

A Balance Between Art And Principle In Management Of Distal Tibia Fractures

¹Ong ZW, ¹Gunaseelan P, ²Tan HK, ¹Yong AP, ¹Thevarajan K, ¹Hishamuddin S
¹Orthopedic Department, Hospital Sultanah Aminah, Jalan Persiaran Abu Bakar Sultan
²Orthopedic Department, University Malaya, Jalan Universiti

INTRODUCTION:

Commonly, open reduction and internal fixation with a plate and screw device is performed for these injuries, but the risk of soft tissue complications is significant. Although potentially more technically demanding than fixing diaphyseal or extra-articular tibial fractures, intramedullary nail (IMN) fixation of simple intra-articular distal tibia fractures is a viable alternative with unique advantages. The purpose of this review is to analyses our results of interlocked nailing of complex tibial fractures.

MATERIALS AND METHODS:

Between January 2016 and January 2017, 21 patients with complex tibial fractures were treated with interlocking nail at Hospital Sultanah Aminah Johor Bahru, Malaysia.

RESULTS:

Distal Tibia Fracture	7
Distal Tibia Fracture with pilon involment	8
TOTAL CASES	15
MALE/FEMALE	13/2
HIGH ENERGY TRAUMA	10
CLOSE/ OPEN FRACTURE	13/2
AVERAGE AGE	33
ASSOCIATED INJURY	27%
AVERAGE WAITING TIME	62 HOURS
AVERAGE OPERATING TIME	88 MIN
AVERAGE FRACTURE UNION	30 WEEKS
AVERAGE BLOOD LOST	150ML
CLOSED / OPEN REDUCTION	86%/24%
COMPLICATION	
NON UNION	13%
DELAY UNION	7%
MALUNION	13%
ANKLE STIFFNESS	27%
SHORTENING	20%
AVERAGE FOLLOW-UP	9 MONTHS



DISCUSSION:

The treatment of these complex injuries has been facilitated by advancements in surgical technique and the available orthopedic implants. In addition, contemporary intramedullary nails now have more distal locking options. Angular stable interlocking bolts have also been introduced, which may improve fixation in short or compromised distal tibia segments.¹ Treatment of these injuries with an IMN results in minimal periosteal disruption to the distal tibia, a location prone to soft tissue complications. Limited soft tissue dissection may also benefit healing.² Biomechanically the stiffness and strength of the nail can be modulated by IMN diameter and the use of additional screws through or around the nail.

Biomechanical studies have compared the use of tibial IMN with standard medial distal tibia plate for fixation of a simulated distal tibial metaphyseal fracture. The study found that the IMN performed better under axial loading conditions but mixed results were seen under the 2 torsional loading conditions.³

CONCLUSION:

Fixation of some intra-articular distal tibia fractures with an IMN may therefore be biomechanically and clinically advantageous.

REFERENCE:

1. Boraiah S, Gardner MJ, Helfet DL, et al. 2008;466:1692–1698.
2. Purnell GJ, Glass ER, Altman DT, et al. J Trauma. 2011; 71:163–168.