

The Role of Surgery in the Management of Congenital Vascular Anomalies

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Surgery is one of the modalities used to treat vascular lesions. Its role is to act in concert with interventional radiology and the various pharmacologic agents. The role of surgery in patients with hemangiomas is limited to nonresponders to propranolol, complications, and eyelid lesions. Corrective surgery would also normalize facial distortion and asymmetry which may result from a hemangioma. Concerning vascular malformations, cure may only be obtained in case of small, focal lesions. In larger, extensive lesions, the role of surgery is limited to debulking the mass. This is usually performed after preoperative embolization or sclerotherapy to reduce the amount of intraoperative blood loss. Surgery is usually not curative but would decrease the amount of disease needing to be sclerosed. Surgery is therefore most often an adjuvant therapy.

Tech Vasc Interventional Rad 16:45-50 © 2013 Published by Elsevier Inc.

KEYWORDS vascular anomaly, vascular malformation, infantile hemangioma, surgery, laser, sclerotherapy, embolization, interventional radiology

The past decade has seen major advances in the management of infantile hemangiomas and vascular malformations. Multidisciplinary vascular anomalies clinics have been established in many centers and clearly the way forward is for team members to work in tandem. Each of the disciplines has a role in the management of these patients and we should never practice in a vacuum. Surgery is without a doubt an important modality in the management of these lesions but a surgeon cannot and should not work alone. Close collaboration between a surgeon and an interventional radiologist can prevent mutilating surgery and ensure the best possible outcome for the patient.

Infantile Hemangiomas

The recent discovery of effectiveness of propranolol in treating hemangiomas has completely shifted the paradigm of management for these lesions.¹⁻³ Despite this, there is still a role for surgery. A recent study found that 50% of patients, when treated with propranolol, had no need for treatment with another modality.⁴ This means

that the other 50% of the patients would need further treatment.

Propranolol appears to be more active against segmental hemangiomas and for these lesions, when treated early, there is only rarely a need for surgery. Focal hemangiomas appear to be less responsive to propranolol and although they do respond, at least 50% will not respond sufficiently and will need surgery. Apart from this, there are instances in which surgery is indicated.

Ulceration

An ulcerated focal hemangioma is usually extremely painful. Even though propranolol is used as the first line of treatment, it may take months to heal⁵ and result in scarring. The child, in the meantime, is in severe pain and at risk for hemorrhage and infection. Surgical removal of the lesion can alleviate the problem more rapidly (Fig. 1). This is usually only possible in the presence of an ulcerated focal hemangioma.

Eyelid Hemangiomas

Eyelid hemangiomas are often complicated by astigmatism. It has been shown that early removal of the hemangioma often reverses the astigmatism.⁶ This should be done as soon as possible after the astigmatism has been diagnosed and certainly before the eighth month of life.

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Figure 1 An infant with severe ulceration of both cervical hemangiomas, before and 6 months after surgery. (Color version of the figure is available online.)

Eyelid hemangiomas can frequently be removed using simple procedures and with minimal blood loss (Fig. 2).

Anatomical Distortion

Ulceration, tissue loss, and mass distortion often need to be corrected surgically. This is especially true for lip and nasal tip hemangiomas (Figs. 3 and 4). Simple procedures aimed at improving function and appearance can greatly improve the quality of life of the patient.

In about 50% of cases of children with focal hemangiomas treated with propranolol, shrinkage of the lesions is insufficient (Fig. 5). In many of these cases, surgery will correct the problem.

Vascular Malformations

Surgical resection of vascular malformations has evolved. The role of the surgeon in a multidisciplinary team is to work in tandem with the interventional radiologist. Surgical resection is used to debulk large segments of malformation. This is often done with the aid of pre-, intra, or post-operative embolization or sclerotherapy. In general, excision of a vascular malformation is both difficult and hazardous.

Preoperative sclerotherapy, performed 24-48 hours before surgery, coagulates a spongy vascular lesion into a firm, solid mass (Fig. 6). The added soft-tissue edema accentuates the tissue planes and thus significantly decreases the difficulty of the dissection, and thereby minimizes intraoperative blood loss. This is especially important in young children whose total circulating blood volume is much less than that of an adult. The hemorrhage that can accompany surgical resection of an unsclerosed lesion can be life threatening.

So as to optimize treatment, preoperative planning must be undertaken. A combined multidisciplinary conference should discuss both the clinical needs of the patient and the radiologic images. It is often not possible



Figure 2 An infant with a large upper eyelid hemangioma, before, 1 week after, and 8 weeks after surgery. This child had severe astigmatism which reversed postoperatively. (Color version of the figure is available online.)

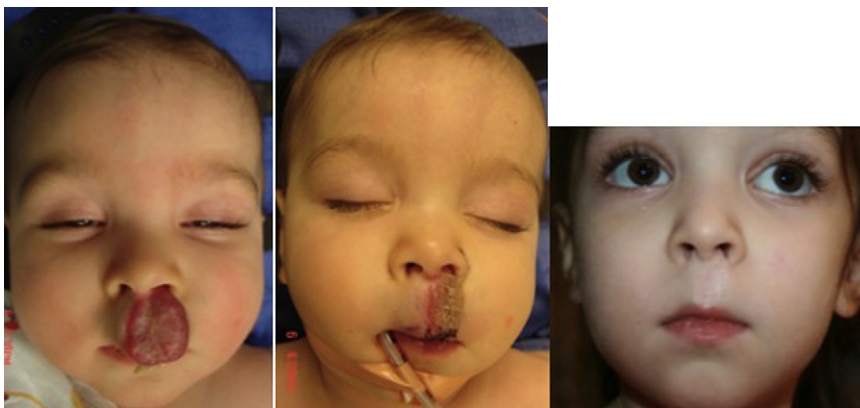


Figure 3 An infant with upper lip distortion due to a large, previously untreated hemangioma; before and after surgical excision and after further laser treatment. (Color version of the figure is available online.)

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