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**Pyogenic Granuloma**

***Introduction***

Pyogenic Granuloma is defined as a benign, localized mass of inflamed vascular tissue caused by an excessive growth of the capillary blood vessels in the affected area as a result of an injury or local infection (1)(2). These lesions affect both the skin and mucous membrane and it is composed of granulation tissue, immature collagen, endothelial cells and new capillaries (1)(3).

***Other Terminologies***

This benign vascular tumor is sometimes referred as “Granuloma Pyogenicum,” or “Lobular Capillary Hemangioma,” because of its lobule like appearance under a microscope (2). When it occurs during pregnancy it is more commonly known as “Pregnancy Tumor”, “Granuloma Gravidarum,” or “Epulis Gravidarum” (3). For individuals going through puberty and experiencing Pyogenic Granuloma, the lesion may be referred to as “Hormonal Gingivitis” or “Puberty Gingivitis” (1).

***Etiology***

Studies have shown that many different factors contribute to the development of a Pyogenic Granuloma but the exact cause is still unknown. It is believed that the various stimuli that contribute to its emergence include irritation, trauma, hormones and drugs. Studies have also shown there might be an association between pyogenic granuloma and other systemic dermatoses like atopic dermatitis and psoriasis (3)(5). The most common etiologies known are minor trauma and localized infections (1).

Hormonal fluctuations appear to have a role in its development, as it is in the case of puberty, menopause and pregnant women (1)(5). These lesions can occur in the second and/or third trimester of pregnancy, where the estrogen level in the body will reach its peak (3). Researchers have found that medications like oral contraceptives, retinoids, antiretrovirals, antineoplastics and immunosuppressants may be associated with pyogenic granulomas (3)(4). In a recent cohort study, pyogenic granulomas were seen on a lot of patients taking cyclosporine and tacrolimus (3).

***Demographics***

Lobular capillary hemangiomas can be seen in patients of all races and ages but very frequently it occurs in early childhood (2)(3). Both males and females can experience pyogenic granulomas but females have been found to be more commonly to be affected (1). Approximately 5% of pregnant patients will acquire these granulomas (1).

***Clinical Appearance***

Pyogenic granulomas may seem lobular or nodular, flat or pedunculated and exophytic (1). They first arise as a singular, localized, smooth and friable papule but they grow very quickly and due to this rapid proliferation, the lesion may appear ulcerated since the epithelium can’t grow as fast (1)(3). The color of the lesion will vary from pink to reddish-brown or purple but this will be determined by how long the lobular capillary hemangioma has been present for (1)(3)(5). The younger the lesion, the more red it presents as a result of the immature capillaries involved but as the lesion gets older, it will become more pink in color because it has collagenized (1). Their size ranges from a few millimeters to several centimeters in diameter (3). After a long period of time, Pyogenic Granulomas will develop an epidermal collarette at the base and may also become thick and hardened resulting in Fibromas (1)(3).

This skin disease can develop anywhere on the body, most commonly within the oral cavity (5). On rare occasions it has been found within the gastrointestinal tract and subcutaneously (3). Three different clinical variations have been found other than intraoral pyogenic granulomas: digital, disseminated and satellite which is the most rare (3). Intraorally they are more likely to develop on the gingiva and keratinized tissues (1). The most common site intraorally is the interproximal papillae, occurring 70% of the time (1). Most of the time it is an asymptomatic lesion but they tend to have a tendency of excessive bleeding, raising the patient’s anxiety and urgency for medical help (1)(3).

***Histopathology***

These lesions have no potential to be malignant but a biopsy must be done to rule out other diagnoses. Histologically a pyogenic granuloma will consist of lobular aggregates of capillaries embedded within a loose fibrous stroma, each lobule will contain a central feeder vessel that develop within highly vascular granulation tissue (3). Inside the stroma you will find lymphocytes, neutrophils, plasma cells and mast cells (3). Endothelial cells on the most superficial surface will line the capillaries lobules and as it progresses to a deeper region you will notice small, overlapping lumens due to the increased cellularity (3).

Bacterial staining has been done for other studies and the presence of Gram-positive and Gram-negative bacilli in the lesion have been indicated (5).

***Radiographic Feature***

Some researchers have observed localized, alveolar resumption in cases of longstanding gingival pyogenic granulomas (5).

***Differential Diagnosis***

Lobular capillary hemangioma may be diagnosed with a thorough medical history and clinical examination but these lesions may sometimes resemble malignant skin diseases that need to be ruled out. Amelanotic melanoma, squamous cell carcinoma, basal cell carcinoma, Kaposi sarcoma and angiosarcoma are some of the cancerous lesions that need to be differentiated (3)(5).

***Treatment***

These skin lesions may excised by laser, with a blade, through cryotherapy or curettage (2). It is advised for the excision to be followed up with a dental prophylaxis to remove calculus, plaque, debris and other irritants since both the lesion and its stimuli must be removed to lessen the chance of recurrence (1).

***Prognosis***

Pyogenic granulomas may resolve on its own after removing the stimuli triggering it (5). Oral hygiene must be maintained to help prevent recurrence of intra oral lesions (3). When associated with pregnancy, it is very unlikely for these benign tumors to resolve itself after childbirth, very sparingly they do (1).

***Recurrence Rate***

Pregnancy or drug-induced pyogenic granulomas have a higher recurrence rate after being treated (3). After analyzing oral conditions, Vilmann et al. stated that in cases of gingival Epulis Gravidarum, the recurrence rate is much greater than other intraoral lesions (5). Another study showed these lesions are 15.8% more likely to occur after an excision but if it was excised from an extragenital site, it is very uncommon for the lesion to arise again (3)(5).

***Dental Hygiene Tx***

A good and carefully done prophylaxis is the most important thing to do after the removal of the lesion to make sure any irritant is removed from the site. Patient education and home care instructions are also very important when treating pyogenic granulomas because of its many different triggers. We must educate the patient to maintain a good oral care regiment to keep the area free from calculus, plaque and debris that may cause a recurrence.

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