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Surgical excision of pyogenic granuloma along with coronally advanced flap in maxillary esthetic region: a case report.

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Abstract: *Pyogenic granuloma is a common form of inflammatory hyperplasia occurring in the oral cavity. Its etiological factors are often associated with underlying irritants such as local irritation, traumatic injury, or hormonal influences (including puberty, menstruation, and pregnancy), although the exact etiopathogenesis remains uncertain. Clinically, it presents as an exophytic lesion with either a pedunculated or sessile base and a smooth or lobulated surface. Given the limited literature on the management of residual gingival defects, the present case report not only outlines the diagnosis and treatment of pyogenic granuloma but also highlights the immediate and successful management of the residual gingival defect in the esthetic zone using a coronally advanced flap. Healing was uneventful and satisfactory at 10 days, with excellent coverage of the mucogingival defect, good gingival esthetics, and normal sulcus depth observed. No complications were noted during follow-up periods at 2 weeks, 1 month, 3 months, and 6 months.*

Keywords: *coronally advanced flap, excisional biopsy, hyperplasia, pyogenic granuloma, residual gingival defect.*

I. Introduction:

Pyogenic granuloma (PG) is a benign, non-neoplastic lesion of the oral cavity, commonly occurring on the

gingiva with a reported prevalence of approximately 17.65% [1,2]. The term "inflammatory hyperplasia" encompasses a broad spectrum of nodular growths of the oral mucosa that histologically consist of inflamed fibrous and granulation

tissue [3,4], among which PG is a well-recognized entity. The term "pyogenic granuloma" or "granuloma pyogenicum" was first introduced by Hartzell in 1904 [5]. The lesion can vary in size from a few millimeters to several centimeters [6].

It typically develops in response to various stimuli such as low-grade local irritation, traumatic injury, hormonal influences, or certain medications. Although PG can occur across all age groups, it is more frequently observed in young females, particularly during the second decade of life, likely due to hormonal fluctuations [7].

This article presents the case of a 15-year-old female patient with pyogenic granuloma, successfully managed through surgical intervention. Excision of the lesion often necessitates removal of excess tissue to minimize recurrence, which may result in a residual mucogingival defect. Such defects can lead to unaesthetic gingival appearance and increased root sensitivity [8]. As literature on the immediate management of these defects is limited, this report highlights the use of a coronally advanced flap for the successful management of the residual gingival defect following excision of PG in the maxillary esthetic zone.

II. Case Report:

A 15-year-old female patient presented to the Department of Periodontics, College of Dental Sciences, Davangere, with a chief complaint of a growth in the upper right posterior tooth region for the past three months. The lesion was initially small and had gradually increased to its present size. The patient reported discomfort associated with the growth, which intensified during mastication. Her medical history was non-contributory.

Intraoral examination revealed a solitary, red, sessile gingival growth measuring approximately 8 × 15 mm in relation to tooth 13, extending up to the mesial aspect of 15 (Figures 1 and 2). On palpation, the findings were consistent with the clinical examination; the lesion was firm, non-tender, and exhibited no discharge. However, bleeding on provocation was present. Oral hygiene was poor, with noticeable calculus and stains. A complete hemogram showed values within normal limits, and intraoral periapical radiography (IOPAR) revealed no significant abnormalities.

Phase I therapy, including oral prophylaxis, was performed (Figure 2), and the patient was advised chemical plaque control using 0.2% chlorhexidine gluconate mouthwash twice daily. One week later, an excisional biopsy was carried out under local anesthesia for histopathological evaluation (Figure 3). The lesion was excised from its base to assess peripheral extension by scalpel method using 12 blade, followed by removal of an additional 2 mm of surrounding normal tissue, resulting in a residual gingival defect in relation to 13. Root planing was performed, followed by a crevicular incision and elevation of a full-thickness flap, which was then converted to a partial- thickness flap to allow tension-free coronal advancement. After thorough irrigation, the flap was coronally repositioned and secured using two simple interrupted silk sutures, and a periodontal dressing was placed (Figure 4). Postoperative instructions were provided.

Histopathological examination revealed hyperplastic parakeratinized stratified squamous epithelium overlying a loose fibrillar connective tissue stroma containing numerous proliferating capillaries, dense mixed inflammatory cell infiltrate, and extravasated red blood cells, confirming the diagnosis of pyogenic granuloma.

The patient was reviewed after 10 days, and the surgical site demonstrated satisfactory healing (Figure 5). Subsequent follow-ups were conducted at 2 weeks, 1 month, 3 months, and 6 months, during which oral prophylaxis and reinforcement of oral hygiene instructions were consistently provided.

III. Discussion:

Gingival enlargement, also referred to as gingival overgrowth, is defined as an increase in the size of the gingiva. Based on etiological and pathological factors, it may be classified as inflammatory, drug-induced, associated with systemic diseases, neoplastic, or false enlargement. Pyogenic granuloma (PG) is considered a nonspecific conditioned enlargement and falls under the category of enlargements associated with systemic conditions. It presents as a benign, localized mass composed of exuberant granulation tissue and is regarded as an exaggerated response to minor trauma or chronic irritation[6]. PG is more commonly observed in females, particularly during the second decade of life, with a higher predilection for the maxillary arch [7].

Oral PG most frequently involves the gingiva, accounting for approximately 75% of cases, followed by the buccal mucosa, tongue, and lips [1]. In the present case, the lesion was located on the maxillary gingiva. Although PG may
occasionally be associated with significant bone loss [10], no such defect was observed radiographically in this case. PG is often considered a reactive, tumor-like lesion arising in response to stimuli such as low-grade irritation, trauma [1], hormonal influences [11], or certain medications [12]. In this instance, the lesion may have developed due to hormonal imbalance compounded by poor oral hygiene, with chronic irritation from plaque and calculus acting as contributing factors.

Management of recurrent reactive gingival lesions poses a clinical challenge, as excision often results in a residual gingival defect. In the present case, immediate management of the anticipated defect was planned to minimize postoperative complications such as compromised esthetics, pain, and dentinal hypersensitivity [8]. Various techniques, including subepithelial connective tissue graft (SCTG), coronally advanced flap (CAF), free gingival graft (FGG), and platelet-rich fibrin (PRF), have been described for managing mucogingival defects, either alone or in combination. Among these, CAF was selected due to its simplicity, reduced surgical time, and favorable esthetic
outcomes [13]. Previous studies have demonstrated high predictability of CAF in treating gingival recession defects [15]. In the current case, complete coverage of the residual gingival defect was achieved, consistent with findings reported by Salaria et al., [15] although their approach incorporated PRF in conjunction with CAF.

Histopathological evaluation is essential, as PG may clinically resemble other gingival enlargements. The differential diagnosis includes peripheral giant cell granuloma, peripheral ossifying fibroma, hemangioma, and

angiosarcoma. In the present case, biopsy findings confirmed the clinical diagnosis of pyogenic granuloma. The standard treatment involves complete surgical excision; however, a recurrence rate of approximately 16% has been reported [1]. The patient was placed on regular follow-up, and no recurrence was observed at the 6-month review.

(IV) Figures:

Fig 1: Before phase I therapy

Fig 2: One week after phase I therapy

Fig 3: After excision of the overgrowth

Fig 4: Coronally advanced and sutured

Fig 5: 10 days post-operative

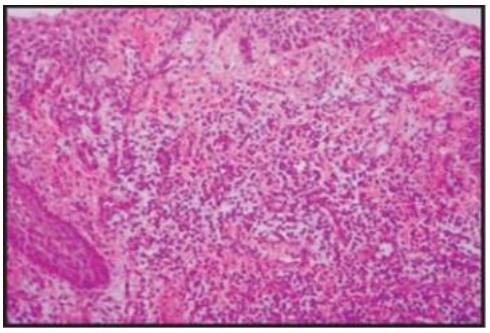

Fig 6: Histological view

IV. Conclusion:

Pyogenic granuloma can be effectively managed with accurate diagnosis and appropriate treatment planning. However, drawing definitive conclusions based on a single case report remains challenging. In the present case, satisfactory coverage of the residual mucogingival defect was achieved using a coronally advanced flap (CAF), resulting in favorable gingival esthetics and restoration of normal sulcus depth. Further validation through controlled clinical trials with larger sample sizes is necessary to establish more conclusive evidence.

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