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Result of Mippo in Bicondylar Tibia Fracture

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ABSTRACT

This study was done with the help of 40 patients of bicondylar tibia fracture which were admitted and treated in our institute over a period of September 2009 to July 2011.

Our study was based on result of bicondylar tibia fracture treated with minimally invasive percutenous plate osteosynthesis. This fracture is common in age group of 41 – 50 with the mean age of 41 years of age.

All patients were evaluated using Rasmussen scoring system. Results and which were obtained were encouraging. About 23 patient showed excellent result and 15 patients showed good result where as only 2 patient showed fair result

INTRODUCTION...

Minimally Invasive Percutaneous Plate Osteosynthesis (MIPPO) is a technique in which percutaneously inserted plate is fixed at a distance proximal and distal to the fracture site through minimal exposure and also the blood supply to the fractured fragments is maximally preserved.

This has biological advantage not only for fracture healing but also for the whole body as demonstrated by damage control surgery in polytraumatized patients(6,7,8).

Fractures of proximal tibia involve a major weight bearing joint and are serious injuries that frequently result in functional impairment. To preserve normal knee function, the surgeon must strive to maintain joint congruity, range of motion. This is a formidable task to accomplish, especially in the face of compromised soft tissues, variable bone quality, comminution of the fracture and associated medical conditions of the patien ts(5,6,7,,8,9,10,11,12,17).

There is danger inherent in the mechanical efficiency of our modern methods, danger lest the craftsman forgets that union cannot be imposed but may have to be encouraged. Where bone is a plant, with its root in the soft tissue, and when its vascular connections are damaged, it often requires not the technique of the cabinet maker, but the patient care and understanding of a gardener. "

These were the words of Girdlestone in 1932, which meant that the vascular supply of the bone is the basis of all fracture healing.(8)

MATERIALS & METHODS..

Patients with bicondylar tibia fractures treated in our institution were prospectively followed. X rays were taken and all fractures were classified using the schatzker classification.we used proximal tibia hockey locking plate as a mode of internal fixation. Fractures were considered healed when mature bridging callus was identified on radiographs and patients reported no pain on weight bearing. Soft tissue outcome was assessed on basis of infection, wound dehiscence(5,8,10,12).Functional outcome was assesed by Rasmussen scoring system for tibia. (15,17)

OBSERVATION & RESULT..

Majority of the patients in our series belonged to age group of 41 – 50 years with average age is 41 years.

Majority of the patients in our series belonged to two groups : drivers 35% and labourer 25%. They sustained high velocity trauma.

Right side affected more than left.

Majority of the patients in our series were male 80%. Males are usually more outdoors and involve in heavy work and automobile driving so prone to high velocity trauma.

Most of the injury in our study were due to vehicular accident 75% and then fall from height 10%.

Among vehicular accident, motorcycle accident at the most common cause of tibial condyle fracture.

90% of the injury were closed injury.

In 90% of the injury there was fibular fracture.

Most of the patients got admitted to the hospital on 1st day of the injury. Probably suggesting better transport facility from peripheral area to referral hospitals.

Only 4 patient (10%) causes required bone grafting due to delayed healing of fracture indicating better surgical outcome and better union rate.

Majority of the patients had started non weight bearing mobilization exercise within 4 – 8 weeks after plating 77.50% indicating good fixation.

Physiotherapy was in the form of static quadriceps exercise and knee bending exercise.

Most of the patients were operated upon within 2 days of the injury indicating better hospital facility and feasibility of patients own condition for surgical procedure.

Majority (95%) of the surgical incisions healed by primary intention indicating good surgical techniques, proper aseptic precautions during surgery and better preoperative and postoperative antibiotic coverage.

Majority of the patients had started Partial weight bearing within 8 – 12 weeks of plating 82.5% indicating good fixation and absence of early or late postoperative complications.(6,7,,8,9)

Majority of the patients had started full weight bearing mobilization exercise within 12 – 16 weeks of plating 72.50% indicating better union rate without any complication in reasonable postoperative period for these particular fractures.

Majority of the patients in our studies did not require hospital stay for more than 5 – 10 days 50%. In the rest of the patients the prolonged hospital stay were due to superficial or deep infection and one who require additional surgical procedure like plastic coverage.

In our study majority 47.5% of the patient had achieved knee movement in the range of 120 – 130 making it possible to sit cross leg and squat (with slight difficulty).

87.5% of the patient in our study did not require any kind of support of daily activity postoperatively. Only 10% patients required one stick for their daily activity (most probably due to minimal pain while walking).

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In our study majority of the patient had continued the same work as that before surgery, indicating good functional recovery.

In our study 75% patients were fully satisfied (all these patients acquired the same work as before surgery).

Only 5% were not satisfied because of pain on walking, requirement of support while walking, difficulty in sitting cross legged and squatting or compulsion to change occupation.

Only 2 patients (5%) in our study developed supraficial to deep post operative infection.

Not all the patients having compound fracture in our series developed post operative infection.

- 38 patients post operatively showed primary healing of wound and 2 patients required delayed SSG and delayed flap.
- 10 patients had complain of mild persistent pain while walking.
- 1 patient showed varus angulations out of 40 patients.
- 4 patients showed delayed union in which bone grafting was done.
- In our study none of our patient showed limb shortening.
- In our study the usual complication associated with bicondylar fracture of like compartment syndrome, vascular injuries, deep vein thrombosis, pulmonary embolism, reflex sympathetic dystrophy, knee flexion contracture, varus/valgus angulation deformity, etc, were not seen(5,8,810,17).

Post operative xray of 80 year old male with bicondylar tibia fracture.

Follow up after 3 months of postoperative period.

DISCUSSION

MIPO however relies primarily on the indirect reduction of the fractures using various techniques and in this way, the fracture environment is better preserved, as well as the blood supply to the bony fragments is not disturbed, which finally leads to decreased infection rate better fracture healing. MIPO offers several theoretical advantages compared to conventional open plating technique. A mechanically stable fracture-bridging osteosynthesis can be obtained without significant dissection and surgical trauma to the bone and surrounding soft tissues. As a consequence, the vascular integrity of the fracture and the osteogenic fracture hematoma are preserved. However MIPO does not allow direct visualization of the fracture and the surgeon is dependent on intra operative fluoroscopy to confirm that an adequate reduction has been achieved. Additional radiation exposure during application of the plate to the bone and screw fixation and therefore extended operating time are the disadvantages of these techniques(5,6,7,8,910,12,17).

Displaced fractures of the bicondylar tibia are difficult to treat. The goal of the treatment of intra articular fracture of proximal tibia is to restore optimum anatomy of the bones as near as possible and thus to restore normal function of the limb as much possible (pain less and stable).

Fracture of bicondylar tibia frequently result from direct trauma and are often comminuted. It usually requires rigid internal fixation which is often difficult.

In our study age of patient ranged from 20 – 60 years with the mean age of 41 years which was comparable to other study.

Study shows that male members are more prone for this fracture as they are exposed to outside world for earning bread.

In our study 90% of patient showed radiological union at the minimum follow up of 6 months.4 patient showed delayed union in which bone grafting was required.

Rom of knee joint in most patient was between 0 – 1200 which in our study.Complications associated with bicondylar tibia fracture treated with MIPPO was less.4 patient in our study showed delayed union which was treated by bone grafting.(6,7,8,9)

We have used the Rasmussen scoring system for evaluating the functional outcome of the patient.

Majority of the patients achieved good to excellent results (15)

CONCLUSION

On the basis of the finding of this study it can be concluded that MIPO technique preserves most of the osseous vascularity and fracture hematoma thus providing for a more biological repair. There is rapid fracture consolidation due to preserved vascularity. There are fewer incidences of delayed union and non-union. There is a decreased need for bone grafting and incidence of infection is less due to limited exposure.

MIPPO signifies "as minimal surgical trauma to the soft tissues as possible and does not effectively mean operating through small incisions." (6,7,8,9,17,15,5)

REFERENCE

1. Gray's anatomy 39th edition. | 2. Human anatomy Dr. B. D. Chaurasiya. | 3. Grants atlas of anatomy. | 4. Netter's Atlas of human anatomy. | 5. AO principles of fracture management T. P. Ruedi , W. M. Mumphy page 502. | 6. Campbell – operative orthopaedics 11th edition Volume – I. | 7. Campbell – operative orthopaedics 11th edition Volume – II. | 8. Campbell – operative orthopaedics 11th edition Volume – III (Pg. 3147, 3148) pg. 3020 | 9. Campbell – operative orthopaedics 11th edition Volume – IV. | 10. Practical fracture treatment. Ronald Mcrae , Max Esser | (Pg. 366) | 11. Manual of internal fixation techniques recommended by AO-Asif group. | 12. AO Surgery reference (online reference in clinical life) Executive editor Ernst Raay Maker, Joseph schatzker, aauthor Matthias Hanses, Rodrigo pesantez. | 13. Surgical exposure in orthopaedics The Anatomic approach stonely hoppen feld (Pg. 589) | 14. Pb journal of orthopaedics Vol. XII No, 1, 2010 Dr. A. S. Sidhu et al, MIPO for proximal tibial fracture. | 15. Rasmussen Paul S. Tibial condylar fracture impairment of knee joint stability of an indication for surgical treatment SBJS 1973, Oct. pg. 1331-1349. | 16. Acta orthopaedics 2006 Vol 77 No. 3 Pg. 524-530 Chang-Way Oh, Jang keon Department of orthopaedics surgery Kyangpook National University hospital Daegu, Seol South Korea. | 17. Injury : | International Journal of the care of the injured Vol. 41, issue II page 1178-1182 November 2010. Tibial plateau fracture internal fixation with locking plate and the MIPO technique F. Biggi, SD, Fabio, C. D. Antimo.