Surgical removal of a noninvoluting congenital hemangioma using a modified sub-brow flap

David Moreno-Ramirez, PhD,[a] Tomás Toledo-Pastrana, MD,[a]
Juan J. Rios-Martin, PhD,[b] and Lara Ferrándiz, PhD[a]
Seville, Spain

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Management of infantile hemangiomas has recently undergone significant changes because of the introduction of systemic treatment with propranolol.[1] However, this approach has failed in other types of vascular tumors, such as congenital hemangiomas, in which surgery remains the first-choice treatment.[2] In this case report, the surgical removal and reconstruction of a glabellar congenital hemangioma is described. Among the surgical techniques available for large glabellar surgical defects, the sub-brow flap represents a suitable option rarely described in the literature.[3] A subtle modification of this technique is performed in this case report.

Abbreviation used:

NICH: noninvoluting congenital hemangioma

CASE REPORT

An 18-month-old boy presented with a congenital tumor located in the glabellar region. Physical examination found a firm, violaceous tumor, 3.0 × 4.5 cm in size, occupying the entire glabellar and intercanthal surface (Fig 1). The patient had recurrent bleeding and was previously treated with oral propranolol at a maximum dose of 4 mg/kg/d without changes after 12 weeks of treatment.

The MRI showed a 3.0- × 4.5-cm trabecular tumor involving the soft tissue of the mediofrontal and glabellar region, with lower extension to the nasal root and without involvement of the cranial bones.

With a tentative diagnosis of noninvoluting congenital hemangioma (NICH) limited to the glabellar soft tissue, surgical treatment was offered. Under general anesthesia, the tumor was excised up to the muscular fascia of the glabellar region (Fig 2, *A* and *B*). A 4.0- × 2.5-cm ovoidal surgical defect extended laterally to the inner end of both eyebrows and the dorsum nasi at the lower edge (Fig 2, *C*). Lateral incisions of 3 cm in length were made over the upper edges of the eyebrows (Fig 3, *A*). Both lateral flaps were undermined and moved downward and medially to avoid narrowing of the glabellar surface as much as possible (Figs 3, *B* and 4, *A*). The upper mediofrontal third of the defect was closed directly in a W-plasty fashion (Fig 3, *B*). Surgical closure was completed using a subcutaneous suture with 4-0 and 5-0 polyglactin and skin interrupted stitches with 5-0 polypropylene monofilament.

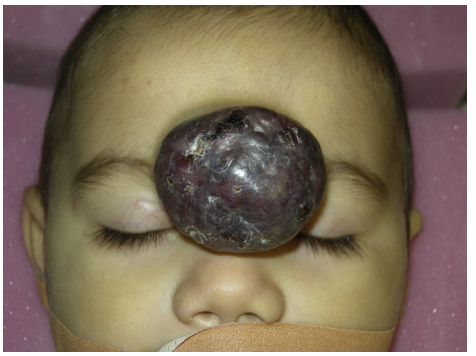

Fig 1. Noninvoluting congenital hemangioma. A 3.0- × 4.5-cm firm, violaceous tumor in the glabellar region of an 18-month-old child.

Major bleeding was not observed during surgery or during the postsurgical period. One year after surgery, the cosmetic appearance was excellent, with inconspicuous scars, preservation of the

From the Medical & Surgical Dermatology Unit[a] and the Pathology Unit,[b] University Hospital Virgen Macarena.
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Correspondence to: David Moreno-Ramirez, PhD, Dermatology Unit, University Hospital Virgen Macarena, Avda. Dr. Fedriani s/n 41009 Seville, Spain. E-mail: dmoreno@e-derma.org.

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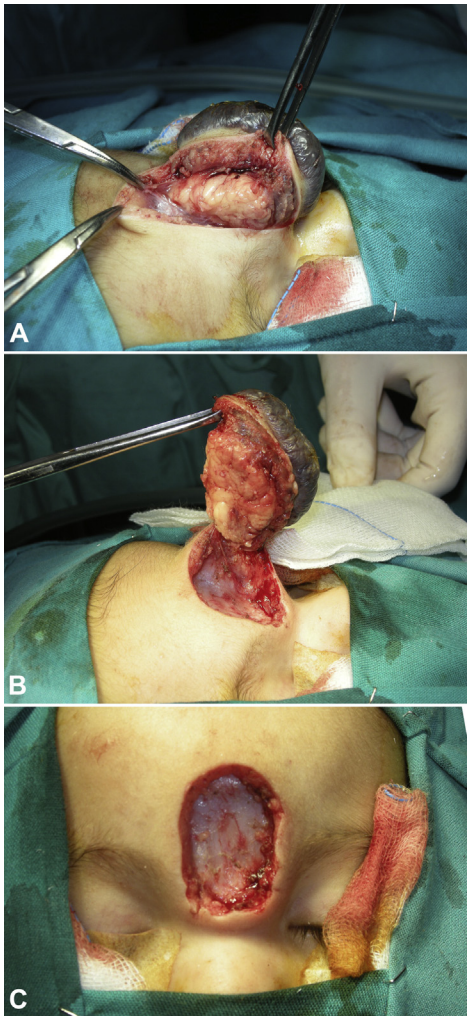

Fig 2. Surgical procedure of the excision. **A**, The excision of the tumor was performed on the supramuscular layer. **B**, The tumor was surrounded by a dense pad of fat tissue that prevented breaching the tumor, thus preventing major tumor bleeding. **C**, A 4.0- × 2.5-cm ovoidal surgical defect extended laterally to the inner end of both eyebrows and the dorsum nasi at the lower edge.

intercanthal surface, and slight interciliary hypertrichosis (Fig 4). No recurrence has been observed 12 months after the surgery.

Histopathologic study found a cavernomatous vascular proliferation with congestive and sinuous vessels lined with plump endothelial cells. Thrombosis, focal regressive changes, and muscle involvement could also be observed. Immunohistochemistry techniques disclosed positive CD31 and CD34 markers with negative Glut-1 staining. These findings led to the definitive diagnosis of NICH.

DISCUSSION

Despite the great impact of oral propranolol on the treatment of infantile hemangiomas, surgery remains

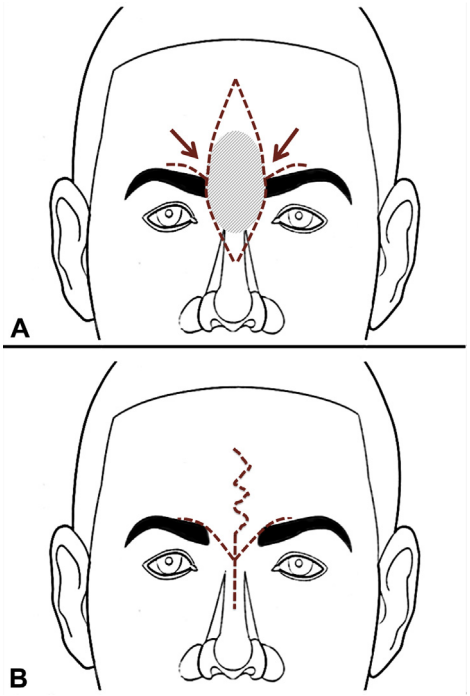

Fig 3. Lateral modified sub-brow flaps. **A**, The modification applied comprised the incision of the lateral flaps over the brows. **B**, Scarring lines after reconstruction of the defect.

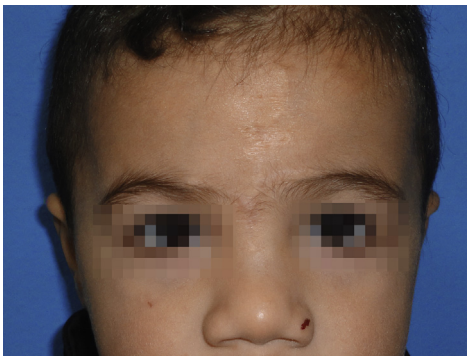

Fig 4. Clinical outcome 12 months after the surgery.

an option in vascular tumors in difficult anatomic locations (eg, periorbital, parotid gland, tip of the nose), and in lesions that are unresponsive or unsuitable for medical treatment (eg, kaposiform hemangioendothelioma, angioblastoma, and NICH).[1,2]

Regarding the specific management of NICH, surgery should be offered as early as the diagnosis to achieve the best cosmetic and functional results in adult life.[4] However, this early treatment can be hampered because in many cases the diagnosis of NICH, and its differential diagnosis with rapidly involuting congenital hemangioma in particular, relies on the lack of involution over a period of several months.[4]

The reconstructive solution performed in this case is based on the technique previously reported as a sub-brow flap, an appropriate option for reconstruction of glabellar defects. In the case presented, sub-brow incisions were replaced by lifting the flaps over the upper edge of the eyebrows in an attempt to avoid upper eyelid distortion. Finally, the completion of the vertical mediofrontal closure in a W-plasty fashion allowed for better scar placement with respect to the frontal expression lines, giving rise to inconspicuous scars and an excellent cosmetic result after 1 year of follow-up.

The modified sub-brow flap described herein is found to be a suitable reconstructive option for large infantile noninvoluting vascular tumors located in the glabellar region, with a medium difficulty level and an excellent anatomic and cosmetic outcome. Because the best cosmetic results in adult life are expected after surgery at early ages, surgical removal of these tumors must not be delayed once the lack of involution is confirmed.

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