Microsurgical Preservation of Ambulation in Lower Extremity Sarcoma Treatment

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INTRODUCTION: Lower extremity sarcoma treatment has evolved from primarily amputation procedures towards limb salvage.[1] A survival advantage has not been shown for amputation compared to limb salvage, although amputation is associated with a significantly higher level of handicap. [2,3] Microsurgery has the potential to further expand the options in limb preservation by allowing coverage of massive soft tissue defects as well as by restoring function following the resection of critical nerves, muscles or tendons. These immediate reconstructive procedures are capable of preserving ambulation and therefore function. This study examines our institution's experience with microsurgical techniques as they apply to lower extremity soft tissue sarcoma treatment.

MATERIALS AND METHODS: A 5-year retrospective review of all microsurgical reconstructions for limb salvage in lower extremity sarcoma patients was completed at our institution. Limb salvage rates, oncological data, surgical techniques as well as complication rates were analyzed. Patients were additionally asked to complete the Toronto Extremity Salvage Score (TESS) quality of life survey.

RESULTS: Over a five-year period, 22 patients (average age 52.2 years) underwent free flap reconstructions for 23 sarcomas (mean follow-up 14 months). 85% of patients underwent neoadjuvant radiation therapy. The thigh was the most common tumor site (56.5%) and 3 named muscles were resected on average. Perforator flaps were most frequently used (68.18%), and functional muscle transfers or immediate tendon transfers were used in three patients. There were no flap take-backs or failures, and 21 patients achieved independent ambulation. Two patients in the series died, each from metastatic disease and not local recurrence. A 77.3% response rate was achieved for the TESS survey, with a mean score of 83.1% as a representation of normal lower extremity function. The lowest average TESS scores were associated with kneeling, participating in sporting activities and getting up from kneeling. There was no relationship between TESS scores and tumor location, resection surface area, number of muscles resected, or days to ambulation.

CONCLUSION: Microsurgical reconstruction of lower extremity sarcoma defects enables the preservation of ambulation. Restoration of function utilizing immediate functional microsurgical reconstructions should be considered safe and effective in lower extremity sarcoma limb salvage.

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