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Focal reactive gingival overgrowth: Diagnosis, histopathological evaluation and management

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SUMMARY

Reactive lesions are clinically and histologically benign nodular swellings that emerge in response to chronic and recurring tissue injury. The chronic and recurring injury stimulates an elated or excessive tissue response. Clinically, these reactive lesions often present diagnostic challenges because they mimic various groups of pathologic processes. They are clinically indistinguishable but possess distinct microscopic features. The aim of this article was to review the clinicopathologic and histopathologic features of focal reactive gingival lesions commonly encountered clinically.

Keywords: focal, reactive, lesion, gingiva, overgrowth.

INTRODUCTION

Gingival enlargement is defined as an increase in the size of the gingiva (1). In the past clinical descriptive terms were used such as gingival hyperplasia or hypertrophic gingivitis but new nomenclature used for this condition is gingival overgrowth (2).

Gingival enlargement is a commonly seen problem in clinical practice. Due to their varied presentations, the diagnosis of gingival overgrowth becomes challenging for the clinician. A perfect diagnosis is critically important, since the management of these lesions and prevention of their recurrence is completely dependent on correctly diagnosing the cause and origin of the enlargement (2).

Gingival overgrowth is usually associated with a diversity of local and systemic factors. The incident leading to gingival overgrowth are complex and the clinician needs to be vigilant and put its skill into place to correctly diagnose the origin among the plethora of causes of gingival overgrowth which could range from inflammatory enlargements, Drug induced enlargements, enlargements associated with systemic diseases or conditions, false enlargements, and neoplastic enlargements. A differential diagnosis goes thorough review of medical and dental histories, a careful examination of the nature of the enlargement, and an identification of its etiology. A biopsy specimen may be required to confirm a diagnosis (3).

Based on etiopathogenesis, enlargements could be inflammatory, drug influenced, associated with systemic conditions or diseases, neoplastic or false enlargements. On the basis of location, it can be marginal, papillary or diffuse. According to distribution enlargements can be localized or generalized. Localized enlargements could further be divided into three sub-types i.e., isolated, discrete, and reactive (3).

These focal reactive gingival overgrowths (FRGO) are commonly encountered in clinical practice and develop in response to local stimuli/ irritation/ injury, such as plaque retentive factors, crowding of teeth, inadequately functioning restoration, appliances, etc. These lesions mostly arise from the interdental papilla and manifest itself in different clinical forms (4).

Kfir *et al.* classified FRGO into different types such as Peripheral giant cell granuloma, fibrous hyperplasia, pyogenic granuloma, peripheral ossifying fibroma with calcifications (5).

Clinically these lesions often present diagnostic challenges as they mimic various groups of pathologic processes.

The aim of this article is to present a series of 5 different cases of FRGO and review their Clinicopathological features along with successful surgical management using various techniques.

CASE REPORT I: INFLAMMATORY GINGIVAL HYPERPLASIA

A 43-year-old female reported to the Department of Periodontics of Sudha Rustagi College of Dental Sciences and Research, Faridabad, Haryana with a

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chief complaint of swollen and bleeding gums in relation to mandibular anterior teeth since 3 years. There was no history of history of drug intake causing enlargement neither any medical or family history was present. Patient also complained of difficulty in chewing.

Intraoral examination revealed that the enlargement was diffuse (Figure 1 A, B). On palpation, the enlargement was fibrotic with smooth and shiny central surface. According to Bokenkamp classification (6), patient was placed under grade II gingival enlargement. On probing there were deep pockets of 6-11 mm with mobility of varying grades in all the anterior teeth. Radiographic examination reported horizontal bone loss in relation to the site of enlargement. Hematological investigations revealed no abnormality.

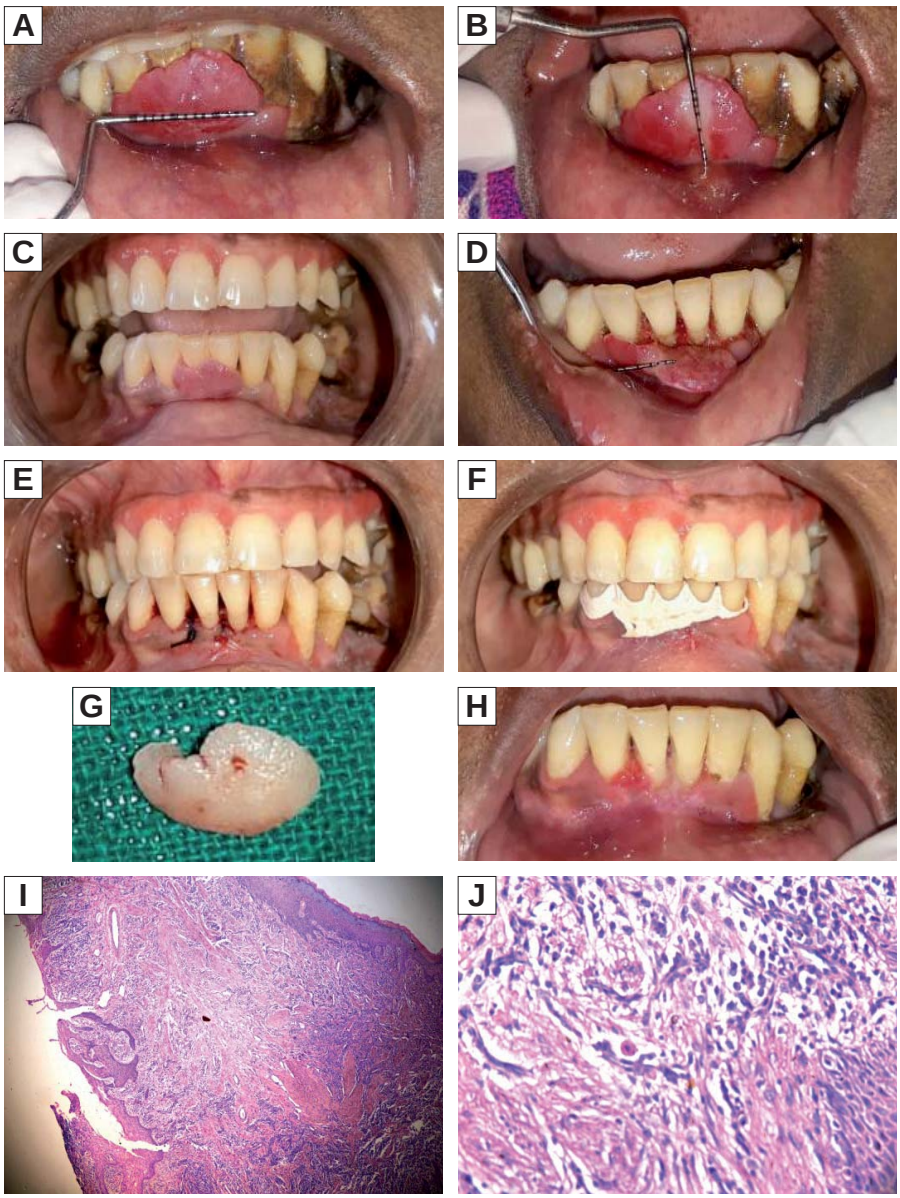

Fig. 1. Case report I: inflammatory gingival hyperplasia (A, B – preoperative view; C, D – view after 1 week of non-surgical periodontal therapy; E – sutures; F – after periodontal pack placement; G – excised tissue; H – 1 week after surgical therapy; I, J – photomicrograph)

Management

Phase 1 therapy comprising of scaling and root planing and oral hygiene instructions were given and the use of chlorhexidine mouthwash twice a day for 2 weeks was advised. Patient was recalled after 1 week (Figure 1 C, D).

Surgical therapy consisted of flap procedures to eliminate the periodontal pockets and to reduce the tissue thickness to get physiological contour. Pockets depths were marked with a pocket marker and bone sounding was performed with periodontal probe to determine the presence and extent of bone deformities. The initial internal bevel incision was made at least 3 mm coronal to the mucogingival junction, which creates new interdental papilla at each interdental space. Flap was reflected and debridement was performed. Direct interrupted sutures were given (Figure 1 E). Periodontal dressing was given (Figure 1 F) and the excised tissue (Figure 1 G) was sent for histological examination. Uneventfull healing was noticed after 1 week of Surgical therapy (Figure 1 H).

Histopathologic examination

Histopathological examination (Figure 1 I, J) revealed cellular stroma. Perivascularly arranged foci of chronic inflammatory cells infiltrate (predominance of plasma cells, few lymphocytes and eosinophils) were seen in the stroma. These foci are separated by discernible collagen bundles. Numerous dilated blood vessels are also present. Overlying epithelium was para keratinized stratified squamous epithelium which is hyperplastic to atrophic. Biopsy report was suggestive of Inflammatory Gingival Hyperplasia.

CASE REPORT II: PERIPHERAL OSSIFYING FIBROMA

A 69-year-old female patient reported to the Department of Periodontics with a chief complaint of pain and swelling in lower right back tooth region since 15 days. No relevant drug history was reported

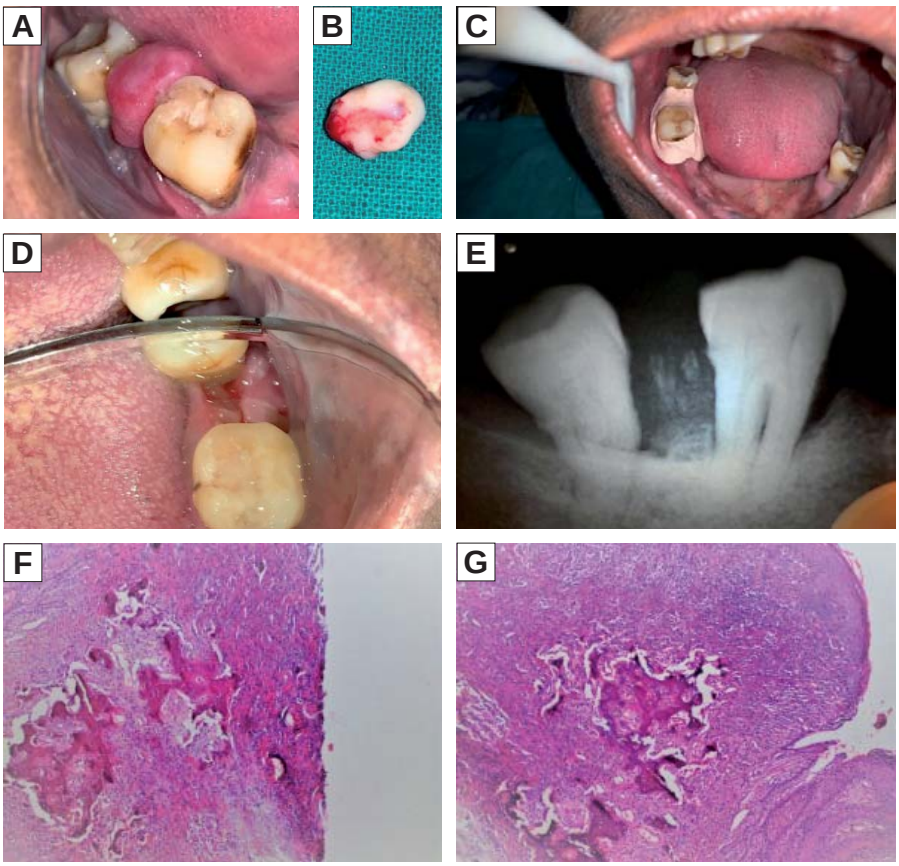

Fig. 2. Case report II: peripheral ossifying fibroma (A – preoperative view; B – excised tissue; C – immediate postoperative photograph; D – after 1 week postoperative view; E – photo radiograph; F, G – photomicrograph)

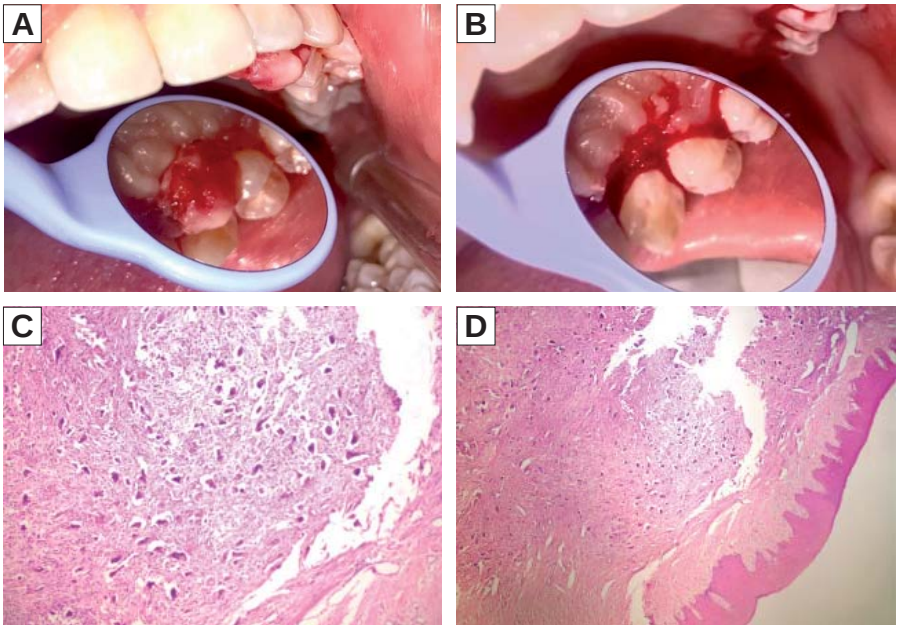

Fig. 3. Case report III: giant cell epulis (A – preoperative view; B – immediate postoperative view; C, D – photomicrograph)

by the patient. Past medical and family history was non-contributory.

The intraoral examination revealed a solitary growth with a firm to hard consistency and round to oval shape of gingival tissue on the edentulous region of 47 (Figure 2 A, B). The growth was non tender on palpation.

Management

The lesion was resected completely under local anaesthesia with scalpel (Figure 2 C). Periodontal pack was placed on the site of tissue excision (Figure 2 D). Uneventful healing followed after 1 week (Figure 2 E).

Radiographic examination

On radiographic examination, IOPA showed the presence of soft-tissue shadow, interspersed with radiopaque areas suggestive of calcification between the mandibular right lower back tooth region, corresponding to the area of exophytic growth (Figure 2 F).

Histopathologic examination

Microscopic examination revealed calcifications in cellular stroma, numerous bony trabeculae in the centre of cellular stroma were present. These bony trabeculae have an osteoid rimming and osteocytes within lacunae. Supporting stroma shows prominent fibroblastic activity and chronic inflammatory cells infiltrate (mast cells, lymphocytes) over lined epithelium is parakeratinized stratified squamous epithelium and shows few cellular atypia (Figure 2 G, H). Conclusively, a diagnosis of Peripheral ossifying fibroma was made.

CASE REPORT III: GIANT CELL EPULIS

A 26-year-old female reported to the Department with a chief complaint of swollen and bleeding gums in upper front tooth region since 1 month. There was no systemic, family history reported. No relevant drug history was reported by the patient.

The intraoral examination revealed a solitary, diffuse swelling on the palatal aspect of 23 (Figure 3 A). The swelling measured about 1×1 cm. The surface of the swelling was lobulated and firm in consistency. It was bluish in color, and the overlying mucus mem-

brane was intact. History revealed that the swelling started as a small one and progressively increased to the present size over a period of 6 months. It was associated with intermittent pain. There was no history of trauma, neurological deficit, fever, loss of appetite, loss of weight. Orthopantomogram, intraoral periapical radiographs, and maxillary occlusal radiograph showed no bone loss. Hematological investigations revealed no abnormality. Laboratory tests revealed no evidence of any systemic disease.

Management

Surgery (excisional biopsy) (Figure 3 B) was planned under local anesthesia. The overlying mucosa was incised and undermined. Lesion was separated from the adjacent tissue by blunt dissection and removed in one piece. The specimen was sent for histopathologic examination.

Histopathological examination

Histological features showed tissue lined by stratified squamous epithelium showing hyperplasia and focal ulceration. Underlying zone shows proliferation of plump ovoid to spindle shaped stromal cells along with numerous multinucleate giant cells. At places reactive bone formation and calcification also noted (Figure 3 C, D). No malignant cells were noted. Conclusively, a diagnosis of Giant cell epulis was made.

CASE REPORT IV: IRRITATIONAL FIBROMA

A 52-year-old female reported to the Department of Periodontics with a chief complaint of swollen and bleeding gums in upper front tooth region since 3 months. No relevant drug history was reported by the patient. Past medical and family history was non-contributory.

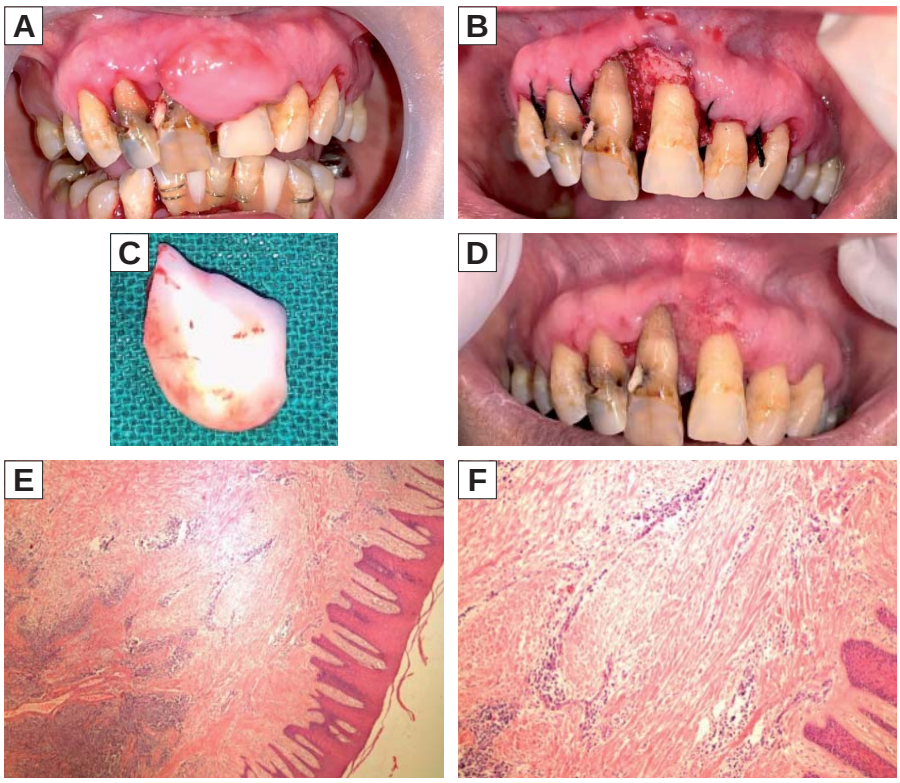

Fig. 4. Case report IV: irritational fibroma (A – preoperative view; B – immediate postoperative view; C – excised tissue; D – after 1 week postoperative view; E, F – photomicrograph)

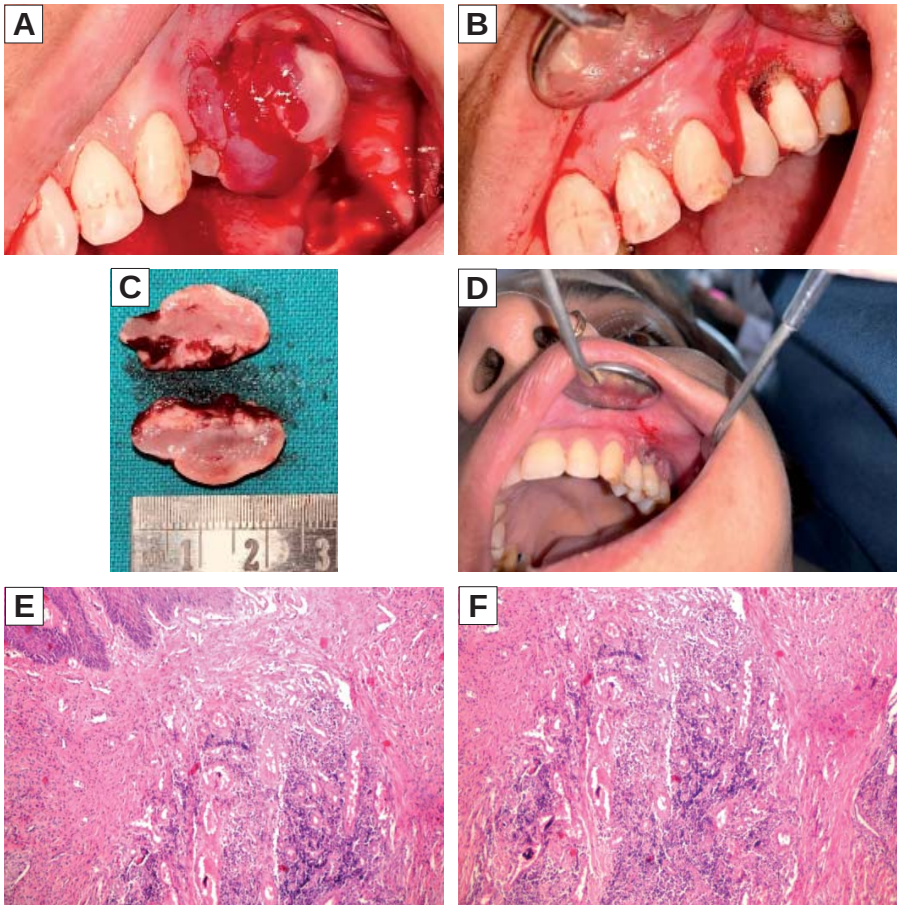

Fig. 5. Case report V: pyogenic granuloma (A – preoperative view; B – immediate postoperative view ; C – excised tissue; D – 1 week postoperative view; E, F – photomicrograph)

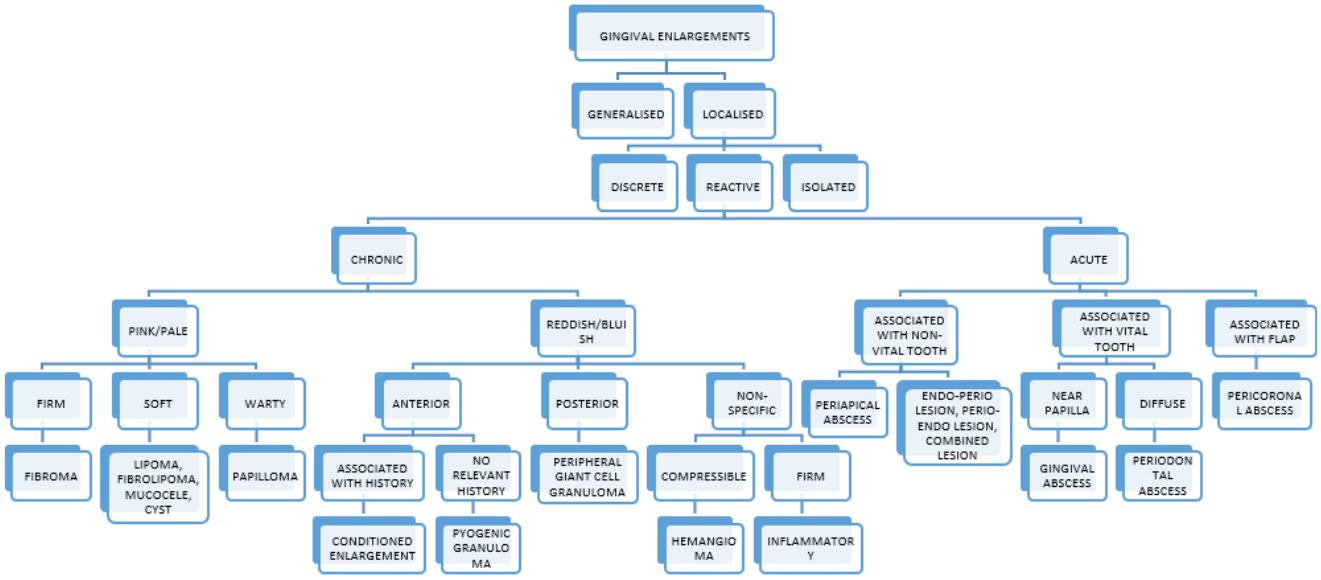

Fig. 6. Algorithm for directing the examination of patients with similar conditions of focal reactive gingival overgrowth

The intraoral examination revealed swelling on the buccal aspect (Figure 4 A). The marginal, papillary and attached gingiva appeared reddish pink with a firm consistency. The size of the lesion was 15×12 mm. On probing there was severe attachment loss, deep pockets of 8-11 mm with mobility of varying grades in all the anterior teeth. Hematological investigations revealed no abnormality.

Management

Phase 1 therapy comprising of scaling and root planing and oral hygiene instructions were given and the use of chlorhexidine mouthwash twice a day for 2 weeks was advised. Patient was recalled after 1 week.

The patient was administered local anaesthesia. An internal bevel Gingivectomy was performed and the lesion was resected. Flap was reflected and debridement was performed. Direct interrupted sutures were given Figure 4 B). Periodontal dressing was given and the excised tissue (Figure 4 C) was sent for histological examination. Satisfactory wound healing was observed after 1 week (Figure 4 D).

Histopathologic examination

Microscopic examination showed fibrous connective tissue. Focal perivascular aggregates of chronic inflammatory cells along with dilated blood vessels in the oedematous background. Dense and discrete collagen bundles were present throughout the stroma forming the bulk of lesion. Overlying epithelium is para- to non- keratinised stratified squamous epithelium which is hyperplastic at predominant places. At few areas, characteristics gingival epithelium was evident (Figure 25 E, F). Conclusively, a diagnosis of irritational fibroma was made.

CASE REPORT V: PYOGENIC GRANULOMA

A 34-year-old female reported to the Department of Periodontics with a chief complaint of swollen and bleeding gums in upper left tooth region since 2 months. No relevant drug history was reported by the patient. Past medical and family history was non-contributory.

The intraoral examination revealed swelling on the buccal aspect (Figure 5 A). The localised diffuse enlargement appeared reddish pink with a firm consistency measuring 2×1×0.5 cms. On probing there was severe attachment loss, deep pockets of 6 mm. Hematological investigations revealed no abnormality.

Management

Phase 1 therapy comprising of scaling and root planing and oral hygiene instructions were given and the use of chlorhexidine mouthwash twice a day for 2 weeks was advised. Patient was recalled after 1 week.

The patient was administered local anaesthesia. The lesion was resected with the help of laser (Figure 5 B). Periodontal dressing was given and the excised tissue (Figure 5 C) was sent for histological examination. Healing was satisfactory after 1 week (Figure 5 D).

Histopathologic examination

Microscopic examination of the section revealed a tumour composed of tightly packed anastomosing small vascular channels lined by a single layer of cells. Inflammatory cells were noticed (Figure 5 E, F). These features were compatible with a pyogenic granuloma.

DISCUSSION

FRGO is a quotidian finding in clinical practice and its etiopathogenesis is still unresolved. The most common cause is low grade inflammation due to plaque accumulation on the adjacent gingival tissues (7). Such gingival enlargement can be magnified by hormonal effects, as found in puberty and pregnancy, and may also be convulated by certain systemic medications (7). Plaque-induced inflammatory hyperplasia should settle with debridement of plaque and calculus and improved oral hygiene, especially when the gingival tissue is oedematous. Situations in which the chronic inflammatory gingival enlargement has significant fibrotic components that do not reduce in size and undergo shrinkage when exposed to scaling and root planing are treated with surgical removal of the excess tissue (7). This outline requires a more detailed appraisal and a longer term management plan designed to map the level of gingival and possibly periodontal connivance. Surgical management to remove enlarged tissue and provide improved access for the patient's oral hygiene may be needed.

FRGO exhibit similar clinical features; thus diagnosis of FRGO is a challenging task. Histopathological examination of specimens plays a key role in confirming the diagnosis or making a diagnosis of exclusion (2).

Following is an algorithm (Figure 6) that can be used to direct the work-up of patients presenting with similar conditions of focal reactive gingival overgrowth (2).

CONCLUSION

Correct diagnosis and management of FRGO are incorporated in clinical practice. Inspite of a plethora of etiology, FRGO can often be diagnosed by a careful history (e.g., drug influenced or hormonal influenced gingival enlargement), by location (e.g., mouth-breathing enlargement around anterior teeth) or by the clinical presentation. Presence of plaque and calculus could be primary or associated cause of FRGO. Hence, plaque control is an indispensable aspect of management in all the patients. An excisional/incisional biopsy and/or hematologic/histologic examination may be needed occasionally to correctly diagnose the unusual cases of gingival overgrowth.

STATEMENT OF CONFLICTS OF INTEREST

The authors state no conflict of interest

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