Title: The posterior location of the flap and larger tumor size were significant risk factors for morbidity after microvascular free flap surgery in musculoskeletal sarcomas.

Abstract

Background This study aimed to clarify the clinical results of reconstruction using microvascular free flap transfer after wide resection of musculoskeletal sarcomas and the factors associated with flap loss, salvage surgery and perioperative complications.

Methods The subjects were 77 patients (43 men, 34 women) who underwent reconstruction using microvascular free flap transfer after wide resection of musculoskeletal sarcomas in our group between 2001 and 2010. In them we investigated the risk factors associated with lap loss, salvage surgery and perioperative complications.The clinical variables were compared using Fisher's exact test or Chi-square test.Their age was 2-78 years(mean 44 years)and the follow-up period was 6-120 months(mean 57).There were bone sarcomas in 22 cases and soft tissue sarcomas in 55 (superficial 21 cases, deep 34), which were located in the upper extremities in 16 cases, lower extremities in 41, and trunk in 20.The pathological diagnosis was bone sarcoma: osteosarcoma 15 cases, Ewing sarcoma 3, and others 4; and soft tissue sarcomas: MFH 24 cases, synovial sarcoma 5, DFSP 5, leiomyosarcoma 4, liposarcoma 3, Ewing sarcoma 2, fibrosarcoma 2, MPNST 2, and others 8.Free flap transfers used a latissimus dorsi muscle flap in 39 cases, anterolateral thigh flap 23, vascularized fibula graft 6, rectus abdominis muscle flap 6, and others 3.

Results The oncological outcome at the final follow-up was CDF in 42 cases, AWD 4 cases, NED 17 cases, and DOD 14 cases. In 4 cases (5%) the flap was lost, with a success rate of 95% (upper extremities 100%, lower extremities 95%, trunk 90%).Perioperative complications were noted in 21 cases (27%), and salvage surgery was performed in 16 (21%).Age and Adjuvant therapy including chemotherapy and radiotherapy were not associated with flap loss or perioperative complications. Posterior location of the flap was significantly associated with flap loss ($p<0.001$) and salvage surgery ($p=0.008$).Larger tumor size (≥ 10cm) was significantly associated with perioperative complications ($p=0.016$).

Conclusions In this series the flap loss rate was 5%.Recent advances in microsurgery have improved the feasibility of one stage limb-salvage surgery using microvascular free flap transfer in musculoskeletal sarcomas.The posterior location of the flap and larger tumor size were significant risk factors for morbidity after microvascular free flap surgery in musculoskeletal sarcomas.These factors should be considered in determining the flap location and recipient vessels.

Keywords: musculoskeletal sarcomas; reconstruction; microvascular free flap transfer; complication

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