

11442 - Extra-Corporeal Irradiated Bone Autografts in Reconstruction of Diaphyseal Tibial Defects

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Introduction: Biologic reconstruction using the resected tibia as an autograft after sterilization of tumour has gained popularity due to precise fitting of the graft and low cost. Multiple methods of sterilizing the autograft have been described with no clear advantage yet demonstrated.

Methods: We present the mid to long term outcomes of extra-corporeal radiation sterilized and re-implanted tibial autografts in reconstruction of large defects of the tibia with particular reference to oncologic outcomes, complications, function, time to union, and predictive factors for complications and function.

Results: 26 consecutive patients treated between 2000 and 2013 were studied. Mean age was 17 (range 7 – 65). Mean follow up was 70 months (range 24 - 173) and the most common diagnosis was osteosarcoma (n=9). The Average resection length was 14cm. The 5yr Overall survival was 84.5%. Local recurrence occurred in 8%. Complication rate was 52% with delayed/non-union most common (26%). The mean time to union was 16 months (range 5 - 67). Complications were most commonly associated with longer resection length, use of chemotherapy and more distal location. Development of complication was a predictor of poor function. Limb salvage was achieved in 96% of patients in the long term.

Conclusions: Reconstruction of tibial diaphyseal defects with re-implanted autografts after extra-corporeal bone irradiation provides a safe and robust method of reconstructing diaphyseal tibial defects but complications occur in half of the patients.