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A superlative case presentation of unilateral fibroepithelial hyperplasia in a pediatric patient

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Abstract

Reactive lesions of the oral cavity are non-neoplastic tissue proliferations that can mimic benign tumors in clinical appearance. Examples include pyogenic granuloma, fibrous epulis, peripheral giant cell granuloma, fibro-epithelial polyp, peripheral ossifying fibroma, giant cell fibroma, and pregnancy-related epulis. Fibro-epithelial hyperplasia, a histological subtype of fibroma, is a proliferative fibrous lesion affecting the gingival tissue, often impairing both function and aesthetics. These lesions typically arise due to trauma, chronic inflammation, or from cellular components of the periodontium, periodontal ligament, or periosteum. This report discusses an uncommon case of unilateral fibro-epithelial hyperplasia in a six-year-old male child, identified through biopsy and histopathological examination. The lesion developed as a result of accidental cheek biting during mastication approximately ten days before it was noticed. The inflamed gingival tissue was surgically excised using a soft tissue laser under local anesthesia. The procedure was free of complications, and a six-month follow-up confirmed a favorable outcome. Early identification of common oral lesions in children enables timely management with minimal surgical intervention, ensuring better prognosis and recovery.

Keywords: Fibroepithelial hyperplasia, reactive gingival lesions, laser excision, Paediatric oral pathology

Introduction

Reactive lesions are non-neoplastic overgrowths that form as a result of persistent local irritation or injury [1]. Their surface may appear smooth and intact or exhibit an ulcerated texture. The size of these lesions can range from just a few millimetres to several centimetres [1]. Typically painless, they can present as either pedunculated or sessile masses, with colors varying from pale pink to red [2]. From a histological perspective, these growths are primarily composed of fibrous tissue, often accompanied by other elements such as multinucleated giant cells, calcifications, or small vessel proliferation. They can occur as either localized or widespread tissue responses [3].

Clinically, these lesions may resemble conditions such as pyogenic granuloma, fibrous epulis, peripheral giant cell granuloma, fibro-epithelial polyp, peripheral ossifying fibroma, giant cell fibroma, or pregnancy-related epulis [4]. They are most commonly located on the gingiva. Diagnosing reactive lesions can be challenging due to their clinical similarity to a variety of other conditions, despite their distinctive histological features. The term "epulides" specifically refers to connective tissue growths confined to gingival tissue [5].

Fibro-epithelial hyperplasia, a histological variant of fibroma, is a proliferative fibrous lesion affecting gingival tissue that disrupts essential functions like chewing and speech. Clinically, it presents as enlarged gingival tissues in an otherwise healthy mouth, often filling the interproximal spaces. The enlargement typically originates near the contact areas, extending apically and laterally in a smooth, curved pattern [4]. These hyperplastic conditions are generally self-limiting; however, they require surgical excision due to their impact on oral form and function. If left untreated, persistent hyperplastic lesions may undergo neoplastic transformation as a result of chronic inflammation.

Case Report

A six-year-old male presented to the paediatric and preventive dentistry department with his parents, reporting a unilateral swelling on the right side of the oral cavity that had persisted for the past 10 days. The parents mentioned a history of accidental cheek biting approximately one month prior. Upon intraoral examination, a firm, pinkish, pedunculated, and nontender mass was observed on the right buccal mucosa, located distal to the mandibular second primary molar. The lesion measured 11 mm in length and 8 mm in width and had gradually increased to its current size. The child was of moderate build and nutrition upon general inspection. An orthopantomogram was performed, which showed no evidence of bony attachment or resorption of surrounding bone. Routine blood investigations were conducted, with all values falling within normal reference ranges.

The treatment plan involved the precise excision of the lesion using a fibreoptic soft tissue diode laser. The procedure was carried out under local anaesthesia with 2% lignocaine hydrochloride. The laser excision was performed at a wavelength of 810 nm, utilizing an average power of 4W and a 0.4 mm diameter tip. The lesion was carefully excised at the base of the peduncle, along with a margin of surrounding healthy tissue, using a continuous-wave irradiation mode. A small amount of char tissue was observed at the excision site, which is expected to form a bioprotective plug to aid in haemostasis. Healing was uneventful after seven days. The excised tissue was sent for histopathological examination to confirm the diagnosis. Postoperative care included prescribing antibiotics and analgesics to ensure recovery.

Histopathological Examination

Histopathological analysis of the H&E-stained section revealed hyperplastic Para keratinized stratified squamous epithelium with hyperchromatic basal cells and elongated rete ridges. The connective tissue stroma was fibro cellular, containing numerous inflammatory cells, extravasated red blood cells, and visible blood vessels (As shown in Fig. 4). Based on these findings, a definitive diagnosis of fibroepithelial hyperplasia was established. A six-month follow-up showed satisfactory outcomes with no signs of recurrence.



Fig 2: OPG showing no bony attachment

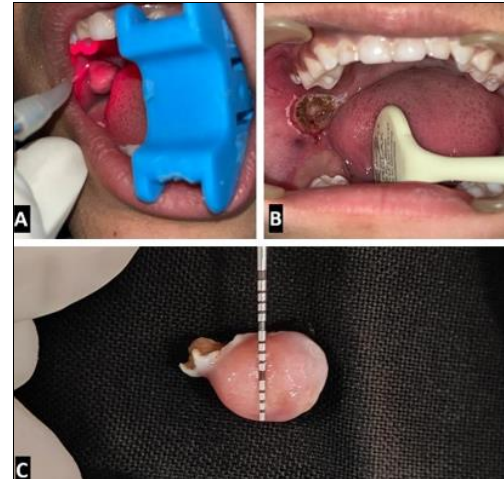


Fig 3: (A) Intra operative photograph showing excision with diode laser, (B) Immediate Post Operative and (C) Excised tissue specimen

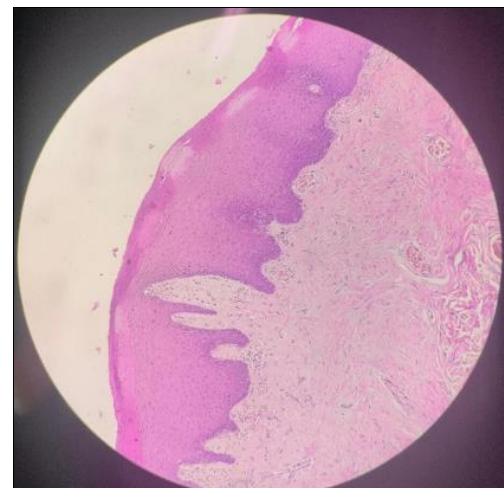


Fig 4: H&E-stained section confirming fibroepithelial hyperplasia



Fig 1: (A) Front view showing soft tissue growth and (B) Right Occlusal View

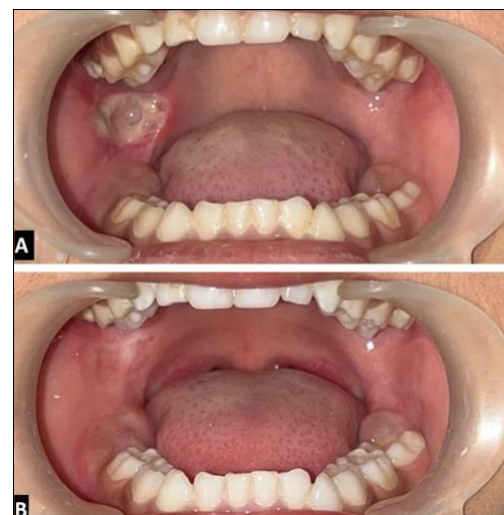


Fig 5: (A) 1 week follow up and (B) 6 months follow up

Discussion

A soft tissue tumour-like lesion is any abnormal growth that protrudes beyond the normal surface contour of the mouth [6]. Most fibromas found in the oral cavity are not true tumours but are rather fibrous growths resulting from prolonged inflammation. Many experts prefer using terms such as "fibroepithelial polyp" or "fibrous hyperplasia" to describe these lesions [7]. Fibroepithelial hyperplasia is a reactive condition that typically occurs in the gingiva and can lead to different types of lesions based on the clinical presentation [4]. It is crucial not to confuse "fibroepithelial hyperplasia" with "localized epithelial hyperplasia," a condition caused by the human papillomavirus (HPV), where the changes are restricted to the epithelium and do not involve the connective tissue of the oral mucosa [8,9].

Fibromas are the most common benign soft tissue tumours found in the oral cavity. Most of these fibromas are reactive localized fibrous hyperplasias, which arise due to trauma or local irritation. Unlike neoplasms, hyperplasia is a self-limiting process where the hyperplastic cells may regress if the underlying stimulus is removed [4]. Chronic irritation, however, can lead to a persistent hyperplastic lesion that may eventually transform into a malignant condition. The differential diagnosis for epithelial hyperplasia includes conditions such as giant cell fibroma, neurofibroma, peripheral giant cell granuloma, mucocele, lipoma, and salivary gland tumours [10].

The presence of multiple oral mucosal polyps was first documented by March in 1881 [11]. Cooke described all pedunculated swellings on mucosal surfaces as "polyps" (fibroepithelial polyps), with the majority of these lesions occurring along the occlusal line. He also referred to both pedunculated and sessile lesions on the gingiva as "epulides" (fibrous epulides), which were commonly found in the anterior region of the maxilla [12].

There is considerable overlap among the different histological classifications of reactive focal gingival hyperplastic lesions. The high prevalence of these lesions in the gingiva supports the idea that they represent the same lesions at different stages of development. Daley *et al.* suggested that the vascular component of pyogenic granuloma is progressively replaced by fibrous tissue over time, eventually being diagnosed as fibrous hyperplasia or fibroma [5]. Additionally, Natheer Al-Rawi found that fibrous hyperplasia in the gingiva shows a female predominance and occurs in the same age group and location as pyogenic granulomas [13]. This led to the conclusion that fibrous hyperplasia could represent the fibrous maturation of pyogenic granuloma, especially in long-standing lesions.

Laser technology has proven to be an effective treatment option in pediatric dentistry for children and adolescents. A study by Pogrel MA *et al.* in 1990 demonstrated that wounds treated with lasers were the first to epithelialize, followed by those treated with a scalpel, a finding that was confirmed histologically [14]. Diode lasers are particularly versatile, offering a wide range of wavelengths that allow for various therapeutic applications across different tissues. They provide a comfortable and stress-free environment for both the pedodontist and the child, offering excellent haemostasis, ease of use, reduced discomfort and swelling, and often eliminating the need for postoperative antibiotics [15].

Conclusion

A pedodontist must be familiar with the clinical appearance of common oral lesions in children, as this knowledge helps

facilitate early diagnosis and management with minimal need for surgical intervention. This case report aims to describe an uncommon occurrence of oral lesions in pediatric patients. A histopathological examination will provide valuable insights to ensure a more effective and appropriate treatment plan, while also reducing the risk of recurrence.

Clinical Significance

It is crucial for clinicians to distinguish between hyperplasia and neoplasia, as neoplasia represents long-standing hyperplastic lesions that result from ongoing irritation and do not resolve on their own. These lesions are typically observed in adults, although there is limited research available regarding pediatric cases. In addition to the lesion's physical characteristics, an accurate and appropriate diagnosis also relies on factors such as the patient's demographic information, presence of accompanying symptoms, lesion location, and histopathological structure.

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Conflict of Interest

Not available.

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