Objective: To present the technique of and indications for serial excision of facial hemangiomas.

Methods: Clinical review of patients cared for by the senior author (M.H.) in a private-practice specialty center.

Results: Forty-six patients underwent serial excision of facial infantile hemangiomas. The average number of excisions was 3 (range, 2-5), with a mean interoperative period of 4 months (range, 3-7 months). One patient sustained a traumatic dehiscence of the surgical wound, and 6 others had minor wound problems that had no impact on the final result. Two “final” scars underwent surgical revision. All results were ultimately deemed acceptable by the parents and surgeons.

Conclusion: Serial excision is a practical and reliable technique for treatment of facial hemangiomas which due to size and location are not feasibly excised and repaired in a single setting without the use of complex adjunctive reconstructive techniques.

niques. Serial excision of other benign pediatric lesions, such as congenital melanocytic nevi, has been used successfully for decades and has served as the motivation for application of the technique to hemangiomas. What makes this technique possible in the treatment of hemangiomas are the known surgical planes, which either exist or can be created, and what is known of the qualities of the tumor during proliferation and involution. Dissection is possible between the superficial and deep components of the hemangioma, within the deep component, or between the deep component and normal tissues. Each of these planes can be approached as necessary with careful sharp and microunipsolar dissection. Dissection within the substance of the tumor is easily performed, and hemostasis is readily achieved with bipolar cautery. An avascular plane invariably exists between the deep component and the surrounding normal tissue (Figure 1). Most serial excisions are performed during the involutonal stage when the tumor is being replaced by fibrofatty tissue. However, judicious resection during late proliferation can be performed as well. The first stage of elliptical excision is performed completely intralesionally, sparing normal skin (Figure 2). The purpose of this and each subsequent excision is to reduce the size of the lesion leading to eventual primary closure. The elliptical excision is planned along the axis of the eventual final scar—along relaxed skin tension lines or at the junction of facial subunits. After this subtotal excision of the tumor, the edges are sutured under moderate tension to promote creep. Absorbable sutures are typically used in the intermediate stages, and meticulous wound closure techniques with tissue adhesives and nonabsorbable skin suture materials are used for the final stage. Enough time between stages is allowed to develop enough laxity of the surrounding tissues to enable reduction of the size of the residual lesion by subsequent advancement of the excision edges. The main objective is to eventually obtain a tension-free primary closure of the normal skin in the final stage. Absolute, complete removal of the tumor is not necessary or always desirable. Often, the deep component is sculpted or removed subtotally in order to not create a contour defect. Likewise, if complete removal of the superficial component in the final stage would require excision of enough skin to make closure difficult, it is left behind to continue involuting or treated with the pulsed-dye laser.

RESULTS

Forty-six patients underwent serial excision of facial hemangiomas from 2009 through 2010 out of a series...
of 276 patients with hemangiomas operated on during the same period. An average of 3 serial excisions was necessary (range, 2-5). The average time between stages was approximately 4 months (range, 3-8 months). Thirty-one patients achieved a final result by about 3 years of age, 8 by around age 5 years, and 2 were not finished with surgical treatment when this article was submitted. Complications included 1 near-complete wound dehiscence owing to postoperative trauma requiring resuturing and 6 minor wound infections or dehiscences during the intermediate stages, which were treated with local care and had no bearing on the final outcome. Two “final” scars were surgically revised with concomitant primary carbon dioxide laser abrasion for improved camouflage. The pulsed-dye laser was used in 15 patients to treat residual superficial components of the tumors. Ultimately, all final results were deemed acceptable by the parents and surgeons. Clinical examples are seen in Figures 3, 4, and 5.
Serial excision is a reliable and reproducible option for the surgical treatment of infantile hemangiomas that cannot be resected and reconstructed by simple primary closure or advancement. The advantage of obviating the use of complex reconstructive techniques while obtaining acceptable cosmetic results in concert with developmental milestones outweighs the relative disadvantage of frequent outpatient procedures and anesthetics. Just as the technique is well accepted for the treatment of other pediatric cutaneous lesions, we believe serial excision has a similar place for these benign vascular tumors.

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REFERENCES


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