

Tibial Lengthening and Angular Deformity Correction after the Treatment of Tibia Osteomyelitis Using Perone Pro Tibia Graft Technique. Case Report

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Introduction

The technique perone pro tibia graft for the leg reconstruction was described for the first time at the end of the nineteenth century. With the advancement of new techniques, for example, Masquelet induced membrane and distraction osteogenesis, the aforementioned procedure has been almost forgotten. There are several complications associated with the procedure including the fracture of the perone, nonunion and shortening of the lower limb.

Due to the high rate of complications and technical difficulties for bone reconstruction, sometimes, it is necessary to combined different techniques. The right selection of the reconstructive procedure would be based on the extension of the bone defect, the characteristics of the soft tissue coverage, and the familiarity of the surgeon with the technique.

We describe a case of a female patient after distraction osteogenesis and progressive deformity correction of the ankle after an early closure of the distal tibia physis for infection who was treated with perone pro tibia graft during her childhood.

Description of the Case

20 year old female patient with previous osteomyelitis of the tibia was treated with massive bone resection and reconstruction with perone pro tibia graft. At the end of skeletal growing, her lower extremity was short and varus deformity of the ankle noticed. During her initial visit, the patient was complaining of lumbar pain, limp, and pain around the ankle joint. X rays showed 6 cms of shortening, hypertrophy of the fibula, and 35 degrees of varus deformity with articular incongruency due to the partial closure of the distal physis of the tibia (Figure 1a-c). Limb lengthening with correction of the angular deformity of the distal tibia was performed using an Ilizarov external fixator (Figure 2) achieving equalization and deformity correction with improving in her gait and pain level (Figure 3).

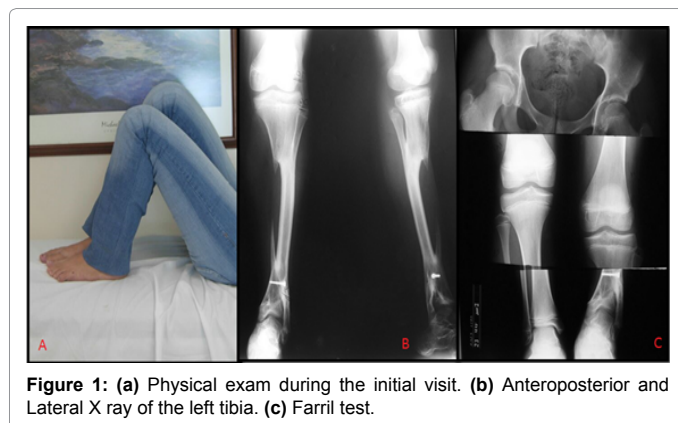


Figure 1: (a) Physical exam during the initial visit. (b) Anteroposterior and Lateral X ray of the left tibia. (c) Farril test.

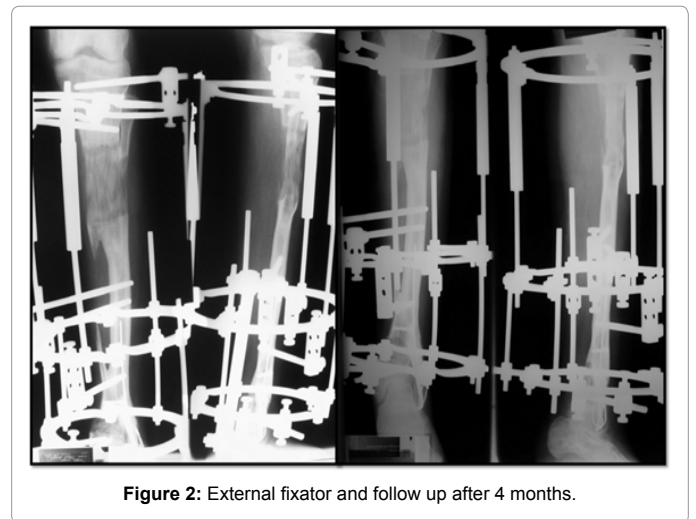


Figure 2: External fixator and follow up after 4 months.

Discussion

Perone pro tibia graft was described by Eugene Hahn in 1884. The technique tries to increase the volume of the fibula (hypertrophy) performing a medial displacement of the bone sharing the mechanical load of the limb. Different modifications of the original description have been performed in order to improve the union rate and decrease the arthrosis of the proximal and distal tibioperoneal joints. In 1941, Wilson advocated for fusion of the metaphyseal regions with screws [1].

As we previously mention, in our patient this technique was used to treat a severe bone infection after resection. Perone pro tibia graft also have been described for congenital nonunion of the tibia when the fibula is intact, and in tibia defects after fractures or posttraumatic nonunions.

Generally speaking, the valgus deformity of the ankle is due to the proximal displacement of the distal fibula secondary to the instability of the distal tibio-fibular joint. In our case, the patient was treated with fusion of the distal tibio- fibular joint with a screw keeping the fibula in position. However, a secondary varus deformity and shortening was created because the distal tibia physis was damaged during the bone infection [2].

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