



A CASE REPORT

Gingival Fibroepithelial Polyp: A Case Report

Tareq Qarata^{1*}, Jassim Qarata², Shaikha Al-Doseri³

¹Resident, Dental and Maxillofacial Department, Bahrain Defense Force Hospital, Royal Medical Services, Kingdom of Bahrain

²Intern, Dental and Maxillofacial Department, Bahrain Defense Force Hospital, Royal Medical Services, Kingdom of Bahrain

³Consultant Periodontist, Periodontics Doctorate (Sheffield), Dental and Maxillofacial Department, Bahrain Defense Force Hospital, Royal Medical Services, Kingdom of Bahrain

***Corresponding author:**

Resident, Dental and Maxillofacial Department, Bahrain Defense Force Hospital, Royal Medical Services, Kingdom of Bahrain

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Abstract

A fibroepithelial polyp is a benign reactive exophytic lesion of the oral mucosa resulting from an exaggerated tissue response to low-grade mechanical or inflammatory irritation. When localized to the gingiva, its clinical presentation frequently mimics other focal reactive overgrowths, requiring definitive clinicopathological correlation. A 21-year-old female presented with a painless, firm, pedunculated, pink labial gingival mass associated with the maxillary right central incisor (#11). The lesion emerged 6 months following the completion of a 2-year course of fixed orthodontic therapy. Detailed periodontal parameters revealed stable baseline tissues with an isolated localized plaque-retentive field. A complete conventional excisional biopsy was executed down to the attached gingiva, combined with root surface debridement. Histopathological examination confirmed hyperplastic stratified squamous epithelium overlying dense, mature collagenized fibrous connective tissue with mild chronic inflammatory cell infiltration, lacking any evidence of cellular atypia, mineralized structures, or multinucleated giant cells. Surgical excision was completed successfully with uneventful healing by secondary intention, fully preserving the local soft tissue architecture without postoperative complications. A 3-year follow-up period demonstrated exceptional stability of the gingival contour, ideal aesthetic restoration, and a complete absence of localized recurrence. This case is particularly noteworthy due to the uncommon manifestation of a mature fibroepithelial polyp localized within the highly sensitive maxillary anterior aesthetic zone, presenting unique diagnostic and aesthetic management challenges. A long-term follow-up validates the clinical therapeutic approach and establishes long-term resolution.

Keywords: Fibroepithelial polyp, Focal fibrous hyperplasia, Gingival overgrowth, Reactive gingival lesion, Excisional biopsy, Orthodontic irritation

Introduction

Localized gingival overgrowths are common clinical entities encountered in routine dental practice.^{1,2}

In scientific writing, the terms “overgrowth” or “enlargement” are preferred to describe the clinical appearance of the lesion, whereas “hyperplasia”

should be reserved for histologically confirmed increases in cell number.^{2,3} Accurate diagnostic categorization is vital because different gingival lesions exhibit identical physical presentations yet diverge profoundly in their underlying pathogenesis, biological behavior, and long-term recurrence risks.^{3,4}

The gingiva is particularly susceptible to focal reactive lesions because it is continuously exposed to plaque biofilm, calculus, food impaction, restorative overhangs, traumatic toothbrushing, occlusal trauma, and appliance-related friction.^{4,5} These persistent mechanical and biological stimuli induce a localized, low-grade chronic inflammatory microenvironment.^{5,6} This microenvironment drives complex cross-talk between fibroblasts, endothelial cells, chronic inflammatory cells, and signaling cytokines, culminating in localized tissue remodeling and cellular proliferation.^{2,6}

A fibroepithelial polyp, which falls within the clinicopathologic spectrum of focal fibrous hyperplasia (irritation fibroma), is a benign reactive proliferation rather than a true neoplasm.^{1,7} Morphologically, it presents as a smooth, firm, pink, sessile or pedunculated nodule.^{1,8} Secondary mechanical trauma or acute inflammatory shifts can induce surface ulceration or vascular congestion, altering its classic appearance and causing it to mimic more aggressive or highly vascularized anomalies.^{2,3} Histologically, it is defined by marked epithelial hyperplasia, acanthosis, and elongated rete ridges overlying dense, bundled collagenous stroma with variable fibroblastic proliferation.^{1,7}

Orthodontic treatment has been implicated in the development of reactive gingival overgrowths because brackets, archwires, and elastomeric components promote plaque accumulation and may cause repeated mechanical irritation of the gingival tissues.^{2,8} Drawing a direct causal link requires strict chronological scrutiny.⁹ Lesions manifesting after appliance de-bonding often reflect residual inflammatory tissue alterations, local tissue trauma from post-treatment retainers, or independent localized irritants.^{8,9} Dissecting this timeline is critical to establish realistic

pathogenic associations.⁹ Lesions arising in the maxillary anterior region require careful diagnosis and meticulous management to preserve gingival architecture and optimize esthetic outcomes.^{3,7} This report details a post-orthodontic maxillary anterior fibroepithelial polyp, highlighting the clinical timeline, detailed periodontal indices, differential diagnosis, and long-term 3-year stability.

Case Presentation

Clinical and Periodontal Status

A 21-year-old female presented to the Dental and Maxillofacial Department with a chief complaint of a localized, slowly enlarging gingival mass in the upper front jaw region that compromised her smile aesthetics. Her medical history was unremarkable, with no systemic diseases, regular medication use, pregnancy, or tobacco use. The patient exhibited an exceptional level of baseline oral hygiene. Comprehensive periodontal examination demonstrated a stable periodontal condition, with an overall plaque index (PI) of <10% and a gingival index (GI) of 0 throughout the dentition, except at the site of the lesion. Periodontal assessment of the maxillary right central incisor (tooth #11) revealed probing depths of 1–2 mm, no bleeding on probing (BOP), no clinical attachment loss (CAL), and no periodontal pocketing or tooth mobility.

Detailed Intraoral and Radiographic Findings

Intraoral examination revealed a solitary, well-demarcated, pedunculated gingival overgrowth on the labial aspect of the attached and marginal gingiva adjacent to the maxillary right central incisor (tooth #11) (Figure 1). The lesion measured 5 × 8 mm and exhibited a smooth surface, a uniform light-pink color consistent with the adjacent healthy gingiva, and a firm, fibrotic consistency on palpation. It was non-tender and non-fluctuant, showed no blanching on digital pressure, and exhibited no spontaneous bleeding or bleeding on manipulation. High-resolution periapical radiographic evaluation showed an intact interdental alveolar bone crest, with no widening of the periodontal ligament space, root resorption, or evidence of superficial cortical bone erosion or saucerization.



Figure 1: Preoperative clinical photograph showing a solitary, well-demarcated, pedunculated gingival overgrowth on the labial aspect of tooth #11 in the maxillary anterior esthetic zone

Chronological Timeline

The patient had completed a 2-year course of fixed orthodontic treatment approximately 6 months before first noticing the gingival lesion. Clinical records confirmed the absence of gingival overgrowth or inflammatory enlargement during active orthodontic treatment. The lesion developed progressively after appliance debonding. This temporal sequence suggests that the lesion was unlikely to be directly related to active orthodontic forces and may instead have been associated with localized plaque accumulation, repeated minor trauma, or soft tissue irritation during the post-orthodontic retention phase.

Differential Diagnosis Matrix

To ensure diagnostic rigor, alternative clinical entities were systematically considered and excluded based on their clinicopathological features.^{2,3}

Irritation Fibroma: This was an important differential diagnosis because of the lesion's firm consistency, smooth surface, pale pink color, and slow growth.¹ However, irritation fibromas most commonly occur on movable oral mucosa subjected to chronic trauma, particularly the buccal mucosa along the occlusal plane.^{1,9} In contrast, the present lesion arose as a pedunculated mass on the attached gingiva, favoring a diagnosis of fibroepithelial polyp.^{1,7} Histopathological examination confirmed

the diagnosis by demonstrating epithelial hyperplasia with acanthosis and elongated rete ridges overlying a dense collagenous stroma, features that distinguish fibroepithelial polyps from irritation fibromas, which typically exhibit a flattened or attenuated epithelial surface.¹

Peripheral Giant Cell Granuloma (PGCG):

PGCG was considered because it occurs exclusively on the gingiva or edentulous alveolar ridge.^{1,3} However, it typically presents as a sessile, red to bluish-purple nodule that bleeds readily and may be associated with superficial alveolar bone saucerization on radiographic examination.^{1,2} In the present case, the lesion was firm, pale pink, pedunculated, non-hemorrhagic, and showed no radiographic evidence of underlying bone involvement. Histopathological examination excluded PGCG by demonstrating the absence of multinucleated osteoclast-like giant cells, a cellular fibrovascular stroma with hemosiderin deposition, and the prominent vascular proliferation characteristic of this lesion.^{1,3}

Pyogenic Granuloma (PG): PG was considered because it is a common reactive vascular lesion of the gingiva, particularly in young women.^{2,6} However, it was considered unlikely based on the clinical presentation, as pyogenic granulomas typically appear as soft, erythematous to reddish-purple, highly vascular lesions that are often ulcerated and bleed readily.^{1,5} In contrast, the present lesion was firm, pale pink, and non-hemorrhagic. Histopathological examination further excluded PG by demonstrating the absence of lobular capillary proliferation, plump endothelial cells, edematous granulation tissue, and a prominent acute inflammatory infiltrate.^{1,4}

Histopathological Correlation

The excisional biopsy specimen was fixed immediately in 10% neutral buffered formalin and processed for histopathological examination. Microscopic evaluation confirmed the diagnosis of a mature fibroepithelial polyp.^{1,7} Sections showed hyperplastic stratified squamous epithelium with marked acanthosis and elongated, regular rete ridges.¹

The underlying stroma consisted of dense, mature collagenized fibrous connective tissue with uniform fibroblastic proliferation arranged in thick collagen bundles.^{1,7} The vascular component comprised mature capillary-sized blood vessels of normal caliber, accompanied by a sparse chronic inflammatory infiltrate composed predominantly of lymphocytes and plasma cells immediately beneath the epithelium.¹ No evidence of epithelial dysplasia, cytologic atypia, increased mitotic activity, multinucleated giant cells, lobular capillary proliferation, or mineralized osteoid or cementum-like material was identified.

Surgical Management and Interventions

Given the localized, pedunculated, and clinically benign appearance of the lesion, complete excisional biopsy was performed as both the definitive diagnostic and therapeutic procedure.¹⁰ Following local infiltration anesthesia with 2% lidocaine containing 1:100,000 epinephrine, the lesion was excised using a conventional cold scalpel (#15 blade).^{10,11} This technique provided precise incision margins while preserving tissue architecture for histopathological evaluation.

The lesion was carefully stabilized with fine tissue forceps to minimize crush artifacts.¹⁰ An elliptical incision was made around the pedunculated base, incorporating a narrow (approximately 1 mm) margin of clinically healthy tissue.^{10,11} The dissection was extended to the superficial attached gingiva while preserving approximately 3 mm of healthy keratinized tissue to maintain periodontal architecture.

Following excision, the root surface of tooth #11 was carefully inspected and gently debrided with periodontal curettes to remove localized plaque and other potential irritants while preserving the cementum. Hemostasis was achieved with direct pressure. Due to the small, superficial surgical defect, the wound was allowed to heal by secondary intention, thereby preserving the gingival contour and esthetics in the anterior maxillary region (Figure 2). Postoperative care included 0.12% chlorhexidine digluconate mouthwash twice daily

for 7 days, atraumatic oral hygiene instructions, and a soft diet.



Figure 2: Immediate postoperative clinical photograph following complete cold-scalpel excision of the lesion, showing a clean surgical wound left to heal by secondary intention to preserve the gingival architecture

Discussion

Pathogenesis and Chronological Maturation

Fibroepithelial polyps are benign reactive lesions that represent the end stage of a chronic reparative response to persistent local irritation rather than true neoplasms.^{1,2} As these lesions mature, the initial inflammatory and vascular changes gradually subside and are replaced by progressive collagen deposition and fibrosis, resulting in their characteristic firm consistency and pale pink clinical appearance.^{1,3,7} The lesion developed approximately 6 months after orthodontic appliance debonding, suggesting that it was unlikely to be directly related to active orthodontic forces. Instead, its development may have been associated with persistent local irritants, including plaque accumulation, altered gingival contours, or mechanical irritation during the post-orthodontic retention phase.^{8,9}

Literature Comparison and Clinical Significance

Although fibroepithelial polyps commonly occur on the buccal mucosa, tongue, and other sites subjected to chronic irritation, their occurrence on the attached gingiva of the maxillary anterior region is relatively uncommon.^{1,2,4} Lesions in this esthetically sensitive area may disrupt the gingival contour and smile line, even when small, and can interfere with plaque control by creating localized plaque-retentive areas.^{2,3,7,8}

Management of lesions in the anterior maxilla requires meticulous surgical planning to preserve the interdental papilla, attached gingiva, and gingival architecture while achieving complete excision.^{10,11} In the present case, conservative excision with preservation of the surrounding soft tissues resulted in favorable healing without compromising esthetics.

The histopathological findings were consistent with those previously reported for mature fibroepithelial polyps, demonstrating epithelial hyperplasia with acanthosis overlying dense collagenized connective tissue.^{1,7} The absence of mineralized tissue excluded peripheral ossifying fibroma, whereas the lack of lobular capillary proliferation and multinucleated giant cells distinguished the lesion from pyogenic granuloma and peripheral giant cell granuloma, respectively.^{1,3}

Academic Value, and Long-Term Stability

The clinical significance of this case lies in its occurrence in the anterior maxillary esthetic region, its temporal association with previous orthodontic treatment, and the availability of long-term follow-up. The patient was reviewed at 1 week, 3 months, 6 months, 1 year, and annually thereafter for a total of 3 years. At the 1 week review, the surgical site demonstrated satisfactory healing by secondary intention, with complete epithelialization and no evidence of infection or excessive inflammation. By 6 months and 1 year, the gingival tissues had matured, with restoration of a harmonious gingival contour and preservation of the attached keratinized gingiva. The transient postoperative increase in clinical crown length resolved through normal soft tissue remodeling.

At the 3-year follow-up, the surgical site remained stable, with preservation of the gingival architecture, harmonious tissue color, and no clinical evidence of recurrence. Although recurrence of fibroepithelial polyps is uncommon following complete excision and elimination of local irritants, long-term follow-up is infrequently documented in published case reports.^{4,5} This case demonstrates that conservative surgical excision combined with removal of local

irritative factors can result in favorable long-term clinical and esthetic outcomes (Figure 3).



Figure 3: Three-year long-term follow-up review demonstrating complete architectural soft-tissue stability, excellent remodeling of the gingival zenith, and complete absence of localized recurrence.

Conclusion

Fibroepithelial polyp should be considered in the differential diagnosis of solitary, firm, pink, slow-growing gingival overgrowths, particularly in patients with a history of chronic local irritation or previous orthodontic treatment. Because its clinical presentation may resemble that of pyogenic granuloma, peripheral giant cell granuloma, and peripheral ossifying fibroma, definitive diagnosis requires histopathological examination. In the present case, complete cold-scalpel excision combined with removal of local irritative factors resulted in uneventful healing and favorable esthetic and functional outcomes. The absence of recurrence during 3 years of follow-up suggests that complete surgical excision with elimination of local etiologic factors can provide durable long-term disease control.

Conflict of Interest

Nil

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