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A Clinical Study To Asses Functional Outcome Following Surgical Fixation of Tibial Plateau Fractures

Medical Science

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Introduction

Also called Bumper Fractures, Tibial Plateau fractures are intraarticular fractures involving largest synovial joint of body. Also is known by inherent complications associated with it like loss of limb alignment, future risk of osteoarthritis, associated ligament injury, open fracture and persistent stiffness and instability of knee. In review of constantly evolving treatment methods, it is essential to asses how much it helped to patients in terms of functional outcome.

Materials and Methods

44 cases all above 18 years old, of tibial plateau fractures, both open and close are included in the study. Operative management is planned according to type of fracture in schatzker classification. Post-operative assessment was made according to Rasmussen scoring system.

Results and observation

In our study according to Rasmussen's radiological scoring11, we have achieved excellent outcome in 32%, good in 57%, fair in 9% and poor in only 2%.The mean Rasmussen's radiological score was 15.20.Superficial infection occurred in 5% and deep infection in 2% of cases. Incidence of redepression was found to be 43%.Malunion in varus was noted in 23%.There was no case having non-union, compartment syndrome or deep vein thrombosis.

In our study 39% of the patients were between 20-40years, 54% of the patients were 41-60 and 7% of the patients were above 60 years of age respectively. The mean age was 43.6 years with youngest patient being 22 years and oldest being 75 years.

There were 2 groups based on the mechanism of injury. 77% of the cases were due to Road traffic accidents and 23% of the cases were due to domestic fall.

In this study, 27 patients sustained injury to the left and 17 patients to the right. Rasmussen D.S.11 reported the fractures were equally distributed in the right and left knee that is 131 on right and 129 on left.

Out of 44 patients in our study 23% were treated with PCCS, 50% with ORIF+BP, 11% with ORIF+LP, 5% with ORIF+DP and 11% with MIPPO.

We have not formulated the stringent criteria as to particular method of fixation for particular type of fracture. So each case was individualized and treated according to its merit.

In our study the mean delay between (b/w) day of injury and day of surgery was 2.4 days (Range 1-10 days) which is comparable to Radheshyam et al. 84 in 2012 of 2 days (Range 1-5 days), 9.2 days by Barei et al.110 in 2010 and 10.4 days by Z. Yu et al.109 in 2009.

Conclusion

Based on this study, we have found that aim of surgery must be precise articular reduction, elevation of depressed segment and stable fixation allowing early mobilization. Bone graft or its substitutes should be used to fill metaphyseal void to prevent redepression.In cases of bicondylar fractures, medial buttress plating is always helpful to prevent varus malunion and delayed medial collapse. Longer follow up is required to know accurate incidence of posttraumatic osteoarthritis.

Tibial plateau fractures are increasing (especially the high velocity injuries) with the increase in automobile accidents.

- These fractures need optimum treatment as most of them involve the productive men.
- Preoperative soft tissue status and their repair at right time, significantly changes the outcome.
- Surgical treatment when indicated (particularly in depressed and displaced fractures) is advantageous to get a stable knee.
- The correct method of management of intraarticular fractures of the proximal tibia depends on good clinical judgment. If rational treatment is to be instituted the surgeon must have sound knowledge of the personality of the injury and a clear understanding of the knee examination, imaging studies and must be familiar with variety of techniques available at present for treating tibial plateau fractures.
- The main aim of surgical treatment include precise reconstruction of the articular surface with elevation of the depressed bone fragment, bone grafting when required, stable fragment fixation allowing early range of movement.
- Displaced intraarticular fractures of proximal tibia those belonging to Schatzkers type I, II and III the treatment of choice is CRIF with PCCS.
- For optimum results in these fractures bone graft or bone graft substitute should be used to fill the metaphyseal void.
- Though locking compression plates were used in two of the patients, the results are same as the conventional plating but the numbers of cases in the series are insufficient to draw meaningful conclusion.
- Medial side buttress plating is always desirable in bicondylar fracture pattern with unstable medial condyle, to prevent delayed medial collapse and undesirable varus deformity.
- Operative management showed excellent radiological alignment and functional outcome in most of the patients with earliest return to pre injury activity level. But this modality was technically demanding, more expensive with greater hospital stay.
- Result of various types surgeries are good for various types of fracture pattern except when complications developed in the form infection and stiffness which led to an unacceptable outcome.
- The spectrum of injuries to the tibial plateau is so variable that no single method has proven uniformly successful.
- Whatever may be the modality of treatment adequate physiotherapy and maintenance of rehabilitation protocols proved to be the independent factor influencing functional results.
- Measurement of accurate incidence of posttraumatic osteoarthritis in these patients with high velocity injuries requires long term follow up, indicating the importance of accurate articular surface reconstruction by surgical methods.

Hence, to conclude, the surgical management of tibial plateau

fractures is challenging and gives excellent anatomical reduction & rigid fixation to restore articular congruity, facilitate early knee motion by reducing post-traumatic osteoarthritis and thus achieving optimal knee function. In the background, it reminds us to remember the remarks given by Hohl at the presidential guest lecture at the Chicago Orthopaedic Society (1997). "These fractures are tough".

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