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Fibrous Epulis: A Case Report of Benign Gingival Mass with Unusual Histology (Calcification and Cartilaginous Metaplasia)

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Abstract: The epulis is a benign lesion which originates from the gingiva and are often benign and which has no potential for deterioration. A 13-year-old-girl was referred to our clinic for a mass on gingiva, precisely in the anterior maxillary alveolar ridge, that the patient first noticed 15 months ago. The mass gradually increased in size over time. The mass was relatively mobile, the surface was erythematous and evoked little pain when palpated. It had a relatively thin pedicle which is why it was resected under local anesthesia, allowing a complete removal of the mass. The histological examination showed a cellular fibrous proliferation and multiple foci of calcification and focal area of cartilaginous metaplasia. Surface epithelium was denuded, revealing ulceration and granulation tissue formation. We here report this case of fibrous epulis with metaplastic change in order to give a useful example that could help in the differential diagnosis of the lesions located in the oral cavity.

Keywords: *Epulis, Gingiva, Pedunculated Mass, Calcification, Cartilaginous Metaplasia.*

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I. INTRODUCTION

Epulis is a clinical term referring to a localized benign overgrowth of the gingiva, primarily caused by long-term irritation resulting from dental plaque, calculus, trapped food, trauma, and iatrogenic factors such as ill-fitting dental appliances. These growths are generally considered hyperplastic inflammatory reactions rather than true neoplasms. They are localized and often present as reactive lesions in response to chronic irritation (Buchner et al., 2014).

The term "epulis" originates from ancient Greek, functioning as a nonspecific clinical descriptor without a strict topographic meaning. It simply indicates a lesion occurring over the gingiva, regardless of the specific underlying pathology (Akazane & Hassam, 2014). The incidence of epulis is approximately twice as common in females compared to males, though the exact reason for this gender predisposition remains unexplained (Pour & Mojtahedi, 2008).

Histologically, the most widely accepted classification of epulis categorizes it into four distinct subtypes: focal fibrous hyperplasia (FFH), peripheral ossifying fibroma (POF), pyogenic granuloma (PG), and peripheral giant cell granuloma (PGCG) (Buchner et al., 2010). It has been suggested that these subtypes may represent different developmental stages of a single pathological entity. In the early stages, the lesion is rich in vascular and cellular components, gradually becoming more fibrotic over time.

Clinically, epulis typically appears as a single, pedunculated lesion arising from the maxillary alveolar ridge. It exhibits a slow growth pattern, with considerable variation in size. Depending on its histologic composition, it may present as a soft or firm mass, with coloration ranging from pink to dark red or pale tan (Ajagbe & Daramola, 1978).

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Despite its benign nature, epulis can cause discomfort, aesthetic concerns, and functional impairments, particularly if it interferes with mastication or prosthetic appliances. Proper diagnosis requires a combination of clinical examination and histopathological evaluation to distinguish epulis from other gingival pathologies. Treatment typically involves surgical excision, with attention to the removal of underlying irritants to minimize recurrence. Advances in histopathological and immunohistochemical studies continue to provide insights into the pathogenesis and optimal management strategies for these lesions.

The etiopathogenesis is not completely clear. It is believed that the reactive inflammatory component plays a substantial role whose action on cells within the periodontal ligament or the periostium leads to epulis. Poor oral hygiene seems to be a predisposing factor. The fact that they are more common in some conditions characterized by hormonal disequilibrium, such as pregnancy, supports the hormonal hypothesis. (Andrikopoulou M, et al, 2013).

Likewise, it is believed that a chronic and recurrent traumatism may induce an exuberant or excessive tissue response (Fonseca, et al, 2014)

It is proposed that patients without regular supportive periodontal therapy and the patients with symptomatic patients with periodontitis has higher recurrence rate. Therefore, Controlling the periodontal inflammation and regular supportive periodontal therapy might help reduce the recurrence of epulis.

II. CASE REPORT

A 13-year-old girl came to our attention for a mass, located in the oral cavity and more precisely in the anterior maxillary alveolar ridge (**Figure 1**) that she first noticed 15 months earlier and its size gradually increased over time.

(1.5 × 1.2 × 0.9 cm). The mass appeared nodular, non-ulcerated, erythematous and pale white and its consistency was hard. It was partly mobile, anchored to the gingiva via a relatively thin pedicle and evoked mild discomfort when palpated. The underlying tooth seemed to have been pushed and slightly displaced backward to the oral cavity side. We planned to perform a biopsy under local anesthesia and submitted the specimen for pathologic evaluation.

Fig 1: Gross presentation of the mass at anterior maxillary alveolar ridge.

Microscopically, the lesion showed cellular fibrous proliferation and multifocal calcifications. The surface epithelium was denuded and overlying inflammatory cells and underlying granulation tissue formation (**Figure 2A-D**) were seen. The fibrous component was cellular and bundles were in haphazard directions. Calcifications were seen. Focal area of immature cartilaginous metaplasia were identified. No atypia was found. No mitotic figures were seen.

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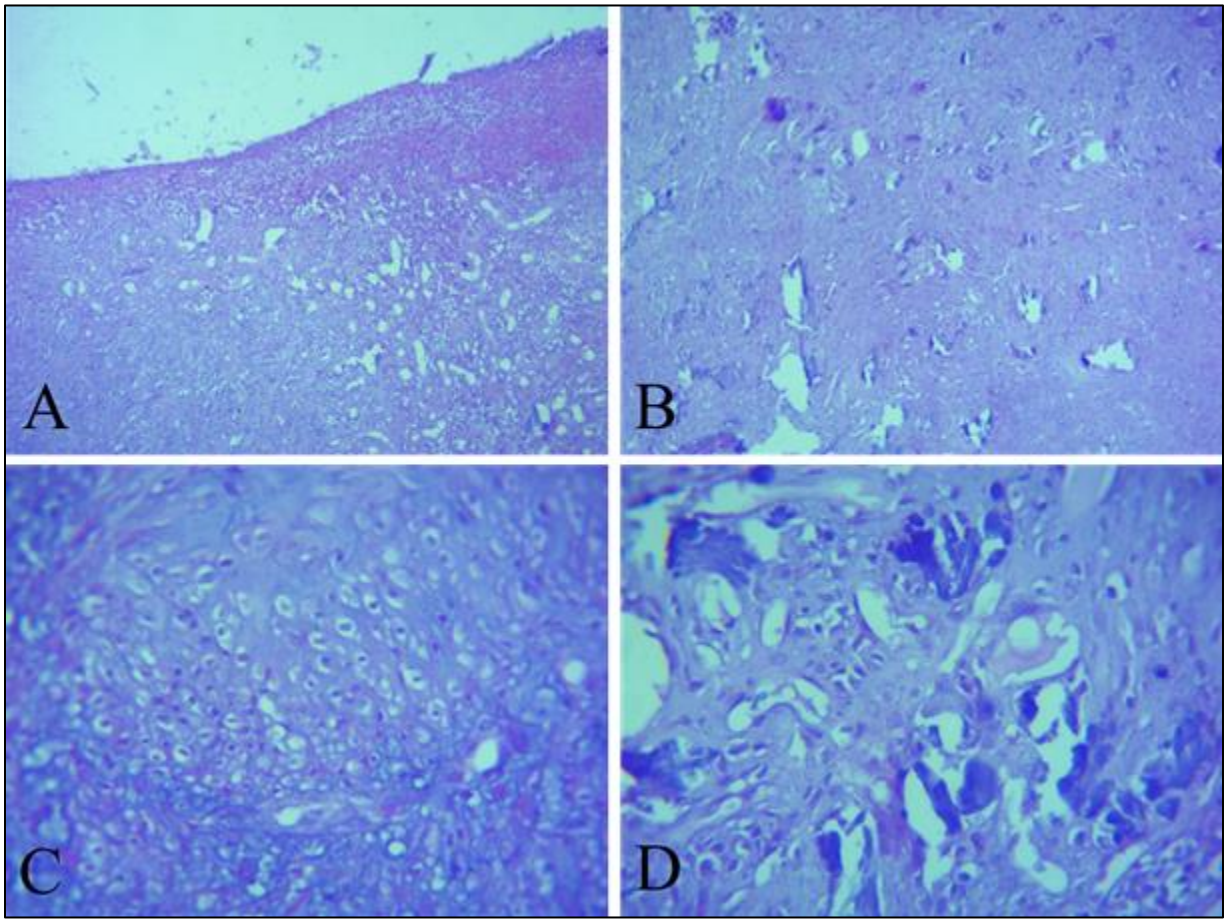

Fig 2: Histological findings, hematoxylin/eosin staining (A) inflammation and granulation tissue formation at the surface with denuded epidermis, (B) fibrous proliferation with multifocal calcification, (C) focal immature cartilage formation and (D) high power view of calcific deposit in fibrous background.

III. DISCUSSION

The term epulis was initially introduced by Virchoff in 1864 and, later, its histological variants were explained (fibrous, granulomatous, angiomatous and with giant cells).

Our case report focuses on a fibrous epulis with metaplastic changes such as calcification and cartilaginous metaplasia. Some authors believe that the various forms of epulides are distinct entities, while others assume that they are evolutionary stages of the same initial lesion. We agree with the latter.

Usually, such lesions are referred by dentists to consultant stomatologists. However, this case was referred by a general practitioner. Seldom, inexpert doctors or health workers may mistake larger or recurrent epulides for malignant masses, such as fibrosarcoma, Burkitt's lymphoma, or squamous cell carcinoma (todero, et al, 2013). That is why histopathologic evaluation is fundamental for differential diagnosis.

After the pathology report was received, we performed excision of the mass with local anesthesia because the lesion was relatively pedunculated and was easily removed negating the need for general anesthesia and the underlying periostium was then superficially curetted. It is agreed upon that the treatment of the epulides consists of the complete removal together with the underlying periostium associated with a thorough curettage of the bone and to avoid recurrence, the factor which allows local irritation should be discouraged (fonseca, et al, 2014)

In cases where the lesions originate from the periodontal ligament of a tooth, it is encouraged to perform a radicular ligature in order to remove the originating tissue.

The recurrence of such lesions are up to 10%. Recurrent lesions warrant removal of the tooth associated with the lesion.

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However, in our case, given the presence of a relatively thin pedicle, we planned to remove the mass with superficial curettage of the periostium. Fortunately, after a follow up of 9 months, no recurrence of the lesion is noted.

In this case, focal area of immature cartilage and myxoid components were identified. Fibrous epulis with metaplastic osseous component have previously been reported. However, to our knowledge, fibrous epulis with or without metaplastic deposits that contain cartilaginous metaplasia have not been reported.

IV. CONCLUSIONS

The diagnosis and treatment of fibrous epulis may sometimes be troublesome even for experienced clinicians, especially in developing countries where there is usually a delay in referring or presentation by the patients.

Cartilaginous metaplasia can be seen in the fibrous epulis. Therefore, fibrous proliferative lesion on the gingiva with metaplastic change may contain cartilaginous components and is therefore no worrisome. Adequate excision and histological examination of all tissues excised have been found to be the best management procedure for fibrous epulides.

Multiple recurrences either due to inadequate removal of the lesion or continuation of predisposing factors may unreasonably create uncertainties about the behaviors of epulides or may worry the patient unnecessarily.

Conflict of Interests

No conflict of interest was found among the authors.

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