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Oral Pregnancy Tumor: An Etiopathological Enigma for Gynaecologists

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ABSTRACT

Pregnancy tumor is one of the common inflammatory hyperplasia of the oral cavity presenting as a reddish pink, exophytic, pedunculated sometimes sessile, often non- tender, friable mass which interferes with speech and mastication and is associated with profuse bleeding seen in almost 5% gravid females.Not a true neoplasm it arises in response to various stimuli such as low-grade local irritation, traumatic injury and mainly hormonal imbalance. The surge of estrogen and progesterone induces expression of various types of growth factors simultaneously decreasing the apoptotic effect of granuloma cells thus leading to increased proliferation of granulation tissue.Although excisionalsurgery is the treatment of choice, other treatment modalities like Nd: YAG laser, cryosurgery, intralesional injection of ethanol or corticosteroids, and sodium tetradecy lsulfate have also been proposed. Primaryobstetric care providers should be acquainted with these conditions to avoid misdiagnosis and overtreatment.If the condition is diagnosed, active and pertinent treatment is necessary to avoid recurrence and unnecessary apprehension among pregnant patients. This case report aims at presenting a case of a recurrent pregnancy tumor with persistent growth even post parturition highlighting the need for proper management.

Key words: Pregnancy tumor, Pyogenic granuloma, Oral cavity, Recurrence

INTRODUCTION

Pregnancy tumor is a benign, hyperplastic lesioncomposed of fibro vascularor granulation tissue with extensive proliferation as a result of physiological changes and shifting of the hormonal milieu in pregnant women.[1,2]It is often considered to be reactive or traumatic tumorrather than a proper neoplasm. [3,4]The clinical presentation and histological appearance, resemble a pyogenic granuloma which is a type of inflammatory hyperplasia,although others claim it to be a distinct lesion because of the apparent influence of the female sex hormones.

Hullihen is credited with the description of the first pyogenic granuloma reported in literature in 1844.[5] The term "pyogenic granuloma" or "granuloma pygenicum" was coined by Hartzell in 1904,[6] although it is a misnomer since the condition is not associated with pus or infection and does not represent a true granuloma.[1,3,7,8]Being an etiopathological enigma,periodontal pathogens, local irritants,[3,7]traumatic injuryand circulating hormones[9] of the pregnant woman are the plausible factors associated with its causation.Gingiva(83%)[10]is the most commonly affected site often presenting as a tumor-like growth, reddish purple in color with tendency to bleed.[1,3,7]Lips, tongue and mucosa are the other commonly involved sites.[1,7,11]The lesion has a predilection for the maxillary facial gingiva (55%)[12]than the mandibular gingiva; anterior areas are more frequently affected than posterior areas. The typical lesion originates from the interproximal gingiva which increases in size to partly cover a portion of the adjacent teeth.[3] Females are the most susceptible because of changes in the hormonal levels that occur during pregnancy, puberty and menopause. [13,14]Almost 5% of pregnancies are associated with the development of pregnancy tumors.[15]This rapidly growing tumor usually appears during the 2nd or 3rd month of pregnancy.[16]The female steroid hormones estrogen and progesterone reach peak levels by the end of third trimester of pregnancy[17]which excaberates the occurrence of pyogenic granuloma duringthis period. These hormones enhance the expression of various growth factors such as Fibroblast growth factors,[18] Transforming growth factors [19] and angiogenic factors namely vascular endothelial growth factors (VEGF) [20]in inflamed tissuessimultaneouslydecreasing the apoptotic effect of granuloma cells.[21,22]Being plaque induced, the treatment involves removal of irritating agent, oral prophylaxis, and oral hygiene reinforcement

,[1,3,7,23]surgical excision with a scalpel, radiosurgery, laser surgery, cryosurgery, and intralesional injections of ethanol, sodium tetradecy lsulfate sclerotherapy, or corticosteroid.
Recurrence can be seen in few cases (up to 16%)[24] after excision of the lesion.Recurrence is believed to occur as a result of incomplete excision, failure to remove etiologic factors or re-injury in that area.[1,3,7,25]This case report aims at presenting a case of a recurrent pregnancy tumor with persistent growth even post parturition highlighting the need for proper management.

CASE REPORT

DIAGNOSIS

A 26-year-old female patient was referred by her gynaecologist to the Department of Periodontics and oral implantology, Post Graduate Institute of Dental Sciences.The patient presented with a chief complaint of growth in the gums of lower right back regionwith frequent bleeding, foul mouth odour,mild pain and inability to eat properly. Obsteretic history revealed that she was 2 months old post-partum phase when she visited our Department. Past dental history revealed a similar growth in the same region which was first noticed by her at the 3rd month of pregnancy which was excised by a private practitioner during the 2nd trimester (6th month) of pregnancy. No radiographs were taken for the concerned lesion by the private dentist.Within 1 month after excision, the growth reappeared and gradually started increasing in size. As the lesion re-appeared, the patient became apprehensive as it was now interfering with speech and mastication also.

On extra oral examination, no gross abnormalities were detected. Intra oral examination revealed a pedunculated growth arising interproximally between #44 and #45 both involving and extending from the buccal and lingual papillae.(Figure IA) On the buccal aspect, it measured approx. l cm × 2 cm in diameter and approx. 2cm×3cm on the lingual aspect.

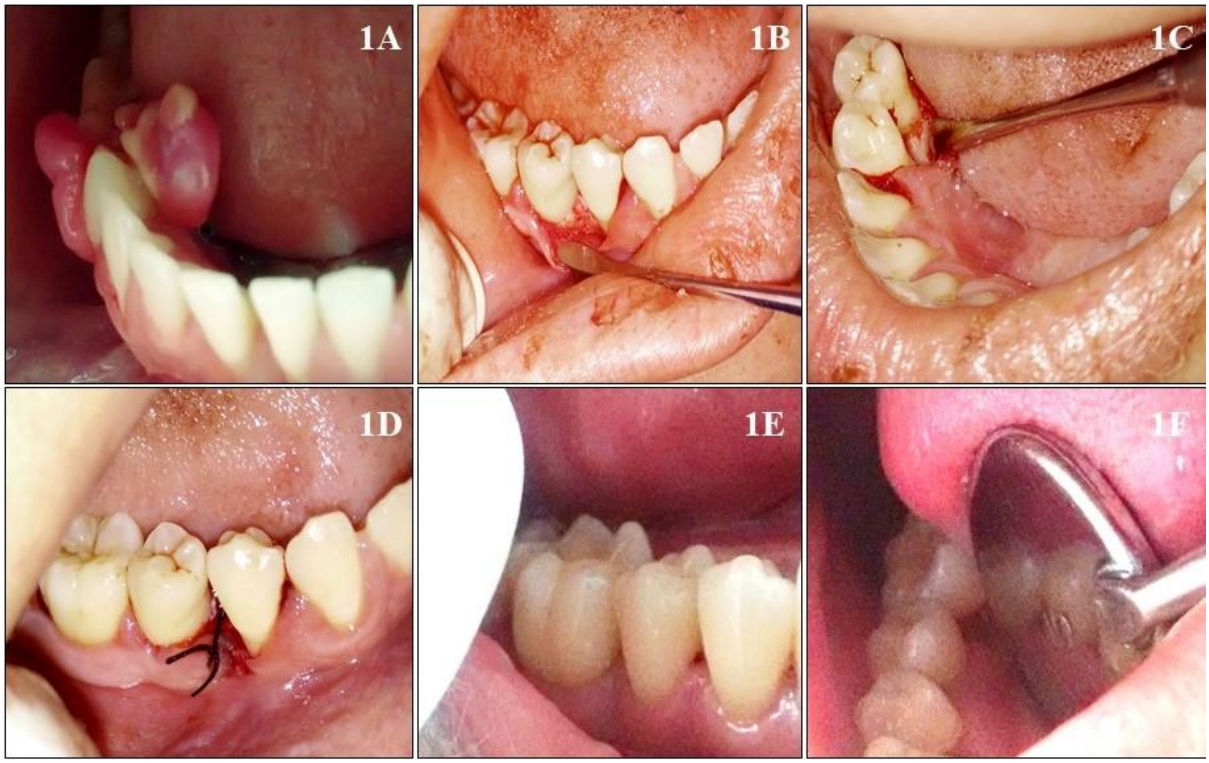

Figure 1:APreoperative picture showing growth on buccal and lingual papillae
Figure 1:B,C Intraoperative picture revealing raised flap on buccal and lingual side respectively after excision of growth
Figure 1: D Postoperative picture
Figure 1: E,F Follow up after 1 month

It was reddish pink in color, pedunculated, soft in consistency on palpation,non- tender, friable, interfered with eating and bled on slight provocation. On periodontal examination, a pocket 6 mm in depth and clinical attachment loss of 4 mm was found associated with the involved #44 and #45 teeth region. Radiographic examination revealed horizontal bone loss interdentally between #44 and #45. (Figure 2) Based on the clinical and radiological findings, the lesion was provisionally diagnosed as a pregnancy tumor with localized periodontitis. Differential diagnosis was peripheral giant cell granuloma.

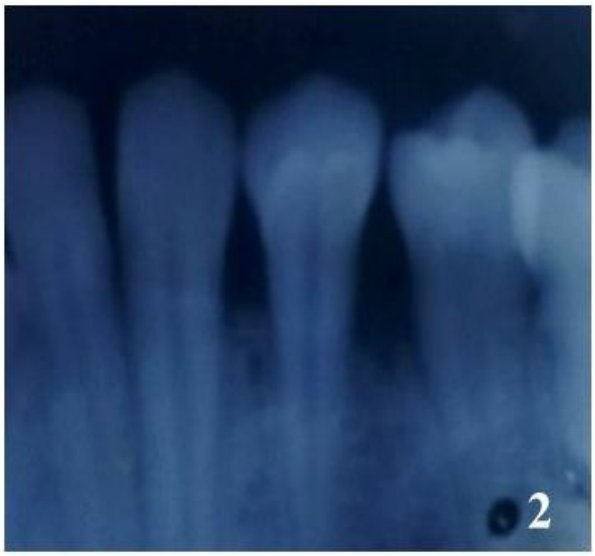

Figure 2: Radiographic examination revealing horizontal bone loss interdentally between #44 and #45.

TREATMENT

After proper patient counselling and informed consent, routine blood investigations were advised and values were found to be within normal limits.Scaling and root planning was carried out under phase I therapy and patient was instructed with proper plaque control measures at home. Although plaque control did improve the periodontal condition, the lesion seemed persistent. A complete surgical excision was planned. Under local anesthesia, excisional biopsy procedure was performed which included complete excision of gingival growth along with full thickness flap reflection and complete debridement of granulation tissue upto the bone to avoid recurrence of thetumor. (Figure 1 B,C,D) Post-operative instructions with medications were given.

Excised specimen was sent for histological examination. (Figure 3A,B) Both tissue bits (from lingual and facial aspect) lingual tissue specimen stained with hematoxylin and eosin showed hyperkeratotic par keratinized stratified squamous epithelium overlying fibro vascular connective tissue stroma demonstrating numerousproliferating endothelial cells and budding small and large endothelial lined vascular channels engorged with red blood cells. Few areas showed the lobulated arrangement of these vessels. (Figure 3C,D) Areas with intense mixed cell infiltrate consisting of neutrophils, lymphocytes, plasma cells and polymorph nuclear leukocytes were evident. Histopathological examination of the excised specimen confirmed our clinical diagnosis and final diagnosis of pregnancy tumor was made.

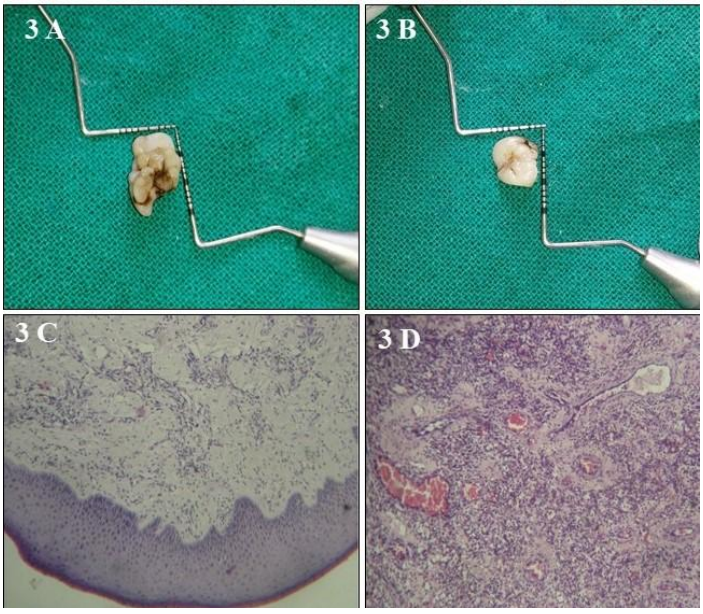

Figure 3:A, B Excised growth from lingual and buccal side respectively
Figue 3:C,D Histological examination showed showed hyperkeratotic parakeratinized stratified squamous epitheliumoverlying fibrovascular connective tissue stroma demonstrating numerous proliferating endothelial cells and budding small and large endothelial lined vascular channels engorged with red blood cells.

Post-operative healing was uneventful,some marginal gingival inflammation with receded margin was observed.(Figure 1E,F) The patient was comfortable and a proper maintenance program was initiated after suture removal. During the recall visitat 1month, the surgical site appeared healthy and no recurrence of the lesion was seen.

DISCUSSION

Pregnancy tumor of the gingiva has a 0.2-9.6% prevalence among all the pregnancies.[26]The persistent presence ofplaque induces catarrhal inflammation of the gingiva which in synergy with the profound endocrinal uphevealmay give rise to a pregnancy tumor. Studies have revealed that sex hormones exert a variety of biological,vascular and immunological effects. Estrogen accelerates wound healing by stimulating Nerve Growth Factor (NGF) and Vascular Endothelial Growth Factor (VEGF) production in macrophages, and Granulocyte- Macrophage-Colony Stimulating Factor (GM-CSF) production in keratinocytes, basic Fibroblast Growth Factor (bFGF) and Transforming Growth Factor beta1 production in fibroblasts, leading to granulation tissue or pregnancy tumor formation.[21,27]Progesterone acts asan immunosuppressant in the gingival tissues of pregnantwomen by inhibiting the migration of inflammatory cells andfibroblastswhich prevents a rapid acute response to plaque, but instead leads to an increased chronic tissuereaction.[28] Increased levels of progesterone, also produces dilation and tortuosity of gingival microvasculature, circulatory stasis increased susceptibility to mechanical irritation favouring leakage of fluid in the perivascular spaces.[27]

This case report describes a case of a recurrent granuloma (2-3 cm in size) presenting as a lobulated reddish pedunclatedmass and a highly vascular surface[3]with concomittant horizontal boneloss in relation to the #44 and #45 regionwhich can be attributed to the pressurecreated from the existing lesion[29,30]or superimposed on previously existent bone loss.These lesions usually begin in the 2nd month of pregnancy and reach a maximal level during the 8th month when the shift in the hormonal milieu is at its peak. In our case the lesion was first observed at the 3rd month of pregnancy which is consistent with the findings of other studies.Although most of the granulomas have a predilection for anterior maxillary facial areas, however the lesion in this case exhibited proliferative growth and extended between the teeth involving both the facial and lingual gingiva of posterior mandibular teeth .Occlusal trauma was responsible for the mild pain and the location with the large size of the lesion can be ascribed to the difficulty in speech and mastication.

Conservative surgical excision and removal of causative irritating factors during the second trimester are the most common treatment modalities.However,the excision should extend down to the periosteum and the adjoining teeth properly scaled and root planed to remove the source of continuing irritation.Flash lamp pulsed dye laser,[31] cryosurgery, [32]sodium tetradecy lsulfate sclerotherapy[33] have also been used as alternative therapies. Also for highly persistent lesions, intralesional injection of absolute ethanol[34] and corticosteroids[35]have been successfully attempted.Use of lasers like Nd:YAG[36]and CO2[37]have also been advocated in the recent reports owing to the painless and photocoagulating effects leading to faster healing.Proper management is thus essential to prevent the recurrence of the lesion.

The tumorin this case wasmanaged successfully by surgical excision in the post partum period with open flap debridement.The patient had undergone a similar surgery for the same during the second trimester but the lesion had recurred within just one month which can be attributed to the incomplete removal of irritating factors and also due to the high recurrence rate [3,25,35]seen in gravid patients thus necessitating waiting until parturition.[1,2]It was clearly observed that there was no recurrence of the lesion after 3 and 6months post-operatively as the excision was carried out after post parturition. Steelman and Holmes advocated that maintenance of oral hygiene ,regular follow up appointments , surveillance of home care in pregnant patients go a long way in preventing adverse prenatal outcomes.[38]

Regression after parturition is a natural phenomenon owing to the absence of VEGF, angiopoietin-2 (Ang-2) which causes the blood vessels to regress along with the decrease in the inflammatory cytokines levels due to the negative feedback loop leading the endothelial cells to enter the apoptotic pathway.[39,40]

CONCLUSION

An unusual site of presentation contemplating the diagnostic difficulty calls for attention, thereby, warranting the dentist to consider distinct lesions with different diagnostic methods as well as precise excisional intervention avoiding the recurrence and restoring the functional demands of patient, as a worthwhile approach.Primary obstetric care providers should be acquainted with theseconditionsto avoid misdiagnosis and overtreatment.If thecondition is diagnosed, active and pertinent treatment isnecessary to avoidunnecessary apprehension among pregnant patients. Every pregnant woman should be screened for oral risks, counselled on the importance of proper oral hygiene during pregnancy, and referred for dental treatment when required.

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