MANAGEMENT OF PROXIMAL TIBIA FRACTURE USING L.C.P (LOCKING COMPRESSION PLATE)

Orthopaedics

Dr. Anand Katakdhond*

Karnataka Institute Of Medical Sciences., KIMS, Hubli. *Corresponding Author

Dr. S. F. Kammar

(M.S Ortho), Professor, Department Of Orthopaedics, karnataka Institute Of Medical Sciences, KIMS, Hubli.

Dr. A. A Hosangadi

(M.S Ortho), Associate Professor, Department Of Orthopaedics, Karnataka Institute Of Medical Sciences, KIMS, Hubli.

Dr. Prashant Kumar T. S.

(D Ortho), Senior resident, Department Of Orthopaedics, Karnataka Institute Of Medical Sciences, KIMS, Hubli.

Dr. Ateet P. Babli

Junior Resident, Department Of Orthopaedics, Karnataka Institute Of Medical Sciences, KIMS, Hubli.

ABSTRACT

BACKGROUND: Knee Joint is one of the most important weight bearing joint and also an important joint in locomotion carrying daily routine activities. Hence any fractures around the bones of knee joint needs to be fixed meticulously in order to get the optimal functional activity. Tibia plateau fracture one of the most common fracture around knee joint. The present study involves the evaluation of LCP plating in fixation of proximal tibia fracture. **MATERIALS AND METHODS:** Prospective study of 40 patients was done from year 2017 to year 2020 in Department of Orthopaedics KIMS hubli in which 40 patients were operated with LCP for proximal tibia fracture. **RESULTS:** Rasmussen's functional grading system was used to evaluate the clinical outcome. End results 35 had excellent outcome. 5 had good outcome. Complications occurred were superficial wound infection in 5 patients. 1 had Deep vein thrombosis. 5 patients had extensor lag of 12 to 14 degrees. **CONCLUSION:** LCP plating system has given a good functional outcome for proximal tibial fractures by restoring the articular congruity and good anatomic reduction and rigid fixation.

KEYWORDS

LCP, proximal tibia fracture. Knee joint.

INTRODUCTION:

Knee Joint is one of the most important weight bearing joint and also an important joint in locomotion carrying daily routine activities. Hence any fractures around the bones of knee joint needs to be fixed meticulously in order to get the optimal functional activity. Tibia plateau fracture one of the most common fracture around knee joint. Biological osteosynthesis is characterized by the preservation of bone and soft tissue vascularity and relative rather than absolute fixation. The LCP plate helps in restoring the biological osteosynthesis.

MATERIALS AND METHODS:

The study was a prospective study involving 40 patients from year 2017 to 2020 in the Department of orthopaedics KIMS (KARNATAKA INSTITUTE OF MEDICAL SCIENCES) hubli. During this period 40 patients were treated for proximal tibial fractures by LCP fixation and all the required data was collected from the patients during their stay in the hospital and during follow up at regular intervals.

INCLUSION CRITERIA:

- 1) Age above 18 years
- 2) Type I to type 6 Schatzker's fracture (closed fractures)

EXCLUSION CRITERIA:

- 1) Pathological fractures.
- 2) Patients medically unfit for surgery.

OPERATIVE PROCEDURE:

Spinal anaesthesia/epidural anaesthesia was administered. Tourniquet was used in all cases. All operations were done under image intensifier. The anterolateral parapatellar approach was used most frequently because of frequency of lateral tibial plateau fractures. With knee in 30° flexion and S-shaped incision starting 3-5cm proximal to the joint line staying just lateral to the border of patellar tendon. Curve the incision anteriorly over the Gerdy's tubercle and extended distally, staying about 1cm lateral to anterior border of the tibia. The lateral tibial condylar fragment was replaced to lock the articular fragments together. The lateral margin of the articular surface reduced under the femoral condyle for support. As the fragments were elevated and

reduced, temporarily fixed them with multiple small Kirschner wires. The contoured T or L buttress plate lateral tibial LCP was applied for definitive fixation. This plate was applied to the anterolateral tibial condyle and contoured precisely to conform to the condyle and proximal metaphysis. It was secured to the condyle with appropriate cancellous/locking screw of sufficient length to engage opposite medial cortex. Cortical/locking screws (4.5mm/5mm) were used to attach the plate to the shaft of tibia. A small thin periosteal elevator was inserted through the window into the cancellous subchondral bone, depressed fragments were elevated to the normal level of the articular surface and supported with autogenous iliac bone grafts if required. Once the fracture had been adequately stabilised, all temporary fixation devices were removed. The capsular incisions were closed with interrupted sutures and the skin and subcutaneous tissue was closed over a #10 or #12 suction drains. The limb was kept immobilised in long knee brace and kept elevated over one/two pillows.

RESULTS: Rasmussen's functional grading system was used to evaluate the clinical outcome. End results 35 had excellent outcome. 5 had good outcome. Complications occurred were superficial wound infection in 5 patients. 1 had Deep vein thrombosis. 5 patients had extensor lag of 12 to 14 degrees.

Figure 1 : Results of LCP for proximal tibia fracture

Figure 2: complications of LCP for proximal tibia fracture

Figure 3: pre Op X Ray

Figure 4: post Op After 3 Months

Figure 5 : Post Op After 6 Months

Figure 6: post Op After 10 Months

Figure 7: post Implant Removal

Figure 8: Sitting Cross Legged

Figure 9: Squatting Position

Figure 10: Knee Flexion

Figure 11: KNEE EXTENSION

DISCUSSION

Kim¹ et al reported good results with MIPPO technique in treatment of open proximal tibial fractures with adequate soft tissue coverage.

Ebraheim² et al in his series of 117 tibial plateau fractures had excellent results in 68% of cases, good in 13%, fair in 11% and poor in 8% of the patients

Feng et al³ reported good results when fixed with LCP in comparison with dynamic compression plate (DCP) with an additional benefit of minimally invasive surgery.

Jain et al⁴ showed applied with proper understanding of biomechanics, LCP is one of the best available options for management of challenging peri and intraarticular fractures especially in proximal tibia.

CONCLUSION

The locking compression plate has the advantage of minimal surgical incision

There is less blood loss during surgery

There is also more rigid fixation

REFERENCES

- 1) Kim JW, Oh CW, Jung WJ, Kim JS. Minimally invasive plate osteosynthesis for open fractures of the proximal tibia. Clin Orthop Surg 2012; 4: 313-320.
- 2) Ebraheim NA, Sabry FF, Haman SP. Open reduction and internal fixation of 117 tibial plateau fractures. Ortho Blue Journal. 2004;27(12):1281-7.
- 3) Feng W, Fu L, Liu J, Qi X, Li D, Yang C. Biomechanical evaluation of various fixation methods for proximal extra-articular tibial fractures. J Surg Res 2012; 178: 722-727.
- 4) Jain JK, Asif N, Ahmad S, et al. Locked compression plating for peri- and intra-articular fractures around the knee Orthop Surg 2013;5(4):255-260.