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USEFULNESS OF 3 COLUMN CLASSIFICATION IN THE MANAGEMENT OF PROXIMAL TIBIA FRACTURES

Orthopaedics

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ABSTRACT

Background: The proximal tibial fractures are one of the commonest intraarticular fractures. The majority of tibial plateau fractures are secondary to high-speed velocity accidents and fall from height where fractures result from direct axial compression, usually with a valgus (more common) or varus movement and indirect shear forces. In spite of all the advances, proximal fractures of tibia still pose a challenge to the orthopaedic surgeons due to the following reasons: presence of hinge joints at the knee and the ankle which allows no adjustment for rotatory deformity after fracture, occurrence of open fractures and higher rate of post-operative infection. In particular, those fractures involving the posterolateral corner (PLC) are complex, since PLC fractures can be debilitating and require prompt recognition and treatment to avoid long-term consequences. However, the current classification systems available do not define the PLC very well. **Aim:** To study the usefulness of revised 3-column classification in the management of proximal tibia fractures. **Material And Methods:** Present study was a prospective observational type, patients admitted with closed proximal tibia fractures (Schatzker type I/II/III/IV/V/VI) with a total sample size of 60. All patients with recent history of fall and aged more than 20 years and less than 70 years. Patients of closed proximal tibial fracture (Schatzker type I, type II, type III, type IV, type V, type VI) were included in the study. All data was collected and complied in Microsoft and analysis was done using OpenEpi software version 2.3.1. **Results:** Mean age was 37.8+1.2 years and majority were males. Common etiology was road traffic accident 60%. **Conclusion:** Present study concluded that 3 column classification helps understand and guide the treatment of proximal tibia fracture

KEYWORDS

tibial fractures, Schatzker, 3-column classification

INTRODUCTION

The proximal tibial fractures are one of the commonest intraarticular fractures. The majority of tibial plateau fractures are secondary to high-speed velocity accidents and fall from height [1] where fractures result from direct axial compression, usually with a valgus (more common) or varus movement and indirect shear forces [2].

In spite of all the advances, proximal fractures of tibia still pose a challenge to the orthopaedic surgeons due to the following reasons: presence of hinge joints at the knee and the ankle which allows no adjustment for rotatory deformity after fracture, occurrence of open fractures and higher rate of post-operative infection [3]. In particular, those fractures involving the posterolateral corner (PLC) are complex, since PLC fractures can be debilitating and require prompt recognition and treatment to avoid long-term consequences [4]. However, the current classification systems available do not define the PLC very well.

The most common classification systems used in tibial plateau fractures include Schatzker and OTA/AO system, although these classification systems are not always helpful for planning the surgical strategy [5–7]. Therefore, Luo et al. have introduced the 3-column classification approach of tibial plateau fractures [8]. This classification is based on three anatomical pillars and can be used as a supplement to the conventional Schatzker classification, since not all fracture types, particularly posterior column fractures, are well depicted in the conventional classifications [9,10]. Moreover, the 3-column classification helps the surgeon to better understand the fracture type and proved to be an excellent surgical planning tool preoperatively. Nevertheless, the clinical treatment of lateral tibial plateau fractures extending into the PLC is not guided sufficiently using the 3-column classification in the current form.

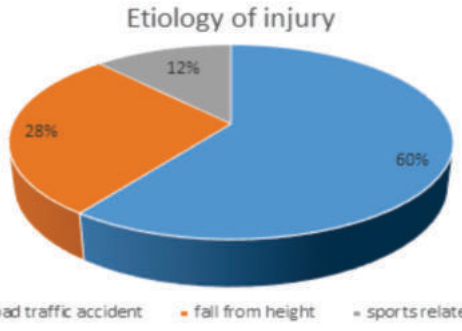
Additional information provided by preoperative cross-sectional imaging, including two-dimensional and three-dimensional CT and MRI in specific circumstances, aids in the identification of specific soft-tissue injuries and fracture morphologies that influence surgical management. These specific fracture morphologies and soft-tissue injuries should be identified and communicated to orthopaedic surgeons for optimal patient management.

MATERIAL AND METHODS:

present study was a prospective observational type, patients admitted with closed proximal tibia fractures (Schatzker type I/II/III/IV/V/VI) with a total sample size of 60. All patients with recent history of fall and aged more than 20 years and less than 70 years. Patients of closed proximal tibial fracture (Schaztkers type I, type II and type III, type IV, type V, type VI) were included in the study. All data was collected and complied in Microsoft and analysis was done using OpenEpi software version 2.3.1.

RESULTS:

Mean age was 37.8±1.2 years and majority were males. Common etiology was road traffic accident 60%.



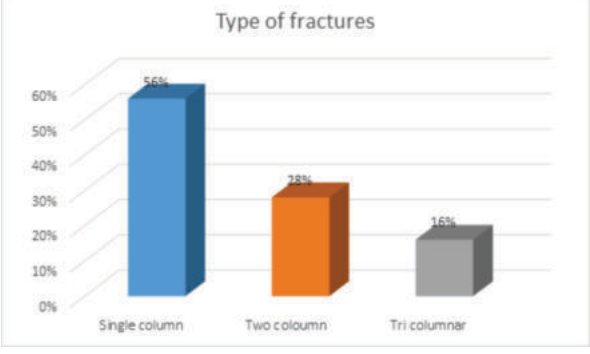


Table 1: Type of surgery

Type of surgery	
Platting	78%
CC screws	12%
External fixator	10%

On follow up functional outcome was excellent in 81%, good in 14% and poor in 5%.

Figure 3: Functional outcome

DISCUSSION:

Study by Luo C et al [3] also showed that mean age was 27.3 years, Byanjankar S et al [11] had mean age 41.74 years and 15 were males and 4 were females. . Common etiology was road traffic accident 60% and study by Byanjankar S et al [11] showed similar results. It was seen that majority cases had single column fracture(56%), followed by two column fracture (28%) and tricolumnar were very less(16%). Study by Byanjankar S et al [11] showed 63.1% single, 31.5% two column and only 5.2%tricolumnar. On type of surgery conducted it was seen that among majority surgery platting (78%) was done. Mehin R et al [12] showed that 60% had single column. Similar, results were seen in present study. On follow up functional outcome was excellent in 81%, good in 14% and poor in 5%. Study by Byanjankar S et al [11] showed 52.6% excellent, 42.2% good and 5.2% fair. Study by H Raza et al [13] also showed similar results.

CONCLUSION:

Present study concluded that 3 column classification helps understand and guide the treatment of proximal tibia fracture. It is very useful for early detection and management of coronal plane fractures. This type of fractures are not classified in Schatzker classification. So, 3 column classification makes it easy for an Orthopaedic surgeon to identify and manage such injuries. This 3 column classification helps in pre operative planning to decide whether to go for unicondylar or bicondylar plating as a procedure of choice. Tibia injuries are more common among younger age groups so early diagnosis and treatment will prevent further complications.

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