

Congenital Pseudoarthrosis of Tibia Treated with Vascularized Fibula Graft - Our Experience

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Introduction

Congenital pseudoarthrosis of the tibia (CPT) remains a challenge for surgeons¹. Vascularized fibula graft (VFG) is a technique to reconstruct the bone defect after resecting the pathologic bone¹. We are presenting a CPT patient managed with VFG.

Report

A 7-year-old girl, underlying neurofibromatosis Type 1 was initially referred to us at the age of one year for nonunion of left tibia fracture secondary to CPT. She underwent tibia resection, acute docking and rush rod insertion following fibula osteotomy (Fig1A and 1B). The family defaulted follow-up due to COVID-19. She re-presented recently, with non-union tibia and fractured fibula with varus ankle (Figure 1C and 1D). Intraoperatively, hamartoma, abnormal bone and periosteum were excised completely until normal tissues identified, followed by external fixator. The medullary canal of both tibial fragments was reamed. The 4cm bone gap was filled with the ipsilateral vascularized fibula and an intramedullary wire was inserted from distally to stabilize the graft. (Figure 1E, 1F; Figure 2)

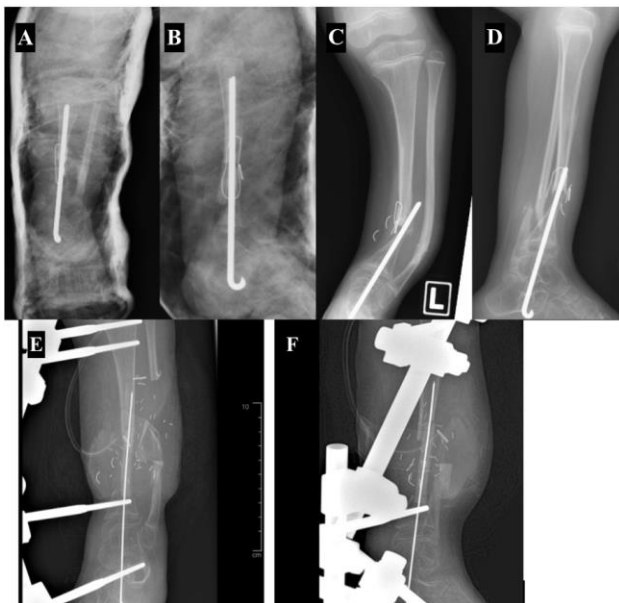


Figure 1: A: Sequential post-operative X-rays



Figure 2: A: 4cm gap after resection; B: VFG filled the bone gap; C: Final outcome.

Conclusion

Treatment goal for CPT is to achieve bony union, avoid recurrent fracture and limb length discrepancy². Despite the optimal treatment remains inconclusive, VFG implantation ideally provides structural support with a healthy periosteum, sufficient length, low donor site morbidities, and reliable circulation that can hasten the healing of the CPT¹. The use of VFG in patients with congenital pseudoarthrosis of the tibia enhances union and allows restoring the integrity of the tibia.

References

1. M Chou, et al Treatment of Refractory Congenital Pseudoarthrosis of Tibia with Contralateral Vascularized Fibular Bone Graft and Anatomic Distal Tibial Locking Plate; Children 2023
2. Nico Lie; Free Vascularized Fibular Graft for congenital pseudoarthrosis tibia; International Journal of Science; 2021