Orthognathic Considerations of Vascular Malformations

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KEYWORDS

• Orthognathic • Skeletal abnormalities • Vascular malformations • Malocclusion • Open bite

KEY POINTS

- Vascular malformations affect the craniofacial skeleton in several ways, depending on the type of lesion and its location.
- Vascular malformations may remodel the mandible causing bony hypertrophy or thinning or expansion.
- Orthognathic abnormalities are addressed after the soft tissues are adequately debulked.

Congenital vascular lesions affect the craniofacial skeleton in several ways depending on the type of lesion and its location. Infantile hemangiomas (IHs), the most common congenital vascular lesions, rarely affect adjacent osseous structures.[1] Vascular malformations, on the other hand, may have either a direct or indirect effect on the adjacent bony skeleton.[2,3] All types of vascular malformations (lymphatic [LM, capillary [CM], venous [VM], or arteriovenous [AVM]) may present with bony changes[4,5] and cause functional and aesthetic concerns. Especially with regard to the lower third of the face, patients present with facial asymmetry, dental caries, and malocclusion, which contribute further to oral incompetence, speech intelligibility, and psychosocial concerns. Cervicofacial LMs, for example, are associated with characteristic structural abnormalities such as winging of the mandibular rami, widening of the gonial angles, and increased lower facial and mandibular anterior dentoalveolar height.[2] With

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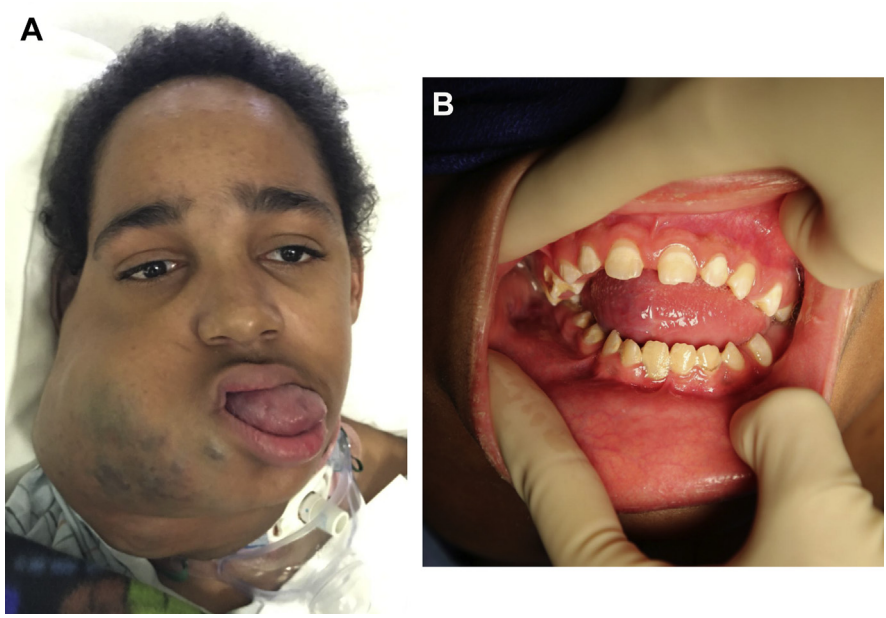

Fig. 1. 17-year-old patient with right cervicofacial venous malformation involving the premandible, oral cavity (tongue, floor of mouth), oropharynx and larynx. (*A*) Note macroglossia and open bite deformity. Patient also required a tracheotomy for advancing airway disease prior to treatment. (*B*) After tongue reduction.

regard to occlusion and mandibular displacement, there can be anterior displacement of the condyle in addition to class III occlusion and an anterior open bite deformity. These same findings are also seen in venous malformation (**Figs. 1–3**). Patients with untreated capillary malformations (CMs) may develop soft tissue hypertrophy, bony hypertrophy, and nodule formation in the distribution of the lesion[6] (**Fig. 4**). The maxilla and zygoma were noted to be hypertrophied in a case series of patients with Sturge-Weber syndrome in addition to facial soft tissue hypertrophy.[7] One patient had class II

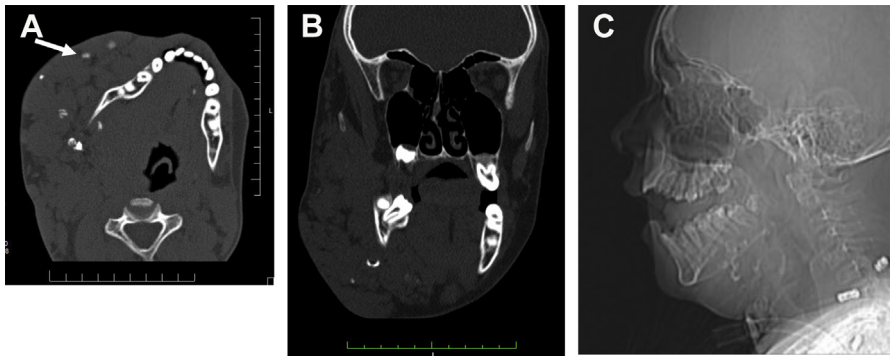

Fig. 2. (*A*) Axial CT image from patient in **Fig. 1** shows anterior displacement of the right mandibular body and ramus with bulky right premandibular, parotid, and parapharyngeal space disease. Radio-opaque lesions denote phleboliths (*arrow*). Airway is shifted to the left. (*B*) Coronal CT. Abnormal eruption of path of right molar medially into oral cavity. (*C*) Sagittal scout film shows anterior open bite deformity.