Original Article

# A study of associated injuries with fracture shaft of femur and tibia

Rahul N Bade[1*], Sanjay S More[2]

[1]Professor, [2]Associate Professor, Department of Orthopaedics, RCSM Government Medical College, Kolhapur, Maharashtra, INDIA.
**Email:** rbrahulbade@gmail.com, sanjaysmore@yahoo.com

## Abstract

**Introduction:** Diaphyseal femur fractures are mostly the result of high-energy trauma, for which reason they endanger life itself, account for important handicaps, and are usually associated with multilevel injuries. Their most frequent sequelae are limb shortening, poor alignment and stiffness in the knee. **Aims and Objectives:** To Study of Associated Injuries with Fracture Shaft of Femur and Tibia. **Methodology:** This study includes retrospective and prospective cases with complex fractures of shaft of femur and tibia admitted at our hospital during the period July 1998 to June 2002. A series of 52 cases of comminuted fractures of shaft of femur and tibia were studied. The study included 21 fractures of shaft femur of which 3 were Grade I compound and 18 were closed and 31 fracture of tibia of which 5 were grade I compound and 26 were closed. **Result:** minimum age of patient was 12 years and maximum age of patient was 70 years. The mean age was 35.04 years. The peak incidence was observed in age group 21-30 years (36%) followed by 31-40 years (26%). There were 44 (88%) males and 6 (12%) females Out of 31 biologically plated tibia 14 (49.40%) Had no associated injury, 17 (51.50%) had associated injuries which included 6 poly trauma cases Out of 21 biologically plated femur 3 (19.05%) had no associated injury, 18 (80.95%) had associated injury which included 4 poly trauma. **Conclusion:** Poly trauma was most common cause of Associated injury.

**Keywords:** Associated Injuries with Fracture Shaft of Femur and Tibia, Fracture Femur, Fracture Medial malleolus, Fracture injury with Fracture Ribs, Head Injury.

[*]**Address for Correspondence:**
Dr. Rahul N Bade, 142/5 Nigadewadi, Gandhinagar Road, Karvir, Kolhapur, Maharashtra 416005 INDIA.
**Email:** rbrahulbade@gmail.com
Received Date: 14/12/2015 Revised Date: 10/01/2016 Accepted Date: 08/02/2016

Access this article online

Quick Response Code:

Website: www.statperson.com

DOI: 10 February 2016

## INTRODUCTION

Diaphyseal femur fractures are mostly the result of high-energy trauma, for which reason they endanger life itself, account for important handicaps, and are usually associated with multilevel injuries. Their most frequent sequelae are limb shortening, poor alignment and stiffness in the knee[1-4]. The literature states that a diaphyseal femur fracture is accompanied by a femoral neck fracture in 2.5% to 9% of cases, with approximately one third of such cases remaining undiagnosed[5-11]. In this series, all of the cases were fractures of the trochanteric region, with no femoral neck fracture having been diagnosed. In our series it is possible that either no femoral neck fracture associated with the diaphyseal fracture existed, or that the percentage of fracture undetected extended to 100% of the cases. None of the ten cases of ipsilateral fracture of the femur and tibia in this series was associated with an ipsilateral knee injury, which is not consistent with the literature. Moreover, Schiedts states that knee instability is the main reason for the unsatisfactory results of his series[12]. Thus, this under-diagnosis may imply significant prevalence. The art of treating femoral shaft fractures is a delicate balance between restoration of limb length and alignment, and at the same time achieving early mobilization of the limb. This is, however, prevented by strong muscular forces, which become specifically important when the fracture is either proximal or distal. Various treatment modalities have been used to treat these fractures with Intramedullary (IM) nailing being the gold standard. IM nails are weight sharing implants which allow immediate weight bearing after static locking even in unstable fractures. They have the advantage of providing greater fatigue strength, better stability in all planes specially if locking screws are used and providing reamed bone at the fracture site.[13-17]

How to site this article: Rahul N Bade, Sanjay S More. A study of associated injuries with fracture shaft of femur and tibia. *MedPulse – International Medical Journal*. February 2016; 3(2): 182-184. http://www.medpulse.in (accessed 12 February 2016).

## MATERIAL AND METHODS

This study includes retrospective and prospective cases with complex fractures of shaft of femur and tibia admitted at our hospital during the period July 1998 to June 2002. A series of 52 cases of comminuted fractures of shaft of femur and tibia were studied. The study included 21 fractures of shaft femur of which 3 were Grade I compound and 18 were closed and 31 fracture of tibia of which 5 were grade I compound and 26 were closed. Duration of follow up ranged from 6 months to 4 years. Fractures from sub-trochanteric to supracondylar area of femur, upper tibial metaphysis, tibial shaft and pilon fracture were included. Closed fractures and gustilo Anderson Grade I compound fracture were included in this group. Three cases were lost to follow up. Intra-articular fracture of femur, Infection, Poor skin condition, Gustilo grade II and more severe grades of compounding Pathological fracture excluded from study. Implants Used: For sub trochanteric fractures, contoured simple plate, DCP or LCDCLP were used.For supracondylar fractures, contoured simple plate, DCP or LCDCP were used.

## RESULT

**Table 1:** Age incidence

| Age Group in years | No. of cases | Percentage(%) |
|---|---|---|
| 10-20 | 8 | 16 |
| 21-30 | 18 | 36 |
| 31-40 | 13 | 26 |
| 41-50 | 7 | 14 |
| 51-60 | 3 | 6 |
| 61-70 | 1 | 2 |
| **Total** | **50** | **100** |

In this study minimum age of patient was 12 years and maximum age of patient was 70 years. The mean age was 35.04 years. The peak incidence was observed in age group 21-30 years (36%) followed by 31-40 years (26%).

**Table 2:** Sex incidence

| Sex | No. of case | Percentage (%) |
|---|---|---|
| Male | 44 | 88 |
| Female | 6 | 12 |
| **Total** | **50** | **100** |

There were 44(88%) males and 6 (12%) females

**Table 3:** Associated Injuries

| Fracture Biologically Plated | Associated Fracture or Dislocation | | No. | Percentage (%) |
|---|---|---|---|---|
| Tibia | Fracture Femur | Ipsilateral | 7 | 25.80 |
| | | Contralateral | 1 | |
| | Fracture Medial malleolus | | 1 | 3.22 |
| | Fracture injury with Fracture Ribs | | 1 | 3.22 |
| | Anterior Dislocation of Shoulder and Shoulder and Chest injury | | 1 | 3.22 |
| | Traumatic amputation of Fore Foot | | 1 | 3.22 |
| | Fracture Lateral Malleolus with Gallaezi dislocation | | 1 | 3.22 |
| | Head Injury with Fracture clavicle | | 1 | 3.22 |
| | Contralateral grade II compound Fracture tibia | | 1 | 3.22 |
| | Fracture Medial Malleolus | | 1 | 3.22 |
| Femur | Fracture Tibia | Ipsilateral | 6 | 38.09 |
| | | Contralateral | 2 | |
| | Dislocation of Knee Joint | | 1 | 4.76 |
| | Contralateral Fracture shaft femur | | 1 | 4.76 |
| | Posterior subluxation of Knee | | 1 | 4.76 |
| | Closed FractureIshio Pubic Rami | | 1 | 4.76 |
| | Closed Fracture neck talus type III | | 1 | 4.76 |
| | Head injury | | 1 | 4.76 |
| | Operated Case of opposite side proximal third Fracture tibia with gangrenous changes in the limb | | 1 | 4.76 |

Out of 31 biologically plated tibia 14 (49.40%) Had no associated injury, 17 (51.50%) had associated injuries which included 6 poly trauma cases Out of 21 biologically plated femur 3 (19.05%) had no associated injury, 18 (80.95%) had associated injury which included 4 poly trauma.

## DISCUSSION

In this study minimum age of patient was 12 years and maximum age of patient was 70 years. The mean age was 35.04 years. The peak incidence was observed in age group 21-30 years (36%) followed by 31-40 years (26%). There were 44 (88%) males and 6 (12%) females As Per The E. Carlos Rodriguez-Merchan[18]Injuries associated with femoral shaft fractures were very frequent (46.4%)

in our series, with 25.5% undetected. Open reduction and internal fixation was a poor prognostic factor of nonunion in these fractures. In our study we have observed Out of 31 biologically plated tibia 14 (49.40%) Had no associated injury, 17 (51.50%) had associated injuries which included 6 poly trauma cases Out of 21 biologically plated femur 3 (19.05%) had no associated injury, 18 (80.95%) had associated injury which included 4 poly trauma. It is similar with c. Krettek et al[19], K.A, Siebenrock et al[20]

## CONCLUSION

Poly trauma was most common cause of associated injury.

## REFERENCES


1. Salminen ST, Pihlajamaki HK, Avikainen VJ, Bostman ON. Population based epidemiologic and morphologic study of femoral shaft fractures. ClinOrthopRelat Res. 2000; 372:241–9.
2. Regel G, Lobenhoffer P, Grotz M, Pape HC, Lehmann U, Tscherne H. Treatment results of patients with multiple trauma: an analysis of 3406 cases treated between 1972 and 1991 at a german level I trauma center.J Trauma. 1995; 38:70–8.
3. Bengner U, Ekbon T, Johnell O, Nilsson DE. Incidence of femur and tibial shaft fractures, epidemiology 1950-1983 in Malmo Sweden. ActaOrthop Scand. 1994; 61:251–4.
4. Arneson TJ, Malton III LJ, Lewallen DG, O'Fallon WN.Epidemilogy of diaphyseal and distal femoral fractures in Rochester Minnesota, 1965-1984. ClinOrthopRelat Res. 1988; 234:188–94.
5. Laporte C, Benazet JP, Scemama P, Castelain C, Saillant G. Ipsilateral hip and femoral shaft fractures: components of therapeutic choice. Rev ChirOrthopReparatriceAppar Mot. 1999; 85:24–32.
6. Watson JT, Moed BR. Ipsilateral femoral neck and shaft fractures: complications and their treatment. ClinOrthop Relat Res. 2002; 399:78–86.
7. Casey MJ, Chapman MW. Ipsilateral concomitant fractures of the hip and femoral shaft. J Bone Joint Surg. 1979; 61-A: 503–9.
8. Wiss DA, Sima W, Brien WW. Ipsilateral fractures of the femoral neck and shaft. J Orthop Trauma.1992; 6:159–66.
9. Nork SE. Bucholz RW, Heckman JD, Court-Brown CM, Tornetta P. Rockwood and Green's Fractures in Adults. 5th ed. Philadelphia: Lippincott Williams and Wilkins; 2009. Femoral shaft fractures; pp. 1713–5.
10. Barquet A, Fernandez A, Leon H. Simultaneous ipsilateral trochanteric and femoral shaft fracture. ActaOrthop Scand. 1985;56:36–9.
11. Paul GR, Sawka MW, Whitelaw GP. Fractures of the ipsilateral femur and tibia: Emphasis on intra-articular and soft tissue injury. J Orthop Trauma. 1990; 4:309–14.
12. Schiedts D, Mukisi M, Bouger D, Bastaraud H. Ipsilateral fractures of the femoral and tibialdiaphyses (Abstract) Rev ChirOrthopReparatriceAppar Mot. 1996; 82:535–40.
13. Beaty JH, Austin SM, Warner WC, et al. Interlocking intramedullary nailing of femoral-shaft fractures in adolescents: preliminary results and complications. J PediatrOrthop 1994; 14:178-83.
14. Brumback RJ, Ellison PS, Poka A, et al. Intramedullary nailing of open fractures of femoral shaft. J Bone Joint Surg 1989; 71A:1324-30.
15. Brumback RJ, Handal JA, Poka A, et al. Radiograph analysis of the Brooker-Wills interlocking nail in the treatment of comminuted femoral fractures. J Orthop Trauma 1987; 1:120-9.
16. Brumback RJ, Reilly JP, Poka A, et al. Intramedullary nailing of femoral shaft fractures. Part I: Decision-making errors with interlocking fixation. J Bone Joint Surg 1988; 70A:1441-52.
17. Brumback RJ, Uwagie-Ero S, Lakatos RP, et al. Intramedullary nailing of femoral shaft fractures. Part II: Fracture-healing with static interlocking fixation. J Bone Joint Surg 1988; 70A:1453-62.
18. Carlos Rodriguez-Merchan, Luis Moraleda, and Primitivo Gomez-Cardero, Injuries Associated with Femoral Shaft Fractures with Special Emphasis on Occult Injuries.Arch Bone Jt Surg. 2013 Dec; 1(2): 59–63. Published online 2013 Dec 15.
19. Kretteck C, schandelmair P, Miclau T, Tscherne H: Minimally invasive percutaneous plate osteosynthesis (MIPPO) using the DCS in proximal and distal femoral fractures: injury, 1997, 28(1): 20-29.
20. Siebenrock K. A, Muller U. Ganz R: indirect reduction with condylar blade plate for osteosynthesis of subtrochanteric femoral fracture injury, 1998 Vol. 29 supp. 3: 7-15.


Source of Support: None Declared
Conflict of Interest: None Declared