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KEY WORDS: LCP: Locking compression plate, MIPPO: minimal invasive percutaneous plate osteosynthesis, ORIF: open reduction internal fixation. LISS: Less invasive stabilization system, sander's scoring.

TO EVALUATE FUNCTIONAL OUTCOME OF DISTAL FEMUR FRACTURE MANAGED BY LOCKING COMPRESSION PLATE- A STUDY OF 30 CASES

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ABSTRACT

Fracture distal femurs are one of the commonest fractures encountered in high velocity trauma that are associated with high morbidity and mortality. The LCP (Locking Compression Plate), the product of combination of dynamic compression plate and point contact fixator, is in line with the latest plating techniques, the aim of which is to achieve the smallest possible surgical incisions and to preserve the blood supply helps to achieve satisfactory results in these cases. Internal fixation is the choice of treatment in fracture distal femur with LCP. Plating has shown to give one of the best results in terms of recovery, Fracture union, return to work and functional outcome. The present study was concluded on 30 patients admitted in MMIMSR, Ambala. The age group of patients in the study varied between 30– 70 years. Patients were evaluated for locking compression plate in the treatment of distal femur fracture. The patients were followed up for up to minimum period of 6 months. 80% of our cases achieved excellent to good results.

INTRODUCTION:

Fractures of distal femur are complex injuries that can be difficult to manage. These serious injuries have potential to produce significant long-term disability. These fractures account for 7% of all femoral fractures[1]..

Internal fixation devices that have been used to treat these fracture include 95° angled blade plate, Dynamic condylar screw, buttress plate, distal femoral plate and retrograde supracondylar interlocking nailand LCP. The increase in stability provided by locking plates is most helpful to surgeons treating a fracture in poor- quality bone, a comminuted bi-condylar fracture for which a single plate may not provide adequate stability[2]. However, the complexity of fracture that require treatment has changed from simple extra-articular supracondylar types to complex inter-condylar comminution with hoffa's fracture.[3-5].Angle stable locked plates have been used successfully for distal femur fractures where the new desgn imparts a higher degree of stability and provides better protection against peimary and secondary losses of reduction.[6-14]

A new type of implant system LISS(Less invasive stabilization system) and technique like MIPPO: minimal invasive percutaneous plate osteosynthesis, were developed for treatment. LISS and MIPPO allows for fixed angel fixation of distal femur and minimally invasive fixation with benefit of preservation of vascularity [15]. Locked plating is one of the most modern plating techniques, the aim of which is to achieve the smallest possible surgical trauma, small incisions, preserve blood supply of the bone and adjacent soft tissues, and to ensure a minimal bone-implant interface[16].

MATERIAL AND METHODS:

A prospective study was conducted in our hospital for fracture of long bones of lower limbs after an informed consent. This study was conducted with due emphasis for clinical observation and analysis of results after surgical management for role of locking compression plating in fracture of long bones. All patients were evaluated clinically and radiographically at the time of admission. Fracture patterns for distal femur like comminuted fractures, fracture with nonunion, peri-prosthetic fracture, metaphyseal fractures and fractures in osteoporotic bones were chosen. All the fractures were fixed with LCPs taking care to protect the periosteal blood supply. Under regional or general anesthesia, involved leg was prepared and draped. Tourniquet was routinely applied but inflated only when necessary. Bone grafting was done in old ununited fractures and early range of motion exercises was started in stable fixation.Any associated medical problems were taken care before patient is taken for operation.

SEX	No. of cases
MALE	17(53%)
FEMALE	13(47%)
TOTAL	30(100%)
MODE OF TRAUMA	
RTA	20(67%)
FALL AT HOME	8(26%)
ASSAULT	2(7%)

In fracture of femur a lateral incision was made Fragments were first reduced and hold with K-wires. Reductions were achieved and a LCP plate was applied. Locking screw applied in distal metaphyseal portion & proximal diaphysis. K-wires used for holding the fragments were removed. In cases where LISS technique was also used for supracondylar femur. Operations were performed directly by a consultant orthopedic trauma surgeon or under their immediate supervision. The LCP was used as a bridging construct across the diaphyseal— metaphyseal fracture. Where appropriate, articular fragments were anatomically reduced and rigidly fixed via separate small incisions. Splintage and immobilization was applied as per fixation achieved. After discharge from hospital patient was follow up after 2 weeks for suture removal and wound examination. Than after six weeks patient was assessed clinically and radiologically. Thereafter patient was assessed every four weekly. Full weight bearing was permitted to patient based on radiological evidence of callus formation and patients were evaluated clinically and radiologically for outcome and accessed using SAUNDER's score.

SITE OF INJURY	NO. OF CASES
RIGHT	14
LEFT	15

TYPE OF WOUND	
CLOSED	21
COMPOUND	9

FUNCTIONAL OUTCOME	NO. OF CASES
EXCELLENT	15
GOOD	12
FAIR	3

RESULT:

In our study 30 distal femoral fracture were treated. All cases were fresh, 17 patients were male and 13 were female, 20 caused by RTA, 8 were by fall, 2 by assault. 16 pateints were with fracture on Right side and 14 on left side. Using sander's scoring system result was excellent in 50% cases, good in 30% cases, fair in 20% cases. Range of motion of knee hip was excellent to very good, gait was satisfactory and weight bearing was done after satisfactory union. Favourable results of LOCKING COMPRESSION PLATE might be contributed to the fact that Locking compression system provides early weight bearing and good functional status in majority of patients with minimal complication with sutaible technique.

CONCLUSION:

We concluded that LCP is the most common and widely used orthopeadics implant for fixation of fracture in long bones, LCP are used by both MIPO and ORIF techniques. The various principles like Briging, neutralizing, mechanical, Point fixation and dynamic compression principle are available in LCP and can be used as per requirement[17].

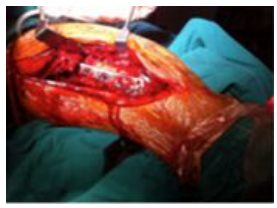
Locking compression provides:-

- Absolute stability
- Minimal obliteration to blood supply
- Minimal periosteum stripping
- Increased rate of union
- Early range of motion
- Act as internal fixator
- Decrease chances of infections and non-union
- Minimal surgical exposure if done by MIPO

Using MIPO is technically feasible and advantageous, that it minimises soft tissue compromise and devascularisation of the fracture fragments[61]. The procedure includes three important components: bone reduction (indirect reduction in MIPPO), minimal soft tissue dissection and stabilisation with a long percutaneously inserted plate fixed with a limited number of widespread.

CASE I

Pre-operative X-ray of patient



Intra-operative picture of case

Post-operative follow-up X-Ray

CASE-II

CASE-III

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