Upper and Lower Limb Salvage with Omental Free Flaps: A Long-term Functional Outcome Analysis

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Background: The omentum is one of the oldest, but often overlooked options for extremity reconstruction. Due to the large amount of pliable tissue, long vascular pedicle, associated lymphoid tissue, and angiogenic properties, the omentum should be considered when reconstructing complex extremity defects. We report the largest series of free omental transfers for reconstruction of complex extremity defects.

Materials and Methods: A retrospective analysis of 27 omental free tissue transfers in 24 patients with complex upper and lower extremity defects between 1999 and 2013 was performed. Indications, operative technique, and outcomes were evaluated. Functional outcomes were analyzed using clinical examination, functional scales, Tess scores and patient satisfaction scores.

Results: Patient age ranged from 12-71 years with 19 males and 5 females. Mean follow-up was 4.5 years. Indications included defects due to crush-degloving injuries, IIIB/IIIC fractures, pitbull mauling, infection or debilitating scar contracture. Eleven omental flaps were for upper and sixteen for lower extremity defects, with bilateral coverage using split omentum performed in three patients. Mean defect size was 780 cm^2 and all patients achieved wound coverage. Complications included total flap loss (1), partial flap loss/partial skin graft loss (4), donor site infection (1) and periumbilical hernia (1). One patient chose to undergo revision amputation after one year due to poor function. Laparoscopic-assisted harvest was performed in three cases based on defect size (48-150cm^2, mean 115cm^2). All patients achieved complete wound coverage. Out of the 24 patients 16 came back for functional score analysis. On evaluation 56% used some form of ambulatory assistance device. Upper extremity functional scale average was 49.5 (62% limb function) and lower extremity functional scale average was 32 (40% limb function). TESS scores were 69 (out of 100) for upper extremity and 56 for lower extremity. Satisfaction scale showed an average of 61 for upper extremity and 75 for lower extremity.

Conclusion: The long vascular pedicle, the vascular anatomy within the omentum and large amount of pliable tissue allow the omentum to effectively contour complex defects and is especially valuable in bilateral or multi-site injuries. By maintaining its unique physiology, including omental stromal cells and lymphoreticular bodies, the omentum may facilitate healing by reducing edema and fighting infection. The long-term clinical and functional outcomes are promising in limbs, which are often deemed unsalvageable.

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