ORIGINAL RESEARCH PAPER

Orthopaedics

CLINICAL AND RADIOLOGICAL OUTCOMES OF EXCHANGE REAMED NAILING FOR ASEPTIC FEMORAL SHAFT NONUNION WITH BROKEN INTRAMEDARY NAIL: A CASE REPORT

KEY WORDS: Femoral Shaft Nonunion, Broken Intramedullary Nail, Exchange Nailing, Revision Surgery, Aseptic Nonunion.

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ABSTRACT

Background: Nonunion of femoral shaft fractures associated with broken intramedullary nail is an uncommon but challenging complication. Exchange reamed nailing remains the gold standard treatment for aseptic femoral shaft nonunion.We report a case of successful management of femoral shaft nonunion with a broken intramedullary nail using exchange reamed nailing.**Case Presentation:**A 64 year-old male presented with persistent pain and inability to bear weigh and abnormal mobility present on the right lower limb one year after intramedullary interlocking nailing for a midshaft femoral fracture sustained in a road traffic accident. Radiographs revealed aseptic nonunion of the femoral shaft with breakage of the intramedullary nail at the level of the nonunion site. Laboratory investigations showed no evidence of infection. The patient underwent removal of the broken nail fragments followed by exchange reamed nailing with a larger diameter interlocking nail. Autologous iliac crest bone grafting was performed. Progressive radiological union was observed, and complete fracture union was achieved at six months. At one-year follow-up, the patient was pain-free and had resumed normal daily activities.**Conclusion:**Exchange reamed nailing with autologous bone grafting is an effective treatment modality for aseptic femoral shaft nonunion associated with broken intramedullary nail failure, resulting in satisfactory clinical and radiological outcomes.

INTRODUCTION

Intramedullary interlocking nailing is considered the gold standard for the treatment of femoral shaft fractures because of its high union rates and favorable functional outcomes. However, complications such as delayed union, nonunion, and implant failure may occur. Nail breakage secondary to nonunion represents a challenging problem requiring revision surgery. Exchange reamed nailing has been widely advocated as the preferred treatment for aseptic femoral shaft nonunion owing to its biological and mechanical advantages. We present a case of femoral shaft nonunion associated with broken intramedullary nail successfully treated with exchange reamed nailing.

CASE PRESENTATION

A 64-year-old male sustained a closed fracture of the right femoral shaft following a road traffic accident and underwent closed reduction and internal fixation with an intramedullary interlocking nail at another institution. Despite surgery, the patient experienced persistent thigh pain and difficulty in weight-bearing and abnormal mobility at the fracture site. Twelve months after the initial procedure, symptoms worsened.

On examination, tenderness was present over the mid-thigh with painful abnormal mobility at fracture site. There was no evidence of sinus formation or local signs of infection. Range of motion of the hip and knee was preserved.

Radiographs demonstrated nonunion at the middle third of the femoral shaft with breakage of the intramedullary nail at the level of the fracture. Laboratory investigations including total leukocyte count, ESR, and CRP were within normal limits, suggestive of aseptic nonunion.

The patient underwent revision surgery. The proximal fragment of the broken nail was removed routinely, while the distal fragment was extracted using specialized extraction techniques. Sequential reaming of the medullary canal was performed, and a larger diameter interlocking nail was inserted. Autologous cancellous bone graft harvested from the iliac crest was placed around the nonunion site.

Postoperatively, gradual weight-bearing was initiated. Serial radiographs demonstrated progressive callus formation. Complete radiological union was achieved six months after revision surgery.

At one-year follow-up, the patient had full weight-bearing without pain and had returned to normal activities. Functional outcome was satisfactory with excellent lower limb function.

DISCUSSION

Nonunion associated with implant breakage is a recognized complication of femoral shaft fractures. Mechanical instability and inadequate biological healing contribute to fatigue failure of the intramedullary nail. Exchange reamed nailing addresses both problems by increasing mechanical stability and stimulating osteogenesis through reaming.

Previous studies have reported union rates ranging from 85% to 100% following exchange nailing in aseptic femoral shaft nonunion. In the present case, successful fracture union and excellent functional recovery were achieved without complications. The addition of autologous bone grafting further enhanced biological healing.

CONCLUSION

Exchange reamed nailing combined with autologous bone grafting is a reliable and effective treatment option for aseptic femoral shaft nonunion associated with broken intramedullary nail. It provides excellent clinical and radiological outcomes with a high likelihood of achieving fracture union.

Patient Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying radiographic images.

Declaration: Conflict of Interest

There are no conflicts of interest regarding the publication of this article. The authors have no financial, personal, institutional, or other relationships that could inappropriately

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LEDGER

Figure 1: Plan Radiograph showing Broken Nail At Diaphysis of femur with Non Union

Figure 2: Plan Radiograph After Broken Nail Removal

Figure 3: Clinical Image Of Non union at Broken Nail

Figure 4: Plan Radiograph After correction of Deformity and Exchange of Nail Along with Bone Graft

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