



LOCALISED GINGIVAL OVERGROWTH- ISSUES REVISITED

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ABSTRACT A variety of localised gingival overgrowths are encountered by a clinician on a regular basis, specially a dentist encounters such growths very frequently; although all the growths show similar clinical features, it is their **histological features** which are different for each type of growths. Though ignored in daily practice, but histological examination is the only method to form the correct diagnosis avoidance of which could sometimes lead to ignoring serious consequences like malignancies. **This article reviews and presents three cases** of such growths i.e. Peripheral odontogenic fibroma which is a rare benign odontogenic neoplasm, Fibroid and Pyogenic granuloma. It stresses upon the importance of histopathological examination of all such gingival conditions, and how it is ignored and should be mandatory for such cases.

KEYWORDS : histopathological examination, Peripheral odontogenic fibroma, epulis, Pyogenic granuloma.

Introduction:

A variety of proliferative lesions of gingiva have been described in the literature which may be neoplastic or inflammatory. Although histologically these growths show different characteristics but it is very difficult to differentiate between them clinically. Neoplastic growth like peripheral odontogenic fibroma and inflammatory growths like fibroid epulis and pyogenic granuloma are some such proliferative lesions of the gingiva.

Peripheral odontogenic fibroma (POdF) is described as a rare, slow growing, solid gingival mass, which may arise between the teeth and cause their displacement¹. The World Health Organization (WHO) has defined odontogenic fibroma as a benign odontogenic neoplasm of fibroblastic origin characterised by relatively mature collagenous fibrous tissue and varying amounts of odontogenic epithelium with a potential to occur in either a central or extraosseous location⁵. The extraosseous counterpart is designated as peripheral odontogenic fibroma which clinically is indistinguishable from fibrous gingival overgrowth¹.

Gingival epulis is a localised growth or enlargement of gingiva. It is a nonspecific entity which resemble cysts or tumour like growth related to gingiva². There are four types of epulides, depending on the prevalent histological component: fibrous, granulomatous (pyogenic granuloma), angiomatous and giant cells epulis⁶. They usually occur as a result of gingival hyperplasia due to local irritation of the gums⁷.

Pyogenic granuloma a type of epulis, appears in response to various stimuli such as low grade local irritation and traumatic injury, is also called as granuloma pyogenicum a reactive inflammatory hyperplasia of gingiva. Clinically these lesions usually present as single nodule or sessile papule with smooth or lobulated surface and maybe seen in any size from a few millimetres to several centimetres. As lesion mature, the vascularity decreases and the clinical appearance are more collagenous and pink³.

This article is a report of three cases which reported with the painless enlargement of gingiva.

Case report 1

An 18 year old male reported to the department with the chief complaint of deposits in mouth; on examination it was found that the patient has gingival growth in 34- 35 region. The growth was sessile and attached to the underlying mucosa, firm and painless on palpation, due to its painless nature and no hindrance in mastication or tongue movement, the patient was not aware of the growth or of the time period for which the growth was present in his mouth till it was noticed by the examiner. There were no radiographic changes in the region. Surgical excision of the growth was done and the excised tissue was sent for histopathological examination (figure 1 & 2).



Figure 1: Preoperative view



Figure 2: 1 month post operative view

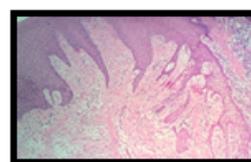


Figure 3: H & E stained section of excised tissue showing odontogenic epithelium in the connective tissue

The H & E stained section showed single bit of lesional tissue comprising of epithelium & connective tissue. Epithelium was parakeratinized stratified squamous epithelium with thin & long rete ridges. The connective tissue stroma was predominantly cellular comprising of round to spindle shaped cells with centrally placed nuclei. At few places, odontogenic epithelial islands scattered in the stroma with darkly stained columnar cells were arranged in clusters. Loose strands of collagen fibres interspersed with plump shaped fibroblast arranged in haphazard fashion were found in the connective tissue. Mild to moderate chronic inflammatory cell infiltrate chiefly composed of lymphocytes were seen. Few epitheloid cells were also seen at places. Few small single epithelial lined blood vessels with extravagated RBCs were seen. Overall histopathological features suggested the diagnosis of peripheral odontogenic fibroma (figure 3).

Case report 2: A 62 year old female reported to the department with chief complaint of a painless growth in 33 region. The growth was of size of around 2- 3 mm present between 32 and 33 when she first noticed it and has grown to its present size after the extraction of 32, in

the span of 4 months. The adjacent teeth were mobile due to periodontally compromised condition and pressure exerted by the growth. The growth hindered the mastication and was painful due to constant impingement of the tooth in the opposite arch. The growth was pedunculated, firm and painless on palpation. Radiograph of the region showed no abnormality. It was excised and the tissue was sent for histopathological examination (figure 4-7).



Figure 4: Pre operative view

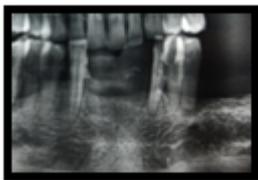


Figure 5: Radiograph of the region of interest

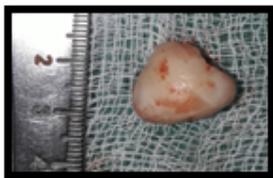


Figure 6: Excised growth



Figure 7: One month post operative view

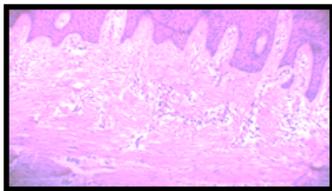


Figure 8: H & E stained section of the growth showing numerous fibroblasts

The H & E stained section shows parakeratinized stratified squamous epithelium with underlying predominantly fibrous connective tissue stroma. The epithelium was hyperplastic and also atrophic at few places with long, slender and blunt rete ridges. Connective tissue stroma showed numerous bundles of interlacing collagen fibers interspersed with fibroblast arranged in haphazard fashion along with patchy and dense chronic inflammatory infiltrate consisting of lymphocytes and plasma cells and also single endothelial lined blood vessels with extravagated RBC's were seen at few places. Areas of diffused and focal calcification along with osteoid tissue were seen. Overall clinic- pathological features were suggestive of fibroid epulis (figure 8).

Case report 3:

A 35 year old female patient reported to the department with complaint of painless solitary gingival growth in upper left front region of jaw. The growth was smooth, firm, painless on palpation, pedunculated, pink in colour with central soft part which appeared bright red. The

patient also had poor oral hygiene with generalized deep periodontal pockets, suggestive of generalized severe chronic periodontitis. The growth did not cause displacement of teeth and achieved its present size of around 2x2 cm in duration of 2 months. The growth was surgically excised and send for histopathological examination (figure 9-13).



Figure 9: Pre operative view



Figure 10: Radiograph shows bone loss due to chronic periodontitis

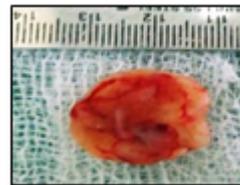


Figure 11: Excised growth



Figure 12: Papilla preservation flap was done to treat chronic periodontitis



Figure 13: 1 week post operative view

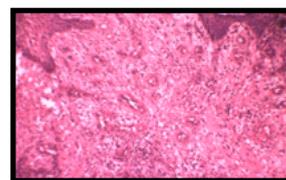


Figure 14 H & E section of the growth showing numerous endothelial lined blood vessels

The H&E stained section showed multiple bits of lesional tissue comprising of epithelium and connective tissue stroma. The epithelium was parakeratinized squamous epithelium showing thin

rete ridges at most place, some section shows ulceration. Underlying connective tissue showed dense and delicate collagen fibers bundles interspersed with plump shaped fibroblasts arranged in haphazard fashion. Patchy chronic inflammatory infiltrate chiefly comprising of lymphocytes, neutrophils, plasma cells and macrophages were seen. Tissue shows hyper vascularity with small to medium size single endothelial lined blood vessels. These features suggested diagnosis of Pyogenic granuloma (figure 14).

Discussion:

Clinically all the gingival overgrowths appear to be similar, it is the difference in their histopathological features which distinguishes them from each other. The histopathological examination is not just important for diagnosis but also for proper treatment of such growths and to rule out possibility of malignancy.

Epulis which appears as a pale gingival overgrowth has variety of forms based on its histopathological features like granulomatous epulis, giant cell epulis, fibroid epulis, melanotic epulis and fibrosarcomatous epulis. The treatment of each type differs. According to Dabholka et.al (2008), Fibrous epulis, the treatment involves excision with gingival recontouring. The giant cell epulis, treatment includes local excisions with curettage of the bony surface and removal of the local irritant. Melanotic epulis, treatment includes excision of the tumour along with the surrounding healthy teeth, gum along with the margins of the alveoli of the extracted teeth. Fibrosarcomatous epulis is a complication that occurs as a result of malignant changes in a fibrous epulis. The carcinomatous epulis is an epithelioma of the gum arising around a tooth or its socket, its treatment involves adequate resection of the jaw with block dissection of neck nodes and post-operative radiotherapy⁷

Peripheral odontogenic granuloma, are rare and comprise only 0.05% of all biopsies, but they are the most common peripheral odontogenic tumour⁹. Initially the largest case series was reported by Farman, who found only 5 cases in extensive review of English literature and added 10 new cases. There was no gender predilection in the 15 reported cases, while ages of patient ranged from 5 to 65 years¹. According to Ritwik & Brannon (2010), it is estimated that they have recurrence rate of 50%. The budding of the basal cell layer of the surface squamous epithelium was associated with higher recurrence and the presence of calcification in direct apposition to epithelial rests was associated with lower recurrence¹⁰. This makes histological examination of the neoplasm even more mandatory to predict the recurrence of the neoplasm.

Pyogenic granuloma is a common benign inflammatory lesion of gingiva. Bhaskar et al observed that oral pyogenic granuloma comprised about 1.85% of all oral pathosis. Regezi et al. suggest that pyogenic granuloma represents an exuberant connective tissue proliferation to a stimulus or injury like calculus or foreign material within the gingival crevice. Reichart et al. in their study observed that granulation tissue in oral pyogenic granuloma may become contaminated by flora of oral cavity and its surface may often become covered by fibrin which may mimic pus. Still suppuration was not a characteristic of oral pyogenic granuloma to support infectious origin¹⁶. It can clinically mimic oral manifestations of malignancies like Kaposi's sarcoma and Non-Hodgkin's lymphoma¹¹. Thus, a firm histological background is required to rule out the malignancies or to identify them in the early stages.

Differential diagnosis of lesion: All the three above mentioned solitary gingival overgrowths are differential diagnosis for each other. The histopathological analysis is very important to identify them (table 1).

Table 1: Differential diagnosis:

Features	Peripheral odontogenic fibroma	Fibroid epulis	Pyogenic granuloma
Etiology	No specific etiology	Local irritation from sharp margins of a carious tooth or the presence of sub- gingival Calculi ⁷ .	Response of the tissue to non - specific infection, minor trauma to tissue.

Microorganism associated	Not involved	<i>C.albicans</i> is the most commonly associated organism with denture associated epulis ⁸ .	Arises as a result of infection by either <i>Staphylococci</i> or <i>Streptococci</i> , these microorganisms could produce colonies with fungus like characteristics in oral cavity ⁴
Clinical features	Slow growing lesion and may be present for years. It is generally described as a solid, firmly attached gingival mass, sometimes arising between teeth and can cause displacement of teeth. Some of the lesions may contain calcified stalk ⁴ .	Commonest variety of epulis ⁶ . It often arises from the interdental papilla as a firm, pink, uninfamed mass. It may be pedunculated or sessile. Trauma during mastication may ulcerate this lesion imparting it a malignant look ⁷ .	Elevated, pedunculated vascular mass with a smooth or lobulated surface which commonly is ulcerated. It is deep red or reddish purple, depending on the vascularity, painless, and rather soft in consistency ⁴ .
Radiographic feature	May cause localised bone loss and displacement of teeth ⁵ .	No changes	No changes
Histopathology	Cellular connective tissue parenchyma, with non-neoplastic islands, strands and cords of columnar or cuboidal, sometimes vacuolated odontogenic epithelium. The epithelium is usually deep in lesion, away from the surface epithelium and is sometimes found with calcifications. The calcified tissue if found may resemble bone, dentin or cementum like material ⁴ .	Irregularly interlacing bundles of collagenous fibrous tissue in continuity with the corium and without any capsule or pseudo-capsule. The epithelium is usually mildly acanthotic. The area of an epulis in contact with gingival plaque is usually inflamed. When related to dentures, it may show no inflammation unless ulcerated or superficially infected by <i>C. albicans</i> . Dystrophic calcification, osteoid or bone formation is common in fibrous epulides ⁸ .	Appears similar to granulation tissue with thin overlying epithelium. The connective tissue shows vast number of endothelium lined vascular spaces and extreme proliferation of fibroblasts. In addition inflammatory cells like PMN's, plasma cells, leukocytes and lymphocytes are seen ⁴ .
Predisposing factor	No specific factor	Hormonal variation	Pregnancy
Age and sex predilection	2-80 years of age with a slight predilection for the female gender ⁵ .	Epulis appears mostly between 30 and 50 years, but any age is possible ¹⁵ . Female predilection is observed ^{4,6,15} .	It is more common in age group between 11 to 40 years and found more in females ⁴ .

Site predilection	In mandibular region ⁵ .	On the gingiva near the front of the mouth between two teeth ¹⁴	75 % of cases occur on gingiva. It may also occur on lips, tongue and buccal mucosa, it is more common in maxillary anterior region ⁴ .
Recurrence rate	Reported to be as high as 38.9% ¹² & 50% ¹⁰	At a rate of about the 10% ⁶ .	15.8% after conservative excision ¹³ .
Prognosis	Prognosis is good, close examination should be done during each follow up, frequent recall to check for recurrence	Good, in case of recurrence it might be necessary to remove the tooth associated with the lesions themselves.	Good, constant followups are required due to high rate of recurrence after conventional excision.

Conclusion:

A variety of swellings located on or near the gums is clinically included under the heading of epulis⁷. This article discusses the three type of gingival enlargement seen in the oral cavity, their etiology, clinical and histopathological features which are helpful for their diagnosis. The identification of such growths is impossible with only clinical features as many of the clinical features are common for most of the lesions, thus a firm histopathological basis is very important to differentiate and diagnose the growths from each other.

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