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Case Report

Management of Multi-planar Deformity with Delayed Union of Fracture Distal 3rd Tibia Using Ilizarov Technique

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Abstract: Fracture of both bones leg is commonly seen in clinical practice. The most common complication of distal third fractures is delayed union /non-union. Here in our case we opted, Ilizarov technique for the management of delayed union with multi-planar deformity in a single sitting. A 40 years old female came to the Outpatient department with complains of deformity of Right Leg and difficulty in walking. Diagnosis was made as delayed union of the lower third tibia fracture with anterior deformity angle of around 40°and lateral deformity angle of around 45°. We finally diagnosed the case as multi-planar deformity with delayed union of fracture distal third of tibia. We managed our case by fibular osteotomy followed by application of Ilizarov fordifferential distraction and compression with angular correction of the delayed union of distal third of tibia. At twelve weeks there was no tenderness and deformity was completely corrected. X-ray shows complete healing of fracture. Now at six months patient is doing her daily routine activity including farming without any discomfort in the leg. We conclude that fractures of distal third of tibia are prone for delayed/non-union. Diagnosis is by clinical and radiological examination. Ilizarov technique is the best modality of treatment to correct multi planar deformity and delayed union of distal third tibial fractures. Proper technique and regular follow up helps in good functional outcome.

Keywords: Delayed union, Ilizarov, Multi planar Deformity, Non-union,Tibia

INTRODUCTION

Fracture of both bones leg is commonly seen in clinical practice. The most common complication of distal third fractures is delayed union /non-union. There are various modalities of treatment for delayed union/non-union of distal third fractures of tibia. Here in our case we opted, Ilizarov technique for the management of delayed union with multi-planar deformity in a single sitting.

CASE DETAILS

A 40 years old female came to the Outpatient department with complains of deformity of Right Leg and difficulty in walking. She Sustained injury to Right leg Four months back and took osteopathic treatment for broken leg and was walking with support .She gradually developed deformity with minimal pain at the injured region . Examination of the leg revealed Antero-lateral bowing of lower 3rd of Right leg with mild tenderness at injured site. Tendoachillis was found to be taut and contracted. There was a shortening of Right leg of one centimeter without any neuro-vascular disturbance. Roentgen graphic examination revealed Anterior and lateral angulation at lower third of Right tibia with minimal callus and fibula was found to be malunited. Templating of the pre-operative X-rays shows anterior deformity angle of around 40°and lateral deformity angle of around 45°(Fig. 1). We finally diagnosed the case as multi-planar deformity with delayed union of fracture distal third of tibia. We managed our case by fibular osteotomy followed by application of Ilizarov fordifferential distraction and compression with angular correction of the delayed union of distal third of tibia. Clinically and radiologically the case was evaluated second day (Fig. 2), four weeks (Fig. 3), eight weeks, twelve weeks (Fig 4), sixteen weeks and twenty four weeks. At twelve weeks there was no tenderness and deformity was completely corrected. X-ray shows complete healing of fracture. Hence Ilizarov apparatus was removed and patellar tendon bearing cast was applied for four weeks. After four weeks the patient was allowed full weight bearing without any aid. Now at six months patient is doing her daily routine activity including farming without any discomfort in the leg (Fig. 5 & 6). In due course of treatment we encountered with one pin tract infection which was subsequently managed with appropriate antibiotics and regular pin tract dressings.

Fig. 1: Pre-operative X-ray

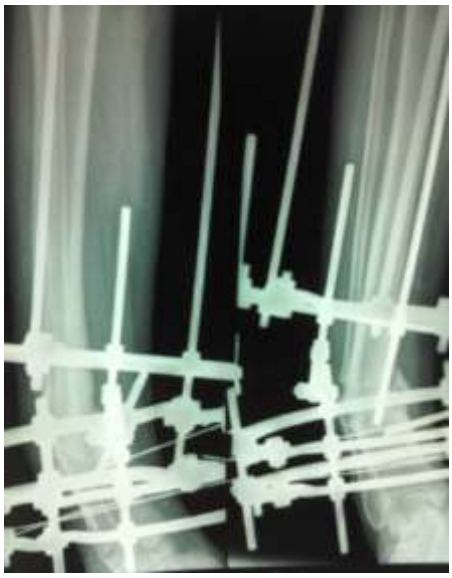

Fig. 2: Immediate Post op

Fig. 3: Four weeks-post op

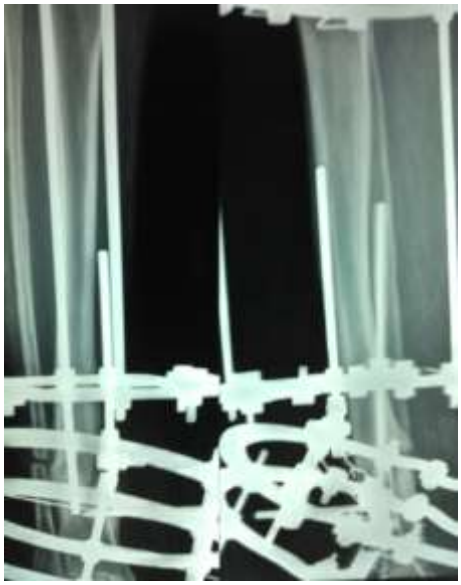

Fig. 4: Twelve weeks-post op

Fig. 5: Six months-post op

Fig. 6: Clinical Photograph at Six months

DISCUSSION

Fracture of both bones leg is commonly seen in clinical practice. The most common and challenging complication to manage is delayed union/non-union of distal third tibial fractures because of ambiguous blood supply. There are various management modalities like electrical stimulation, autologous bone marrow injections, open reduction and internal fixation with intra medullary interlocking nailing with bone grafting, open reduction and internal fixation with compression plates with bone grafting and Ilizarov technique to correct multi planar deformity and delayed union/non-union. Electrical stimulation helps in cases where there is no deformity associated [1]. An autologous bone marrow injection is also used in cases where there is no associated deformity and at the moment, success with this technique remains anecdotal, and its use cannot be recommended [2]. Open reduction and internal fixation with intra medullary interlocking nailing with bone grafting has got disadvantages of damaging endosteal and periosteal blood supply which will hinder in fracture healing and gives a higher rate of infection [3]. Open reduction and internal fixation with compression plates with bone grafting also damages periosteal blood supply and gives way for infection [4]. On the other hand Ilizarov technique has got upper hand over the above mentioned methods in the form of correcting multi planar deformity without disturbing both endosteal and periosteal blood supply and able to treat delayed/non-union without opening the fracture site and hence barring the infection too. Ilizarov technique has also got complications like pin tract infections and poor patient compliance [5]. In our case we encountered one pin tract infection which was managed by appropriate antibiotics and regular dressings.

CONCLUSION

We conclude that fractures of distal third of tibia are prone for delayed and non-union . Diagnosis is by clinical and radiological examination. Ilizarov technique is the best modality of treatment to correct multi planar deformity and delayed union of distal third tibial fractures. Proper technique and regular follow up helps in good functional outcome.

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