

Outcome Of Percutaneous Fixation Of Calcaneal Fractures: A Prospective Analysis

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INTRODUCTION

The treatment for displaced calcaneal fractures is complicated due to thin soft tissue envelope, complex anatomy, complicated joint mechanics between the tarsal bones and intraarticular fracture pattern. Conservative methods are associated with inadequate articular reduction, malunion and deformities, whereas open techniques afford good reduction but at the cost of compromising soft tissue envelope. To avoid these complications a number of percutaneous techniques have been developed, but these methods have limited available data.

MATERIAL AND METHODS

23 closed displaced intraarticular calcaneal fractures (19 patients) were treated with closed reduction and percutaneous fixation using K wires. Fractures were classified by Essex Lopresti and Sanders classification. Outcome was evaluated by radiographs (bohler, gissane angle and width of calcaneus) and functional score (Maryland foot score and American orthopaedic foot and ankle score) at 6 and 18 months.

RESULTS

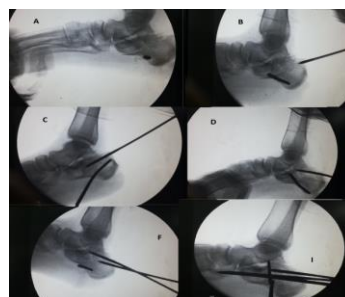
The mean preoperative bohler and gissane angles were 3.0 and 123.5 mean postoperative was 11.9 and 123.1, and at 18 months follow up were 6.6 and 125.6. Functional score was graded as excellent in 33% (5 patients); good in in 67% (10 patients) at 18 months follow up. The mean functional score (MFS) at 18 months was 87.5 for joint depression type (n=18), 85 for tongue type fractures (n=5) and 92.5, 87, 83 for sander type II (n=2), III (n=13) and IV (n=8) respectively. There was no pin site infection, wound complication or loss of reduction in postoperative period.

FRACTURE TYPE	PREOP BOHLER ANGLE	POSTOP BOHLER ANGLE	MEAN MFS SCORE	MEAN AOFAS SCORE
JOINT DEPRESSION TYPE	2.7	13.3	87.4 (76-96)	84.7 (66-96)
TONGUE TYPE	4.2	7.04	85.0 (82-89)	82.8 (79-87)
SANDER TYPE II	17.5	22.5	92.5 (89-96)	92.5 (90-95)
SANDER TYPE III	2.6	11.4	86 (76-92)	84.2 (69-92)
SANDER TYPE IV	1	10.8	80.0 (75-85)	80.8 (66-83)

DISCUSSION

Mean bohler angle was lower (mean 3.04) as compared to other studies probably due to inclusion of comminuted sander type IV (~ 35%), which many studies have not included. The role of gissane angle is limited as the value of gissane angle has not changed significantly after intervention (p<0, 05).therefore very few studies have used it.

Functional score was not found to correlate with anatomical outcome in our study as some patients had inadequate restoration of bohler angle but had good functional outcome. This finding was also reported by other authors but an explanation could not be cited.



CONCLUSION

Closed reduction and percutaneous fixation is a viable alternative to open techniques, with the advantage of minimising wound infections, shorter operative time, decreased postoperative morbidity and achieving good functional results.

REFERENCES

1. Stulik J, Stehlik J, Rysavy M, Wozniak A. Minimally-invasive treatment of intra-articular fractures of the calcaneus. *J Bone Joint Surg Br.* 2006 Dec; 88(12):1634–41.