

Case Report

Giant cell fibroma of the oral mucosa : a case report in a 15-yr-old patient

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Abstract – Giant cell fibroma (GCF) of the oral mucosa is a rare lesion first described by Weathers and Callihan in 1974. GCF accounts for 2%–5% of all biopsied fibrous lesions in the oral cavity and 5%–10% of all oral fibrous lesions. It predominantly affects Caucasian patients under the age of 30, with a slight female predilection, particularly after puberty. This case report presents a new case of GCF in a 15-yr-old boy, comparing the clinical and histopathological findings with those reported in the literature. Clinical examination revealed a well-demarcated, sessile, exophytic lesion with a keratinised surface, pale pink in colour, and papillomatous in appearance, initially suggestive of a papilloma. The lesion was completely excised with a cold scalpel. Histopathological analysis confirmed the diagnosis of giant cell fibroma. The clinical diagnosis of GCF is often challenging due to its resemblance to other benign entities such as papilloma or irritation fibroma. Definitive diagnosis relies solely on histopathological examination.

Introduction

The giant cell fibroma (GCF) of the oral mucosa is a rare condition, first described by Weathers and Callihan in 1974 [1]. It is a non-neoplastic lesion of the oral mucosa [2]. From a dermatological perspective, similar histological lesions had already been described in the late 19th century, such as nasal fibrous papule, unguis fibroma, acral fibrokeratoma, and fibroblastoma [3]. On mucous membranes, the retrocuspid papilla and the pearly penile papule also share a similar histological appearance [3]. GCF accounts for 2%–5% of biopsied fibrous lesions in the oral cavity [4] and 5%–10% of all fibrous oral lesions [2]. It is mainly observed in Caucasian patients under the age of 30 [1,4], with a slight female predominance, especially post-puberty [1,2]. Its aetiology remains unknown and controversial [1,2]. GCFs are most frequently located on the gingiva, followed by the tongue and other oral sites [2,4]. The mandibular gingiva is more commonly affected than the maxillary gingiva, with a 2:1 ratio [2].

Differential diagnoses include papilloma, pyogenic granuloma, and irritation fibroma [1,2]. GCF usually appears as an exophytic, sessile, or pedunculated lesion, generally smaller

than 1 cm [2,4], although lesions up to 2 cm have been reported [2]. It often presents with a papillary surface, distinguishing it from irritation fibromas [4].

Histopathologically, GCF is a fibrous lesion characterised by the presence of stellate giant cells, sometimes multinucleated, located just beneath the epithelium [1,4], in an avascular collagenous stroma [4], suggesting a fibroblastic origin [1]. The treatment of choice is complete surgical excision, with a low recurrence rate [4].

The aim of this case report is to present a new case of giant cell fibroma in a 15-yr-old boy and to compare the clinical and histological findings with the existing literature. The rarity of this lesion justifies this report, which aims to enhance understanding of the clinical and histopathological features of GCF.

Case report

A 15-yr-old boy with a medical history of pneumococcal pneumonia was referred by his dentist for assessment of a papillomatous lesion located on the lingual aspect of the mandibular incisors (teeth 31/41), extending towards the vestibule (Fig. 1). The lesion had appeared two years after hospitalisation for pleuropneumonia at the age of six.

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Fig. 1. Giant cell fibroma located on the lingual aspect of teeth 31 and 41.

Clinical examination revealed a well-demarcated, exophytic, sessile lesion with a keratinised surface, pale pink in colour, and a papillomatous appearance. Concerning the clinical case, the patient did not present with any dental or clinical symptoms. The complaint was purely aesthetic. No initial imaging was performed, as there were no clinical signs suggesting bone involvement. A periodontal probing was carried out and was within normal limits, and no dental mobility was associated with the lesion.

From a medical point of view, the initial clinical diagnosis was papilloma. Only surgical excision and submission of the specimen for histopathological analysis were performed, followed by a follow-up appointment to assess healing and review the histological results.

Follow-up at six months post-excision revealed no signs of recurrence (Fig. 2). The surgical treatment showed a good outcome without complications.

A histopathological examination was performed with routine hematoxylin and eosin stain. The lesion consisted of an exophytic, polypoid proliferation, predominantly fibrous in nature, covered by a well-differentiated stratified squamous epithelium. The epithelial surface was overlain by a thin layer of orthokeratosis and exhibited slender papillary projections, occasionally forming bridging connections between adjacent papillae. No epithelial dysplasia was identified, and no koilocytosis was observed. Immunohistochemical analysis with Ki-67 (MIB-1) showed no evidence of suspicious proliferative activity. Periodic acid-Schiff staining with diastase digestion revealed no fungal hyphae. Within the underlying fibrous stroma, numerous plump, stellate myofibroblasts were observed, frequently binucleated or multinucleated. The latter corresponded to the giant cells characteristic of giant cell fibroma. (Fig. 3).

In Figure 3, multinucleated fibroblasts appear in purple on the histological section. These large, multinucleated fibroblasts represent the hallmark of giant cell fibroma.

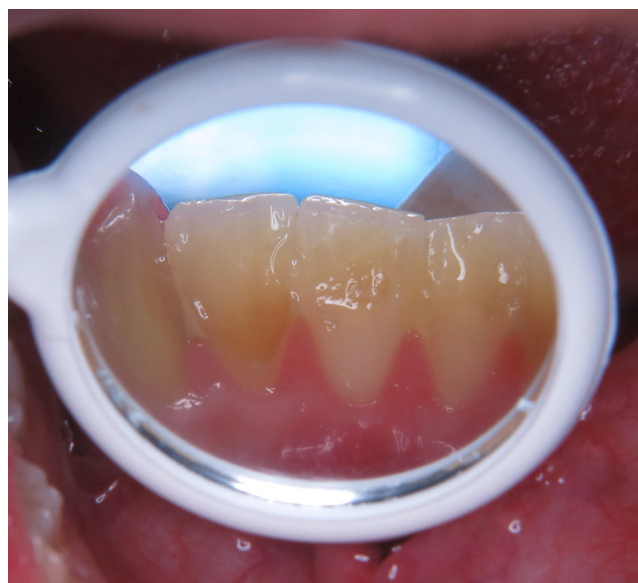


Fig. 2. Six-month postoperative healing of the giant cell fibroma: no evidence of recurrence.

Discussion

Giant cell fibroma is a rare lesion [4] whose clinical presentation can mimic entities such as papilloma or irritation fibroma [1], as well as other paediatric lesions including pyogenic granuloma, peripheral ossifying fibroma, haemangioma, or epulis [2]. In our case, the initial diagnosis was a papilloma.

GCF typically affects the gingiva, predominantly in Caucasian females [1], with a mandibular preference (2:1) [2] and a mean age of 27.7 years [4]. The present case is atypical due to the patient's age and sex, making it a noteworthy observation.

The foundational study by Weathers and Callihan reported gingival involvement in 44.5% of cases, clearly distinguishing GCF from irritation fibroma, which more commonly occurs on the buccal mucosa [5]. This is supported by Houston *et al.*, who analysed 464 cases and reported increased incidence during the second decade of life, a mild female predominance, and a majority of Caucasian patients [3]. Notably, many GCFs in that series were initially misdiagnosed as papillomas (134 cases) or fibromas (207 cases), underscoring the diagnostic challenge [3].

GCF may present with clinical features that deviate from those originally described by Weathers and Callihan, complicating clinical diagnosis. Atypical presentations have been documented, such as the case by Uloopi *et al.* of a 1.8 × 0.7 × 0.6 cm lesion in a 12-yr-old girl located on the lateral tongue border [6]. This morphological and topographical variability highlights the necessity of histopathological confirmation.

In our case, histology revealed a non-encapsulated lesion with thin, elongated epithelial ridges and characteristic spindle-shaped multinucleated giant cells, distinguishing it from other fibrous lesions [6].

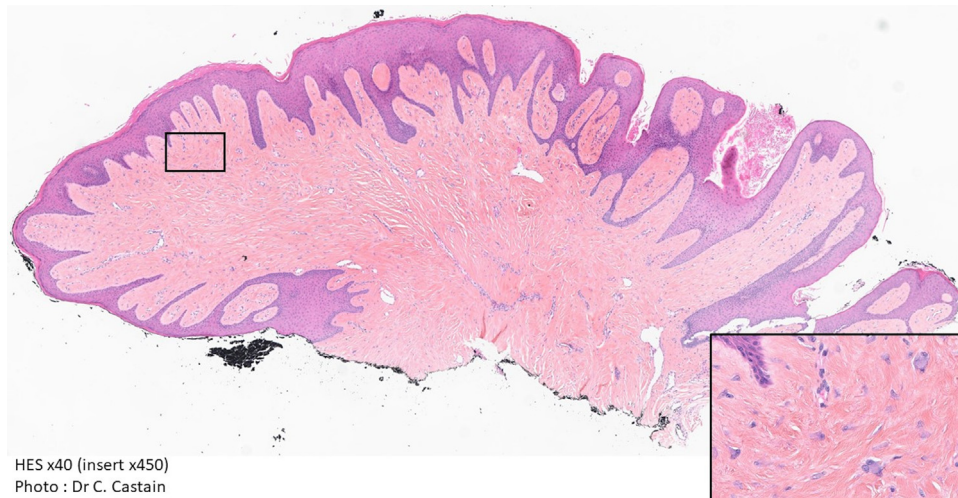


Fig. 3. H&E-stained histological section at $\times 40$ magnification (inset $\times 450$) of the giant cell fibroma: presence of multinucleated fibroblasts at $\times 450$ magnification, giving the lesion its characteristic giant cell appearance.

Table 1. Differential criteria between papilloma, irritational fibroma and giant cell fibroma.

Criterion	Papilloma	Irritative fibroma	Giant cell fibroma
Surface appearance	Exophytic growth, cauliflower-like surface	Smooth, homogeneous surface	Smooth, sometimes similar to papilloma (exophytic, lobulated)
Location	Tongue and palate (60%) according to Frigerio <i>et al.</i> (125/207 cases)	Buccal mucosa (60%) according to de Santana Santos <i>et al.</i> [12]	Gingiva, masticatory mucosa (Regezi <i>et al.</i>) [5]
Transmissible disease	Yes (associated with HPV, mainly types 6/11)	No	No
Oncogenic potentiel	None (benign lesions, not linked to high-risk HPV)	None	None
Recurrence	Rare if completely excised	Rare if irritative cause is removed	Very rare

GCF may also be confused with the retrocuspid papilla—a benign anatomical variation. Histologically, both contain mono- or multinucleated giant cells, but retrocuspid papillae do not require surgical intervention and must be distinguished from true pathological lesions such as GCF and papilloma [7].

In a study by Rezende *et al.*, among 250 children aged from 1 month to 3 yr, six cases of giant cell fibroma were reported, all located on the gingiva, with a male-to-female ratio of 2:1 [8]. This study therefore suggests a male predominance, in contrast with the previous reports.

Regarding pigmentation sometimes observed in GCF, Weathers *et al.* initially proposed a melanocytic origin, associating the lesion with a variant of naevus. This theory is now refuted, as naevi typically occur on the palate or maxillary gingiva between the fourth and fifth decades, whereas GCF predominantly affects the mandibular gingiva between the second and third decades and is statistically more frequent [5].

Kulkarni S *et al.* suggested that pigmentation is not intrinsic to GCF but related to its gingival location. Melanocytes in the basal layer of the gingival epithelium produce melanin, which may be

released into adjacent connective tissue and transferred to keratinocytes via melanosomes. The characteristic fibroblasts in GCF retain residual phagocytic activity, allowing them to incorporate melanin granules. This intracellular melanin can be found in fibroblasts or macrophages, confirmed by immunohistochemical staining (Masson Fontana + / HMB-45 - / CD68 \pm) [9]. Post-inflammatory pigmentation is another possible explanation [9].

GCF is histologically defined by the presence of multinucleated fibroblast-like giant cells [1,2] as well as stellate-shaped cells [4,5]. Weathers *et al.* considered the presence of large spindle-shaped, angular, or stellate cells (20–40 μm) to be a constant diagnostic feature of GCF [3], which was also observed in our case.

Regezi *et al.* proposed that these stellate, multinucleated cells represent a non-specific response of the lamina propria to various stimuli. Fibrous hyperplasia is common in tissues composed of lamina propria (*i.e.* masticatory mucosa) and is often associated with numerous large stellate fibroblasts. In contrast, lesions arising in submucosa-rich tissues (non-masticatory mucosa) tend to contain few or no stellate cells.

This may explain the preferential location of GCF on the gingiva, tongue, and palate [10], unlike papillomas (more common on the tongue and palate) [11] and irritation fibromas (frequent on buccal mucosa) [12].

Out of 401 reported cases of GCF treated by simple excision, only two cases of recurrence have been documented [3].

Conclusion

Giant cell fibroma is a rare oral lesion with a polymorphic clinical presentation that can mimic other benign conditions such as papilloma or irritation fibroma, each with distinct characteristics (Tab. 1). However, definitive diagnosis relies exclusively on histopathological examination.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

Data availability statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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