

A Novel Approach Of Reconstruction Of Distal End Radius Post Resection Of Osteosarcoma With Utilization Of Free Vascularized Fibular Graft In Paediatric Patient

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INTRODUCTION:

Wide resection of long bone tumors can create a large intercalary bone defect requiring reconstruction. Thus in such cases, free vascularized fibula graft has become a viable option since it first introduced in 1975. We will discuss on the use of proximal fibular epiphysis in replacement of distal radial epiphysis in one paediatric patient.

MATERIALS & METHODS:

A prospective analysis of an 8 year old boy who presented with pain and swelling over his left wrist. The radiographs showed a lytic lesion of the distal radius (Figure1) and open biopsy confirmed the diagnosis of osteosarcoma. He underwent 6 cycle of neoadjuvant chemotherapy and CT angiogram was done preoperatively to evaluate the peroneal circulation.

A wide surgical resection of the tumor was performed by the orthopaedic oncology team with intact flexors and extensors of the forearm. A 12cm vascularized proximal fibular epiphysis graft together with biceps femoris tendon stump, based on peroneal vascular pedicle, was harvested (Figure 2) by hand and microsurgery team simultaneously. The fibula graft was fixed to proximal radius with a 4-hole LCP. Anastomosis of peroneal vessel to radial artery and cephalic vein was performed and the biceps tendon stump was split and attached to radiocarpal ligament and TFCC. The graft total ischaemic time was approximately 4 hours. The arm then immobilised with sugar tong splint.

RESULTS:

About 2 weeks postoperatively, skin flap was healthy, pink. All fingers pink, CRT <2sec with intact sensation. He was able to flex and extend all his fingers.

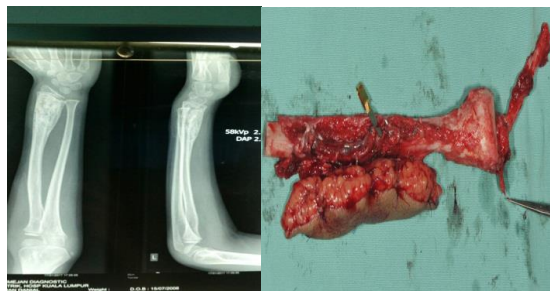


Figure 1 – 8 year old boy with distal end radius osteosarcoma

Figure 2 – Fibula osteoseptocutaneous flap

DISCUSSION :

The proximal fibula is favorable donor for reconstruction of distal end radius, surpassing other potential donor site such as iliac crest and inferior angle scapula due to its tubular configuration, good length and presence of articular cap at the head and a vascularized graft has a reliable blood supply and improved union rate. It will also continuously remodel and grow longitudinally in response to load and stresses, allowing it to be an anatomically and biomechanically sound option for joint reconstruction in paediatric patient.

CONCLUSION:

Free vascularized proximal fibular graft is the optimal choice for distal osteoarticular reconstruction in skeletally immature patients.

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