***SYNOPSIS***

Tibial plateau fracture occur when proximal tibia bear an excessive axial load. Proximal tibia fracture classified on the basis of schatzker and AO/OTA CLASSIFICATION system. Treatment of proximal tibial fracture depends upon the degree of injury, comminution, other associated injury. Proximal tibia fracture account for 11% of all tibia fracture proximal tibia fracture can be quite challenging .Proximal tibia fracture can be managed conservatively but most of the time surgically treated .Proximal tibia fracture can be classified on the basis of schatzker classification and AO/OTA. Function outcome assessment done on the basis of OXFORD KNEE SCORE

***INTRODUCTION***

The knee joint is complex joint and being superficial joint is more exposed to external forces. It is commonly injured joint now a day because of increased vehicular trauma and sports related injury.Proximal tibia fracture occur when proximal tibia bear an excessive axial load .Proximal tibia fracture also known as bumper and fender fracture.

It constitutes 1% of orthopedic fracture and 8% of a fracture in elderly (1)

The proximal tibia fracture are one of the commonest intra-articular fracture, generally these injuries fall into two broad categories high energy fracture and low energy fracture. (2)

Proximal tibia fracture varying from minor hair line crack with excellent functional outcome to challenging fracture required highly experienced surgical hands.

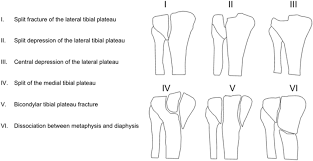
These are intra articular therefore their fixation is an important issue (3)

These fracture affect biomechanics and stability and ROM of knee joint. These can be present with either displacement, depressed articular surface or tibial condylar involvement. The treatment focuses on maintaining soft tissue integrity ,restoring conformation of an articular surface ,anticipating post traumatic degenerative joint disease and early mobilization.(4)

Degree of soft tissue involvement ,bone quality, patients age and post traumatic knee stiffness are important contributing factor which influence the functional outcome.(5)

SCHATZKER classification based on MORPHOLOGY AND GUIDE THE SURGEON TO FORMULATE LINE OF TREATMENT and AO/OTA classification define fracture morphology precisely.(6)

SCHATZKER CLASSIFICATION .



Proximal tibia fracture can be managed conservatively as well as surgically,treatment plan depends upon the severity of injury ,age ,gender ,comminution ,soft tissue injury

Conservative management is not feasible most of the time and consequently most fracture are treated operatively .Surgically treated fracture yielded favorable result due to achievement better articular congruity ,higher stability and early mobilization (7)

REVIEW OF LITERATURE

1. A study conducted by Dr Dhruv Gautam at al titled as TO STUDY THE ROLE OF CT BASED LUO CLASSIFICATION FOR SURGICAL MANAGEMENT OF PROXIMAL TIBIA FRACTURE :A PROSPECTIVE OBESERVATIONAL STUDY at Department of orthopaedics ,Maharishi Markandeshwar Institute of Medical Sciences and Research, Mullana,Ambala. In this study total 25 patient with proximal tibia fracture were enrolled .3D CT scan was done along with plain xray in all cases.Luo CT based 3 column concept helped to identify posterior column in 36% of cases.Luo classification helped better understand the pattern and morphology of fracture.

(2) Dr Avinash kumar et ol conducted a prospective observational study in K.V.G MEDICAL COLLEGE AND HOSPITAL SULLIA for a period of 2 years from January 2017 to December 2018 published as A STUDY TO ASSESS FUNCTIONAL OUTCOME /OF LOCKING PLATE OSTEOSYNTHESIS FOR PROXIMAL TIBIA FRACTURE , a total 25 subject with proximal tibia fracture included in study .In the study 78% had excellent result ,16 had good result and 4% had fair and poor outcome respectively , 5% had complication in study

(3) Dr Jagdish singh charan et ol conducted a prospective study from april 2018 to june 2019 at the tertiary center Apollo Hospital Banglore in the age group of 18-70 years .Study titled as FUNCTIONAL OUTCOME OF PROXIMAL TIBIA FRACTURE ( SCHATZKER TYPE 4/5) FIXED WITH OPEN REDUCTION AND INTERNAL FIXATION WITH DUAL PLATE OSTEOSYNTHESIS. A total of 30 patients with proximal tibia fracture planned for surgical fixation with dual plating were studied .The functional outcome measured via the modified Rasmussen score showed good to excellent results in 93.33% of cases in the post operative period at 6 months.

(4) STUDY OF SURGICAL AND FUNCTIONAL OUTCOME IN THE MANAGEMENT OF PROXIMAL TIBIA FRACTURE WITH CIRCULAR WIRE BASED EXTERNAL FIXATION conducted by Dr Tushar Mandal et ol .30 patient of ages ranging from 18-70 years include in this study , study conducted in a tertiary care institute in WEST BENGAL for a period of 18months .Post surgical follow up done at 6,12,24wk and 6month for functional assessment using KNEE SOCIETY SCORE SYSTEM .24 patient showed excellent result , 5 show good result and 1 had fair result.

(5) This study conducted by Dr Prateek Girotra et ol in the Department Of Orthopaedics North DMC Medical College and Hindu Rao Hospital ,Delhi between feburary 2017 to april 2018, published as FUNCTIONAL OUTCOME OF LOCKING COMPRESSION PLATE IN THE MANAGEMENT OF PROXIMAL TIBIA FRACTURE. 30 patients with proximal tibia fracture included in this study,fair to good functional result were co-related with associated injury where as excellent result were obtained with those who did not sustained other associated injury.

(6)Dr Ravikant Jain et ol conducted a study published as EVALUATION OF FUNCTIONAL OUTCOME OF TIBIA PLATEAU MANAGED BY DIFFERENT SURGICAL MODILITIES. The study period was from august 2013 to july 2015, 58 patient treated surgically for tibial plateau fracture were selected on the basis of history,clinical examination and radiography. The analysis of result was made in term of age of patient ,sex ,distribution,occupation,mode of injury,laterality of fracture ,modality of treatment and complication.

(7)A prospective observational study of 56 patient treated with ring fixator after a complex tibial fracture conducted by RASMUS ELSOE et ol to evaluate patient reported outcomes for complex tibial fracture treated with ring fixator,57% patient had antibiotics during the treatment period due to pin or wire infection .One patient readmitted to hospital for intravenous antibiotics .21% patient had one or more wire exchanged due to infection .

**AIMS AND OBJECTIVE**

Assessment of functional outcome of proximal tibia fracture managed by various surgical methods.

Functional outcome will be measured on the basis of OXFORD KNEE SCORE

**MATERIAL AND METHOD**

Study design :- a prospective and observational study

Study site :-Dept of orthopedics J.L.N MAIN HOSPITAL & RESEARCH CENTRE , BHILAI

Study group :- all proximal tibial fracture cases satisfying inclusion criteria willing to take part in the study

Study period :- 1.5 years

Sample size :- 35

Cases satisfying the inclusion criteria admitted in JLNHRC Bhilai CG during the study period of november 2022 to november 2024

**REFERANCE STUDY**

Functional outcome of proximal tibial fracture management study conducted by dr Naveen kumar singh

According to study :90% showed excellent to good functional outcome

Taking P=90%=0.90

1.96=z value for 95%significance level

e= Allowable error=0.10

Cochran formula for an observational study

Minimum sample size =N=1.96(2)\*P\*(1-P)

e(2)

=1.96 2POWER \*0.90\*(1-0.90)

(0.10)2

=35 cases

**Study design :Prospective observational study**

**STATISTICAL ANALYSIS**

Statistical analysis will be performed by the SPSS program for windows, veraion 20.0.Continous variables will be presented as mean +\-SD and categorical variables will be compared using the t test , whereas the MANN-WHITNEY U test will be used for those variable that will not be normally distributed. Categorical variables will be analysed using either the CHI SQUARE TEST OR FISHER,S EXACT TES

**STATISTICAL SIGNIFICANCE**

P>0.05 is not significant

P<0.05 is significant

P<0.01 is highly significant

INCLUSION CRITERIA

. all the patients with proximal tibia fracture

.age more than 18

.pt giving consent for participating in study

EXCLUSION CRITERIA

.age less than 18years

Pt with extra articular fracture

Pt with open fracture

Pt with pathological fracture

Pt with severe head injury with initial Glasgow coma scale <8

Previously non ambulatory patient

Previously operated tibia fracture

Pt not willing to participate or to give informed and written consent

**METHODOLOGY**

This is a prospective analytical study of functional outcome of various methods of treatment of proximal tibia fracture

Sample size will study prospectively from study period December 2022 to June 2024. Data will be collected as patient with proximal tibia fracture will be admitted in our institute. Patient will call for follow up at 2week,6week,3month,6month, functional outcome assessment will be done according to OXFORD KNEE SCORING

**OXFORD KNEE SCORE**

1. How would you describe the pain you usually have in your knee ?

.none

.very mild

.mild

.moderate

.severe

1. Have you had any trouble washing and drying yourself (all over ) because of your knee

.no trouble at all

.very little trouble

.moderate trouble

.Extreme difficulty

.impossible to do

1. Have you had any trouble getting in and out of the car or using public transport because of your knee

.no trouble at all

.very little trouble

. moderate trouble

.extreme difficulty

.impossible to do

1. For how long are you able to walk before the pain in your knee becomes severe ( with/without a stick)

.no pain >60 min

.16-60 min

.5-15 min

.around the house only

.not at all, severe on walking

1. After a meal ( sat at a table ),how painful has it been for you to stand up from a chair because of your knee ?

. not at all painfull

. slight painfull

.moderate pain

.very painful

.unbearable

1. Have you been limping when walking , because of your knee ?

. rarely

. Sometimes

.often,not just at first

. most of the time

. all of the time

1. Could you kneel down and get up again afterwards ?,

.yes,easily

.with little difficulty

.with moderate difficulty

.with extreme difficulty

.no,impossible

1. Are you troubled by pain in your knee at night in bed ?

.not at all

.only one or two nights

.some nights

.most nights

.every night

1. How much has pain from your knee interfered with your usual work ?(including housework)

.not at all

.a little bit

.moderately

.greatly

.totally

(10)Have you felt that your knee might suddenly give away or let you down ?

.rarely/never

.sometimes or just at first

.often,not at first

.most of the time

.all the time

(11)Could you do household shopping on your own ?

.yes,easily

.with little difficulty

.with moderate difficulty

.with extreme difficulty

. no,impossible

(12) Could you walk down a flight of stairs ?

.yes,easily

.with little difficulty

.with moderate difficulty

.with extreme difficulty

.No,impossible

|  |  |
| --- | --- |
| Excellent | 40-48 |
| Good | 30-39 |
| Fair | 20-29 |
| Poor | 0-19 |

Following points should be kept in mind while assessing the functional outcome.

1 extent of injury

2 soft tissue damage

3 definitive management

4 mode of injury

5 type of fracture

STUDY PROFORMA

Case no

Name

Age/sex

address

DOA

DOD

IPD NO

Ward

Occupation

Contact no

**HISTORY**

**MODE OF INJURY**

1. Trivial trauma slip/fall
2. RTA
3. Sports injury
4. Assult

**MECHANISM OF INJURY**

1. Direct
2. Indirect

**DURATION OF INJURY**

***GENERAL PHYSICAL EXAMINATION***

(A)pulse rate

(B)blood pressure

(C) RR

(D)saturation

(E) presence of associated injuries

***LOCAL EXAMINATION***

1. Swelling
2. Visible deformity
3. Tenderness
4. Skin condition
5. Distal neuro vascular deficits
6. Range of movement
7. Bony crepitus
8. Abnormal bony movement

**CLASSIFICATION TYPE**

(schatzker/AO)

**RELEVANT INVESTIGATION**

1. CBC
2. BT,PT,CT
3. LFT,RFT
4. Serum electrolyte
5. Viral marker
6. ECG
7. Chest Xray
8. Xray knee AP/lateral
9. MRI/CT( if require )

**TREATMENT**

***First aid***

Definitive management ( conservative/surgical)

Assessment of functional outcome will be done according to OXFORD KNEE SCORE at 2wk,6wk,3m,6m

***REFERENCES***

1. Jacofsky DJ,Haidukerwych GJ. Insall & Scott Surgery of the knee. Philadelphia :Tibia plateau fracture.In: Scott WN .Churchill Livingstone;2006.p.1133-46
2. Schulak ,David J, Donald.R Gunn.fracture of the Tibial Plateaus:A review of the Literature.clin orthop Relat Res. 1975;109:166-19
3. Koval K,Hulfut D.Tibial plateau fracture :evaluation & treatment .J Am Acad orthop surg.1995;3(2):8E94
4. Biyani A,Reddy N, Chaudhaury J.The results of surgical management of disolaced tibial plateau fractures in the elderly.Injury.1995;26(5):291-7
5. Kulkarni GS,Babhulkar S. Guidelines in Fracture Management Proximal Tibia. 1st ed. Chapter 3. Nodia :Thiieme Medical and scientific Publishers Private Limited;2014.p.61.
6. Azar Frederick M, Beauty James H,Terry Canale S.Fractures of the lower extre ty.In :Campbells operative orthopaedics. 13th ed,vol.3 Ch. 54.Philadelphia:Elsevier ;2017.p.770-2774
7. Schatzker J, McBroom R,Bruce D. the tibial plateau fracture : the fracture the Toronto experiences 1968-1975.Clin orthopaed Related Res. 1979;138:94-104.
8. Marsh JL,slongo TF,Agel J,Broderick JS ,Creevey W,DeCoster TA et al.fracture ans dislocation classification compendium-2007: orthopaedic trauma association classification ,database and outcomes committee. J Orthop Trauma.2007;21(10):S1-133
9. Jansen H,frey SP,Doht S et al (2013)medium term results after complex intra- articular fractures of the tibial plateau .J orthop Sci 18:569—577

(10)Ali AM (2013) outcome of open bicondylar tibial plateau fractures treated with Ilizarov external fixator with or without minimal internal fixation . Eur J orthop surg Trauumatol 349-355