier for guidance. Pop cast was give for 4 to 6 weeks and non weight bearing mobilization was advice for 3 months.
2. After 3 months weight bearing was allowed as per X-ray review and healing.
3. Similarly closed manipulation and Stinman Pin manipulate was done to achieve Bohler’s angle and Gissan angle Stinman pin was introduced from posterior surface of calcaeus. Two pin were used. position was checked under Carm and closed cast was given after manipulation from external surface.

Method of surgical treatment

1. G/A singal anaesthesia was given
2. Was reduced and Stinman pin manipulation was done to active Bohler’s and Gissane angle.
3. Stinman pin was inserted from Tuberosity of calcaneus uncl image intensifier with ankle plantes flexed.
4. After elevation of depressed suptalar articula surface of calcaneus two.pins were introduced

AIMS & OBJECTIVES

1. To treat patient with minimum invasive method.
2. Poor patients are more and hece economical treatment was preffer.
3. Tongue #type patient were reduced with Stinman pin and were given cast under with arm control
4. Gr. III and depressed patient were considered for surgery.
5. Those patients with Bohler’s angle maintained were treated conservatively
6. To reduce the chances of infection
7. Early mobilization.
8. To avoid arthritis and post operative thickning of bone.

Following observation were done

Conservative cast	Stinman pin manipulative with C.R. & Cast
Patients pain was not reduced satisfactorily	Pain reduction was achieved immediately after postoperative period

Bony thickening was noticed after 6 month	Minimum bone thickening was seen
Subtalar arthritis was not seen	Subtalar arthritis was noted in patients with depressed type of fracture
Peroneal impingmont syndrome was noticed in few patients i.e. 15 patients	Peroneal impingmont was seen only in five patients.
Tendo achilis laxity were noticed in 10 pts.	Tendoachilis laxity was seen only in two pts.
Patient were having good results in 80% patients after 1 years	95% patients had good and satisfactory outcome after 1 year
Subtalar fusion was not adviced to any patient	Two patient needed subtalar fusion after 2 years.

**Observations:**

Comparison of results of calcaneous by conservative and minimum invasive means was selected for study. As patient coming to us are poor and cannot afford surgical intervention charges. Hence, patients where Bohler’s angle and Gissan angle were maintained were selected for conservative care. While fracture involving intra articular are with change in Bohlers angle and Gissan angle were selected for Stinman pin and closed manipulation and cast under anesthesia.

Overall study revealed that Gr.I and Gr. II type of patient responds well to functional cast manipulation and Stinman pin minimum invasive care.(85%) Results are superior when Stinman pin manipulation and cast with K wire fixation was done. Pain reduction, bony thickening, subtalar Arthritis peroneal impingment syndrome and Tendoacmlis laxity chances were reduced in all those who were treated with Stinman pin manipulation.

**Discussion:**

During last 6 years study on fracture calcaneous was carried out in PDVVPE’s medical college and hospital, orthopaedic department total 92 patients of fracture calcaneous were treated conservatively, minimum intervention with K wire and Stinman Pin and surgical treatment with plating the results of conservative care i.e. closed manipulation under anaesthesia and east Vs minimum invasive surgery with K wires and Stinman pin was studied during period 2010 to 2014. Comparison of results of calcaneous by conservative and minimum invasive means was selected for study. As patient coming to us are poor and cannot afford surgical intervention charges. Hence, patients where Bohler’s angle and Gissan angle were maintained were selected for conservative care. While fracture involving intra article are with change in Bohlers angle and Gissan angle were selected for Stinman pin and closed manipulation and cast under anesthesia.

In Crosby's study computerized tomography was used to evaluate thirty intra-articular fractures of the calcaneus in twenty-seven patients. A classification of the fractures was devised on the basis of fracture patterns involving the posterior facet joint of the calcaneus. In Type I, the fracture fragments were small or not displaced; in Type II, they were displaced; and in Type III, they were comminuted. There were thirteen Type-I, ten Type-II, and seven Type-III fractures, all of which were treated with a variety of closed methods. The length of follow-up ranged from eighteen to fifty-two months (mean, thirty-six months). The results were graded by a predetermined point system that included the evaluation of motion of the subtalar joint. Of the thirteen Type-I fractures, eight had an excellent result; four, a good result; and one, a fair result. Of the ten Type-II fractures, two had a good result; four, a fair result; and four, a poor result. All of the seven Type-III fractures had a poor result. On the basis of that study of the fracture patterns as seen on the computerized tomography scans, he believes that it is possible to predict which fractures will do well with closed treatment and which will not. Type-I fractures did well with closed treatment. Type-II fractures can be treated closed but with a lower success rate than Type-I fractures. All of the Type-III fractures had a poor result after closed treatment.<sup>3,4</sup>

#### **Conclusion**

1. Overall study revealed that Gr. I and Gr. II type of patient responds well to functional cast manipulation and Stinman pin minimum invasive care.
2. Results are superior when Stinman pin manipulation and cast with K wire fixation was done.
3. Pain reduction, bony thickening, subtalar arthritis peroneal impingement syndrome and Tendoachilis laxity chances were reduced in all those who were treated with Stinman pin manipulation.
4. Chances of infection were less as compared to open resection and internal fixation in care of Stinman pin and manipulation.
5. Treatment with Stinman pin is economical for rural set up patient

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