

TO EVALUATE THE FUNCTIONAL OUTCOME OF LOCKING COMPRESSION PLATE FOR FRACTURES AROUND KNEE JOINT(DISTAL 1/3RD FEMUR OR PROXIMAL 1/3RD TIBIA)

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Abstract

Background: To evaluate the functional outcome of locking compression plate for fractures around knee joint (Distal 1/3rd femur or proximal 1/3rd tibia)

Methods: This prospective functional out-come study has been conducted on This prospective study has been conducted on 50 patients with Distal 1/3rd femur and 50 patients with proximal 1/3rd tibia

Results: According to Modified Mehrotra's Criteria, the excellent (44.00%) and fair (42.00%) and (14.00%) had poor result

Conclusion: Locking compression plate is the optimal tool for many supracondylar fractures of femur and proximal tibia fractures. It provides rigid fixation, where a widening canal, thin cortices and frequently poor bone stock make fixation difficult.

Keywords: Femur, Tibia, Locking plate, MIPO, Outcome.

Introduction

In the modern world with the increased density of automobile traffic on roads and ever increasing number of road accidents, there is great increase in number and severity of fractures. Fractures around knee joint have assumed an importance and frequency. In the precarious plight of city pedestrian, the knee seems to be the most vulnerable point. A hinge joint at the exact level of automobile bumper is most commonly struck on its lateral side resulting in torn ligaments, sprains or fractures of either lower 1/3rd femur or upper 1/3rd leg bones, or both¹. LCP heals fractures by secondary bone healing (enchondral ossification). Secondary bone healing occurs when relative stability is provided and strain (change in fracture gap / fracture gap) is kept between 2% and 10%.² Secondary bone healing is characterized by callus formation. Other methods by which fracture heals by secondary bone healing are splints, casts, intramedullary nail and external fixators.⁶ Stability determines the amount of strain at the fracture site and strain determines the type of healing that can occur at fracture site. Primary bone healing occur when strain is kept to less than 2%. Bone cannot be formed when strain is greater than 10%.³ The increase in stability provided by locking plates is most helpful to surgeons treating a fracture in poor-quality bone, comminuted bicondylar fracture for which a single plate may not provide adequate stability. Also, since only a single plate is needed and the plate does not depend on a tight fit to the bone for stability, substantially less soft tissue dissection may be required,

thus preserving the local blood supply and enhancing fracture healing.⁴

Material and Methods

This prospective study has been conducted on 50 patients with Distal 1/3rd femur and 50 patients with proximal 1/3rd tibia

Inclusion Criteria

- All patients who got admitted in orthopaedic department with closed or compound fractures around knee joint (either distal 1/3rd femur or proximal 1/3rd tibia) regardless of patient's sex and side.
- Skeletally mature patient.
- Non union distal 1/3rd femur or proximal 1/3rd tibia.

Exclusion Criteria

- Fracture distal 1/3rd femur or proximal 1/3rd tibia with vascular injury
- Floating knee injuries
- Skeletally immature patients (Age<18 years)
- All patients were evaluated clinically at the time of admission and first aid treatment was given.
- For distal femur fracture radiograph of entire femur with one joint above and one joint below taken.
- For proximal tibia fracture radiograph of entire leg with one joint above and one joint below was done

to assess the type of fracture and displacement and plan of the treatment.

History, general examination and local examination were recorded on the proforma attached. Patient was investigated completely for operative and anaesthesia

purpose. Associated medical problems were evaluated and taken care before patient is taken for operation.

Observation

Table 1: Functional Outcome of Distal Femur Fracture According to Modified Mehrotra's Criteria

Grading	Total
Excellent	22 (44.00%)
Fair	21 (42.00%)
Poor	7 (14.00%)
Total	50 (100.00)

According to Modified Mehrotra's Criteria, the excellent (44.00%) and fair (42.00%) and (14.00%) had poor result.

Table 2: Functional Outcome of Proximal Tibia Fracture According to SchatzkerLambart's Criteria (n-50)

Grading	Total
Excellent	13(26.00%)
Good	15(30.00%)
Fair	16(32.00%)
Failure	6(12.00%)
Total	50(100.00%)

According to SchatzkerLambart's criteria excellent (26.00%), good (30.00%),fair (32.00%) and 6 (12.00%) had failure.

Discussion

The distal femur and proximal tibia fractures (fracture around knee joint) results from high energy trauma. These fractures usually have intraarticular extension and associated with metaphyseal comminution. When there is associated coronal plane extension and extensive comminution of these fractures generally preclude the use of traditional implants like fixed angle device, retrograde nail. The use of single lateral plate results in either nonunion or varus collapse in both distal femur and proximal tibia fractures^{6,7}.

The introduction of locking compression plate (LCP/LISS) has provided the means to increase the rigidity of fixation of fractures around the knee joint in the presence of osteoporosis and severe juxta articular comminution.⁸ The LISS/LCP also allows minimally invasive insertion and preservation of vascularity to the fractured bone. Early clinical results following use of the LISS/LCP in the distal part of the femur have been promising⁹⁻¹⁰ as have been the early results of the use of LCP implants for other fractures.¹¹

Conclusion

Locking compression plate is the optimal tool for many supracondylar fractures of femur and proximal tibia

fractures. It provides rigid fixation, where a widening canal, thin cortices and frequently poor bone stock makes fixation difficult. This study results also suggested MIPO was superior to ORIF in case of proximal tibia fracture.

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