ORIGINAL RESEARCH PAPER
VOLUME-6 | ISSUE-7 | JULY-2017 | ISSN No 2277 - 8179 | IF : 4.176 | IC Value : 78.46
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

MANAGEMENT OF PROXIMAL TIBIA FRACTURES WITH LESS INVASIVE PROCEDURES

Orthopaedics

Dr.BenuGopal Das Professor , MGM Medical College & Lions Seva Kendra, Kishanganj
Dr.G.G.Kar Professor , MGM Medical College & Lions Seva Kendra, Kishanganj
Dr.GyanRanjan Senior Residents , MGM Medical College & Lions Seva Kendra, Kishanganj
Dr.Shashank Senior Residents , MGM Medical College & Lions Seva Kendra, Kishanganj
Dr .Bhunesh Mohpal Senior Residents , MGM Medical College & Lions Seva Kendra, Kishanganj

ABSTRACT

Low and High energy Tibial plateu fractures present a spectrum of soft tissues and bony injuries that can produce permanent disabilities. Their treatment is challenged by fracture communition, instability, displacement and extensive soft tissues injuries. Multiple options are available for treating Proximal Tibial fracures. Functional outcome of Tibial Condyler fracures treated with locking plate and importance of satisfactoy reduction and post operative protocols in obtaing good results need to be envaluated.

KEYWORDS:

Introduction :-

Proximal Tibia fractures include articular depression, condyler displacement metaphyseal fracture extension associated injuries include cruciate & collateral ligament injuries and meniscal tears. Latest implants and techniques have provided better options for treatment of Proximal Tibial fractures. These include technique of minimal incison and reduction for articular surface restoration and using locking compression plate.Locking plates may decrease the need for dual plating is certain be condyler fracture patterns. Data regarding the use of these plates ,their functional outcome in Indian population is scarce which necessiates this study.

Material & Methods:-

Around 26 Cases of Tibial Condylar fracture during the last two years included in this study. Creteria for inclusion were adult patients with comminuted metaphyseal fractures of proximal Tibia treated with lateraly placed fixed angle plate. Patients above age of 18 years. Exclusion criteria, all diaphyseal fractures, patients less than 18years of age, patients who are maedically unfit for surgery. Patients were temporarilly immobilized with Posterior slab and surgery was done after subsidence of swelling.

Less Invasive Stabilization System plates and screws were used in all patients.the titanium plate is attached to an outrigger that aligns a drill sleeve with each hole in the plate .This allows percuteneous fixation of all but the proximal portion of the plate to bone . THE LISS system utilizes locking screws that attach securely to threaded holes in the plate,providing a fixed-angle internel fixator that can theoretically resist varus collapse of unstable proximal tibia fractures.

The fixed angle nature of the locking screws does not allow compression or reduction of bone to plate with tightening of screws.Gapes between bone and plate will remain after screws are tightened. Fracture reduction should be obtained prior to screw placement.Alignment will be maintened even if the plate does not precisely fit the bone.

Bending of the plate causes inaccurate aiming of the screws through the outrigger and is contraindicated.

Patients are positioned supine on a radiolucent table . A tourniquet is applied to the proximal thigh and the limb prepared and draped in the standard sterile fashion .Open fractures are irrigated and debrided.

A curvilinear incision is made over the proximal lateral tibia.The skin incision is approximately 6 cm in length for extra articular fractures and is extended as needed to provide exposur of the articular surface

for intra- articular fractures.The fascia of the iliotibial band is divided longitudinally parallel to its fibres starting at the Gerdy tubercle and extended proximally. Dissection is extended distally through the fascia

of the tibialis anterior muscle and a small poetion of the muscle is elevated of the proximal lateral tibia. A submeniscal arthrotomy is made for intra-articular fractures.

When the fracture involves the articular surface, the articular segment is reduced anatomically and held provisionally with Kirschner wires(K-wires).

Based on preoperative planning. care is taken to place these screws in positions that do not interface with LISS screw placement.

Once the articular fragment and/or tubercle are reduced and at least provissionally stabilized, attention is turned to reduction and fixation of the articular segment to the shaft segment. The appropriate length LISS plate that provides at least four screws in the distal fragment is selected and assembled to the radiolucent outrigger. The plate is then guided though the surgical incision between the tibialis anterior muscle and the perosteum along the lateral tibia. The majority of the distal portion of the plate is placed percutaneously without direct visualization.

Once satisfactory alignment of the fracture and positioning of the plate is confirmed, the plate is secured to the proximal and distal fragments with 5.0-mm self-drilling, self-tapping locking screws. On average, 4 screws were used in the proximal fractures segment (range 3–6 screws) and 4 in the distal segment.

The outrigger is disassembled from the plate after removal of K-wires. The wound is irrigated. The iliotibial fascia and wound are closed over a drain in standard fashion.

DISCUSSION

Complex proximal tibia fractures including those with metaphyseal comminution present a difficult treatment challenge. In the current series, the use of the LISS plate system for treatment of complex proximal tibia fractures resulted in an excellent union rate. Obtaining proper alignment is technically demanding with the LISS system. To obtain optimal alignment when using the LISS system, it is important to understand that the unique properties of this fixed-angle plate and screw construct affects fracture alignment differently than traditional plating systems. Traditional constructs reduce bone to plate with the tightening of screws where the alignment of the fracture reduction is largely determined by the plate contour . If necessary, traditional plates can be bent to provide satisfactory reduction once bone is reduced to plate. Insertion of fixed-angle screws does not reduce bone to plate with screw tightening. Therefore, because all screws in the LISS system are locking screws, satisfactory alignment must be obtained independent of the relative contour of the bone and plate. If the bone is properly aligned without being completely in contact with the plate, then the fixed angle screws should be inserted to maintain this . Tightening the screws compresses plate to bone. Reduction is influenced by plate contour. alignment because reducing the bone to the plate with clamps or other instruments will only introduce malalignment.

CONCLUSSION

The type and timing of surgical intervention must be guided by the degree of injury to the soft-tissue envelope and the patient's physiological demand .Articular fractures demand anatomical reduction and absolute stability to enhance the healing of articular fragments and make early motion possible.

In conclusion, the LISS internal fixator system can be used successfully to treat patients with complex proximal tibia fractures without the need for additional medial stabilization. Surgeons attempting to use fixed-angle internal fixation plating systems should familiarize themselves completely with the significant technical differences between these systems and traditional plating systems to assure satisfactory results, especially with regard to obtaining proper fracture alignment. We find that comminuted metaphyseal proximal tibia fractures with either simple or no articular extension are suited for treatment with the LISS system. When complex articular fractures exist, other plate and screw constructs may be preferable.

REFERENCES

1. Stannard JP, Wilson TC,Volgas DA, Alonso JE.The Less Invasive Stabilization System in the treatment of complex fractures of the tibial plateau: short-term results. J Orthop Trauma.2004; 18:552-58.
2. Gosling T,Schandelmaier P,Muller Hankemeier S,waner M,Krettek C.Single lateral locked screw plating of of bicondylar tibial plateu fractures.Clin Orthop Relate res.2005; 439:207-14.
3. Schutz M,Kaab MJ, Hass N. Stabilization of proximaln tibial fractures with the LIS-System: Early Clinical experience in Berlin.Injury.2003;34 Suppl 1:A30-35.
4. Rasmussen P.Tibial Condyler fracture impairment of knee joint stability as an indication forsurgical treatment.J Bone Joint Surg[Am]1973;55-A:1331-50.
5. Anglen J,Kyle RF,Marsh JL, Virkus WW,Watters WC,Keith MW et al.Locking Plates for Extremity Fractures.J A Acad Orthop Surg.2009;17:465-72.
6. Zura RD,AdamsSB,Jeray KJ Obremskey WT,Stinnett SS,Olson SA.Timing of definive fixation of severe tibial plateu fractures with compartment syndrome does not have an effect on the rate of infection.J Trauma.2010;69:1523-26.
7. Marti RK,Kerhoffs GM,RademakersMV.Correction of lateral tibial plateu depression and valgus malunion of the proximal tibia.Oper Othop Traumatol.2007;19:101-13.
8. Agnew Sg.Tibial Plateu Fractures.Operative Techniques in Orthopeadics.1999;9(3):197-205.
9. Smith WR,Ziran BH,Anglen JO,Stahe PF.Locking Plates:Tips and Tricks.J Bone Joint Surg Am.2007;89:2298-307.
10. Schatzker J,McBrom R,Bruce D.The tibial plateau fracture.The Toronto experience 1968-1975.ClinOrthop Relat Res.1979;138:94-104.
11. Dias JJ,Stiriling AJ, Finally DBL ,GreggPJ.Computerized tomography for tibial plateu fracture.J Bone joint Surg[Br].1987;69-B:84-88.
12. Mushal V, Tarkin I,Kobbe P,Tzioupis PC,Siska A,Pape H. New trends and techniques in open reduction and internal fixation of fractures of the tibial plateu.J Bone Joint Surg[Br] 2009;91-B:426-33.