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GLANDULAR ODONTOGENIC CYST: A UNIQUE ENTITY IN ODONTOGENIC LESIONS

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ABSTRACT The Glandular Odontogenic Cyst or GOC is a distinct and rare odontogenic cyst, first identified by Gardner et al. in 1988.Characterized by its histological resemblance to mucus-producing salivary gland tumours, GOC is distinguished by its unique clinical and cytogenetic features. Here we report two cases: a 46-year-old female with a symptomatic multilocular lesion causing tooth displacement and a 55-year-old male with an incidental unilocular radiolucency. Both were confirmed histopathologically and managed surgically. This report emphasizes the importance of integrating clinical, radiographic, and histopathological data for accurate diagnosis and management of GOC, given its potential for recurrence and diagnostic overlap with other odontogenic lesions.

KEYWORDS : Glandular Odontogenic Cyst (GOC),Odontogenic cyst

INTRODUCTION

The Glandular Odontogenic Cyst (GOC) was described by Gardner et al. in 1988 as a distinct pathological entity [1]. While Padayachee and Van Wyk (1987) initially observed similar glandular features in a botryoid odontogenic cyst, Gardner's detailed analysis and classification helped establish GOC as a separate odontogenic cyst with unique clinical and histological characteristics [2]. It shares certain histological features with mucus-producing salivary gland tumours, such as low-grade mucoepidermoid carcinoma, but is recognized as a distinct entity.[3] Cytogenetic studies further support this distinction, which reveals the absence of the MAML2 gene translocation specific to mucoepidermoid carcinoma.[3] It predominantly affects the mandible (80%), especially the anterior region, while maxillary lesions are typically confined to the anterior segment.[3] However, jaw expansion is relatively common, particularly in mandibular cases.[4]There is an equal gender distribution, with a mean age of 50 years, though it can occur across a wide age range, from the second to the ninth decade.[5] The cyst is characterized by slow growth and is usually asymptomatic.

CASE REPORT

A 46-year-old female patient presented with the chief complaint of swelling in the lower front teeth region persisting for the past one month. The patient reported mild dull pain associated with the swelling. Slight displacement of teeth in the lower anterior region was observed.

On extraoral examination, slight facial asymmetry was noted(fig.1). Intraoral examination revealed a swelling extending from 45 to 34 tooth region, obliterating the lower labial vestibule.The mucosa over the swelling appeared normal, and no associated pus discharge or mobility of teeth was evident.

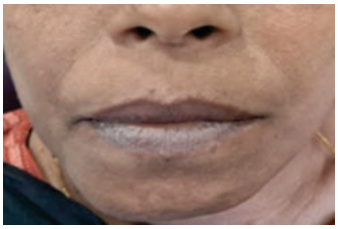

fig.1

An orthopantomogram (OPG) (fig 2) was taken, revealing a multilocular radiolucency extending from the mesial aspect of 35 to the mesial aspect of 44, measuring approximately 8 x 4 x 3 cms. Cortical bone thinning was noted, but no perforation was observed.

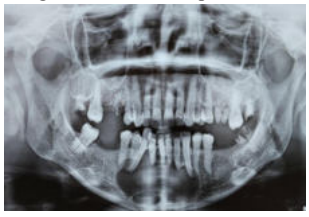

Fig.2

An incisional biopsy was taken. Microscopic examination revealed features characteristic of glandular odontogenic cyst including cystic epithelium exhibiting mucous cells, epithelial plaques and ciliated cells. The lumen contained eosinophilic material and areas of microcyst formation were evident.(fig 3)

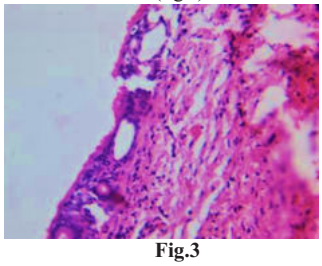

Fig.3

Based on clinical, radiographic and histopathological findings a diagnosis of glandular odontogenic cyst was confirmed. Surgical enucleation was done, and the patient was advised regular follow-up to monitor for recurrence.

CASE REPORT 2

A 55yr old male patient came for replacement of upper teeth and the clinician made an incidental finding of radiolucency in the lower anterior region of size 0.2x 0.1 cm. No apparent swelling or facial asymmetry noted on clinical examination. The skin over the region appeared normal.(fig 4)

Fig.4

OPG revealed a well-defined radiolucency in the interdental area of 42 and 43 tooth region and extending to the periapical area of 41,42, 31& 32.(fig 5)

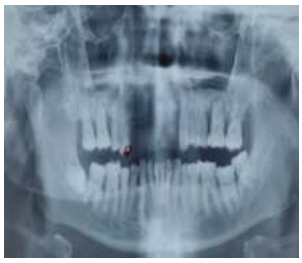

Fig.5

H&E stained tissues revealed a moderately collagenous connective tissue capsule lined by a non- keratinized stratified squamous epithelium of varying thickness(fig 8). Some areas of the section exhibit 2 to 3 layered odontogenic epithelia with presence of mucous cells and goblet cells.(fig 6)

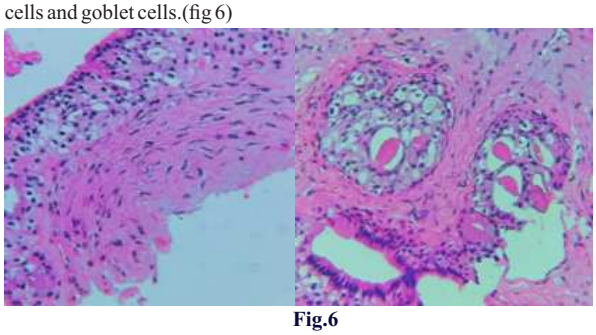

Fig.6

Glandular odontogenic cyst was diagnosed. Excision was done and advised follow up.

DISCUSSION

A glandular odontogenic cyst is an odontogenic cyst with unique histopathological features. It is most commonly found in the anterior mandible and usually affects middle-aged individuals.[3] Clinically, GOC often presents as a painless swelling but can sometimes cause discomfort, cortical expansion, or root resorption. Radiographically, it appears as a unilocular or multilocular radiolucency, making it essential to differentiate from other cystic lesions such as ameloblastoma, lateral periodontal cyst, and central mucoepidermoid carcinoma.[10] Kaplan's diagnostic criteria of Glandular Odontogenic Cyst include major criteria: a squamous epithelial lining with flat interface, epithelium exhibiting varying thickness, presence of hobnail cells, mucous cells with intraepithelial mucous pools, intraepithelial glandular structures and minor criteria which include papillary proliferation of lining epithelium, ciliated cells, multi-cystic or multi-luminal architecture, clear cells in basal or spinous layers[7]. At least 3 major criteria or 1 major and 2 minor criteria should be present to make a definitive diagnosis. PAS positivity in mucin-producing goblet cells is due to the high glycogen content in the mucous secretions, confirming the glandular nature of the cyst.[6]

GOC is known for its relatively high recurrence rate, especially when treated with conservative methods such as enucleation or curettage. Reports suggest a recurrence rate ranging from 21% to 55%, which highlights the need for more aggressive treatment, such as marginal resection, in larger or multilocular cases.[7] Long-term follow-up is crucial to monitor for potential recurrence. The upregulation of antiapoptotic Bcl-2 protein may contribute to the disruption of cell death regulation in the lining epithelium of GOC while the expression Ki 67 and P53 does not appear to have a significant role in cell proliferation. Studies on p53 expression can be done to understand the biological characteristics.[9]

CONCLUSION

GOC is an odontogenic cyst with distinct clinical, histological, and molecular features. Due to its potential for recurrence and aggressive behaviour, accurate diagnosis using histopathology and immunohistochemistry is crucial.[7] Further research is needed to better understand its molecular mechanisms and optimize treatment strategies for improved patient outcomes. These cases highlight the importance of correlating clinical, radiographic, and histopathological findings in diagnosing glandular odontogenic cysts. Regular follow-ups are essential given the lesions' potential for recurrence.

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