First Metatarsal Ray Reconstruction Using a Fibular Strut Autograft in Ewing Sarcoma: A Case Report

Aleksandar Jeremic, MD, MRCS
Institute of Orthopedics Banjica, Belgrade, Serbia

Rada Abussa, MD, MRCS
Institute of Orthopedics Banjica, Belgrade, Serbia

Aleksandar Djordjevic, MD
Institute of Orthopedics Banjica, Belgrade, Serbia

Abstract

Background: Ewing sarcoma of the foot is exceedingly rare, accounting for only a small fraction of Ewing tumors. Due to its uncommon location and nonspecific symptoms, diagnosis is often delayed. Historically, amputation was commonly performed for Ewing's sarcoma in the foot, but advances in chemotherapy and surgical techniques have enabled limb-salvage approaches in select cases. The first metatarsal is critical for forefoot weight-bearing and gait, making its reconstruction important for functional outcome. We report a case of a 22-year-old male with Ewing sarcoma of the first metatarsal managed with neoadjuvant chemotherapy, wide resection, and reconstruction of the first ray using a fibular autograft.

Case Presentation: A 22-year-old man presented with a one-year history of progressive right foot pain. Initial treatment for a presumed sprain was unsuccessful. Imaging revealed a destructive tumor in the first metatarsal with a large soft-tissue component. Biopsy confirmed Ewing sarcoma (CD99 and NSE positive, LCA and desmin negative). After 6 cycles of VIDE chemotherapy, the tumor shrank >70%. The patient underwent en bloc resection of the first metatarsal and adjacent involved tissues, followed by reconstruction using an 11 cm non-vascularized fibular strut autograft bridging the medial cuneiform to the proximal phalanx (first metatarsophalangeal arthrodesis). Histology showed 80% tumor necrosis post-chemotherapy, indicating a good response. Adjuvant chemotherapy (VAI regimen) was given. The patient had a minor wound dehiscence during chemotherapy, which healed with dressings. At latest follow-up, he is cancer-free with a stable, plantigrade foot, mobilizing with minimal pain.

Conclusion: This case demonstrates successful limb salvage in a rare Ewing's sarcoma of the first metatarsal. A fibular strut autograft provided a stable reconstruction of the first ray, preserving foot function. Multidisciplinary management was critical: neoadjuvant chemotherapy facilitated tumor shrinkage and wide resection, and the surgical technique achieved local control while maintaining limb function. This approach offers an alternative to amputation in select patients with forefoot Ewing sarcoma who respond well to chemotherapy.