**Central Giant Cell Granuloma**
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 **Overview**
 The central giant cell granuloma (CGCG) is an uncommon, benign intraosseous lesion that originates in the jawbone. It can result in the expansion, displacement and resorption of the roots. Although it occurs in children and young adults, the lesion has a greater incidence in females due to its suggested correlation with hormones. Considered a non-neoplastic lesion, the etiology of CGCG is uncertain. Central giant cell granulomas are located predominantly on the mandibular anterior pre-molar region, but can be present on the maxilla. CGCGs appear as multilocular or unilocular in radiographic images. Histologically, they are multinucleated giant cells that are spread throughout the fibrovascular stroma. Due to its varied features, the central giant cell granuloma is frequently categorized as aggressive or nonaggressive. Nonaggressive CGCG develops slowly, may be symptomatic or asymptomatic, exhibits minimal cortical expansion and has no recurrence. More aggressive CGCG lesions will advance rapidly, most likely be painful, result in severe root resorption, cortical expansion and perforation, and have a higher rate of recurrence. Depending on how severe, surgical treatments can vary from curettage of the area to local jaw resection if necessary. Malignancy from an aggressive giant cell granuloma is rare.

**Etiology**

 The etiology of the central giant cell granuloma is unknown. However, there are theories stating that CGCG could be a reactive lesion, a developmental anomaly or a benign neoplasm. Inflammation, hemorrhage, and local trauma are speculated to initiate the central giant cell granuloma.

**Clinical Presentation**

Clinically, the central giant cell granuloma is usually seen on the gingival mucosa as a 2-3cm buccal swelling with possible blue or brown discoloration. The lesion is commonly located on the mandible anterior to the first molar. For patients after 20 years of age, there is a tendency for the lesion to appear at the posterior aspect of the jaws. Maxillary lesions can be found usually anterior to the canine.

Some cases had reported the teeth involved to be tender to percussion. Although it may be asymptomatic, patients will typically feel pain or paresthesia in the area of the swelling. Malocclusions or mobility can form due to the displacement of teeth and swelling can create facial asymmetry. The patient may also experience difficulty chewing.

**Demographic**

Most cases are usually found in children or younger adults before the age of 30. They occur predominantly in females and can be identified with the first occurrence of pregnancy or menstruation. This leads many to believe that the central giant cell granuloma is related to hormonal imbalances.

**Biopsy / Histology / Radiographs**

A needle biopsy would be taken to identify the lesion. This process will help differentiate the central giant cell granuloma from other giant cell lesions such as odontogenic keratocyst, unicystic ameloblastoma and aneurismal bone cyst that clinically appear similar to one another. Under the microscope, CGCG appears as numerous multinucleated foreign body type giant cells that are scattered throughout the prominent fibrovascular stroma. The lesion is shown as loose connective tissue with uniformly stratified squamous epithelial lining. Mitotic activity can also be present.

Radiographically, the lesion appears radiolucent and multilocular. Less commonly, central giant cell granulomas can be presented unilocular. The borders may either be well defined or cloudy and the lesion may lead to the expansion of the cortical plates. Root absorption or displacement of roots may be evident in the area of lesion.

Clinical and radiographic features do not give a clear and definite diagnosis in central giant cell granuloma.

**Differential Diagnosis**

 Other pathologies that CGCG can be mistaken for are the Brown Tumor of hyperparathyroidism, Odontogenic keratocyst (OKC), unicystic ameloblastoma and aneurismal bone cyst (ABC). Histological features of the central giant cell granuloma are identical to the brown tumor of hyperparathyroidism and giant cell lesions. There are biochemical tests such as serum calcium, phosphorus, and alkaline phosphatase that are done in order to help determine the lesion as a central giant cell granuloma.

**Treatment**

Depending on how aggressive the giant cell granuloma is, treatment ranges from surgical curettage, curettage with peripheral ostectomy, enucleation, to *en bloc* resection. Very aggressive lesions should be corrected and treated with curettage.

Therapeutic approaches include Intralesional injection of corticosteroids and calcitonin therapy that regulates the osteoclastogenesis. Interferon alpha injections are used additionally to surgery and act as an antiangiogenic and inhibit bone resorption.

**Prognosis**
 Even after treatment, very aggressive central giant cell granulomas have up to a 72% recurrence rate. However, the non-aggressive CGCG generally does not recur after curettage.

Vigilant follow-up examinations should be regularly scheduled after surgical procedures of giant cell granulomas. The pupal and periradicular condition of the teeth should be evaluated and assessed.

**Professional Relevance**

It is relevant to recognize and identify the central giant cell granuloma as a Dental Hygienist considering that the dental professional provides optimal oral health to our patients. Any swelling or pathology in the mouth should be caught early in case it is carcinogenic or interferes with daily life. The central giant cell granuloma is a benign lesion, but when aggressive, can cause destruction to the cortical plates and displace roots of teeth that can lead to malocclusion or issues with mastication. If the Dental Hygienist can catch this lesion or other lesions early enough, the patient can be treated with minimal damage done to their oral cavity.

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