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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- β , 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.

