The Use of Vascularized Proximal Fibula Autograft in Reconstruction after Bone Sarcoma Resection of Proximal Humerus in Children: Preliminary Analysis of 6 Cases

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Background: The proximal humerus is a common site of primary bone sarcomas. Limb salvage is now common in the treatment of primary bone sarcomas. For the reason of losing the capacity of growth, reconstruction after resection of proximal humeral sarcomas in the immature skeleton poses specific challenge to surgeons. We carried out Vascularized Proximal Fibula Autograft (VPFA) for such reconstruction and studied the outcome at a single institution.

Methods: Between October 2009 and December 2013 four boys and two girls of mean age 8 years (4 to 11 years) underwent this kind of procedure. We studied the VPFA technique of reconstruction, complications, and functional and radiologic outcomes during and at final follow-up. The functional results were described according to the Musculoskeletal Tumor Society (MSTS) scoring system.

Results: All patients were followed up regularly for a median period of 29 months (9 to 61 months). All patients got wide margins. Five patients remained free from disease and one patient developed multiple metastases and still alive at the final follow-up. There were no local recurrences. The mean Musculoskeletal Tumor Society (MSTS) functional score was 23(20 to 25). The VPFA were all alive with growth and got union at a mean time of 4.3 months (3 to 6 months). There was only one patient got transient paralysis of common peroneal nerve and no infection and fracture occurred.

Conclusions: The VPFA technique is an effective method in reconstruction after bone sarcoma resections of proximal humerus in children with a potentially improved functional outcome.

Key Words: proximal humerus, children, bone sarcomas, vascularized proximal fibula autograft