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Closure of Scalp Defects Using External Tissue Expander

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Objective: 1) Present a novel method of closure of large scalp defects with an external tissue expansion device. 2) Review methods of scalp closure.

Method: Patients with large central scalp defects secondary to cutaneous malignancy underwent wound closure with a novel external tissue expansion device. The device applies a constant, measured tension to approximate the wound edges. Data regarding patient clinical factors, defect size, and photographs were collected prospectively.

Results: Four patients had large scalp defects secondary to extirpation of cutaneous malignancies. Two patients with wounds 7.5- x 7.5-cm and 9.5- x 5-cm respectively achieved primary closure after 8 days of expansion. One patient with a 6.5- x 7.5-cm wound had reduction of wound size to 3.5- x 2.5-cm after 14 days. The wound then healed by secondary intention. One patient with a 6- x 7-cm wound achieved closure with the use of bilateral rotation-advancement flaps after 8 days. This flap ultimately failed and will require free flap reconstruction. There were no other postoperative complications, wound breakdown, or device failures.

Conclusion: External tissue expansion is a safe and alternative technique to close large scalp defects that would otherwise require skin grafting or free flap reconstruction in appropriately selected patients, and can be achieved in a relatively short period of time.