

## INTRODUCTION

Post-traumatic segmental bone loss is increasingly encountered and frequently complicated by non-union or malunion, increasing surgical complexity, morbidity, and healthcare costs. Autologous bone graft remains the gold standard due to its osteoconductive, osteoinductive, and osteogenic properties. The Masquelet technique offers a reliable two-stage biological reconstruction for such defects.

## CASE REPORT

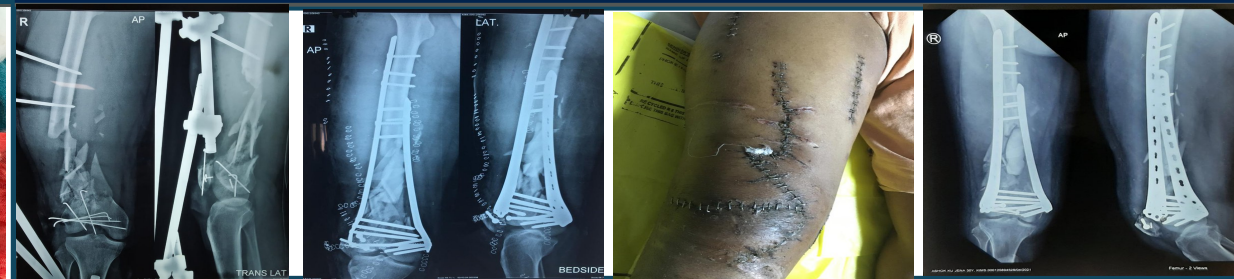
A patient with a post-traumatic segmental bone defect was admitted and managed using the Masquelet technique. Preoperative evaluation included assessment of injury type and location, soft-tissue condition, defect length, fixation method, antibiotic use, and duration of cementation.



## OPERATIVE FINDINGS

**Stage 1:** Following thorough debridement and fracture fixation was performed. The bone defect was measured and filled with polymethylmethacrylate (PMMA) cement spacer, mixed with 2 g vancomycin or gentamicin per 40 g cement. and placement of an antibiotic-loaded PMMA cement spacer to fill the bone defect.

**Stage 2:** Bone grafting was performed 6 weeks later. Through the previous incision, the induced biomembrane was carefully incised and the cement spacer removed. The cavity was filled completely with autologous iliac crest bone graft



## DISCUSSION

The PMMA spacer induces a biologically active membrane rich in growth factors (BMP-2, TGF- $\beta$ , VEGF, IL-6, IL-8), which contains the graft and promotes revascularisation and bone regeneration. Union was achieved by 6 months with no infection and satisfactory wound healing



## CONCLUSION

The Masquelet technique is an effective limb-salvage option for post-traumatic segmental bone defects, providing predictable union and good functional recovery.

