

Combination of Exchange Nailing, Chipping Technique and Autogenous Bone Grafting in Treating Femoral Nonunion

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INTRODUCTION:

In the treatment of femoral shaft fractures, intramedullary nailing has a success rate ranging from 85 to 99 percent.^[1] In hypertrophic or atrophic femoral non-union, chipping technique was proposed as one of the methods to improve fracture healing.^[1]

REPORT:

A 37-year-old Malay male had left femoral non-union 18 months after cephalomedullary nail insertion for a near proximal third shaft of femur fracture after a motor vehicle collision. During the time, he had dynamization of distal screws, bone curettage, and bone marrow concentrate aspirate injection. Unfortunately, there was no sign of fracture union, and the patient complained of persistent pain that delayed his return to work and normal activities.

Combination approach was suggested to enhance the chance of fracture union. The procedure was performed on a traction table. The fracture location was debrided before nail replacement. The 10mm cephalomedullary nail was removed, reamed to 13.5mm, and replaced with a 12mm interlocking nail. Applying traction, fracture alignment was maintained. To stabilise the reduction, the reverse impaction method was used following the insertion of distal screws, followed by the insertion of proximal screws.

Bone chipping was performed carefully along the lateral, anterior, and posterior sides of both fracture ends to prevent minor bone fragment separation from soft tissue. Harvested cancellous iliac bone from the ipsilateral side was implanted into the fracture space.

The patient's fracture was completely healed nine months after surgery.

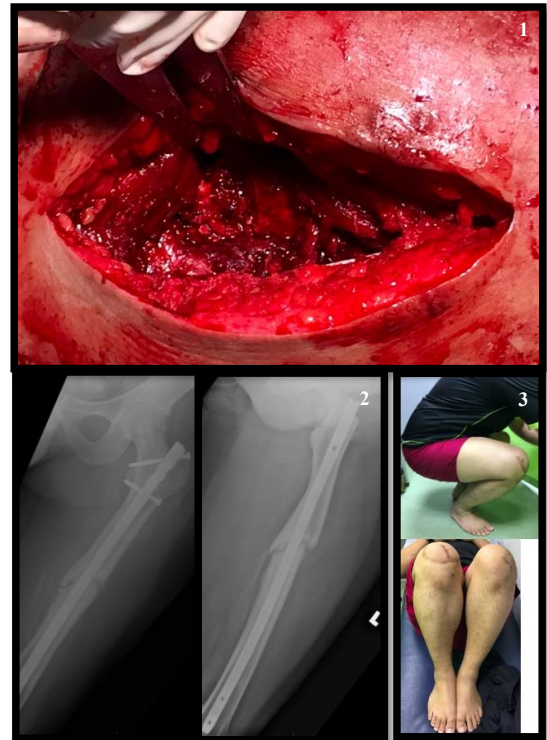


Figure 1: Chipping done at both ends of fracture site

Figure 2: Radiograph left femur 9 months post-operation showed callus filled up the fracture gap with bridging callus

Figure 3: Patient regained full range of motion on the affected limb with no limb length discrepancy

CONCLUSION:

Chipping is a viable treatment option for femoral non-union. The optimal conditions created by the combined strategies augment the success rate of fracture healing.

REFERENCES:

1. Watanabe, y., et al. *Chipping technique as an alternative to bone grafting in treatment of non-unions after long bone fracture*. In *orthopaedic proceedings*. 2013. The british editorial society of bone & joint surgery.