

Surgical Treatment of Vascular Malformations of the Facial Bones

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Purpose: To characterize intraosseous vascular malformations and describe the most appropriate approach for treatment according to clinical experience and a review of the published data.

Materials and Methods: We performed a retrospective review of 11 vascular malformations (7 venous and 4 arteriovenous) of the facial bones treated during a 10-year period using en bloc resection or intraoral aggressive curettage alone or preceded by endovascular embolization. Corrective surgery was planned to address any residual bone deformities. The cases were reviewed at a mean follow-up point of 6 years.

Results: Facial symmetry was restored in the cases requiring reconstruction. Tooth sparing was possible in the case of jaw and/or maxillary localization. Recanalization occurred in 14% of the venous and 33% of the arteriovenous malformations.

Conclusions: Facial intraosseous venous malformations can be successfully treated using surgery alone. Facial intraosseous arteriovenous malformations will be better addressed using combined approaches. Aggressive curettage will obviate the need for extensive surgical resection in selected cases.

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J Oral Maxillofac Surg 72:1326.e1-1326.e18, 2014

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Received January 22 2014

Accepted February 1 2014

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0278-2391/14/00174-8\$36.00/0

<http://dx.doi.org/10.1016/j.joms.2014.02.012>

Vascular anomalies are among the most common benign lesions of the head and neck in infancy and childhood and consist of tumors and malformations with protean clinical presentations. Although the understanding of vascular anomalies within the general medical community has often been poor, the correct diagnosis is critical to provide the appropriate treatment.

Mulliken and Glowacki^{1,2} proposed a modern nomenclature that was later modified by the International Society for the Study of Vascular Anomalies and subsequently widely adopted (Table 1). An

Table 1. INTERNATIONAL SOCIETY FOR THE STUDY OF VASCULAR ANOMALIES CLASSIFICATION

Tumors
Infantile hemangioma
Congenital hemangioma
Rapidly involuting
Noninvoluting
Kaposiform hemangioendothelioma
Tufted angioma
Hemangiopericytoma
Spindle cell hemangioendothelioma
Malformations
Simple (venous, lymphatic, capillary, and arterial)
Combined (arteriovenous)

Colletti et al. *Surgery for VMs and AVMs of the Facial Bones. J Oral Maxillofac Surg* 2014.

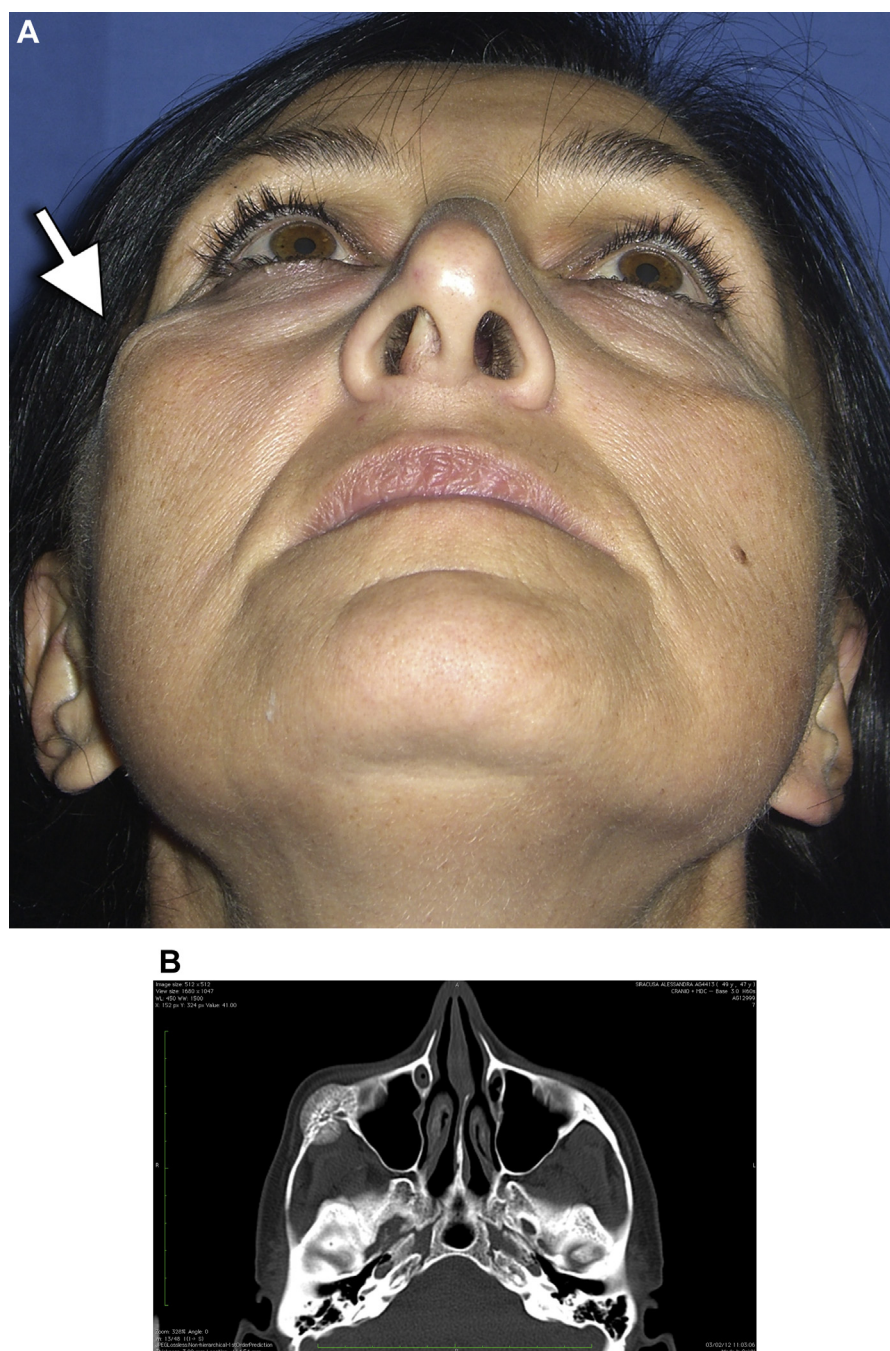


FIGURE 1. A 47-year-old woman presented with A, a long-lasting, painless, slow-growing right malar mass producing gross bone deformity (arrowhead). B, Computed tomography image showing a lesion with a “sunburst” pattern of the right malar bone that extended to the orbital floor and lateral wall. The clinical history and pathognomonic radiologic features were suggestive of an intraosseous venous malformation. (Fig 1 continued on next page.)

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alternative classification was proposed in 1993, distinguishing high-flow from low-flow vascular anomalies.³ Additional advancements in genetics and biology have improved the understanding of the molecular mechanisms causing the wide spectrum of vascular anomalies and their related syndromes.^{4,5}

Intraosseous vascular anomalies represent about 0.5 to 1% of all bony neoplastic and tumor-like le-

sions. Their occurrence in the facial skeleton is uncommon, with the mandible and maxilla the most frequently affected bones.⁶ Zygomatic, nasal, frontal, and orbital bone involvement has also been described in published studies.⁷ They have mainly been venous malformations (VMs) and, rarely, arteriovenous malformations (AVMs), and affect both genders almost equally.⁸ These lesions have major

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