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Double segmental tibial fracture – A rare case report

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Abstract

We report a case of a 55 year old male with closed double segmental fracture of both bones of left leg in a road traffic accident. Patient was treated by expert nailing. Segmental tibial fractures are uncommon and double segmental fractures/ trifocal fractures are rarely seen. Literature search revealed that only four cases reported and ours is the fifth among all and first closed double segmental tibial fracture treated with expert nailing. Nail remains effective treatment modality of such fractures.

Keywords: Double segment, tibia, closed injury, expert nail

Introduction

Segmental tibial fractures feature a unique fracture type characterized by a completely isolated intercalary osseous fragment separated by at least two distinct fracture lines [1-4]. Segmental tibial fractures are an uncommon injury pattern accompanied by significant soft tissue trauma and higher complication rates. Fractures of the tibia account for approximately 17-21% of all lower extremity fractures and approximately 2% of all combined fractures. Within this number, 3% to 13% of tibia fractures are classified as segmental [5]. It is usually associated with high energy trauma, and an increasing prevalence of vehicular accidents is a cause of elevated cases exhibiting atypical fracture configuration. Leg bones are susceptible to direct and indirect forces during trauma and are one of the most common sites of fracture. Their subcutaneous location only adds to its susceptibility.

We are reporting an unusual fracture configuration with a double segmental fracture/ three level bone fracture pattern of the tibia and a multi-segmental fracture of the fibula. This would be the fifth case reported to our knowledge.

Case Report

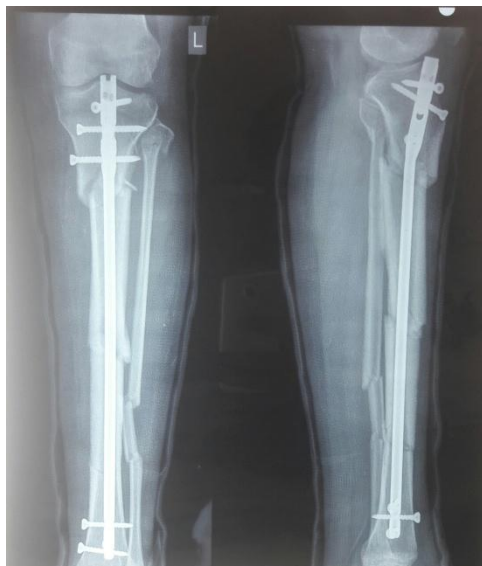
A 55 year old male, without relevant medical history, came to casualty with history of road traffic accident with complains of pain and swelling in the left leg. On clinical examination tenderness and crepitus are elicited at multiple sites with intact neuro-vascular status and radiological examination revealed double segmental tibia fracture or three level bone fracture pattern with multilevel fibula fracture. The limb was kept in a Bohler Braun splint for limb elevation with a calcaneal pin traction for 5 days to settle edema. After general work up, patient was taken to operation theatre. Under spinal anaesthesia and tourniquet in supine position with calcaneal pin traction on a fracture table closed reduction and internal fixation was done with titanium expert tibia nail. Postoperative physiotherapy regime included, range of motion of the knee and non-weight bearing crutch walking for initial 3 weeks. At 6 months follow up, an X-ray image showed signs of union at all levels. The alignment was good and the patient can walk with full weight bearing comfortably. At 1 year follow up, the patient was asymptomatic without any new complaints.



Pre-operative X-ray of left tibia (AP and lateral views) showing double segmental tibia and fibula fractures



Intra-operative positioning with calcaneal pin traction on a fracture table



Post-operative X-ray (AP and lateral views) of double segmental tibia fracture treated with expert tibia nail

Discussion

Segmental tibial fractures are uncommon injuries that occur in about 12.8% of tibial fractures and are caused by high energy trauma [6]. Half of them are open with severe soft tissue injury. According to Giannoudis [7], two thirds need more

than one surgical procedure. Blind nailing, as in our case was described way back in 1969 by Zucman and Maurer [8].

A thorough search using keywords double segmental tibia fractures and three level tibia fractures reported only four cases with this very rare pattern – one managed conservatively, two using expert tibia nail with primary bone grafting in one case and secondary bone grafting in other case and one using three locking compression plates.

Sarmiento *et al.* managed a double segmental tibial fracture using functional treatment. No attempt was made to regain length [9]. The fracture healed with the same initial shortening and with good alignment. Bali *et al.* managed open double segmental tibial fracture using expert tibial nail [10]. They waited for ten days before definitive treatment and performed primary bone grafting. Dhananjay Singh *et al.* managed open double segmental tibial fracture using expert tibial nail and performed definite fixation on next day of presentation and bone grafting was performed at a later date [11]. Garcia *et al.* managed a case using three locking compression plates [12]. Their case had intraarticular fractures of proximal and distal tibia with midshaft fracture of tibia.

In our case, injury was closed one and we managed with expert tibial nail after 5 days of presentation to hospital. Till then leg was immobilized on Bohler Braun splint with calcaneal pin traction to settle edema. At 1 year follow up, patient had no any complications.

Of all above said modalities of treatment Intra-medullary nail offers the advantage of preserving vascularity, surgical incisions away from fracture sites along with early weight bearing making it an ideal implant for such fracture patterns.

Conclusion

This is the 1st reported closed double segmental tibial fracture case as per our awareness after immense search through available and updated literature. A rare case of closed double segmental fractures of the tibia treated successfully with new generation interlocking nail is presented. New generations of interlocking nails are clearly emerging as the implant of choice for closed and grade 1 segmental fractures, whereas external fixators can be reserved for grade 2 and 3 open fractures [10].

References

1. Bonneville P, Cariven P, Bonneville N, Mansat P, Martinel V, Verhaeghe L *et al.* [Segmental Tibia Fractures: A Critical Retrospective Analysis Of 49 Cases] [In French]. *Rev Chir Orthop Reparatrice Appar Mot.* 2003; 89:423-432.
2. Melis GC, Sotgiu F, Lepori M, Guido P. Intramedullary Nailing In Segmental Tibial Fractures. *J Bone Joint Surg Am.* 1981; 63:1310-1318.
3. Rommens PM, Coosemans W, Broos PL. The Difficult Healing Of Segmental Fractures Of The Tibial Shaft. *Arch Orthop Trauma Surg.* 1989; 108:238-242.
4. Woll TS, Duwelius PJ. The Segmental Tibial Fracture. *Clin Orthop Relat Res.* 1992; 281:204-207.
5. Mcmurtry J, Mounasamy V. Segmental Tibia Fractures. *Ann Orthop Rheumatol.* 2015; 3(3):1051.
6. Nithin S, Sreehari CK. Segmental Fracture Of Both Bones With Ipsilateral Condyle Of Tibia Fracture - A Case Report. *Ortho & Rheum Open Access J.* 2016; 3(1):555605. DOI: DOI: 10.19080/OROAJ.2016.02.555605.
7. Giannoudis PV, Hinsche AF, Cohen A. Segmental Tibial Fractures: An Assessment Of Procedures In 27 Cases.

- Injury. 2003; 34(10):756-762.
8. Zucman J, Maurer P. Two-Level Fractures Of The Tibia. Results In Thirty-Six Cases Treated By Blind Nailing J Bone Joint Surg Br. 1969; 51(4):686-693.
 9. Sarmiento A, Latta LL. *In: The Nonsurgical Treatment Of Fractures In Contemporary Orthopedics*, 1st Edition. Mc Graw Hill Education, 2011.
 10. Bali K, Kumar V, Patel S, Aggarwal S. Double Segmental Tibial Fractures-An Unusual Fracture Pattern. Chinese Journal Of Traumatology, Zhonghua Chuang Shang Za Zhi. 2011; 14(4):247-249.
 11. Double Segmental Tibial Fracture: Case Report With Review Of Literature, Dhananjay Singh, Bhanu Awasthi, Vikas Padha, Vivek Negi, Journal Of Case Reports 2016; 6(2):243-246.
 12. Garcia AF, Ashford RU, Deboer PG. Three-Level Tibial Fracture Treated By Minimally Invasive Techniques. Injury Extra. 2006; 37:60-63.