

ORIGINAL RESEARCH

Nailing versus plating in the treatment of fibular fractures

Dr. Hari Shankar Gangwar

Assistant Professor, Department of Orthopaedics, Rajshree Medical Research Institute, Bareilly, Uttar Pradesh, India

Corresponding Author

Dr. Hari Shankar Gangwar

Assistant Professor, Department of Orthopaedics, Rajshree Medical Research Institute, Bareilly, Uttar Pradesh, India

Email: drhsg99@gmail.com

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ABSTRACT

Background: The most prevalent method for internal fixation of fibula injury is plate fixation, either with or without an interfragmentary compression screw. The present study was conducted to compare nailing with plating in treating fibular fractures. **Materials & Methods:** 84 patients of fibular fractures of both genders were divided into 2 groups of 42 each. Group I patients were treated with nailing and group II patients were treated with plating. Complications were recorded in both groups. **Results:** Group I had 22 males and 20 females and group II had 19 males and 23 females. The fracture was lateral malleolar in 18 in group I and 20 in group II, bimalleolar in 16 in group I and 17 in group II and trimalleolar in 8 in group I and 5 in group II respectively. The side involved was the left side in 21 in group I and 18 in group II, the right in 16 in group I and 20 in group II and both sides in 5 in group I and 4 in group II. The difference was non-significant ($P > 0.05$). The common complications were wound infection seen 2 in group I and 1 in group II, wound dehiscence 2 in group I and 1 in group II, ankle stiffness 3 in group I and 2 in group II, screw breakage in 2 in group I and 1 in group II, non-union 1 in group I and 0 in group II and delayed union 1 in each group. The difference was significant ($P < 0.05$). **Conclusion:** In the treatment of fibular fractures, plating has been demonstrated to be superior to nailing in terms of fewer post-operative problems.

Keywords: Ankle fractures, Fibular, Nailing

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INTRODUCTION

Ankle fractures account for around 25% of all lower limb fractures and are exceedingly prevalent. In recent decades, the methods used to treat displaced fractures of the lateral malleolus have largely not changed.^{1,2} The center of the ankle joint is 3–4 mm lateral to the center of the intermalleolar axis, which is important if the tibia piece in the TKR—the mechanical axis of the lower limb—needs extra medullary guidance.³ The ability to implant an intramedullary device with less hardware in the end through a smaller incision is a possible benefit for fibular fixation. These variations may be beneficial to patients for whom wound healing can be problematic, particularly those with diabetes and the elderly. It's also likely that a smaller incision and less dissection.⁴

Currently, the most prevalent method for internal fixation of these injuries is plate fixation, either with or without an interfragmentary compression screw.⁵ Despite relatively high rates of hardware removal, plate fixation has a solid track record due to its low

rates of non-union and hardware-related comorbidities. Not much research has been done on the idea of intramedullary fibular nailing with potential screw fixation.⁶ The present study was conducted to compare nailing with plating in treating fibular fractures.

MATERIALS & METHODS

The present study was conducted on 84 patients of fibular fractures of both genders. All patients were informed regarding the study and their written consent was obtained.

Data of patients such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 42 each. In group I, patients were treated with nailing and in group II, patients were treated with plating. The outcome of treatment and complications were recorded in both groups. The results thus obtained were statistically analyzed. A p-value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Groups	Group I (42)	Group II (42)
Method	Nailing	Plating
M:F	22:20	19:23

Table I shows that group I had 22 males and 20 females and group II had 19 males and 23 females.

Table II Comparison of parameters

Parameters	Variables	Group I	Group II	P value
Fracture	Lateral malleolar	18	20	0.62
	Bimalleolar	16	17	
	Trimalleolar	8	5	
Side	Left	21	18	0.18
	Right	16	20	
	Both	5	4	

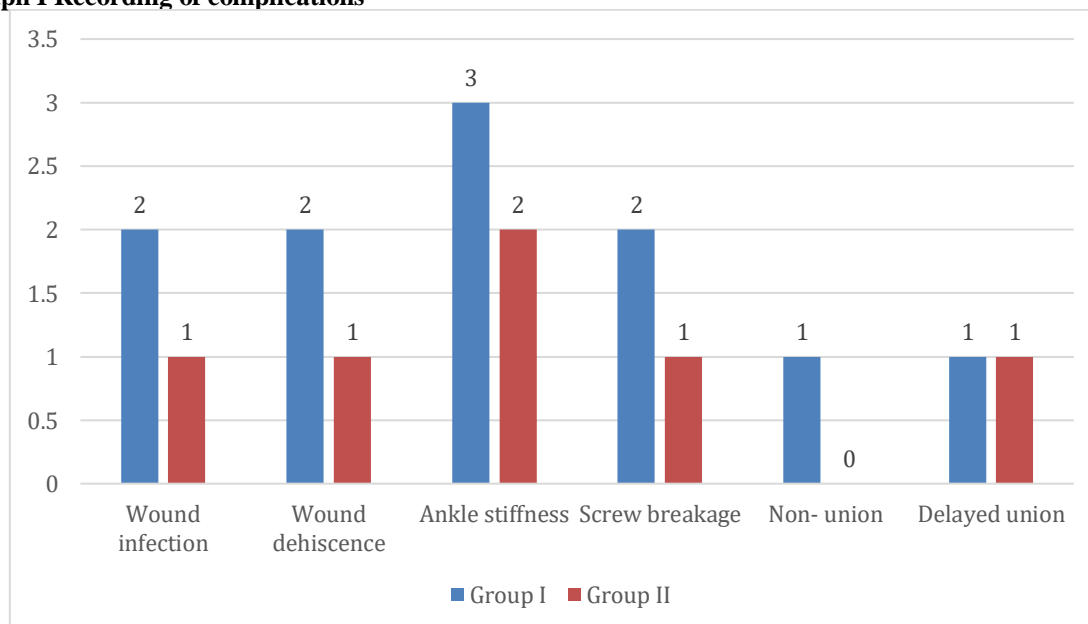
Table II shows that fracture was lateral malleolar in 18 in group I and 20 in group II, bimalleolar in 16 in group I and 17 in group II and trimalleolar in 8 in group I and 5 in group II respectively. The side involved was left side in 21 in group I and 18 in group II, right in 16 in group I and 20 in group II and both sides in 5 in group I and 4 in group II. The difference was non-significant ($P > 0.05$).

Table III Recording of complications

Complications	Group I	Group II	P value
Wound infection	2	1	0.05
Wound dehiscence	2	1	0.05
Ankle stiffness	3	2	0.74
Screw breakage	2	1	0.05
Non-union	1	0	0.87
Delayed union	1	1	1

Table III, graph I shows that common complications were wound infection seen 2 in group I and 1 in group II, wound dehiscence 2 in group I and 1 in group II, ankle stiffness 3 in group I and 2 in group II, screw breakage in 2 in group I and 1 in group II, non-union 1 in group I and 0 in group II and delayed union 1 in each group. The difference was significant ($P < 0.05$).

Graph I Recording of complications



DISCUSSION

Ankle fractures occur annually at a rate of approximately 125/100000. Internal fixation is currently the gold standard treatment for these

fractures, even though conservative measures were employed for many years.^{7,8} Because there is a significant risk of wound complications, infection, and device failures, managing these fractures in senior

people remains difficult. In an attempt to reduce the incidence of posttraumatic arthritis, open reduction internal fixation (ORIF) is necessary for ankle fractures that are judged unstable.^{9,10} It is believed that the quality of reduction is the most significant factor and that it most directly correlates with the probability of developing arthritis later on. To reduce the complication rate, indications include smokers, patients who are not compliant, and those who have serious medical or social issues.^{11,12} The present study was conducted to compare nailing with plating in treating fibular fractures.

We found that group I had 22 males and 20 females and group II had 19 males and 23 females. Coifman¹³ assessed the application of less invasive surgical techniques for fibula intramedullary nailing on 39 cases. There were 39 instances; 37 of them had closed fractures, and 2 of them also had open damage to the medial malleolus. Twenty cases were type B, eighteen cases were type C, and one case was a pathologic fracture similar to a type B fracture, according to Weber's classification of lateral malleolus fractures. It was found to be fair in five cases, bad in two cases, and good in thirty-two cases that underwent intraoperative revisions to plate fixation. Overall, there were no problems with the system. Hardware removals have been the subject of additional procedures for eight patients. The nail was later changed to a different fastening technique in two cases:

We found that fracture was lateral malleolar in 18 in group I and 20 in group II, bimalleolar in 16 in group I and 17 in group II and trimalleolar in 8 in group I and 5 in group II respectively. The side involved was left side in 21 in group I and 18 in group II, right in 16 in group I and 20 in group II and both sides in 5 in group I and 4 in group II. Hess et al¹⁴ evaluated the clinical feasibility and the possible complications associated with minimally invasive plate osteosynthesis of the distal fibula. Seventeen fractures healed without complication at an average of 9 weeks. Three aseptic non-unions were recorded: one in a pilon fracture (Orthopaedic Trauma Association 43-C3) and one in a distal lower leg fracture (Orthopaedic Trauma Association 43-A3), both with severe closed soft tissue injury (as a result of a crush mechanism). The third one was in an ankle fracture dislocation (OTA 44-C1) with delayed treatment and inadequate reduction of the simple fibula fracture.

We found that common complications were wound infection seen 2 in group I and 1 in group II, wound dehiscence 2 in group I and 1 in group II, ankle stiffness 3 in group I and 2 in group II, screw breakage in 2 in group I and 1 in group II, non-union 1 in group I and 0 in group II and delayed union 1 in each group. Backer et al.'s trial (n = 20)¹⁵ involved fibula fixation utilizing the Fibulock (Arthrex) for all patients who had a distal fibula fracture. Patients underwent a retrospective investigation and comparison with a fibular plate fixation control group.

Together with the quality of reduction, the duration of the tourniquet, anesthesia, and operation were all documented. The mean tourniquet time for nail fixation in the 20 cases was 68.9 ± 23.2 minutes, whereas the mean time for fibular plate fixation was 75.8 ± 23.9 minutes. The first and third examples involved two patients who had mild mal reductions; the first was fixed with a lag screw placed outside the nail, while the second involved a full percutaneous reduction on an old patient who had severe blistering. The limitation of the study is the small sample size.

CONCLUSION

Authors found that in the treatment of fibular fractures, plating has been demonstrated to be superior to nailing in terms of fewer post-operative problems.

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