Comparative Outcome Study Between Medial and Trans Patellar Approach in Tibia Fractures Managed by ILN Technique

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بسم الله الرحمن الرحيم
﴿قَالُواْ سُبْحَانَكَ لاَ عِلْمَ لَنَا إِلاَّ مَا
عَلَّمْتَنَا إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ﴾
سورة البقرة
آية رقم :(32)

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Abstract

The tibia is an exposed bone with vulnerable soft tissue coverage and is therefore predisposed to local soft tissue problems and delayed bone healing. The objective in tibial fracture treatment is to achieve stable fixation patterns with a minimum of soft-tissue affection. The risk of soft tissue breakdown and bone healing complications is more likely related to open reduction and plating. Intramedullary nailing is an effective and well-established method for the treatment of a wide spectrum of tibial fractures. Nevertheless, the handling of metaphyseal and open fracture remains challenging. Surgical and technical advancements have opened up new possibilities to broaden the indication of intramedullary nailing in these areas. The intramedullary nailing of metaphyseal fractures is associated with an increased incidence of deformities, which can result from instablity after fracture fixation. Proximal tibial fractures treated with intramedullary nail may result in malunion with apex anterior and valgus deformitis due to the pull of pateller tendon, poor nail cortex fit. Similary, displaced extra-articular fractures of the distal tibia can be difficult to treat, with residul varus, valgus, recurvatum, or possible procurvatum.

Keywords

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List of Abbreviations

IMN	**Intra-medullary nail**
M	**Male**
F	**Female**
A.P	**Antro posterior**
Lat	**Lateral**
AO/ ASIF	**Arbritsgemeinschsft fur osteosynthesefragen / Association for the Study of Internal Fixation**
PWB	**Partial weight bearing**
FWB	**Full weight bearing**

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INTRODUCTION

This Tibia is most commonly fracture long bone in the body, as it has poor tissue coverage, medial surface is completely subcutaneous. The optimum method for skeletal stabilization of open fracture of the tibial shaft remains controversial. In recent years, undreamed intramedullary nailing has become an increasing attractive treatment method for tibial fractures**. (1)**

Most of these fractures are found in young males (through to be related to sports or motor vehicle accidents) with a second peak of incidence among elderly patients, whose injuries likely resulted from a simple fall. **(2)**

Surgical treatment of displaced tibial fractures can improve alignment and provide stability to the bone and the surrounding soft tissues. Stable fixation allows early motion of adjacent joints, helping to maximize overall function. Intramedullary nailing has become the standard of care for many displaced tibial shaft fractures. However, proximal and distal shaft fractures can be difficult to control with a medullary device, leading to increased rates of malalignment **(3).**

Although intramedullary nailing has been the treatment of choice for diaphysis tibial fracture **(4).**

Its role in the management of fractures occurring at the proximal tibial metaphysis remains controversial, as high complication rates that mostly refer to unsuccessful reduction and malalignment have been reported **(5).**

The cause of malalignment has been attributed both to displacing muscular forces and residual instability **(6).**

As there is a large difference between the size of the implant and the metaphyseal diameter with no nail-cortex contact, the nail may translate laterally coronally placed locking screws. To overcome these problems and improve outcomes, certain modification to the standard operative technique have been proposed, such as the use of blocking screws (BS), additional buttress plate, different patient positioning, and extended parapatellar or retro patellar approaches **(7).**

AIM OF THE WORK

The goal of this study is compering pain between medial para patellar and Trans patellar approach.

ANATOMY OF THE LEG

The tibia is an important weight bearing in the lower limb, articulating with the femur proximally at the knee joint and distally with the talus at the ankle joint. It also has articulations proximally and distally with the fibula which lies posterolateral. The fibula is also attached to the tibia along its length by interosseous membrane. The tibia has proximal and distal metaphyses and a diaphysis spanning between them. The tibial diaphysis has three surfaces, the posterior and lateral surfaces serving principally for muscular attachment. The medial surface is mainly subcutaneous, consequently tibial fractures can easily perforate the skin and become open fractures. The medial surface extends beyond the tibial plafond to form the medial malleolus of the ankle **(8).**

1) Definition of proximal and distal tibia:-

Muller defined the proximal and distal segments of long bones by a square whose sides are the same length as the widest part of the epiphysis in question **(Figure 1)**. The diaphyseal segments are contained between the proximal and distal segments **(9).**

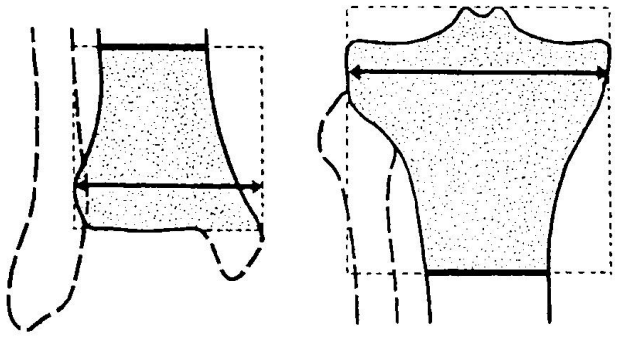

Figure (1): The proximal and distal segments of the tibia **(9)**.

2) Anatomy of patellar ligament:

The patellar ligament is a strong, flat, ligament, about 5 cm in length, which originates on the apex of the patella distally and adjoining margins of the patella and the rough depression on its posterior surface; below, it inserts on the tuberosity of the tibia; its superficial fibers are continuous over the front of the patella with those of the tendon of the quadriceps femoris. The medial and lateral portions of the quadriceps tendon pass down on either side of the patella to be inserted into the upper extremity of the tibia on either side of the tuberosity; these portions merge into the capsule, as stated above, forming the medial and lateral patellar retinacula. The posterior surface of the patellar ligament is separated from the synovial membrane of the joint by a large infrapatellar pad of fat, and from the tibia by a bursa. It is also sometimes called the "patellar tendon". **(Gray's anatomy).**

3) Osteology of the Tibia:-

The tibia has a large upper end, extended by massive medial and lateral condyles, and a smaller lower end having a prominent medial malleolus projecting distally. The superior articular surface or plateau shows a pair of gently concave condylar articular areas, for articulation with the menisci and the condyles of the femur. It is roughly triangular external cross section with an anteriorly directed apex **(Figure 2).**

Borders: The anterior crest or border, the most prominent of the three, commences above at the tuberosity, and ends below at the anterior margin of the medial malleolus. It is prominent in the upper two-thirds of its extent, but smooth and rounded below, it gives attachment to the deep fascia of the leg **(Gray's anatomy).**

The medial border: is smooth and rounded above and below, but more prominent in the center; it begins at the posterior part of the medial condyle, and ends at the posterior border of the medial malleolus; its upper part gives attachment to the tibial collateral ligament of the knee joint to the extent of about 5 cm, and insertion to some fibers of the popliteus; from its middle third some fibers of the soleus and flexor digitorum longus takes origin.

The interosseous crest or lateral border: is thin and prominent, especially its central part, and gives attachment to the interosseous membrane; it commences above in front of the fibular articular facet, and bifurcates below, to form the boundries of a triangular rough surface, for the attachment of the interosseous ligament connecting the tibia and fibula **(Gray's anatomy).**

Surfaces:

The medial surface is smooth, convex, and broader above than below; its upper third, directed forward and medial ward, is covered by the aponeurosis derived from the tendon of the Sartorius, and by the tendons of the gracilis and semitendinosus, all of which are inserted nearly as far forward as the anterior crest; in the rest of its extent it is subcutaneous.