Recurrence of Lobular Capillary Haemangioma in Pregnacy

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OPEN ACCESS

Submission: 05.11.2024 Acceptance: 06.12.2024 Publication: 31.12.2024

Abstract

A 28-year-old pregnant female, named Ashwini, presented to the Department of Periodontics with a chief complaint of recurrent overgrowth in the lower front jaw. The lesion, diagnosed histopathologically as a lobular capillary hemangioma (pyogenic granuloma), is known to recur due to hormonal changes during pregnancy. Surgical excision and periodontal flap surgery were performed to manage the condition, with successful outcomes observed at one week and one month follow-up.

Keywords : Lobular capillary hemangioma, Pregnancy-associated granuloma, Granuloma gravidarum, Periodontal flap surgery, Vascular endothelial growth factor (VEGF), Gingival hyperplasia

Introduction

Lobular capillary hemangioma, also known as pyogenic granuloma, is a benign vascular lesion often observed in the oral cavity.

In 1844, Hullihen reported first case of pyogenic granuloma.[1] Angelopoulos et al histologically described it as "**hemangiomatous granuloma**" because of the inflammatory infiltrate and numerous blood vessels. Histopathologically there are 2 forms of pyogenic granulomas, the lobular capillary hemangioma and the non-lobular capillary hemangioma.[2]

These lesions are non-neoplastic, hyperplasic reactive lesion. The main aetiology is combination of local periodonto-pathogens, irritants and systemic factors like hormonal imbalance.[3]

Radiographically it shows mild alveolar bone resorption. clinically lesion is either a sessile or pedunculated base extending from the gingival margin to the interdental papilla. The color varies from pink- to scarlet depending on the growth of blood vessels.[4]

Pregnancy is a known risk factor for its recurrence. Hence, also known as "**granuloma gravidarum**". Its recurrence during pregnancy is attributed to hormonal influences, particularly elevated levels of estrogen and progesterone. These hormones reach their peak during pregnancy.. Prevalence in pregnant female patients are reported to be 5%.The recurrence rate is 8%-15%[5]

These hormones increase the expression of various growth factors in the tissue, such as fibroblast growth, transforming growth factor, and angiogenic factor called vascular endothelial growth factor (VEGF). It also prolongs the effects of granuloma cells by reducing their apoptotic effects.[5]

This case report documents the clinical presentation, management, and follow-up. Highlighting the hormonal influences and the combined surgical approach used for treatment.

Case presentation -

A 28 year old female reported to department of Periodontics, Nair hospital dental college with a chief complaint of growth in lower gums since 8 months. She visited the Department of Periodontics 2months after delivery. Past dental history revealed of similar growth in the same region which was excised in a private clinic 2 year back. No history of radiographs taken in the same region. Growth reoccurs during her second trimester. As the lesion re-appeared, patient was apprehensive that it could be a carcinogenic tumour. She wanted immediate attention toward the lesion and treatment for the same.

On extra oral examination, no gross abnormalities were detected.

On intra oral examination a reddish, sessile, and lobulated mass was observed in the lower anterior gingiva. The lesion measured approximately 1.5 cm in diameter, was prone to bleeding on slight provocation, and caused discomfort while eating.

On periodontal examination, periodontal pocket depths of 6 mm and clinical attachment loss of 4 mm, was associated with the involved 42 and 43 teeth region with no mobility of affected teeth. Based on the clinical findings, the lesion was provisionally diagnosed as a pyogenic granuloma with localized periodontitis and the differential diagnosis was made as peripheral giant cell granuloma, peripheral ossifying fibroma with localized periodontitis.

Routine blood investigation were found to be within normal limits.

Radiographic investigations revealed horizontal type of bone loss extending up to the middle third of 42 and 43 teeth region.

Treatment-Scaling and root planning was carried out under phase I therapy and was treated accordingly with plaque control measures.

Lesion did not regress after a 3 week follow up.

Considering the recurrence and symptomatic nature of the lesion, a surgical intervention was planned. Periodontal flap surgery was performed. After administering local anaesthesia crevicular incision using a No. 15 blade made . Full thickness mucoperiosteal flap reflected involving regions. Debridement was done along with saline irrigation to eliminate any residual vascular tissue. Flap repositioned and secured with silk sutures. periodontal dressings placed. Post-operative instructions with medications were given.

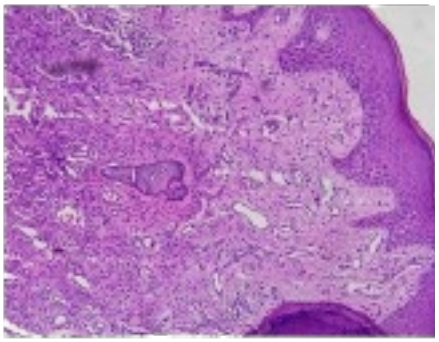
Debridement

Sutures

Specimen was sent for histopathological examination..

Specimen

Histopathological examination - Haematoxylin & Eosin stained section showed proliferative non-dysplastic stratified squamous epithelium covering chronically inflamed fibrovascular stroma composed of budding capillaries with extravasated red blood cells organized in a lobular aggregates. The overall histopathological features are suggestive of **Lobular Capillary Hemangioma (Pyogenic Granuloma).**



H and E section

Diagnosis: Recurrent lobular capillary hemangioma (pyogenic granuloma)

Post-op care-patient was monitored closely post-operatively At the one-week follow-up, the surgical site showed satisfactory healing with no signs of infection or recurrence. At the 1month and 3 month follow-up, the gingiva had healed completely, and there was no evidence of lesion recurrence. Patient reported no discomfort and was pleased with the treatment outcome

1 week follow up

1 month follow up

Discussion

Lobular capillary hemangioma, commonly known as pyogenic granuloma, is a benign vascular lesion that typically presents as a rapidly growing, erythematous nodule or papule. These lesions are characterized by their lobular arrangement of capillaries within a fibro-myxoid stroma and are often accompanied by a significant inflammatory component. Pyogenic granulomas can develop on various mucosal surfaces, including the oral cavity, as well as on the skin. They are particularly noted for their tendency to bleed profusely upon minimal trauma, making them a source of discomfort and concern for patients.[6]

Female Predilection

A noticeable feature of lobular capillary hemangiomas is their predilection for females, particularly during reproductive years. Several factors contribute to this gender bias:

1. Hormonal Influences: female hormones especially involving estrogen and progesterone, plays a crucial role in the pathogenesis of these lesions. These hormones are known to promote angiogenesis, a process fundamental to the formation of pyogenic granulomas. Estrogen and progesterone receptors have been identified in these lesions, suggesting a direct hormonal influence on their growth and recurrence.[7]

2. Pregnancy: Pyogenic granulomas are notably more common during pregnancy, earning the nickname "pregnancy tumors" or "granuloma gravidarum." The elevated levels of estrogen and progesterone during pregnancy significantly contribute to the development and recurrence of these lesions.[7]

3. Trauma and Irritation: Females may experience more frequent minor traumas or irritations due to various factors, including dental hygiene practices and the use of oral contraceptives, which can also influence the development of these lesions.

Hormonal Effects on Pyogenic Granulomas

The hormonal changes associated with pregnancy, particularly the increased levels of estrogen and progesterone, have a profound impact on the development and recurrence of pyogenic granulomas. These effects include:

1. Angiogenesis: Estrogen is a potent promoter of angiogenesis, the formation of new blood vessels. It enhances the proliferation of endothelial cells and stimulates the production of angiogenic factors such as vascular endothelial growth factor (VEGF). This process is fundamental to the formation of the capillary networks that characterize pyogenic granulomas.[8]

2. Immune Modulation: Hormones can modulate the immune response, influencing the inflammatory component of pyogenic granulomas. Estrogen, for example, has been shown to affect various immune cells and cytokine production, potentially contributing to the chronic inflammatory state observed in these lesions.

3. Receptor Presence: The presence of estrogen and progesterone receptors in pyogenic granulomas indicates that these hormones may directly influence the cellular behavior within the lesions, promoting growth and vascular proliferation.[8]

Risk Factors for Lobular Capillary Hemangioma

In addition to hormonal influences, several risk factors contribute to the development and recurrence of lobular capillary hemangiomas:

1. Trauma: Minor injuries or repeated trauma to a specific area can induce the formation of these lesions. Common sources of trauma include dental procedures, biting the cheek or lip, and aggressive tooth brushing.

2. Chronic Irritation: Continuous irritation from dental appliances, ill-fitting dentures, or orthodontic braces can lead to the development of pyogenic granulomas.

3. Infection: Bacterial or viral infections can stimulate an inflammatory response, promoting the growth of vascular lesions.

4. Medications: Certain medications, such as oral contraceptives and retinoids, have been associated with an increased risk of developing pyogenic granulomas due to their effects on the vascular system and immune response.

5. Genetic Factors: A genetic predisposition may play a role in the susceptibility to developing these lesions, although this aspect is not yet fully understood.[4]

the recurrence rate of pyogenic granuloma, especially during pregnancy, varies but is generally noted to be significant due to the hormonal changes that occur. Studies have reported recurrence rates ranging from 5% to 15% after treatment, with higher rates observed in lesions associated with pregnancy. The increased levels of estrogen and progesterone during pregnancy are believed to contribute to both the development and recurrence of these vascular lesions.

Factors Contributing to Recurrence

1. Hormonal Changes: Elevated estrogen and progesterone levels during pregnancy stimulate angiogenesis and can lead to the recurrence of pyogenic granulomas.

2. Incomplete Excision: If the lesion is not completely excised, residual tissue can lead to regrowth.

3. Local Irritation: Continued local irritation or trauma can also contribute to recurrence. Treatment options for pyogenic

granuloma include both conservative and surgical approaches. Conservative management may involve observation for small, asymptomatic lesions or the application of topical agents like imiquimod to reduce inflammation. Surgical options include simple excision to remove the lesion entirely, often accompanied by curettage and cauterization to prevent recurrence. Laser surgery offers a precise method with minimal bleeding Powell et al reported the use of neodymium-doped yttrium aluminium garnet (Nd: YAG) laser for excision of PG because of the lower risk of bleeding compared to other surgical techniques. They chose the Nd: YAG laser over the carbon dioxide (CO2) laser because of its superior coagulation characteristics.[9] Other techniques like cryotherapy and electrocautery are used to destroy the lesion through freezing or electrical current, respectively. In some cases, sclerotherapy with sclerosing agents is employed. Postoperative care, including wound management and regular follow-ups, is essential to monitor healing and prevent recurrence.

Conclusion

This short article highlights the importance of understanding the hormonal influences on the recurrence of lobular capillary hemangiomas, particularly during pregnancy. The effective management of these lesions requires a comprehensive approach that addresses both the immediate presentation and the underlying factors contributing to their recurrence. Surgical excision combined with periodontal flap surgery with thorough debridement proved effective in preventing recurrence. Continuous follow-up is necessary to ensure long-term success and patient satisfaction. Highlighting the importance of a well-planned treatment strategy. Monitoring and managing such lesions during pregnancy is crucial for ensuring patient comfort and preventing future recurrences

Conflict Of Interest- There is no conflict of interest.

Acknowledgement- I would like to express my sincere gratitude to Dr. Mala Dixit Baburaj, Head of the Department of Periodontics, for her invaluable guidance, continuous support, and encouragement throughout the preparation of this case report. Her expertise and insights were instrumental in shaping this work.

I also extend my heartfelt thanks to Dr. Rajiv Desai and the Department of Oral Pathology for their invaluable contribution in providing the histopathological report which helps in the diagnosis of the case. Their support was crucial to the successful completion of this study.

Conflict of Interest: Nil

Source of Support: Nil

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