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Case Report

Diagnostic and Surgical Aspects of Central Hemangioma of Mandible: A Surgical Approach for the Reconstruction of Mandible

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Abstract:

Intraosseous vascular lesions are rare lesions, accounting for 0.5-1% of all intraosseous tumors. They were found to be affecting the second decade of life, more frequent in women. The frequency found affecting the vertebral column and skull; the mandible is a quite rare location. At present, according to the World Health Organization, these lesions are now considered as benign vasoformative neoplasms of endothelial origin. However, the origin of the central hemangioma is debatable. Some authors state it as a true neoplasm, few state it is a hamartoma. On examination, the patient may or may not show any symptoms, some present discomfort, blood discharge, bluish discoloration, mobility of the teeth. The radiographic finding is a multilocular radiolucenies with classic honeycombs or soap bubble appearance. Differential diagnosis includes odontogenic lesions like ameloblastoma, cystic lesions such as residual cyst, central giant cell tumor, fibrous dysplasia. The wide surgical excision along with the reconstruction is choice of treatment of hemangioma. We present a case report of a 24-year-old female diagnosed with intraosseous mandibular hemangioma and surgical reconstruction of mandible with rib graft.

Key Words: Carotid artery, hemangioma, rib graft

Introduction

Vascular anomalies are a new, rapidly evolving multidisciplinary field that combines several surgical and medical specialties. The plastic surgeon plays an essential role in the management of affected patients.

The greatest impediment to development of this field has been confusing terminology. This has been responsible for improper diagnosis, illogical treatment, and misdirected research. Classification was introduced in 1982 based on studies correlating clinical features and microscopic features have clarified most of this terminology disorder. There are two major categories of vascular anomalies: tumors and malformations.[1]

Hemangiomas are endothelial tumors with a unique biologic behavior they grow rapidly, regress gradually, and do not reoccur. The three stages in the of a hemangioma, (1) the proliferating phase (0-1 year of age), (2) the involuting phase (1-5 years of age), and (3) the involuted phase (>5 years of age). These stages are typically clinically apparent and can be distinguished microscopically and immunohistochemically.[2,3]

Intraosseous hemangioma is a quite rare condition, comprising less than 1% of all intraosseous tumors.[4,5] It mainly occurs in the vertebral column. Mandible is a very infrequent location although possible.[4,5] The female:male ratio is 2:1 and the peak of incidence are between the second and fifth decades of life.[4,5]

The tumor origin is not defined. Few studies believe it is a true neoplasm, whereas other literature quote that it is a hamartoma resulting from the proliferation of intraosseous mesodermal cells that undergo endothelial differentiation.[4]

It is usually asymptomatic although may present signs and symptoms including a slow growing bluish mass, dis-comfort, pulsatile sensation and mobile teeth.[4,5] Panoramic radiograph, computed tomography (CT) – scan and magnetic resonance imaging are the most useful radiographic studies.

Case Report

A 24-year-old female was referred to our consultation by her general dental practitioner for evaluation of swelling in the left mandible (Figure 1).

Intraoral examination showed a swelling located in the left mandibular body with a soft consistency. There were no other associated symptoms.

A dental panoramic radiograph revealed a 30 mm × 30 mm multilocular radiolucency, classic honeycomb appearance located in the mandible affecting from the right first central incisive to the right second premolar tooth (Figure 2).

Differential diagnosis included radicular cyst, solitary bone cyst, ameloblastoma, myxoma and bone hemangioma. Given these findings, a CT facial scan was performed. It revealed a 30 mm × 17 mm bad-defined lesion with the inner bone trabeculation and periostic reaction with cortices expansion of the mandible. The dental roots had no remarkable alterations although the inferior dental canal was wider than normal (Figure 3). The presumption diagnosis was a hemangioma.

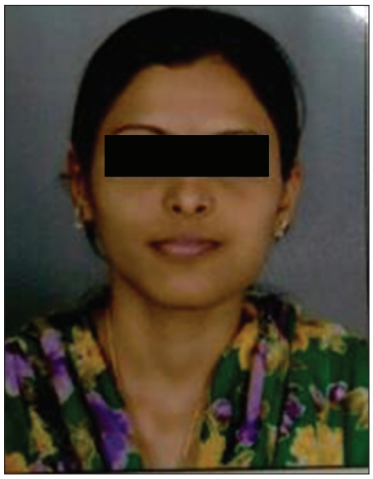

Figure 1: Pre-operative photograph of patient showing swelling in left mandibular region.

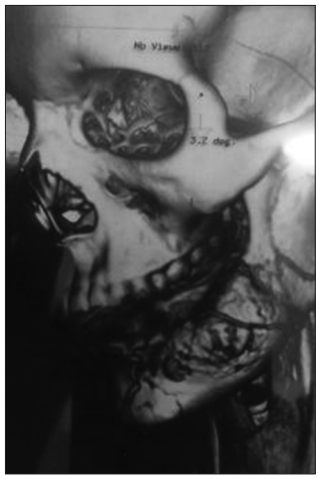

Figure 2: 3D computed tomography scan showing tumor mass on left side of mandible.

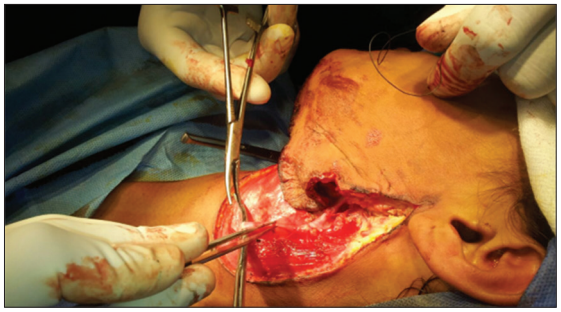

Figure 3: Intra operative photograph showing ligation of carotid artery.

Wide surgical excision of the lesion, identification and ligation of carotid artery was subsequently performed under general anesthesia (Figure 4).

The surgical specimen was described macroscopically as a 45 mm bluish and ovaled mass. Microscopic examination showed a vascular proliferation of congested capillaries, surrounded by normal endothelial cells. The histopathologic diagnosis was cavernous hemangioma.

Mandible was reconstructed with rib graft using a titanium plate. The specimen was sent for histopathological diagnosis, sections showed tumors composed of large vessels with hemorrhage, no evidence of atypia is seen. The histopathological diagnosis was given as a central hemangioma (Figures 5 and 6).

Discussion

Central hemangioma of the jaws is a rare lesion.[6-9] The present case illustrates many features that are characteristic of central

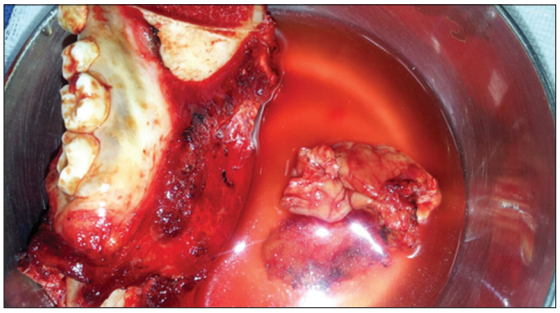

Figure 4: Tumor mass, along with resected mandible.

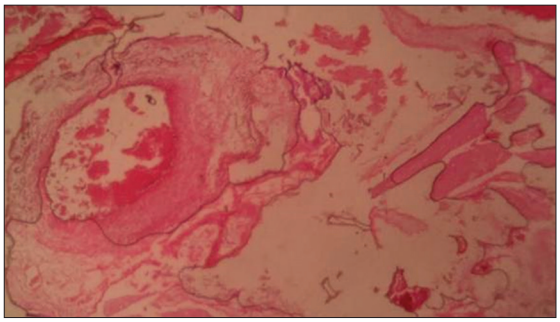

Figure 5: H and E stained sections showing large blood vessels with hemorrhage (×10).

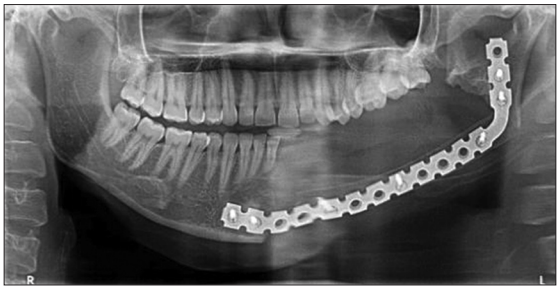

Figure 6: Post-operative orthopantomogram showing reconstructed mandible using titanium plate along with rib graft.

hemangioma, including the patient's: (1) clinical history; (2) findings of examination; (3)radio- graphic and scanning examination.

Radiographically, a differential diagnosis of ameloblas - toma, cavernous hemangioma, giant cell lesion, cyst and myxoma could be made due to the characteristic sunburst appearance.[6-8]

Radiotherapy was not the treatment of choice, considering the age of the patient and the retarding effects of radiation on oral and perioral tissues. Intralesional injections of sclerosing agents would not have been effective because of the lesion's bony nature. Hence, surgical resection and osseous reconstruction was the treatment of choice due to multiple factors such as the: (1) lesion size; (2) child's growth potential; and (3) lesion's approachability. The mandible was resected beyond the lesion's radiographic boundaries to avoid any manipulation of the vascular lesion.[9] Due to the serious consequences, hemangiomas must always be considered in the differential diagnosis, and proper precautions must be taken in establishing the final diagnosis before any surgical treatment is undertaken.

Central hemangiomas should be differentiated from arteriovenous malformations, in which expansive growth and bleeding occur usually after trauma or infection, resulting in acute painful swelling.[10-14]

Conclusion

Because of the serious consequences, hemangiomas must always be considered in the differential diagnosis and proper precautions must be taken in establishing the final diagnosis before any surgical treatment is undertaken.

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