

OUTCOME OF LOCKING PLATES IN DISTAL TIBIA FRACTURES TREATMENT

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ABSTRACT

INTRODUCTION

Most of these fractures except intra-articular fractures are treated with interlocking nail.^{1,2} These nails are a boon for these fractures. But as the fracture nears to the joint stability the fracture fixation will be compromised due to malreduction and alignment, it leads to increased chances of delayed and nonunion.³ Locking anatomical plates are evaluated for anatomical and relative stability fixation. Since then most intra and near intra-articular fractures are fixed with these plates with minimally invasive percutaneous plate osteosynthesis method, these plates have given excellent result⁴. But again these plates have some disadvantages⁵. This study is done to see the outcome of locking plates in distal tibia fracture.

METHODS

This study is done in the Department of Orthopaedics, Bangalore Medical College, Bangalore. This study is done from 2013 to 2015. 30 patients who came to outpatient department were treated with locking plates. All patients above 16 years having distal third tibia fracture are included. All open fractures except type 1 and elderly above 60 years and pathological fractures are excluded in our study. All patients were followed up for initial 5 months, thereafter, once in 3 months, for clinical and radiological evaluation of union status, knee range of motion, ankle range of motion and other complications. Assessment of the patient with functional recovery was done with American Orthopaedic Foot and Ankle Surgery(AOFAS)⁶ minimum 5 months after injury.

RESULTS

Majority of the patients are from age group 18-29 years (50%). Average age group was 30 years. Majority of the patients were males 80.6% (25). All fractures were closed fractures except 2 cases which are type 1. There were 12 cases of AO type A, 8 patients were AO type B and 10 patients were type C. Majority of the patients had fracture due to road traffic accidents, 74%. All fractures were united by the end of 20 weeks. There was delayed union in (22%) 4 patients for which secondary surgery with bone grafting procedure was done after 4 months. According to AOFAS,⁷ we scored the functional outcome of the patients after 5 months of injury. We had 23% of excellent result, 30.4% good and 46% fair with plate.

CONCLUSION

Locking anatomical plates are a boon and have started a new era in orthopaedic surgery in fixation with articular fractures. But due to lack of locking plate principle it is again cumbersome. Locking plates give relative stability for fracture and need as much as possible anatomical reduction of articular margins unlike in nail where we can do dynamisation if fracture going for delayed union in locking plates is not possible, hence doing as much as possible fracture alignment and then stabilising the fracture with screws is recommended.

KEYWORDS

Distal Tibia, Locking Plate, MIPO.

HOW TO CITE THIS ARTICLE: Holagundi L, Dayanand M, Deepak S, et al. Outcome of locking plates in distal tibia fractures treatment. J. Evid. Based Med. Healthc. 2016; 3(43), 2139-2141. DOI: 10.18410/jebmh/2016/475

INTRODUCTION: Overpopulation, increased density of the vehicles are common causes of road traffic accidents. Tibia and fibula bones are most commonly fractured compared to all other bones due to anatomy of the leg which is such a way that bones are superficially placed. Incidence of the distal third leg fracture comprises about 25% of the total leg fractures.

Financial or Other, Competing Interest: None.
Submission 04-05-2016, Peer Review 18-05-2016,
Acceptance 25-05-2016, Published 27-05-2016.

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DOI: 10.18410/jebmh/2016/475

Due to lack of blood supply to distal leg, chances of delayed union and non-union rates are high.

Most of these fractures except intra-articular fractures are treated with interlocking nail. These nails are a boon for these fractures. But as the fracture nears to the joint stability the fracture fixation will be compromised due to malreduction and alignment, it leads to increased chances of delayed and non-union.

Locking anatomical plates are evaluated for anatomical and relative stability fixation. Since then most intra and near intra-articular fractures are fixed with these plates with minimally invasive percutaneous plate osteosynthesis method, these plates have given excellent result⁸. But again

these plates have some disadvantages.^{9,10} Study MIPO was used for definitive fixation of high energy, open and closed, peri-articular distal tibia fractures. This approach aims to preserve bone biology and minimise surgical soft tissue trauma. This surgical approach may provide an answer to treating a challenging group of fractures.¹¹

This study is done to see the outcome of locking plates in distal tibia fracture.

AIMS AND OBJECTIVE: Our main aim is to study the outcome of these locking plates which are used in distal 3rd tibia fractures. And also look for stable construct and fracture union.

MATERIALS AND METHODS: This study is done in the Department of Orthopaedics, Bangalore Medical College, Bangalore. This study is done from 2013 to 2015. 30 patients who came to outpatient department, clinically assessed, stabilised with temporary splint and sent for x-rays. Once we see these fractures, we classified according to AO method. Then planned surgical stable fixation procedure. We thoroughly evaluated and made fit for surgical procedure. All patients above 16 years having distal third tibia fracture are included. All open fractures except type 1 and elderly above 60 years and pathological fractures are excluded in our study.

Routine protocol for surgery was followed. After spinal anaesthesia in supine position, we placed small sand bag behind the effected side pelvis. Under tourniquet control, we went ahead with procedure. Most of cases, fracture stabilisation was done with MIPO principle with standard anteromedial approach¹² except some where we needed extended incision for fracture fragment reduction¹³. Most of the cases, fibula was fixed first, then tibia. Post-operative management, intravenous antibiotics, third generation cephalosporins, cefoperazone and sulbactam given for 2 days. Then oral cefuroxime tablets were started and advised for 7 days and oral NSAIDs. All cases were post-operatively immobile in splints. Limb elevation under pillow in order to relieve oedema was followed. Active mobilisation of knee and toes started immediately. Patients are discharged depending on associated injury, usually in uncomplicated cases, by 5th post-operative day with proper instruction of not to bear weight. Revival of all patients done at 12 days for suture removal. Following suture removal, below-knee cast\ankle brace was given in case of plating. Every 6 weeks once, patient was followed up, examined clinically and radiologically, depending on that weight bearing was advised. Further weight bearing was instituted depending on the evidence of unions as visualised on radiographs. All patients were followed up for initial 5 months, thereafter once in 3 months, for clinical and radiological evaluation of union status, knee range of motion, ankle range of motion and other complications. Assessment of the patient with functional recovery was done with American Orthopaedic Foot and Ankle Surgery (AOFAS)⁶ minimum 5 months after injury.

RESULTS & DISCUSSION: Majority of the patients were from age group 18-29 years (50%). Average age group was 30 years. Majority of the patients were males 80.6%. All fractures were closed fractures except 2 cases which were type 1. There were 12 cases of AO type A, 8 patients were AO type B and 10 patients were type C. Majority of the patients had fracture due to road traffic accidents 74%. All fractures were united by the end of 20 weeks as of other study⁷. There was delayed union in (22%) 4 patients for which secondary surgery with bone grafting procedure done after 4 months. Mean hospital stay was 10 days. One patient had superficial wound necrosis and plate visibility for which plate was removed at the end of 8 months but fracture was united. According to AOFAS,¹² we scored the functional outcome of the patients after 5 months of injury. We had 23% of excellent result, 30.4% good and 46% fair with plate.

CONCLUSION: Locking anatomical plates are a boon and have started a new era in orthopaedic surgery in fixation with articular fractures. But due to lack of locking plate principle, it is again cumbersome. Locking plates give relative stability for fracture and need as much as possible anatomical reduction of articular margins unlike in nail where we can do dynamisation if fracture going for delayed union in locking plates is not possible, hence doing as much as possible fracture alignment and then stabilising the fracture with screws is recommended.



Image 1



END OF 5 MONTHS



Case of Delayed Union Which was Treated with Bone Grafting

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