

A STUDY OF TIBIAL CONDYLAR FRACTURES TREATED BY CONSERVATIVE MANAGEMENT, A FUNCTIONAL OUTCOME

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ABSTRACT: Tibial condylar fractures are commonly seen in the increased vehicular accidents. Tibial condylar fractures also known as BUMPERS FRACTURE / FENDER’S FRACTURE. It is a challenge to any surgeon because of the complex modalities and concepts in the management. Nowadays open reduction with internal fixation and MIPPO technique with internal fixation are commonly used, which has its own inherent problems and complications. In a developing country like India where there is a section of people with low socio economic status who are not affordable for surgical procedure. In these patients a conservative line of management was done in KEMPEGOWDA INSTITUTE OF MEDICAL SCIENCES, BANGALORE in comparison with earlier international authors of 1970’s and 80’s to see the outcome in conservative management.

BACKGROUND:

Tibial condylar fractures patient coming to KEMPEGOWDA INSTITUTE OF MEDICAL SCIENCES, BANGALORE from period of 2005 to 2011 from low socio economic status which were treated conservatively for 2 years. Follow up was done with LOW TIBIAL SKELETAL TRACTION and HINGE KNEE BRACE were studied. Our study was compared with the authors of international journals to know the functional outcome. In spite of the AO techniques and surgical outcome and results.

The classification of intra-articular proximal tibial fractures originally proposed by Hohl and later modified by Moore and Hohl is commonly used to describe tibial plateau fractures. The classification distinguishes between five primary fracture patterns and five fracture-dislocation patterns, with fracture-dislocations occurring one seventh as frequently as fractures.

Tibial plateau fracture patterns according to Hohl and Moore include type 1, minimally displaced; type 2, local compression; type 3, split compression; type 4, total condyle; and type 5, bicondylar. (Fracture dislocation patterns are described in a later section.) Hohl observed that this classification may be an intermediate step in the evolution of a classification that separates the

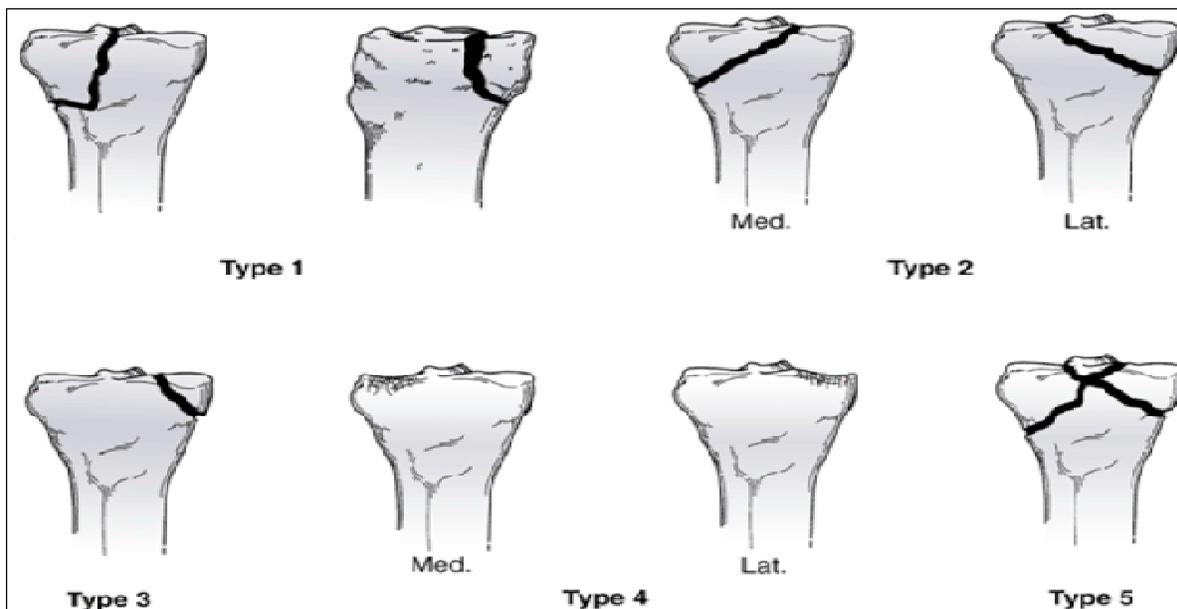
myriad ligamentous and soft-tissue injuries that, along with the bony injury, determine outcome. Our involvement with a level I trauma center has shown several fractures that defy conventional classification and treatment methods. These extremely high-energy fractures, frequently open, usually include bicondylar comminution and extensive shaft comminution with dissociation of the metaphysis and the diaphysis as in Schatzker type VI. The Schatzker classification closely corresponds to the fracture patterns of Hohl and Moore with the addition of type VI, metaphyseal-diaphyseal dissociation.^[1]

MATERIAL AND METHODS:

Inclusion Criteria:

- Undisplaced fracture.
- < 8mm depression,
- < 10mm split depression.
- Grossly comminuted fractures TYPE 5(Four parts).
- Compound fracture.
- Elderly/ Poor general condition/ High risk for anaesthesia / Sedentary worker/ Poor skin condition.

*All the patients who were included in the study were from poor socio economical status and not affordable for surgery.



Skeletal traction



Hinge Knee brace

LOWER TIBIAL SKELETAL TRACTION

APPLICATION: The part is prepared and draped. Local anaesthesia is given just 2 inches above the ankle joint on the lateral and medial aspect. Stab wound is made on the lateral aspect of the leg about 2 inches above the ankle joint Steinmann pin is passed from lateral to medial side midway between the anterior and posterior border of the tibia, parallel to the floor and perpendicular to the tibia. When the pin protrudes through the medial side a stab wound is made and the pin is further advanced. Sterile dressing is done. The limb is elevated on Bohler–Braun’s splint and 7 to 10 kgs

weight applied. Patient is advised to do active ankle movements and isometric exercises. After 2 days a check x-ray is taken to know the reduction and alignment of the fracture fragments. If necessary closed manipulation is done under general anaesthesia. After satisfactory reduction traction is continued for 3-6 weeks. The duration of traction depends on the nature of comminution and displacement. Physiotherapy i.e. isometric exercises are continued. After 3-6 weeks, skeletal traction is removed and a functional cast bracing is applied. Below knee pop cast applied up to tibial tuberosity after sufficient cotton padding. Cast is

moulded around the ankle till it sets. Then the cast is applied to the thigh just above the femoral condyles and it is moulded.

APPLICATION OF KNEE HINGES: The knee is kept in extension in corrected position of varus or valgus deformity. The centre of patella is marked and the line is extended posteriorly and another line is drawn from the centre of knee joint is extended posteriorly. Mark a point at the level of intersection of both lines. The hinge is placed 2cm above the meeting point of these two lines flexion and extension of the knee is done to confirm the

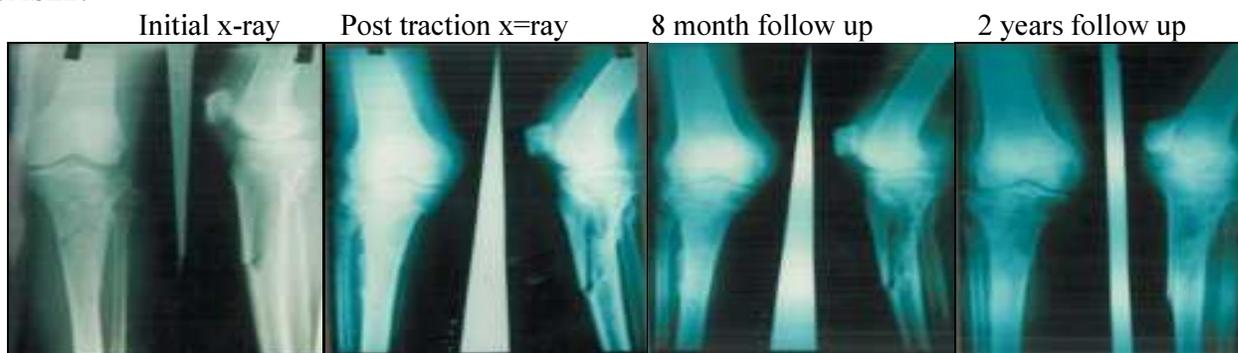
function of the knee hinges then the hinges are stabilized with pop rolls. Patient is advised to do active movements of the knee joint and isotonic exercises up to 8 weeks. Partial weight bearing in cast brace with crutches is allowed upto 12 weeks. Non weight bearing exercises has to be continued. Cast brace is removed after 12 weeks and partial weight bearing with crutches is continued upto 16 weeks, non weight bearing exercises is to be continued. Full weight bearing is allowed after 16 weeks.

CLINICAL PHOTOGRAPHS:

CASE1:



CASE2:



CASE 3:



CASE 4:



DISCUSSION:

Totally 20 cases of tibial condylar fractures was managed conservatively in various age groups of both sexes. The majority of the patients in the study are adults between 31-40 yrs. 18 males and 2 females were studied in the group. Most of the cases reported on the day of the trauma. In the present study most of the cases are abduction injury 90% and 10% of the cases were axial compression injury. Most of the cases were due to high velocity road traffic accident. In the present study we found most of the cases were simple fracture about 75% (15 cases) , 20% compound fractures (4 cases) , 1 case had bilateral condylar fracture. In our study 5 patients had associated injuries.

ASSOCIATED INJURY	NO. OF CASES
HEAD INJURY	2
PELVIC FRACTURE	1
RIB FRACTURES	1
HAND INJURY	1

In our study radiological classification was based on HOHL and MOORE classification. Most of the cases are HOHL and MOORE TYPE 3,4 and 5.

RADIOLOGICAL CLASSIFICATION (HOHL and MOORE)	NO. OF CASES	PERCENTAGE
TYPE 1	4	20%
TYPE 2	0	0%
TYPE 3	5	25%
TYPE 4	4	20%
TYPE 5	8	35%

It appears the mode of injury is so severe and it results in gross comminution, compression, displacement and extension to shaft of the tibia. In our study all the case were treated initially with skeletal traction. Duration of skeletal traction is decided by the amount of comminution , depression and displacement. Type 3,4 and 5 required longer duration of traction varying from 4 to 6 weeks and type 1 required only 3 weeks.

NO. OF WEEKS TRACTION	NO. OF CASES
3 WEEKS	4
4 WEEKS	7
5 WEEKS	4
6 WEEKS	5

COMPLICATIONS:

Two cases showed foot drop along with the simple condylar fracture. Both of them did not have fractured neck of fibula. One recovered the function without intervention. Another underwent tendon transfer. In 4 cases limp was present at 6 months. In 2 cases there was a valgus deformity of more than 10° and 2 cases there was 5° to 10°. In 2 cases range of movements was restricted to less than 80° and other 2 cases had 80° and 100° and rest had good range of movements. In 2 cases articular depression was more than 10° and irregularity of articular surface. In 2 cases depression was 5° to 10°. Rest had negligible depression and fracture was well consolidated.

CASE 16:



VARUS DEFORMITY

CASE 20:



DEPRESSION.

RESULTS:

TOTAL NO OF CASES: 20

RESULTS	NO. OF CASES	PERCENTAGE
GOOD	16	80%
FAIR	2	10%
POOR	2	10%

4/5th of the cases showed good results.
Our results as compared to other authors.

Name of Author	Percentage
APLEY.A.G1956 ^[3]	80%
C.P.BLOKKER & R.B.BROWN (1972-1981) ^[4]	80%
R.L.MARTER & MASON & HOHL (1973- 1983) ^[5]	87%
PAUL J DUWELIES & JOHN.F. CONNOLLY(1974 – 1984) ^[6]	89%
DRENNAN ET AL (1979) ^[7]	85%

Advantages of Conservative Management:

1. Cost effective.
2. Early joint mobilization.
3. Good range of movements.
4. Avoidance of operative risk.
5. Does not need skilled surgical intervention.

Disadvantages of Conservative Management:

1. Prolonged duration of hospital stay.
2. Failure to get anatomical reduction in some of the cases as seen radiologically.
3. In convenience of cast brace.
4. Pin tract infection.

CONCLUSIONS:

- 20 cases of condylar fracture tibia are treated by simple conservative method.
- Majority of the cases belong to age group between 31-40 years.
- Sex incident predominantly in males.

- Abduction injury is the mechanism of injury and mode of injury is high velocity road traffic accidents.
- Majority of them came under HOHL and MOORE TYPE 3, 4 and 5.
- Management by initial lower tibial skeletal traction is an effective method of reduction of fragments followed by non weight bearing exercises in a cast brace up to three months gains maximum mobility.
- Follow up period is minimum i.e 6 months to 2 years.
- Majority of them showed good results.
- This method can be employed in all centers.

Summary:

- 20 Cases of condylar fracture tibia are treated conservatively by initial lower tibial skeletal traction followed by non weight bearing exercises in cast brace.
- Good results were achieved in terms of mobility , stability and function.
- This method is fairly simple, effective and economical.

References:

1. CAMPBELL'S OPERATIVE ORTHOPAEDICS 8th edition : vol.2.
2. ROCKWOOD AND GREEN'S FRACTURE IN ADULTS 7th edition: vol.2.
3. APLEY. A. G : Fractures of the lateral tibial condyle treated by skeletal traction and early mobilization : J.B.J.S, 38-A, 699, 1956.
4. BLOKKER. C. P RORABECK C.H BOURNE R . B : Tibial plateau fractures: an analysis of the results of treatment in 60 patients: CORR 182, 193 – 99, 1984.
5. HOHL. M: Tibial condylar fractures : J.B.J.S ,49 – A 1455, 1967.
6. DUWELIUS P.J. CONNOLLYJ.F : Closed reduction of tibial plateau fracture: a comparison of functional and roentgenographic end results: CORR 230, 116-26, 1988.
7. DRENNAND D.B. LOCHER F.B MAYLAHN DONALD J: Fractures of tibial plateau: treatment by closed reduction and spica cast :

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