CASE REPORT

Treatment of Infected Gap Non-union using Bone Transport with Ilizarov External Fixator – A Case Report

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ABSTRACT

Ilizarov external fixture is a better treatment model for infected gap non-union both infection as well as gap can be treated simultaneously we present a case of such infected tibia with large sequestrum leading to 9 cm gap which was treated with Ilizarov external fixator and proximal tibial corticotomy and gap non-union as well as infection both are addressed simultaneously. [5,6,8,9,12,14,15,17]

Key words: Infected Nonunion, Ilizarov, Corticotomy, Bone Transport

INTRODUCTION

Compound grade 3B fractures frequently result in protracted bone infections, and the possibility of a big diaphyseal sequestrum increases in these circumstances.

The incidence of infection in Grade 3 B compound fractures is directly proportional to contamination of the wound, time of primary debridement (golden period 4 h), and accompanying medical illnesses such diabetes mellitus, among other factors, according to the majority of orthopaedic surgeons treating the case of big gap infected non-union. This case describes trackling both infection and gap simultaneously.[9,12]

CASE REPORT

A 35-year-old male patients sustained road traffic accident and suffered compound grade 3 B fracture Tibia. He was then treated by some orthopedic surgeon in the form of external fixator when presented to us. He was 6 months old infected non-union having draining signs in right tibial shaft with mobility at fracture site with no evidence of distal neurovascular deficit.

Initially, we investigated him with X-rays [Figure 1] which shows infected non-union of middle 1/3 lower 1/3 Junction with large sequestrum with irregular margins with non-union at fibula fracture site the said patient was taken for surgery under spinal anesthesia in supine position fracture site opened, we found a large sequestrum of about 8–9 cm completely avascular and sclerotic. We debrided the fracture site at the end of the procedure, there was more than 8–9 cm gap at fracture site, we applied Ilizarov external fixator and antibiotic impregnated beads were inserted at gap site Figure 2.[5-7, 11,14,17]

Once the fracture site got free from infection, we did proximal tibial corticotomy and removal of beads with freshening of fracture site [Figure 3].[2-4]

Patient was called for regular fortnightly follow-up for uniform compression and distraction. At fracture site the rate of distraction was kept at 90 × 4 for 15 days followed by compression 90 × 4 for 5 days [Figure 4][1-5]. Regeneration of newborn formation was clearly evident on follow-up X-rays [Figures 5-8].

Gradually, we achieved around 8–9 cm of new bone segment at corticotomy site. When the bone ends were about to coincide at fracture site, we did fibulectomy more proximally Figures 9 and 10. At the end of the treatment, we were able to achieve solid regenerated bone of 10 cm at corticotomy site and solid union at fracture site just by adding cancellous bone graft [Figure 11].

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Figure 1: X RAY showing infected nonunion with large sclerosed diaphyseal sequestrum

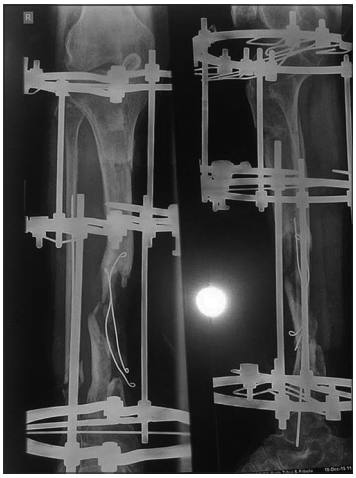

Figure 2: Sequestrectomy done with beeds insertion with ilizarov exfix application

Figure 3: Beeds removed freshning of fracture ends with proximal tibial corticotomy done

Figure 4: Bone transport in progress

Figure 5: New bone formation at corticotomy site

Figure 6: Uniform distraction with new bone formation

DISCUSSION

Infected non-union of Tibia with large diaphyseal sequestrum in compound Grade 3-B fractures is a troublesome entity for

Figure 7: Good amount of regeneration

Figure 8: Solid new bone formation

Figure 9: Solid new bone formation with callus ate distal fracture site

Figure 10: Uniting fracture at distal site

Figure 11: Fracture united with solid organized new bone formed

most of the orthopedic surgeons across the world, many patients lose hope of recovery and live a disabled and miserable life. It has been observed that primary debridement and removal of all sort of contamination in golden period plays a key role in reducing the chances of infection by many folds. The treatment is particularly difficult after infection. Our case was managed by debridgement sequestrectomy with antibiotic impregnated beads insertion and Ilizaro ring fixator application followed by corticotomy and bone transport followed by bone grafting and fibulectomy being last step of surgery.

CONCLUSION

Infected gap non-union can be treated with antibiotic impregnated beads Ilizarov external fixator bone transport. Both infection control and bone transport can be achieved using same Ilizarov external fixture thus making the patient mobilize as early as possible

TAKE HOME MESSAGE

Infected non-union with large diaphyseal sequestrum leading to large gap as long as 8–10 cm can be manage using Ilizarov external fixator and bone transport with early mobilization and good clinical outcome.

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