

Functional Outcome After Rotational Vascularized Fibular Graft For Gct Resection On Right Proximal Tibia: A Case Report

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Abstract: Giant cell tumors are locally aggressive tumors with a high rate of recurrence. There are various methods exist as treatment option for reconstruction following tumor resection. Wide excision is the management of choice, but this creates a defect at the proximal end of tibia. We here present our experience with wide resection and vascularised autogenous fibula grafting for GCT of proximal tibia. From 40 years old male with GCT right proximal tibia with right knee flexion contracture. We preferred ipsilateral vascularized fibular graft as reconstruction modality following by arthrodesis on affected limb. Evaluation of anatomical, functional, radiological outcomes of this management was undergone. After 3,5 years, the patient has good outcome. There is no pain, no recurrence of tumor, the graft is union and become hypertrophy. Patient can walk with full weight bearing for now.

Key Words: GCT proximal tibia, vascularized fibula graft, functional outcome

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Introduction: Giant cell tumors are locally aggressive tumors with a high rate of recurrence. Recurrences of GCT in autogenous fibular grafts have been rarely reported and pathological fractures through such grafts are even rarer. Wide excision is the management of choice, but this creates a defect at the proximal end of tibia. The preferred modalities for reconstruction of such a defect- as described by Tanaka *et al.* 2012- include vascularized/non-vascularized bone graft, osteoarticular allografts and custom-made prosthesis. We here present our experience with wide resection and vascularized autogenous fibula grafting for GCT of proximal tibia. The blood supply to the medulla of the fibula is from the nutrient branch of the peroneal artery, but the abundant supply to the bone is also derived from the circular anastomosis of the musculoepiosteal vessels and other branches of the peroneal vessels. It is therefore possible to transfer more than 20 centimeters of fibula shaft as a living graft on a pedicle of the anterior tibial and peroneal muscles and the peroneal vessels, as described by Chacha *et al* (1981).

Case Presentation: We report a male 40 years old with GCT on right proximal tibia with right knee flexion contracture. He was unable to weight bearing on right leg with crutches aid and limited range of movement on 30° - 100°. The mass as well as pain was gradually increasing during the past 13 months. No history of loss of body weight or night pain. There was history of pre-existing trauma as patient fall from motorbike 3 months before initial mass and pain observed, yet no fracture resulted from the accident. No family history of bone tumor was admitted.

Figure 1: Clinical Picture

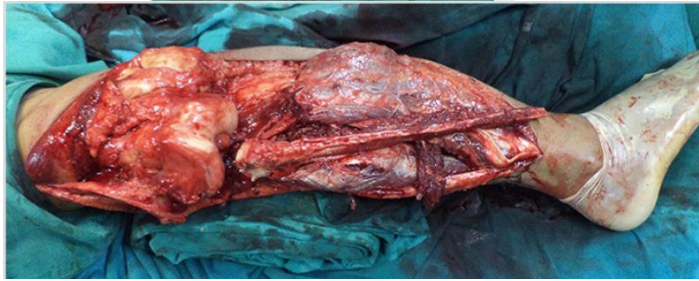


Figure 2: Radiologic Finding



Method: We preferred ipsilateral vascularized fibular graft as reconstruction modality. Wide resection of tumor were performed followed by fibula osteotomy

Figure 3: Intra Operation



above 7 cm of syndesmotic. Fibular head was resected. Special precaution was given to preserve common peroneal nerve during procedure. Around 26 cm length of fibula, equipped with peroneal artery and comitantes fibular vein was obtained and served as vascularized graft. This technique is along with William C. et al (2010) who described vascularized fibular grafting.

Figure 4 : X-ray evaluation following procedure



Vascularized fibular graft was then rotated and inserted in femoral intramedullaryproximally and tibial

intramedullary distally. Arthrodesis performed using broad plate with four cortical screws on proximal and three cortical screws on distal. Long leg back slab was applied for the following three weeks to prevent accidental bending during healing period. No distal neurovascular impairment observed after post-operative assessment. We evaluated anatomical, functional, radiological outcomes of this management.

Figure 5: functional outcome evaluation following procedure



Results: After 3.5 years following the procedure, the patient is reassessed. There is no pain, no recurrence of tumor, the fibular graft is radiologically union and become hypertrophy. Leg length discrepancy is 2 cm shorter than unaffected side. Patient can walk with full weight bearing for now. The procedure brings good outcome and patient is satisfied for the end result, comparable with result proposed by Estrella EP⁴.

References:

1. Tanaka K, Maehara A, Kanaya F. Vascularized fibular graft for bone defects after wide resection of musculoskeletal tumors. J Orthop Sci 2012;17:156-162.
2. Chacha PB., Ahmed M., Daruwalla JS. Vascular Pedicle Graft of The Ipsilateral Fibula, An

- Experimental and Clinical Study. *J Bone and Joint Surg* 1981; 63-B(2): 244-51.
3. William C., Eward DVM., Kontogeorgakos V., et al. Free Vascularized Fibular Graft Reconstruction of Large Skeletal Defects after Tumor Resection. *Clin Orthop Relat Res* (2010) 468:590–598.
 4. Estrella EP. Vascularized Fibula Graft for Tumours. *Biomed Central Proceeding* 2015; 9(Suppl 3): A99.