



ANKLE ARTHRODESIS USING TTC (TIBIOTALOCALCANEAL) NAIL IN THE TREATMENT OF NEGLECTED TRIMALLEOLAR FRACTURES OF ANKLE WITH EARLY ARTHRITIS; CASE REPORT

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ABSTRACT

Introduction: Patients first consult traditional healers and it is when the signs persist that they consult the surgeon for a swollen and painful ankle. Initially we always performed anatomical repairs with osteosynthesis, but the majority of patients still complained of pain and disability. We therefore performed an arthrodesis on neglected post-traumatic ankles. The objective of our study was to describe the result of arthrodesis ankle using TTC (tibiototalcalcaneal) nail on a neglected post-traumatic ankle and to propose a therapeutic indication in the face of any neglected ankle fracture. **Material and Method:** This was a case of 38/m with 3 months old neglected trimalleolar ankle fracture with early arthritis treated with ankle arthrodesis using ttc nail. Follow up taken over 3 months by serial x-rays and clinical evaluation. **Results:** The average follow-up was 3 months and our results were satisfactory radiologically and clinically. **Discussion:** Arthrodesis with ttc nail appears here as an important alternative in the treatment of neglected ankle fractures with early changes of arthritis

KEYWORDS : Arthrodesis, Ankle, Neglected Fracture, TTC Nail, Traditional Healers

INTRODUCTION

Post-traumatic osteoarthritis is by far the greatest contributor to ankle osteoarthritis due to the fact that ankle fractures are by far the most common etiology due to the prevalence of these lesions, which occupy the third rank of limb trauma after fractures of the lower extremity of the radius and those of the upper extremity of the femur [1]. There are numerous therapeutic options, ranging from purely conservative treatment to surgical treatment, such as ankle arthrodesis. Eduard Albert, an Australian surgeon, coined the term arthrodesis in 1879 [2]. Ankle arthrodesis has become the gold standard surgical intervention for the terminally ill ankle [3] [4]. There are numerous options, for this procedure, a variety of surgical approaches are available.

The surgery's goal is to create a painless, stable, and plantigrade ankle. For proper locomotion, the foot and ankle must be properly aligned in the optimal position [6]. Ankle fractures that go unnoticed are common in our regions. Patients seek treatment from traditional healers first, and only when the symptoms persist do they seek treatment from a surgeon for a swollen and painful ankle. Initially, we always used osteosynthesis to perform anatomical repairs, but the majority of patients still complained of pain and disability.

We wondered if a primary arthrodesis would not be indicated in old ankle fractures to avoid patients' disabling pain. As a result, we performed arthrodesis on a previously neglected post-traumatic ankle. The goal of our research was to describe the outcome of arthrodesis on an old post-traumatic ankle and to suggest a therapeutic indication in the face of any neglected ankle fracture.

A retrograde Tibiototalcalcaneal (TTC) nail fusion involves fusing together the ankle joint and the subtalar joint at the hindfoot such that they become solid, removing the arthritis and never move again. Much like a fracture unites so the bone should grow across between the bones (Calcaneus to talus or tibia) becoming one solid structure.[18]

The primary advantages of using an intramedullary nail (IMN) for tibiototalcalcaneal (TTC) fusion are mechanical. The nail is a load-sharing device that demonstrates higher bending stiffness, increased rotational stability, and the

capability for dynamic compression in comparison to other forms of internal fixation. It can achieve distal fixation to the calcaneus, better than with plates or screws alone.

MATERIALS AND METHOD

This was a prospective study on patient 38 years male, driver by occupation has come to opd of our hospital, with neglected ankle fracture treated .We included this with an untreated trimalleolar ankle fracture older than 60 days (Picture 1). An anterior and lateral approach to the ankle was performed (Picture 1 B).The foot was fixed in the horizontal plane between 0 and 5°, in the frontal plane between 0 and 5° of hindfoot valgus and in the sagittal plane at 90° of dorsal flexion.

Postoperative immobilization was ensured by a splint and then a cast boot maintained for three months. Rehabilitation was started as soon as the plaster was removed.

The AP and lateral X- rays made it possible to assess the consolidation by the appearance of trabecular bone bridges covering at least 50% of the tibiotalar space, as well as the alignment of the ankle. The postoperative evaluation was based on the clinical elements, in particular the stability of the ankle and also the absence of pain. We assessed the degree of patient satisfaction by painless walking with full weight bearing and doing his daily and his occupational activity.

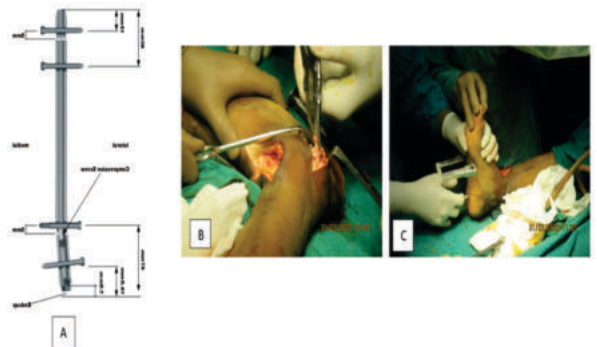
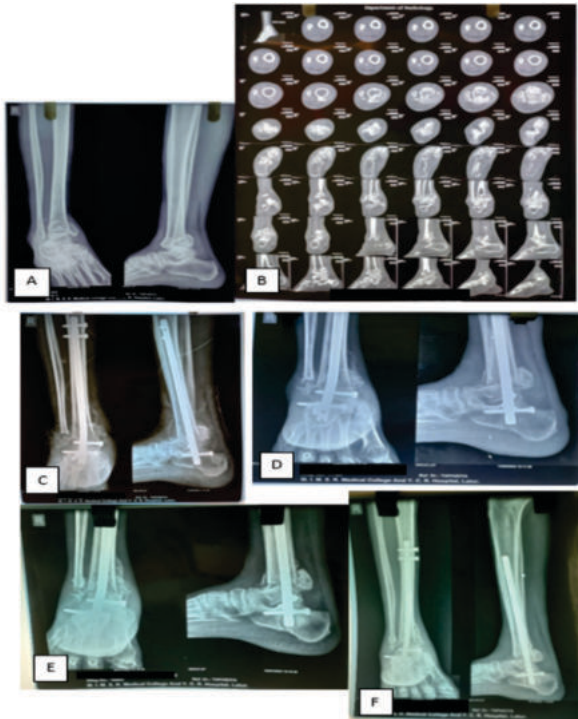


Figure 1 – A: Ttc Nail , B: Approach And Joint Preparation , C: Entry And Nail Insertion



Picture 2 – A And B: Pre Op Xray And Ct Scan, C To F Post Operative Follow Up Xrays Of 6 Weeks, 3 Months And 6 Months



Figure 3: AToD- Planterflexion, Dorsiflexion And Full Weightbearing.

RESULTS

Patient followed up for 6 months. Reduction and fixation were satisfactory on all control radiographs (Picture 2). There is a significant improvement in ankle function after arthrodesis in patient, that patient can walk comfortably with full weight bearing and do his all daily and professional activity.

DISCUSSION

Our case report has some limitations such as it contains only single case. But it appears to be one of the rare studies that tries to solve the problem of therapeutic indication in old ankle fractures. These fractures represent a recurring problem in our regions. The majority of report have focused on the treatment of primary or post-traumatic osteoarthritis [8] [9] [10]. Our patient was mostly young on tray to the average encountered in certain studies. difficult to take in front of this young age of our populations. But in view of the alternative to osteosyntheses. Patients came to us late. According to beliefs, they preferred to consult traditional healers first. They carried out inopportune massages and tractions of the ankle. It's simple as like any type of nailing.

The disadvantage lies in the anterior approach which presents a risk of neurovascular injury and skin necrosis. Several techniques and approaches are proposed. The lateral approach seems to give a good light on the joint and present less risk of nerve and vascular injury. The use of the

external fixator in arthrodesis was reserved for cases of joint sepsis. But this technique generated many cases of non-union before Chandley introduced joint compression [11]. Arthroscopic ankle fusion is gaining popularity due to its advantages such as reduced incision size to minimize morbidity, shorter hospital stays, shorter time to fusion with similar union rates or best [12] [13]. But this technique is good for cases with minimal or no deformity or bone loss, although some authors oppose it [14]. The fractures that we had to treat presented significant deformations, requiring a correction of the axis of the ankle. Authors compared the results of arthrodesis on primary osteoarthritis with those on post-traumatic osteoarthritis [15]. They found the results of the former better than those of the latter. Usually, the primary indication for ankle arthrodesis has been for persistent ankle joint pain and stiffness that is functionally disabling for the patient and is not alleviated by nonoperative treatment methods [16]. Our indications were not posed for declared osteoarthritis, but especially for traumatized ankles that were highly candidates for osteoarthritis. We obtained a very high satisfaction rate.

CONCLUSION

Arthrodesis of the ankle certainly condemns a joint so essential to the proper functioning of the lower limb during walking, but it allows the patient to be relieved of such costly suffering, especially pain. It appears here as an important alternative in the treatment of neglected ankle fractures with significant trophic disorders. The comparison with total ankle arthroplasty is still under discussion. But we believe that arthrodesis is a simple and effective therapeutic means. Ankle arthrodesis using Tibiototalcalcaneal (TTC) nailing is a recognized treatment for improving the chronic pain of arthritic hindfoot and ankle joints, it can also be used for correcting deformity. It is considered as alternative treatment to provide or sustain adequate quality of life with respect to pain and mobility related to the joints to be fused.

Author's contribution:

All authors contributed to the writing of this manuscript and gave their approval. Conflicts of interest: Authors declare no conflicts of interest.

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