

Three-Part Composite Graft In The Treatment of A Comminuted Femoral Fracture: A Case Report

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Patient A.R., a 47 year old male involved in a motor vehicle accident, presented with a Grade II comminuted fracture of the left femoral shaft below a total hip prosthesis. The fracture extended down to the knee joint with intra-articular involvement (Fig. 1). A.R. had previously undergone a total left hip replacement and revision that was complicated by heterotopic ossification. As a result, the patient was left with an essentially fused hip.



Fig. 1: Pre-operative view of comminuted fracture of the left femur.

The fracture was treated with irrigation, debridement and fixation via a supracondylar compression plate. In addition, at the time of wound closure 2 days later a three-part composite graft consisting of demineralized allograft bone gel¹, demineralized allograft chips and autogenous marrow aspirated from the ilium was prepared and placed into the



Fig. 2: Immediately post-operative; fixation and three part composite graft in place.

wound (Fig. 2). Approximately 12 ccs of the bone gel, 120 ccs of the demineralized chips and 15 ccs of the patient's marrow were combined to form the composite. It was observed that the wound site offered an adequate blood supply to stimulate incorporation of the composite graft. Postoperatively, the patient made an uneventful recovery.

Radiographic evaluation at 30 days revealed a slight haziness, indicating early stage bone healing. On subsequent follow-up visits at 60 and 90 days, x-ray examinations showed further increases in healing.

The latest follow-up examination occurred at eight months. A solid medial buttress was seen on x-ray although the

fracture had not filled in laterally (Fig. 3). The patient was kept non weight-bearing for an extended period of time and was then placed on a program of gradually increased weight-bearing. The patient was compliant throughout the course of the program and was allowed to bear full weight approximately eight months after his injury. As of this writing the patient continues to experience some stiffness in his knee and may require a lysis of adhesions.



Fig. 3: Healing at eight months. Good bone formation bridges the two segments.

Based on the favorable results of this case to date, further use of the three-part composite graft material appears warranted for similar fractures.