JMSCR Vol||06||Issue||07||Page 370-373||July 2018

www.jmscr.igmpublication.org
Impact Factor (SJIF): 6.379
Index Copernicus Value: 71.58
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossrefDOI: https://dx.doi.org/10.18535/jmscr/v6i7.62

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Comparision of Schatzker and Duparc Classification and Role of CT Scan in Tibial Plateau Fractures

Author
Dr Vaibhav Agrawal (MS, Orthopaedic)
Ex Resident, Dept. of Orthopaedics, Mahatma Gandhi medical College & Hospital, Jaipur (Rajasthan)
Consultant Orthopaedic surgeon, Singhal Nursing Home, Bharatpur, Rajasthan, India

Abstract
Background: *fracture of proximal end of tibia account for approximately 1/6 of all fracture seen and treated in emergency room. Proximal tibia Fracture frequently shows intraarticular involvement and communition. These fractures often are unstable, are difficult to reduce anatomically and are associated with high prevalence of complication. Restoration of normal alignment and articular congruity after a displaced fracture can we difficult, but it is essential for good functional results. The principal of treatment for proximal tibia fracture are anatomical reconstruction, stable fixation and early motion. Closed reduction and plaster casting and internal fixation is done in most fracture of proximal tibia, especially stable once and unstable also. The presents study were carried out to study and comparision of schatzker and duparc classification and role of ct scan in tibial plateau fractures.*
Materials and Methods: *The study was conducted in Mahatma Gandhi medical College & Hospital, Jaipur from 31 may 2013 to nov 2014. Total 23 cases of proximal tibia fracture were choosen. The patients were treated either by closed reduction and plaster or closed reduction and internal fixation. There were 23 patients choosen randomly; the outcome of treatment had done at the end of study on the basis of functional and radiological results according to schatzker and duparc classification.*
Results: *We found that out of 23 patients there were 9 fractures of the lateral tibial plateau ,5 spino-condylar fractures ,4 medial tibial fractures, 5 bituberosity fractures More than a third of patients has associated injuries primarily affecting the fibula 1 case was involved in a polytraumatism*
Conclusion: *Although the information obtained from plain x-rays is of value if viewed carefully, however CT scans offer a clear picture of fractured tibial plateau and the extent of cortical communition. Based on our results we propose Duparc and Ficat classification to be good for classifying proximal tibial fractures in pretherapeutic assessment.*
Keywords: *radiological assessment, treatment, early mobilization.*

Introduction

Tibial plateau fracture are common injuries occurs mainly in a young population due to direct trauma to knee, mainly due to road trafic accidents. A number of classification systems[1-7] have been proposed to categorize these fracture types, to simplify communication in clinical practice, to give guidelines for preoperative planning. Extent of displacement and degree of communition must be accurately defined before embarking on treatment. Plain x-rays do not define the degree of displacement, exact location and extent of

fracture. So that various diagnostic aids have been proposed. Computerized axial tomograms provide a graphic picture of exact location and extent of tibial plateau involvement. Reviewing the litereture on classifications for tibial plateau fractures, we found that performance of Schatzker classification[6] has already been studied. However, Duparc classification[8] has not been evaluated to same degree. This motivates us to carry out, such a study to compared the Schatzker and Duparc classification of tibial plateau fractures use in pre-operative assessment and role of multi detector Computer Tomography in pre-therapeutic assessment of tibial plateau fractures.

Materials and Methods

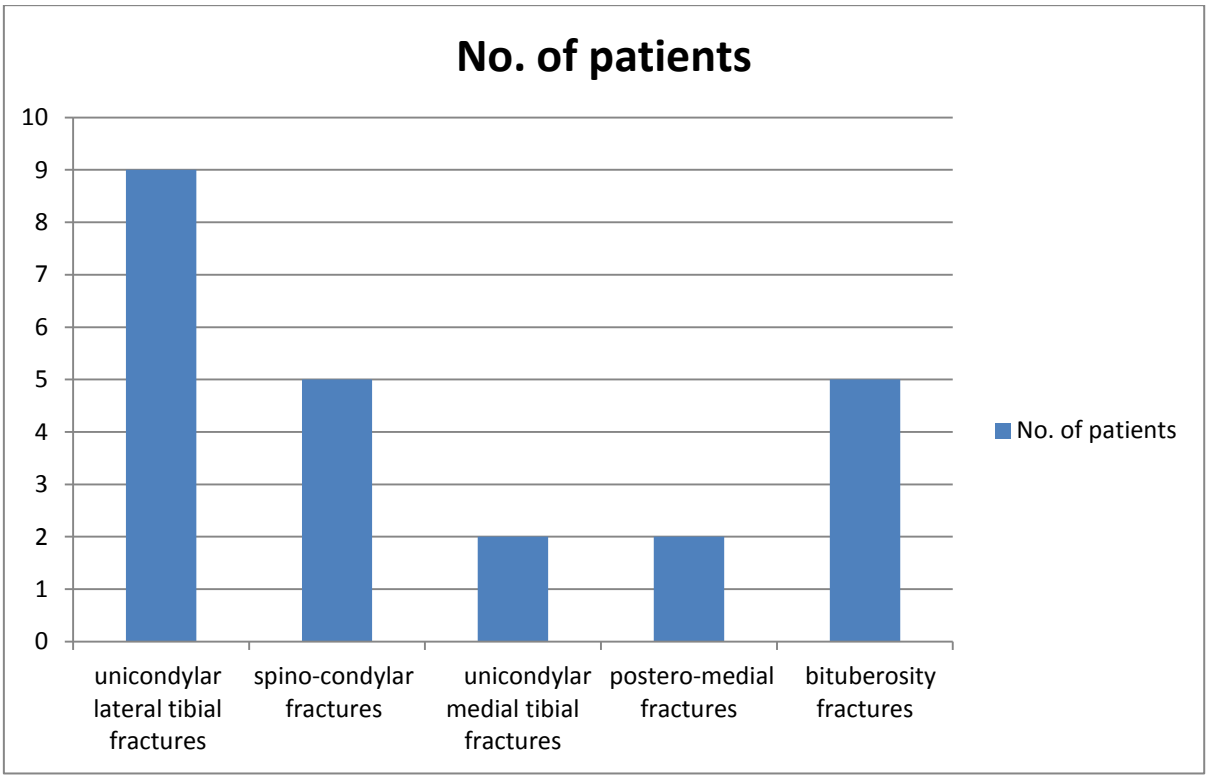
This is a retrospective study done on 23 patients with fracture invloving tibial plateau and proximal tibia. Radiographs (x ray) and CT scans were done for all patients. The volume of acquisition ranged from 1 cm above the patella to 1 cm below the tibial tuberosity. 2D sagittal and coronal images were analysed. 3D reconstruction using GE Volume Rendring (VR). All patients were analysed with Schatzker and Duprac classifcation. Out of 23 patients 10 patients were operated, 13 patients were managed conservatively.

Results

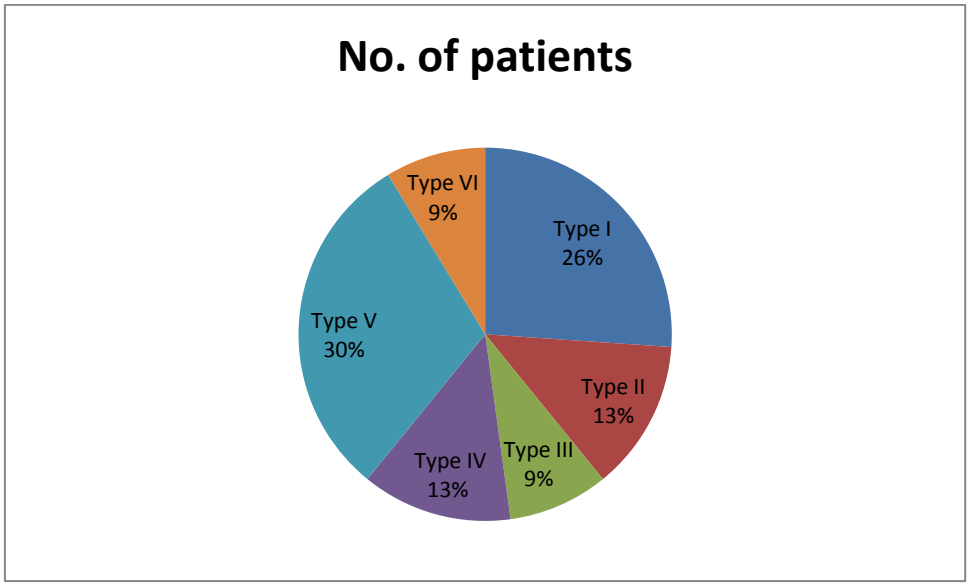
The present study showed that the mean age of patients was 35 years (range 19yrs to 50 yrs) & Male preponderance (5:1). The majority of causes was road traffic accident (n=12), domestic accident (n=6) and accident at work (n=5). Majority of patients have unicondylar lateral tibial fractures (N=9) based on Duprac classification (graph 1) (figure 1) and type V (N=7) in Schatzker classification (graph 2).

Table 1: Distribution of age group

Age (yrs)	No. of Patients
20-30 yrs	4
31-40 yrs	7
41-50 yrs	7
51-60 yrs	5
Total	23



Graph 1: Distribution of patients according to Duprac classification



Graph 2: Distribution of patients according to Schatzker classification

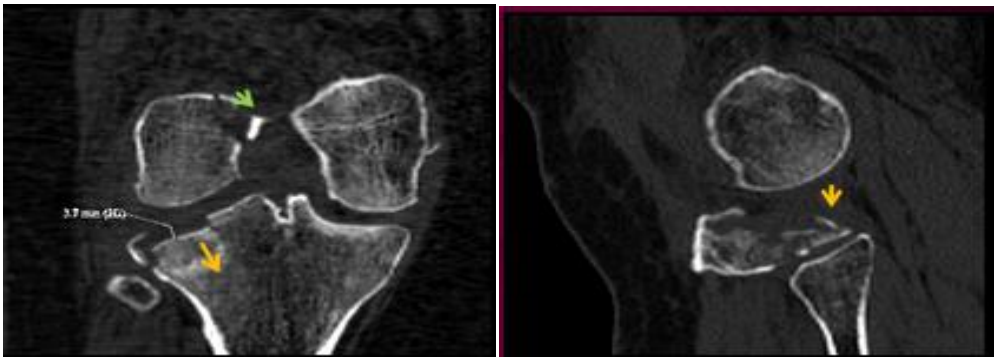


Figure 1: Coronal & Sagittal Images: Classified as Unicondylar lateral depression in Duparc classification and type II in Schatzker classification

Discussion

Treatment of proximal tibial plateau fracture can be done through POP without any patient discomfort it Provides accurate anatomy for difficult fractures. The Classification of proximal tibial fractures becomes easy. With the help of CT its Facilitates decision about operative management. Duparc and Schatzker classification had the same reproducibility when CT scans were used, which is now an essential imaging modality. Duprac classification had the advantage of being more reproducible in its simplified five-type format and allowing a greater number of fractures to be classified. In 1960's Duprac and Ficat classification is being used in French countries which was revised in 1990. Fractures affecting only one plateau (56%), generally the lateral one or the medial, Spino-condylar fracture (22%) Bicondylar fracture (22%) in V, Y or T. These include both complex and comminuted forms. These two classification systems only overlap for Duparc lateral unicondylar fractures, which corresponds to Schatzker types I,II,III (n=11). Posteromedial fractures (n=2) either isolated or associated with another fracture were not classified in Schatzker. In Schatzker type IV (n=3), intercondylar eminence can be involved which can be classified as spinocondylar in Duparc classification taking displacement into consideration Schatzker type V fractures (n=1) are bicondylar fractures that do not take into account potential comminution. They are characterized by metaphysis and diaphysis continuity, which is not correct in many cases. Schatzker type VI fractures (n=2) have the advantage of capturing potential association with diaphysis fracture, but they does

not allow tibial plateau fractures to be classifed, which can be done in Duparc classification, Yang had the same observation.[9]

Kappa coefficients were improved when CT scans were added and similar for the Schatzker system. These discrepancies probably stem from having various levels of experience with the classification system and using different methodology.[10]

Conclusion

Although the information obtained from plain x-rays is of value if viewed carefully, however CT scans offer a clear picture of fractured tibial plateau and the extent of cortical communition. Based on our results we propose Duparc and Ficat classification to Be good for classifying proximal tibial fractures in pretherapeutic.

References

1. Charalambous CP, Tryfonidis M, Alvi F, et al. Inter- and intra-observer variation of the Schatzker and AO/OTA classifications of tibial plateau fractures and a proposal of a new classification system. Ann R Coll Surg Engl 2007;89(4):400– 4.
2. Hohl M. Tibial condylar fractures. J Bone Joint Surg Am 1967;49(7):1455–67.
3. Hohl M, Moore TM. In: Evarts CM, editor. Surgery of the musculoskeletal system. New York: Churchill Livingstone; 1990.
4. Moore TM. Fracture—dislocation of the knee. Clin Orthop Relat Res 1981;156:128–40.
5. Mu¨ller M, Nazarian S, Koch P, Schatzker J. The comprehensive classification of fractures of long bones. Berlin: Springer Verlag; 1990, 120–121.
6. Schatzker J, McBroom R, Bruce D. The tibial plateau fracture. The Toronto experience 1968–1975. Clin Orthop Relat Res 1979;138:94–104.
7. Wahlquist M, Iaguilli N, Ebraheim N, Levine J. Medial tibial plateau fractures: a new classification system. J Trauma 2007;63(6):1418–21.
8. Duparc J, Ficat P. Fractures articulaires de l'extrémité supérieure du tibia. Rev Chir Orthop 1960;46:399—486.
9. Yang G, Zhu Y, Luo C, Putnis S. Morphological characteristics of Schatzker type IV tibial plateau fractures: a computer tomography based study. Int Orthop 2012;36:2355—60.
10. Audigé L, Bhandari M, Kellam J. How reliable are reliability studies of fracture classifications? A systematic review of their methodologies. Acta Orthop Scand 2004;75(2):184—94.