*Case Report*
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# Surgical Management of Focal Reactive Gingival Overgrowth: A Report of Two Cases

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## Abstract

**Background:** Focal Reactive Gingival Overgrowths (FRGO) manifest as a result of chronic stimuli in the form of fibrous connective tissue lesions in the oral mucosa which are routinely observed in day-to-day dental practice. Gingiva is the frequently affected site for such lesions. Along with the clinical presentation, the histopathological investigation of the lesion plays a crucial role for the confirmation of the diagnosis. This case report deals with the surgical management of pyogenic granuloma and irritational fibroma. The first case is treated by using a modified surgical excision in an attempt to prevent the lesion from recurring. On following of both the cases after one month it was observed that the lesions did not recur. Elimination of the cause along with parental counselling are the essential factors for the successful outcome in such cases.

**Keywords:** Irritational Fibroma, Modified Surgical Excision, Pyogenic Granuloma, FRGO

## 1. Introduction

Children are exposed to numerous gingival diseases like adults, but these diseases show variations in certain aspects. Gingival conditions could be of several types - plaque or non-plaque induced, they may run in families, or they may occur as manifestations of underlying systemic diseases. In order to manage these conditions successfully, it is important to identify them[1]. The best way to approach such a condition includes early detection, undertaking of preventive measures, early treatment and control of its progression in children. Focal reactive gingival overgrowths (FRGO) are often reactive,[2] inflammatory[3] and usually develop as a reaction to local stimuli, irritation, injury like plaque, calculus or factors which retain plaque[2–5]. Certain systemic conditions like puberty and pregnancy can also aggravate the response of gingival tissue to chronic irritation resulting in reactive gingival overgrowths[6–8]. Drug-induced gingival enlargements, benign and malignant neoplasms or manifestation of systemic diseases are some of the other causes of gingival overgrowth[9,10]. Although, gingiva is the most frequently affected site, tongue, palate, cheek, and floor of the mouth are the less affected sites[11–13]. These lesions mostly arise from interdental papilla. FRGO is noticeable in different clinical forms which can be classified into Pyogenic Granuloma (PG) including pregnancy tumour, Peripheral Giant Cell Granuloma (PGCG), Fibrous Hyperplasia (FH) or fibrous epulis, Peripheral Ossifying Fibroma (POF) or Peripheral fibroma with calcification[14,15]. Generally, FRGO are associated with a specific ethnic group, particular oral site, age, sex etc. The lesions present with a range of in their clinical appearances that varies from dull pink to reddish in colour and size differs, from a few millimeters to centimeters, including one tooth to several teeth[15]. Lesions can be categorized into pedunculated or sessile

growth with smooth, lobulated or ulcerated surface[16]. They can be soft to rubbery in consistency and some lesions can bleed profusely even on slight provocation. In general, these lesions are painless until they are complicated by trauma or infection. The treatment of FRGO is based on a comprehensive approach that involves elimination of etiology, thorough plaque control and surgical excision of the lesion. Herein, a report two cases of FRGO in the form of pyogenic granuloma and irritation fibroma is presented.

## 2. Case Reports

### 2.1 Case - 1

A female patient aged 13 years visited the Department of Pedodontics with a chief complaint of a growth in the upper right tooth back region since two and half months. (Figure 1a) The lesion was small initially and progressed to grow over a period of time to attain the size at the time of presentation. The patient had also given a history of a tooth pick injury in the same region, with associated discomfort that used to aggravate during mastication. She did not report any significant medical history. On clinical examination, it was observed that the lesion was red in colour, solitary exophytic and sessile in nature that measured about 2 × 1 × 1cms in dimension in the upper right vestibule in relation to first and second erupting premolars and mesial surface of 1st molar. On palpation, the lesion was firm and non-tender. However provocation of the lesion elicited bleeding. A complete hemogram was advised and the result showed that all the parameters fell within their normal ranges. Oral prophylaxis was performed in phase I therapy. Incisional biopsy was carried out and sent for histopathological examination to confirm the provisional diagnosis, as clinical features were suggestive of pyogenic granuloma. Histopathological examination revealed stratified squamous epithelium and vascular stroma which confirmed the provisional diagnosis. 0.2% chlorhexidine gluconate mouthwash was prescribed twice daily for a week. Antibiotics were prescribed for 7 days[35]. Modified surgical excision of the lesion was considered as the choice of the treatment. After obtaining informed consent, excisional biopsy was performed under local anaesthesia with thorough

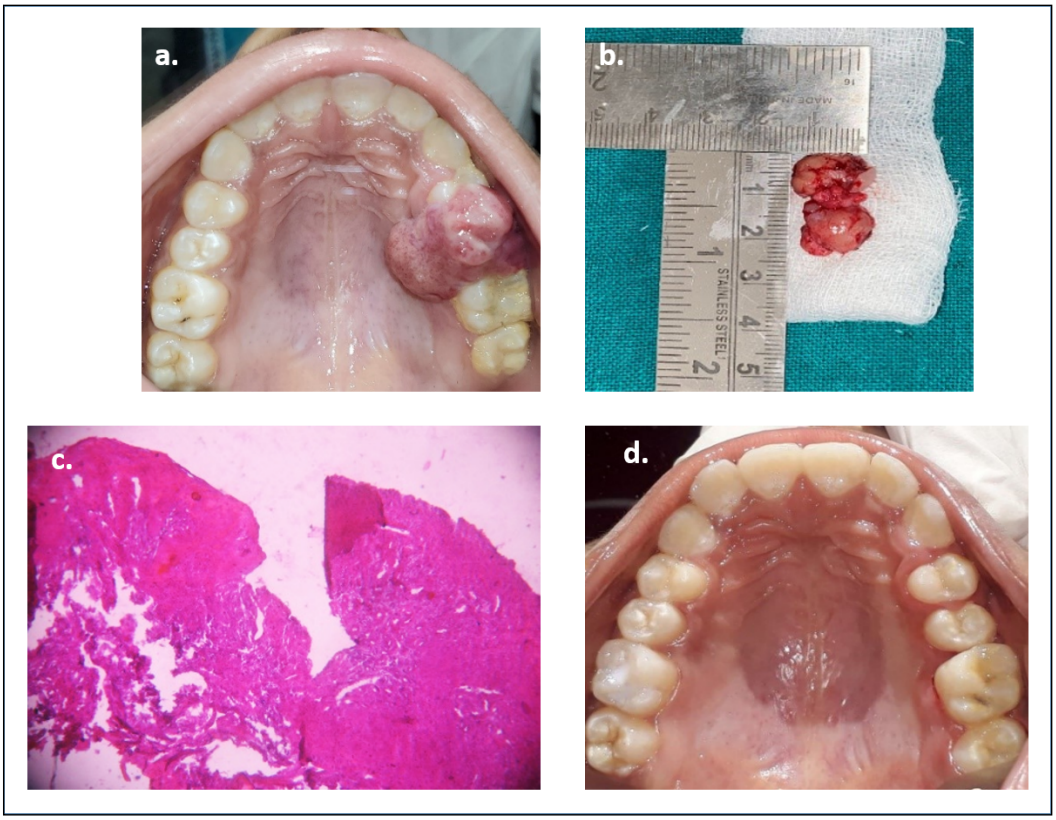



**Figure 1.** Case 1: a. Pre-operative intra-oral photograph of lesion; b. Excisional biopsy; c. Histopathological image; d. Post-operative photograph at 1-month follow-up.

curettage to eliminate any possible granulation tissue. (Figure 1b) Due to phase I therapy and antibiotics, the lesion became fibrotic that reduced blood from operative site. Surgical area was cleaned with Betadine® and saline and pressure pack was given to control bleeding. The dressing of periodontal pack was applied for one week and patient was recalled. The excised tissue was sent for histopathologic investigation which revealed keratinized stratified squamous epithelium with stroma showing abundant endothelial lined blood vessels with prominent inflammatory infiltrates, which confirmed pyogenic granuloma. (Figure 1c) After one week, the operated area was evaluated for healing, which was satisfactory. At each visit, oral prophylaxis was done. On recalling the patient, after a month it was observed that there was no signs of inflammation and oral hygiene was maintained adequately. (Figure 1d)

## 2.2 Case – 2

A male patient aged 12 years reported to the Department of Pedodontics and complained of an uncomfortable growth inside his mouth. The parents described it to be a slow-growing mass on the anterior palatal region that appeared roughly a month ago. The lesion was apparently painless that caused difficulty in mastication and speech. On examination it was observed that the lesion was small and pedunculated around the incisive papilla. On palpation the lesion was found to be relatively smooth, soft, non-tender and adhered firmly to the underlying palatal mucosa. (Figure 2a) The lesion was about $1 \times 1$ cm by dimension. The probable cause for this fibrous overgrowth was due to presence of deep bite anteriorly.

Informed consent was obtained and haematological analysis were carried. The lesion was diagnosed to be irritational fibroma on the hard palate as per the clinical scenario due to trauma from deep bite. It was decided to be treated surgically by excision, under local anesthesia. Supragingival scaling was carried out in Phase I therapy and chlorhexidine rinses was advised to be used twice daily for a week. (Figure 2b) Bleeding was arrested after the excision and the excised sample was sent for the histopathological examination. The result showed that the lesion was hyperplastic lined by stratified squamous epithelium and fibrous stroma with short rete pegs. The

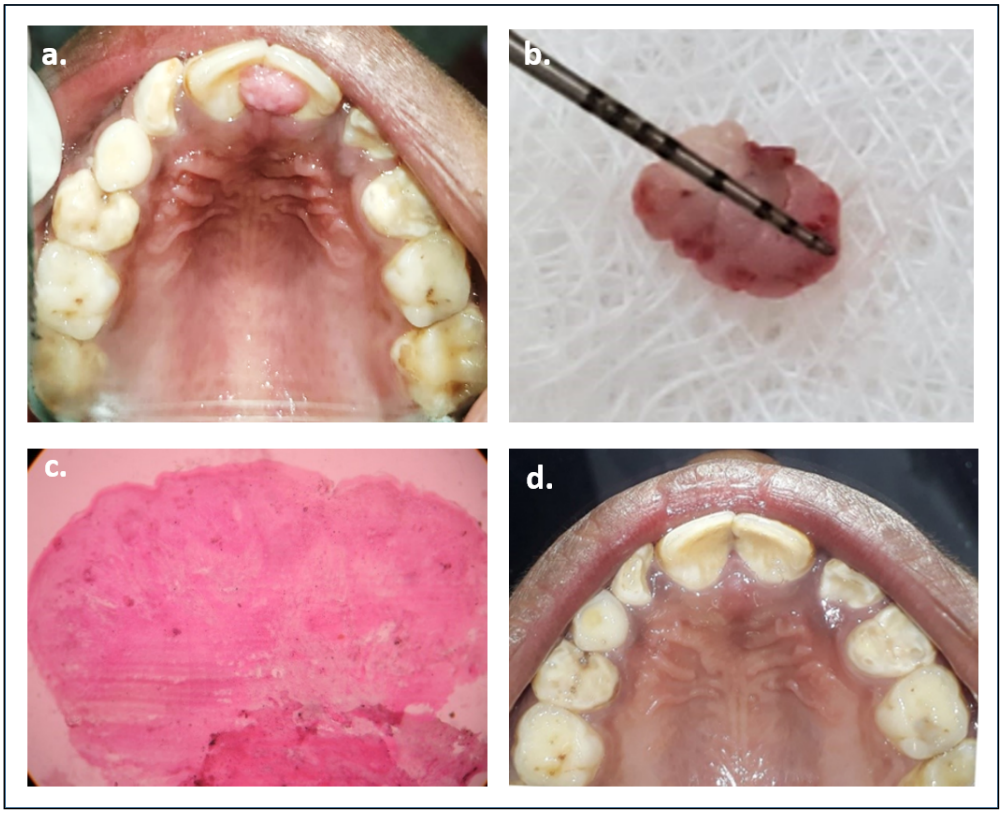



**Figure 2.** Case 2: a. Intra-oral photograph of the lesion; b. Excisional biopsy; c. Histopathological image; d. Post-operative photograph at 1-month follow-up.

stroma of the connective tissue included collagen fiber bundles, proliferating fibroblasts, inflammatory cell infiltrates, and blood vessels, suggestive of traumatic fibroma. (Figure 2c) An uneventful healing of the lesion was observed on follow-up. (Figure 2d) The patient was recommended to visit the department of orthodontics for the correction of deep bite.

## 3. Discussion

"Pyogenic granuloma" also known as a non-specific enlargement, benign in nature and often seen as reactive hyperplasia of granulation tissue. It occurs as an exaggeration to chronic irritation or minor trauma[17]. The term pyogenic granuloma is a misnomer as it is not associated with pus discharge or formation or represent a granuloma histologically[18]. Although it can occur in any age group, it is most commonly seen occurring during the second decade of life[19]. Based on its histology and etiology, the term pyogenic granuloma was substituted by capillary hemangioma, granuloma type, angiogranuloma, hemangiomatous granuloma, and granuloma telangiectacticum[3,18]. The underlying factors include poor maintenance of oral hygiene, cheek biting, infection of unknown origin, over hanging restorations etc. Hyperplasia of the fibrovascular connective tissue occurs due to this irritation resulting in pyogenic granuloma because of proliferation of granulation tissue[20]. In the first case, tooth pick trauma could have been probable cause for occurrence of the lesion. Large lesions can result in occlusal interference that will cause release of endogenous and angiogenic factors. As the involved area is highly vascular it has tendency to bleed[20,21]. The female predilection during the second decade of life may be because of the increased levels of estrogen and progesterone hormones around the time period[22]. This correlation may probably lead to increased angiogenic factors within the inflamed tissues, and in order to extend angiogenic effect the apoptotic activity of granuloma cells will reduce[23]. In cases of suspicion of malignancy or lesion is larger than the normal size an incisional biopsy is usually recommended. Previously literature has reported two types of pyogenic granulomas namely lobular capillary hemangioma (LCH) and the non-lobular capillary hemangioma (non-LCH)[24]. This case was diagnosed to be of lobular type. The LCH type has been reported to be more aggressive exhibiting greater proliferative activity[25]. The LCH type is characterized by proliferating blood vessels organized in lobular aggregates. However, non-LCH type is characterized by greater angiogenesis resembling granulation tissue. Treatment differs depending upon the size of the lesion. The preferred treatment for pyogenic granuloma is complete excision. In this case, modified surgical excision with deep curettage was performed owing to the larger size of the lesion to prevent the recurrence of the lesion as reported in the literature[26].

Traumatic fibromas can be defined as localized fibrous hyperplasias that occur due to trauma or local irritation[27]. The irritants may include calculi, overhanging margins, restorations, sharp tooth, chronic biting, foreign bodies, etc. As seen in the second case, the irritating factor was deep bite constantly causing trauma to the incisive mucosa. As reported in the literature, repetition of noxious stimuli such as trauma due to biting and bruxism is the exaggerating traumatic factor that causes irritational fibroma[28,29]. The fibroma occurs in response to chronic irritation resulting in proliferation of connective tissue cells. When trauma occurs, the tissues of the oral cavity undergo repair process. Due to this, proliferation of fibrous connective tissue is seen leading to the formation of a nodule or a mass[30]. Traumatic fibroma associated with any kind of local irritation may cause such reactive hyperplastic lesions. These hyperplastic lesions are self-limiting in contrast to neoplastic lesions[28]. Fibromas may grow rapidly and thus should be identified and treated as soon as possible. The preferred treatment for such lesions is surgical excision followed by the removal of irritant[27].

Pyogenic granuloma and irritational fibroma can be differentiated from other lesions such as haemangioma on the basis of histological characteristics as the former shows proliferation of endothelial cells and without any inflammatory cell infiltration[31]. Peripheral odontogenic fibroma is localized on gingiva, with very nominal vascular component[32,33]. Multinucleated giant cells are the hallmark features seen in Peripheral giant cell granuloma[32,34].

## 4. Conclusion

Focal reactive gingival overgrowth are usually benign and self-limiting conditions. They often occur due to long standing chronic conditions, repetitive trauma and poor oral hygiene. Emphasis should be given to proper

diagnosis, definitive management and prevention of such lesion. Modified surgical excision and the deep curettage helped in successful eradication of pyogenic granuloma with less chances of recurrence. Along with surgical approach, elimination of underlying causative factors is essential for successful outcome in cases of traumatic fibromas. As a paediatric dentist, counselling of the patient and the guardians about proper oral hygiene maintenance is the key to management.

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