

Tissue expansion to cover amputation stumps

A case report

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Submitted 92-01-18. Accepted 92-07-19

A 48-year-old man lost both legs in a train accident. The extremities were bilaterally amputated at midhigh level (Figure 1). The amputated soft tissue surfaces were covered temporarily with split thickness grafts. Six months later, the patient was readmitted for permanent coverage of the stumps.

Right leg

The surface of the grafted area was 12 x 12 cm. Under general anesthesia a Radovan tissue expander with 400

mL capacity was placed in a subcutaneous pocket on the front of the thigh. Perioperative antibiotics were administered. Expansion started after a 3-weeks healing period. 80-100 mL saline was injected in weekly increments to a total of 460 mL, after which the expander was replaced by a larger one with 700-mL capacity. This one was gradually expanded to the total volume. Six weeks later, the expander was removed, the expanded tissue mobilized and the capsule overlying the expander incised. The entire skin graft was replaced without reamputation. The wound healed without complication.

Figure 1. A 48-year-old man with bilateral midhigh amputations.



The wounds shortly after the accident.



During tissue expansion.



The tissue expander is placed subcutaneously. The stump is still covered with split skin grafts.



Final result. The stump is covered with expanded soft tissue from the thigh.

Left leg

The surface of the grafted area was 15 x 15 cm. An expander with 700-mL capacity was placed likewise on the thigh at the time of the first operation on the right leg. This expander had to be removed due to infection two weeks after the expansion had started. *Staphylococcus aureus* was cultured from the wound exudate and suitable antibiotics were given. The wound was allowed to heal by secondary intention.

Four months later, two expanders were placed simultaneously, one on the front and one on the back of the thigh with 400-mL and 700-mL capacity, respectively. The expanders were serially expanded to total volume.

Six weeks later the expanders were removed and the entire skin graft was replaced with expanded skin. The defect was closed primarily without shortening of bone. The stump healed without complication.

After the postoperative swelling had disappeared, the patient started walking-training with the prostheses.

Radovan C. Tissue expansion in soft-tissue reconstruction. *Plastic and Reconstructive Surgery* 1984a; 74 (4): 482.

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Discussion

The alternative possibilities for coverage of skin defects would have been either a local or free flap. A local flap from the thigh area would have resulted in scars, which are a disadvantage for prosthetic care. The sensibility of a free flap would certainly have been less than that of local skin (Hermanson et al. 1986, Rautio 1990). Furthermore, tissue expansion is a less complicated procedure (Argenta 1984, Manders et al. 1984, Radovan 1984a, Radovan 1984b). The time for treatment was 9 months but would have been shorter if infection had not occurred. There is an increased risk of infection during the relatively long expansion period. Perioperative antibiotics and careful sterility are recommended.

References

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- Manders E K, Schenden M J, Furrey J A, Hetzler P T, Davis T S, Graham W P. Soft-tissue expansion, concepts and complications. *Plastic and Reconstructive Surgery* 1984; 74 (4): 493.