

Management of Pregnancy Tumor: A Case Series

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ABSTRACT

Background: Pyogenic granuloma is one of the inflammatory hyperplasias seen in the oral cavity. This term is a misnomer because the lesion is unrelated to infection and in reality arises in response to various stimuli such as low-grade local irritation, traumatic injury, or hormonal factors. It predominantly occurs in the second decade of life in young females, possibly because of the vascular effects of female hormones. Clinically, the oral pyogenic granuloma is a smooth or lobulated exophytic lesion manifesting as small, red erythematous growth on a pedunculated or sometimes sessile base, which is usually hemorrhagic. Although excisional surgery is the treatment of choice, some other treatment protocols such as the use of Nd:YAG laser, flash lamp pulsed dye laser, cryosurgery, intralesional injection of ethanol or corticosteroids, and sodium tetradecyl sulfate sclerotherapy have been proposed.

Keywords: Pregnancy Tumor, Pyogenic Granuloma, Epulis Gravidarum, Excisional biopsy.

INTRODUCTION

Pregnancy tumour is a pyogenic granuloma (PG) that occurs on the gingiva during pregnancy.^[1] Two French surgeons Poncet and Dor described the term in 1897 and is also known as epulis gravidarum. Hartzell proposed the term pyogenic granuloma although it is not a true granuloma as it is not associated with pus and hence the term itself is a misnomer. It is present in up to 5% of pregnancies.^[2]

Etiological factor triggering the inflammation can be chronic low-grade irritation, hormonal factors, or drugs. This rapidly growing tumour usually appears during the 2nd or 3rd month of pregnancy. Clinically, it represents a tumour-like growth, reddish-purplish-red depending on the vascularity of the lesion, tendency to bleed and most common origin is the interdental papilla of maxillary anterior teeth. The most common site of appearance is gingiva, followed by the tongue, lip, palate, and oral mucosa.^[3]

In 1946, Ziskin and Ness compiled a clinical classification of pregnancy gingivitis as follows:^[4]

- Class I – Characterized by bleeding gingiva with more or less no other manifestations
- Class II – Characterized by changes in interdental papilla-edema and swelling with exhibits a tendency to recur. Subsequent blunting of interdental papilla
- Class III – Characterized by the involvement of the free gingival margin, which takes on the colour and general appearance of a raspberry
- Class IV – Generalized hypertrophic gingivitis of pregnancy
- Class V – The pregnancy tumour.

Pregnancy tumour usually occurs at the end of the first trimester and rapid growth often accompanies the steady increase of circulating estrogens and progesterone. Partial or complete regression is common after childbirth. Repeated mild irritation with gestational steroid changes may subsequently

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exacerbate inflammatory response, leading to development of this proliferating lesion.^[2] The treatment modalities include removal of the irritating agent, oral prophylaxis, and oral hygiene reinforcement. When the patient's oral hygiene condition improves postpartum, some lesions resolves on its own. Persisting lesions can be removed by surgical excision with a scalpel, radiosurgery, laser surgery, cryosurgery, and intralesional injections of ethanol, sodium tetracycl sulfate sclerotherapy, or corticosteroid.^[5]

CASE REPORT 1

A 24-year-old woman in the 17th week of pregnancy reported to the Department of Periodontology with chief complains of swelling in upper left maxillary anterior tooth region for 6 weeks. The patient experienced bleeding on brushing and difficulty in mastication and speech. Intraoral examination revealed soft tissue mass in the anterior region of maxillary left lateral incisor & canine i.e. 22 & 23 . It was pinkish red and 1 cm × 1 cm in size. It had a smooth surface and had 9 mm deep pseudopocket . On palpation, it was soft in consistency, slight bleeding on palpation was present without ulceration. An intraoral periapical radiograph revealed mild horizontal bone loss. (Fig.1a)

CASE REPORT 2

A 27-year-old woman in the 4th month of pregnancy reported to the Department of Periodontology with a similar chief complaint of the above case . Intraoral examination revealed enlargement of gingiva in mandibular left lateral incisor & canine i.e. 32 & 33 & with all the similar clinical feature in above case .(Fig. 1b)



Fig.1a Pre-Operative view irt 22 & 23, Fig.1b Pre-Operative view irt 32 & 33

The treatment plan included phase I therapy- oral prophylaxis after routine haematological

investigation and oral hygiene instruction. Follow- up visits were scheduled for the next 5 months. Postpartum, the patient, reported with persisting lesion and surgical excision of the lesion was planned.

Surgical Procedure

Local anaesthesia 1:80,0000 Infra-orbital nerve block was given . Scalpel technique was used for excision of the growth. The growth was excised, and root planing and curettage of the area was done.(Fig.2a & 2b)



Fig 2a & Fig 2b: After surgical excision of the lesion

The site was irrigated with normal saline. Periodontal pack was placed. The excised mass was sent for histopathological examination.(Fig.3a & 3b)

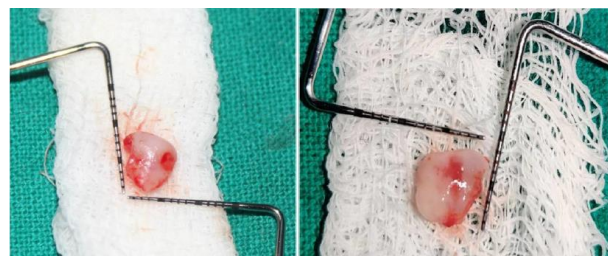


Fig.3a & 3b: Excised tissue

The histopathological (Fig.4a & 4b) report under low power revealed irregular stratified squamous hyperkeratinized epithelium overlying fibrovascular and cellular connective tissue stroma. Under higher magnification, the connective tissue stroma comprised of loose to dense bundles of collagen fibres with predominantly plump-shaped fibroblasts. Numerous endothelial lined blood vessels (few dilated) with red blood cells and extravasated red blood cells were evident. Budding capillaries along with endothelial cell proliferation, were also seen in many areas. Chronic inflammatory cells predominantly comprising of lymphocytes and

few plasma cells were evident. On the basis of histopathological report and clinicopathological correlation, a final diagnosis of pyogenic granuloma was made.

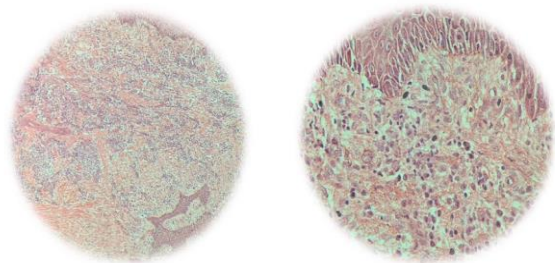


Fig.4a & 4b: Histopathological appearance (in various magnifications & H & E stains 20X & 10X)



Fig. 5a & 5b: Postoperative view after 3 months

DISCUSSION

The physical and emotional changes that occur during pregnancy have a great influence on oral health. Oral pregnancy tumor occurs as a hyperplastic inflammatory response to local irritation, trauma and repeated gingival inflammation secondary to plaque, calculus or foreign body.^[6] The molecular mechanisms involved in the development of pyogenic granuloma lies in the endocrinal changes leading to changes in blood and lymph microvasculature of skin and mucosa.^[7] Ojanotko-Harri et al. suggested the possible role of progesterone in pregnancy gingivitis and granuloma. This hormone acts as an immunosuppressant in the gingival tissues of pregnant women, thereby preventing a rapid acute inflammatory reaction against plaque and allowing an increased chronic tissue reaction, resulting in a chronic inflammatory state.^[8]

The surge in estrogen and progesterone level in circulating blood during pregnancy exerts a proliferative effect on the endothelium (Table 1)

Table 1: Role Of Sex Hormones in Pyogenic Granuloma^[9,10]

Hormone	Cell & Effect	Mediators
Estrogen	Fibroblast Proliferation Macrophage Activation Endothelial Proliferation Keratinocytes Proliferation	- Fibroblast Growth Factor Transforming Growth Factor Beta 1 Nerve Growth Factor Vascular Endothelial Growth Factor Granulocyte Colony Stimulation Factor
Progesterone	Acute Inflammatory Cells – Suppression Chronic Inflammatory Cells – Proliferation	-

According to Tumini, et al., pregnancy tumor is a result of gingivitis that leads to local hyperplasia.^[11] The increase of progesterone can induce substantial microvascular alteration in certain areas, most commonly in the gingiva. The etiologic means by which female sex steroid hormones may influence the periodontium of women, especially during pregnancy, are varied and differ from those ordinarily associated with plaque-induced gingivitis

Human gingiva contains receptors for estrogen and progesterone, and increased plasma levels result in an increase in accumulation of these hormones in gingival tissues. Estrogen regulates cellular proliferation, differentiation and keratinisation and thus estrogen seems to stimulate matrix synthesis, along with progesterone, enhances the localized production of inflammatory mediators, especially prostaglandin E2, a potent inducer of osteoclastic activity. Progesterone compromises tissue homeostasis by reducing fibroblast proliferation, altering the pattern of collagen production and reducing the level of plasminogen activator inhibitor type 2, which is an essential inhibitor of tissue proteolysis.

The subgingival flora changes to a more anaerobic flora as the pregnancy progresses and prevotella intermedia are the microorganism that increases significantly during. Pregnancy .The increase is due

to elevations of levels of systemic estradiol and progesterone. It has been suggested that the altered tissue response to the plaque is due to depression of the maternal T lymphocyte. The gingiva has been shown to be a target organ for female sex hormones. Therefore, the maintenance of oral hygiene before and during pregnancy is essential to reduce the incidence and the severity of gingival inflammation.^[12]

Spontaneous reduction in the size of the enlarged lesion typically follows the termination of pregnancy. Although the process of degeneration of pregnancy tumor is unclear, it may be related to the absence of VEGF and Angiopoietin-2 causing the blood vessels to regress, leading to regression of the tumor.^[13]

Surgical excision is the treatment of choice for pyogenic granuloma. Considering the high recurrence, excision involving normal tissue at its periphery with a depth to the periosteum and curettage of the underlying tissue after excision is recommended.^[14]

CONCLUSION

Oral health care in pregnancy is often avoided and misinterpreted by physicians, dentists, and patients. Every pregnant woman should be screened for oral risks, counselled on proper oral hygiene, referred for dental treatment when necessary and motivated for periodic recall visits. The present case presented with a large persistent oral pregnancy tumour due to poor oral hygiene and lack of awareness. Accurate diagnosis with identification of aetiology and appropriate treatment planning along with patient education is vital.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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