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**Longterm outcomes following lower extremity reconstruction for sarcoma with vascularised fibulae in children**

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**Background:** Various types of reconstruction for patients with bony defects following resection of sarcoma are employed. Vascularised fibular free flaps are used mainly to reconstruct intercalary defects and occasionally for osteoarticular defects. In principle, this method offers biological advantages over allograft or endoprosthetic reconstruction, but is also associated with potential complications and donor site morbidity.

**Purpose:** Here we aimed to evaluate functional outcomes, reconstructive complications and donor-site morbidity in paediatric patients who underwent lower limb reconstruction with vascularized fibula flaps.

**Methods:** The authors performed a retrospective review of consecutive paediatric patients undergoing this procedure between 1994 and 2012. Data on operative details, functional outcomes, and complications were analysed. Patients and families were surveyed to assess satisfaction and quality of life by administering SF-12, PedsQL and PedsQL Infant scores.

**Results:** Eighteen patients who underwent 19 reconstructions were included. Mean age at resection was 10 years (range, 1.5 to 17 years). No patients developed local recurrence, although two patients had metastatic lung nodules resected. All patients were alive at last review, with a mean follow-up of 57 months (range, 10 to 145 months). Flap survival was 95 percent. Median time to bony union was 24 months (range, 9 to 72 months). The fibula flap fracture rate was 52.6 percent and was associated with plate removal for irritation. At the end of the study period, 72 percent of patients were fully weight-bearing, all school-age children had returned to full-time school, and 50 percent were involved in sports. Ninety percent of patients surveyed expressed satisfaction with the outcome.

**Conclusions:** This study demonstrates that the vascularised fibular flap is a strong option for reconstruction of lower limb oncologic defects in children. Despite complications, longterm follow-up suggests that most children lead active lifestyles.