Journal of Pese Pese PARIPEX

Original Research Paper

Medical Science

Analysis of outcome of interlocking intramedullary nailing for tibial diaphyseal fractures in adults in Govt. Kilpauk medical college, Tamil Nadu.

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Introduction:Intramedullary nailing particularly using closed technique provides good bone stability with limited soft tissue exposure. The stability achieved is usually superior to that of external fixation. Soft tissue complications can be easily managed with nail than plate and screws and external fixation without interfering the soft tissue procedures such as local ad free flaps **Materials and methods:** This prospective study of analysis of outcome of interlocking intramedullary nailing for tibial diaphyseal fractures in adults was conducted over a period of two years from February 2001 to March 2003 on 25 patients. Inclusion criteria: Age group 20 years to 65 years of age, closed diaphyseal fractures and Grade 1 open tibial diaphyseal fractures. Two nail system were used: Orthofix and Shakthi interlocking nail systems. Either closed or open nailing was performed. Antibiotics given to all patients. Quadriceps strengthening exercises, leg raising exercises and ankle mobilization were initiated under supervision on the day after surgery. **Results**: The results were graded as excellent, good, fair and poor according to Johner and Wruhs criteria. In our series of 25 patients we achieved solid union in 24 patients. The mean union time was 22.3 weeks. One patient had nonunion.

KEYWORDS

Tibial diaphyseal fracture, intramedullary interlocking nailing

Introduction:

Tibial diaphyseal fractures are one of the most common fractures in daily life. The increase in incidence of road traffic accidents giving rise to more number of tibial fractures. Too many treatment options are available. Conservative treatment modalities are cumbersome and prolonged immobilization results in increased morbidity.

Dynamic compression plating is a load bearing device and has increased rate of complication such as infection, delay weight bearing nonunion.

Intramedullary stabilization of tibial diaphyseal fractures with Kuntcher nail and Lottes nail were popularly used previously. The development of interlocking intramedullary nails made a revolution in the treatment of long bone diaphyseal fractures. It serves to stabilize the fracture fragments and maintains alignment, while permitting micro movements at fracture site. It acts an internal splint. Interlocking nails provide axial, rotational and bending stability to the fracture. In closed interlocking intramedullary nailing with or without reaming because of their bio mechanical advantages and preservation of periosteal soft tissues, there is a lesser incidence of infection, delayed union, mal union, nonunion.

Material and methods:

Inclusion criteria: Male and female patients from 20 to 65 years of age, all closed fractures, Type 1 compound fractures, all grades of comminuted tibial shaft fractures, fractures located from 7 cms below the knee joint and to 4 cms above the ankle joint.

Exclusion criteria: Age below 20years and above 65 years, type 2 type 3 compound fractures, associated head, spine, pelvis abdominal injuries, pathological fractures, patientswho did not come to follow up.

Implants and instruments:Two types of interlocking systems were used: 1. Orthofix 2. Shakthi interlocking nail system. Both the systems are provided with mechanical jig, guide bar, proximal and distal targeting devices. Both have solid and cannulated nails. Both have nail sizes of 8, 9, 10,11mmm in diameter. Orthofix has nail sixes 240, 260, 280, 300, 320, 330, 340, 350, 380, 400mm in length. Shakthihas nail sizes: 24,26,28,30,32,34,36, 38,40cms in

length.

Technique: Preoperatively nail length was determined by measuring the uninjured tibial length, clinically from the tibial tuberosity to the ankle joint minus 30 mm. All nailings were done under spinal anesthesia in standard operating table with the patient in supine position. Patellar tendon splitting approach used inall the patients. Awl was initially inserted at right angle to the bone and the entry point was deepened by angling the handle of the awl so that it lies parallel with the tibia. Guide wire was passed through the entry point crossing the fracture site and up to 2 cms above the ankle joint. Fracture reduction and guide wire position were checked by image intensifier. The assembled nail was inserted in an ante-grade manner by gentle tapping with the guide bar on medial side of the leg. The proximal end of the nail was counter sunk in the entry site and guide wire was removed. Distal locking done with distal targeting device and in some cases by free hand technique. It was followed by proximal locking.

Post-operative protocol: Antibiotic prophylaxis given to all the patients with Cefotaxime 1 G intravenously for 48 hrs. Operated limb kept in elevation with a pillow for the first two days. Quadriceps strengthening exercises, leg raising exercises and ankle mobilization was started under supervision on the day after surgery. Knee mobilization was started on 3rd postoperative day after the drain removal.

Follow Up: Partial weight bearing wit support was allowed when the patient could bear weight without pain. Full weight bearing was allowed when the patient could walk independently and the x rays showed formation of endosteal callus. The final results of all the patients were assessed and graded as an excellent, good, fair and poor using the Johner and Wruhs criteria for evaluation of final results of rigid internal fixation.

Observations: Of the 25 nailings 8 were orthofix nails and 17 were Shakthinails depending upon patients affordability. Among the 25 nailing's 20 were reamed nailing and 5 were unreamed nailing. According to the Johner and Wruhs criteria 7 had excellent , 13 had good, 2 had fair and 3 had poor results.

Conclusion: Closed interlocking intramedullary nailing is the best method of treatment for closed and type 1 open tibial diaphyseal

fractures. Early nailing will avoid the need for open nailing which has got its own complications. Large diameter nails are ideal for closed and type 1 open tibial diapyseal fractures. Dynamization of static locking is not routinely needed to achieve union in tibial diaphyseal fractures. Dynamic fracture fixation for stable tibial diaphyseal fractures will lead to early fracture union.

Case 1 showing Tibial shaft fracture treated with interlocking nail:



Case 2 showing Tibial shaft fracture uniting with interlocking nail:



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