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PERIPHERAL GIANT CELL GRANULOMA: UNVEILING THE UNDERLYING MYSTERIES - A CASE PRESENTATION

Maxillofacial Surgery

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ABSTRACT

Introduction: Peripheral Giant Cell Granuloma (PGCG) is a common benign oral lesion also known as peripheral epulis. It appears as a reddish-purple nodule with multinucleated giant cells and is considered a reactive lesion linked to local irritation. Poor oral hygiene and hyperparathyroidism are possible risk factors. **Case Report:** This case report describes an atypical presentation of PGCG in a 40-year-old diabetic female patient. **Discussion:** The lesion exhibited unusual characteristics including extensive size and involvement of multiple locations. Management involved surgical excision of the lesion along with multiple teeth with severe periodontitis. The case highlights the challenges associated with atypical presentations and underscores the importance of early diagnosis and prompt intervention. **Conclusion:** Early diagnosis, timely surgery, and good oral hygiene are key to managing PGCG and reducing recurrence. Further research is needed to clarify its cause and assess alternative treatments like laser surgery.

KEYWORDS

PGCG, TOOTH DISLODGEMENT, FOLEY'S CATHETER

INTRODUCTION

Peripheral Giant Cell Granuloma (PGCG) is a most common, benign oral lesion with exophytic.[1]growth and was initially named a Giant cell reparative granuloma for its reparative nature It is often referred to as peripheral epulis, osteoclastoma, giant cell reparative granuloma, or giant cell hyperplasia. It is a giant cell tumor of soft tissue characterized by reddish-purple nodule with multiple-nucleated giant cells, single-nucleus stromal cells, and hemorrhagic area.

The exact origin of the giant cells is unclear but it is believed to be a reactive response in the.[4]gingiva, periodontal ligament or periosteum Although local injury or irritation may be factor, the precise cause remains unknown. Individuals with poor oral hygiene and lower socioeconomic status are more likely to develop PGCG, suggesting these factors may increase susceptibility. Additionally, a recent report by Choi has linked peripheral giant cell granuloma to[2] hyperparathyroidism caused by renal failure

Case Report

A 40-years-old female reported to the OPD with the chief complaint of swelling on the lower left back and upper right front gum region since 5 days, and a sudden increase in size was noted. She also reported mild discomfort due to growth without any pain. The patient has a medical history of diabetes since 5 years and was under regular medication. On clinical examination, extraorally, no gross facial asymmetry and no cervical lymphadenopathy were noted as shown in **figure 1.** On intraoral examination, multiple swellings were noted in both the upper and lower alveolar region, which were smooth, exophytic, pedunculated and erythematous. One of the swellings extends mesiodistally from 32 to 38 and buccolingually from the vestibular region to the inner surface of the tongue and is approximately 3 x 7 x 5cm in size. Another swelling is located between the 13 and 15 regions, extending from the buccal vestibule to the palatal vestibule region, and is approximately 2 x 3 x 2 cm in size. Bleeding on probing was noted from the yellowish discoloured peduculated base as shown in the figure 1.

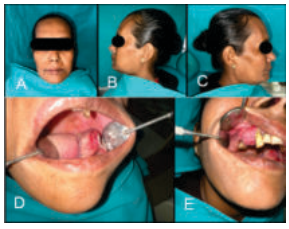

Figure:1 Pre- Operative photographs (Intra-oral & Extra-oral)

On hard tissue examination, subgingival calculus with Grade 3 mobility was present in the teeth diagnosed with severe periodontitis. Treatment was planned as surgical excision under general anaesthesia. Incisions were made with respect to 15 to 21 and 33-38 regions. Lesion excision was followed by tooth extractions (11,12, 13, 21, 22, 23, 32, 33, 34, 35, 36, 38, 42, 44, 45, 46). Hemostasis was achieved as sown in the figure 2.

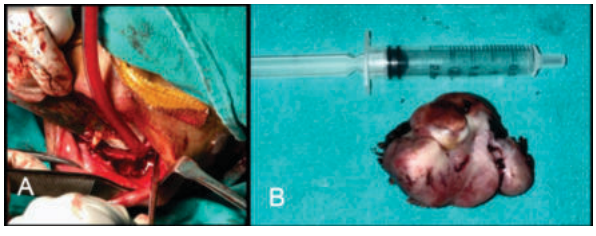

Figure 2A : After Removal Of The Lesion 2B: Excised Tissue

During extubation, the tooth was dislodged to the upper one-third of oesophagus and was retrieved by the Foley's catheter which is inflated using 10ml normal saline, which was followed by theuneventful extubation .The excised tissues were sent for histopathological examination,and report of the lesion was conformed as Peripheral Giant Cell granuloma shown in figure 3.

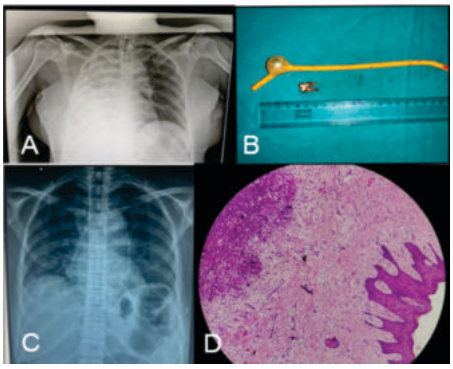

Figure 3A: Intra-op chest x-ray shows the dislodged tooth in the proximal third of the oesophagus.

3B: Foley catheter was employed to retrive the tooth which was dislodged within the proximal third of the esophagus.
3C: Intra-op chest Xray after removal of tooth.
3D: Histological Image depicting hematoxylin and eosin stained section showing parakeratotic stratified squamous epithelium overlying connective tissue stroma. The lesional connective tissue is fibrocellular in nature and shows presence of chronic inflammatory cells, numerous small and large endothelially lined blood vessels, fibroblasts, bundles of collagen fibers and numerous multinucleated giant cells. The overlying epithelium is separated from lesional tissue by normal appearing connective tissue(Grenz zone).

DISCUSSION

PGCG is probably a reactive lesion rather than a real neoplasm, it is frequently referred to as a tumor. PGCG is more frequently observed during the mixed dentition phase and during third and fourth decade of life.[3] Females has the higher prevalence than males.

It typically affects incisors and first molars, and it affects the mandible slightly more frequently than the maxilla.[4] It presents as firm or soft nodules, stalked or flat, typically smaller than 20 mm but sometimes larger (e.g.30 mm).[5] These lesions often have an ulcerated, dark red, purple or blue appearance. Repeated trauma often triggers its growth and can be asymptomatic. Trauma-induced secondary ulceration can result in a yellow patch on the surface of the lesion because of the formation of a fibrin clot, which was also found in our case. Chronic irritation from factors like plaque, ill-fitting prostheses and implants can stimulate a reactive response in the host, which is most likely the cause of localized gingival overgrowth.[6] It can also be associated with other rare conditions, such as xerostomia, hyperparathyroidism, and X-linked hypophosphatemia rickets, as reported by Choi et.al.[2]

PGCG histology reveals multinucleated giant cell nodules within a stroma of plump ovoid spindle cells and extravasated red blood cells, giant cell nuclei vary in number.[7] Fibroblasts are the fundamental component of peripheral giant cell granulomas. Two types of giant cells exist: large, metabolically active Type I and smaller, dying Type II with irregular nuclei and deep stain.[3] Regarding the nature of multinucleated giant cells found in PGCG, previous hypotheses suggested that they were either osteoclast left from the normal resorption of teeth or a reaction to periosteal injury. In 1990 and 1995 Bonetti et.al, lim & Gibbins et.al,[8] respectively provided evidence that these giant cells are osteoclasts based on the presence of calcitonin receptors and their osteoclastic activity when cultured in vitro. Further investigations in 1999 by Abe et al.[9] have shown that a membrane-bound protein family called a disintegrin and metalloprotease (ADAM) may play a role. Radiographic diagnosis are necessary to confirm the origin of the lesion which is either from oral mucosa or from the central bony lesion with cortical perforation and extended into the gingiva lesion may be multinucleation of osteoclast and macrophage derived giant cells well defined or ill-defined, unilocular or multilocular radiolucency and resulting in a cupping appearance. Advance lesion may results in expansion of the cortical plates.[10] Differential diagnoses of PGCG include central giant cell granuloma (CGCG), peripheral fibroma, pyogenic granuloma, peripheral ossifying fibroma, and parulis, with peripheral fibroma. Being the most prevalent PGCG can be easily distinguished from parulis, which is frequently associated with a necrotic tooth or a periodontal disorder.[11] Due to its invasiveness and high recurrence rate (10-15%), the treatment for peripheral giant cell granuloma involves local surgical excision down to the underlying bone, as stated in 2009 by Neville et al extensive clearing of the base is necessary to minimize the chances of recurrence.[12] Additionally, removing local factors or irritants is also required as stated in 2008 by Regezi et,al.[13]

If the resection is only superficial, then there is a risk of the growth recurring. Achieving exposure of all bony walls through surgical resection generally yields satisfactory results. A retrospective study conducted in 2024 by Ilgin Ari et al, have reported that the recurrence rates were21.4% in PGCG.[14] In the case described, the treatment involved surgical excision of the bone, chemical cauterization, and curettage, followed by oral prophylaxis. No recurrence was observed during the one-year follow-up, suggesting that the surgical excision and prescribed medications were adequate to treat peripheral giant cell granuloma when combined with proper oral hygiene.

In comparison to traditional surgery, Er:YAG, CO_2, or diode lasers offer potential benefits like reduced bleeding, pain, swelling, and no need for sutures intralesional steroid injections, denosumab applications, resection, and graft application can be used as adjuvant treatment options.[15]

CONCLUSION

Our findings emphasise the importance of considering PGCG in the differential diagnosis of unusual gingival lesions, even in atypical presentations. Early diagnosis and prompt surgical intervention, along with proper oral hygiene practices, remain crucial for successful management and minimising recurrence risk. Further research is warranted to fully elucidate the aetiology of PGCG and explore potential alternative treatment modalities like laser surgery.

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