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### Case Report

# Successful reconstruction of a post-traumatic defect of 16 cm of the distal femur by modified Capanna's technique (vascularised free fibula combined with allograft) – A case report and technical note

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#### ABSTRACT

Reconstruction of large defects following trauma in the distal femur are a surgical challenge. These cases usually require multiple procedures and are associated with poor functional outcomes. We managed a post-traumatic distal femur defect of 16 cm using the modified Capanna's technique – combination of a vascularised free fibula and an allograft – and achieved a successful union at 6 months and also a good functional outcome with knee flexion of 100°. The patient received a vascularised free fibula which was pegged into an allograft which was sculptured to bridge the defect. The construct was fixed with a locking compression plate on the lateral side. With the allograft providing structural stability and the vascularised free fibula enhancing biology, our technique which involves the expertise of an orthopaedic surgeon and a plastic surgeon is a useful single stage procedure to manage large post-traumatic bone defects.

### Introduction

Reconstruction of large post-traumatic bone defects of the distal femur are a major challenge as they are associated with increased chances of poorer outcomes. Procedures like distraction osteogenesis, Masquelet's induced membrane technique, only allografts and vascularised fibula have been described but each have their own share of complications and are not universally acceptable [1–3]. Innovating on the Capanna's technique [4], we used a vascularised fibula pegged into an allograft [Fig. 1] to reconstruct a 16 cm defect in a 23 year old male following trauma. Bony union was achieved at 6 months and in this case report we describe our surgical technique and we feel it would guide surgeons who encounter such cases to consider the modified Capanna's technique to address large bone defects of the distal femur following trauma.

### Case report and technical note

A 23 year old male presented with an open type IIIB distal femur fracture with bone loss in the distal femur following a high velocity road traffic accident. He was hypotensive on arrival with a blood pressure of 90/60 mm Hg. After fluid resuscitation, he was taken up for damage control surgery. Thorough debridement of the wound and articular reconstruction of the joint was done which

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