Pediatric lower extremity sarcoma reconstruction: A systematic review of limb salvage procedures and outcomes

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Abstract

Introduction: Dramatic advances in the multidisciplinary treatment of pediatric sarcoma have been made in recent years resulting in significantly improved long-term survival. As survival has increased, greater effort has been made towards limb salvage and improving functional outcomes following tumor resection. Plastic surgeons in conjunction with orthopedic surgeons are applying techniques in microvascular free tissue transfer and rotational flaps to preserve limb length.

Methods: Studies describing lower extremity reconstruction following pediatric lower extremity sarcoma resection were identified by PubMed literature search. Those studies which described reconstructive techniques, oncologic and functional outcomes, and surgical complications were included.

Results: A total of 10 articles were identified, yielding 119 total patients. Two articles presented a wider scope of inquiry but sufficient sub-group detail to permit inclusion and three articles were single patient case reports. The average patient age ranged 9 to 14 years and overall age range was 15 weeks to 19 years. The average follow-up ranged 27 to 63 months and overall follow-up range was 0 to 168 months. The most common procedures performed were pedicled gastrocnemius +/- soleus flap (58 patients) and free fibular flap (40 patients). Eighty eight out of 116 patients (76%) achieved independent ambulation, and an additional ten patients (9%) were ambulatory with assistance. There were only three (2.5%) amputations. Seven patients died from metastatic disease (5.9%).

Conclusions: Plastic surgery procedures play an increasingly important role in pediatric lower extremity sarcoma reconstruction and functional limb salvage. Published series are limited in number and case volume, and no systematic review has been published to date. However, the existing data emphasizes the role for local muscle flap coverage as well as microvascular free fibula transfer in preserving limb length and function, with a minimal risk of local recurrence and need for amputation.

Disclosures/Financial statements

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