



## OLGU SUNUMU/CASE REPORT

### Palatal pyogenic granuloma: a common lesion in an uncommon location

Palatal piyojenik granülom: sıradışı bir bölgede sık rastlanan bir lezyon

Medhini Mad<sup>1</sup>, Subhas G Babu<sup>2</sup>, Renita Castelino<sup>1</sup>, Sonika Achalli<sup>3</sup>, Supriya Bhat<sup>1</sup>

<sup>1</sup>B. Shetty Memorial Institute of Dental Sciences, NITTE University, Department of Oral Medicine and Radiology, <sup>2</sup>Professor and Head of the Department, Department of Oral Medicine and Radiology, <sup>3</sup>Patla Speciality Dental Clinic and Orthodontic, Deralakatte, Mangalore:

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#### Abstract

The pyogenic granuloma is a common tumour like growth of the oral cavity. It was originally thought to be caused by pyogenic organisms but it is now believed to be unrelated to infection. It represents an exuberant tissue response to local irritation and trauma. Despite its name, it is not a true granuloma. It arises most frequently on the gingiva, lips, tongue and buccal mucosa. Pyogenic granuloma of the palate is a rare occurrence. Here we report an unusual occurrence of pyogenic granuloma on the hard palate.

**Key words:** Pyogenic granuloma, palate, oral cavity.

#### Öz

Piyojenik granülom, ağız boşluğunda yaygın görülen bir tümördür. Başlarda, piyojenik organizmalardan kaynaklandığı düşünülse de, şimdilerde enfeksiyon ile ilgili olmadığına inanılmaktadır. İsim olarak lokal iritasyon ve travmaya dokunmuş verdiği aşırı reaksiyon anlamına gelir. Adına rağmen, tam bir granülom değildir. Sıklıkla diş eti, dudaklar, dil ve yanak mukozasında ortaya çıkar. Piyojenik granülom damakta nadiren görülür. Bu çalışmada, sert damakta alışılmadık bir şekilde görülen piyojenik granülomdan bahsedilecektir.

**Anahtar kelimeler:** Piyojenik granülom, damak, ağız.

## INTRODUCTION

Pyogenic granuloma is a tumour like growth that is considered as an exaggerated, conditioned response to minor trauma. It was originally believed to be a botryomycotic infection, an infection in horses thought to be transmissible to man. Subsequent work suggested that the lesion was due to infection by either staphylococci or streptococci, partially because it was shown that the microorganisms could produce colonies with fungus like characteristics. It is now generally agreed that the pyogenic granuloma arises as a result of some minor trauma to the tissues which provides a pathway for the invasion of non specific types of microorganisms<sup>1</sup>.

The term pyogenic granuloma was introduced by Hartzell in 1904. It may occur in all ages. It is predominantly seen in the second decade of life in

young adult females. This is perhaps due to the vascular effects of female hormones<sup>2,3</sup>. During pregnancy, the changes in the hormonal levels will exaggerate the response to local irritants. This leads to the formation of pregnancy tumor. Nearly, 75% of oral pyogenic granuloma occurs in the gingiva. The lips, tongue and buccal mucosa are the next most common sites and the growth is rarely seen in the palatal region<sup>4</sup>. This paper documents a 24 year old female patient who had an unusual presentation of pyogenic granuloma on the hard palate.

## CASE

A 24 year old female patient reported to the Department of Oral Medicine and Radiology with a chief complaint of growth in the palate since 4 months. History revealed that the patient initially

Yazışma Adresi/Address for Correspondence: Dr. Medhini Madi, A.B. Shetty Memorial Institute of Dental Sciences, NITTE University, Department of Oral Medicine and Radiology Deralakatte, Mangalore E-mail: medhkat@gmail.com medhini.madi@gmail.com

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noticed a small swelling on the palate 4 months back. Patient also gave a history of self inflicted injury using her fingers after which she noticed bleeding. There was occasional bleeding from the growth since 4 months. The growth gradually increased in size over the period of time and has reached the present size. No history of pain or any other discharge. Medical history when elicited revealed that the patient was a lactating mother and has delivered the infant 5 months back.

On examination no gross facial asymmetry was detected extra orally. Intra oral examination revealed a lobulated, pedunculated growth, red in colour, measuring approximately 1 cm x 1 cm in size, located in the right side of the hard palatal region, extending anteriorly 3 cms away from the incisive papilla, posteriorly in line with 14 and 24, medially 0.5 cms away from the midpalatine raphae and laterally 1.5 cms away from 14. On inspection there was no visible bleeding, discharge or ulceration. On palpation, inspeitory findings regarding the site, shape and size were confirmed. The growth was firm in consistency, non tender and there was no bleeding or discharge on palpation [Fig 1]. Hard tissue examination showed decay with respect to 47 and presence of a crown on 36 [Fig 2]. Considering all the above features a provisional diagnosis of pyogenic granuloma was made and excisional biopsy was planned. Peripheral giant cell granuloma, Peripheral ossifying fibroma, Traumatic fibroma, Hemangioma were considered as differential diagnosis.

Submitted specimen was whitish brown in colour, firm in consistency, measuring 1cmx1cmx1cm in dimension [Fig 3]. Histopathological examination of H and E stained slides shows stratified squamous keratinised epithelium of variable thickness and underlying connective tissue. The connective tissue shows numerous proliferating capillaries, endothelial cells, collagen fibres, fibroblasts with mixed inflammatory cell infiltrate mainly in the form of lymphocytes and plasma cells [Fig 4 and 5]. Histopathological findings were compatible with the clinical diagnosis of Pyogenic granuloma. No recurrence of the growth has been noted since the excision.

## DISCUSSION

Pyogenic granuloma is a common tumor-like growth of the oral cavity or skin. It is considered to

be non-neoplastic in nature<sup>5,6</sup>. Hullihen's description<sup>7</sup> in 1844 was most likely the first pyogenic granuloma reported in English literature, but the term "pyogenic granuloma" or "granuloma pyogenicum" was introduced by Hartzell in 1904<sup>8</sup>. The term "pyogenic granuloma" is a misnomer because the lesion does not contain pus and strictly speaking is not a granuloma.<sup>5</sup>

Nearly one third of the lesions occur after trauma. Therefore, the history of trauma before development of this lesion is not unusual, especially for extragingival pyogenic granuloma. In our case too patient gave a history of self inflicted trauma. Poor oral hygiene may be a precipitating factor in many of these patients<sup>9</sup>.



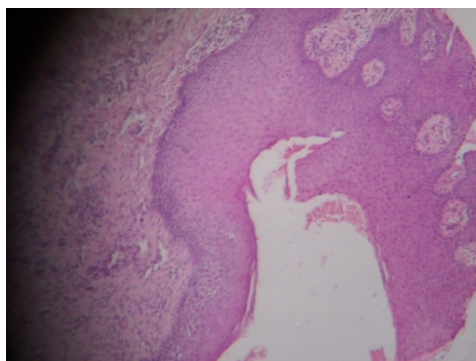
**Figure 1.** Clinical photograph showing a lobulated, pedunculated growth, red in colour, measuring approximately 1 cm x 1 cm in size, located in the right side of the hard palatal region.



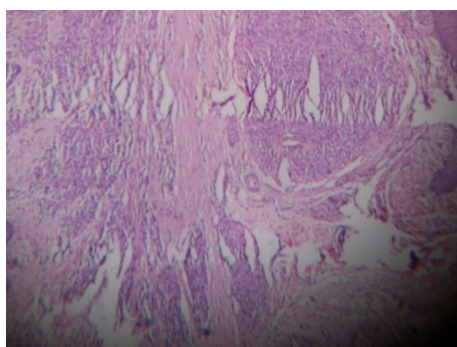
**Figure 2.** Clinical photograph of the mandibular arch showing decay with respect to 47 and presence of a crown on 36.



**Figure 3.** Photograph of the submitted specimen which was whitish brown in colour measuring 1cmx1cmx1cm in dimension.



**Figure 4.** Photomicrograph of H and E stained slides showing stratified squamous keratinised epithelium of variable thickness and underlying connective tissue.



**Figure 5.** Photomicrograph of the connective tissue showing numerous proliferating capillaries, endothelial cells, collagen fibres, fibroblasts with mixed inflammatory cell infiltrate mainly in the form of lymphocytes and plasma cells.

Pyogenic granuloma is predominant in the second decade of life in young adult females, possibly because of the vascular effects of female hormones. Some authors believe that patients are mostly males under 18 years of age, females in the age range 18 to 39, and older patients with an equal gender distribution<sup>9</sup>. Oral pyogenic granuloma, shows a remarkable predilection for the gingiva accounting for 75% of all cases. The lips, tongue, and buccal mucosa are the next most common sites. Lesions are slightly more common on the maxillary gingiva than the mandibular gingiva; anterior areas are more frequently affected than posterior areas. Also, these lesions are much more common on the facial aspect of the gingiva than the lingual aspect<sup>5</sup>.

Pyogenic granuloma is a smooth, lobulated and exophytic lesion manifesting as small, red, erythematous papules either on a pedunculated or sessile base. The size of pyogenic granuloma varies from few mm to several cm rarely exceeding 2.5cm reaching its full size within weeks or months and remaining indefinitely thereafter. Clinical development of the lesion is slow, sometimes rapid and asymptomatic. The color ranges from pink to red to purple depending on the age of the lesion. The surface is characteristically ulcerated and friable<sup>3</sup>. The younger lesions are highly vascular causing considerable bleeding on minor trauma whereas the older lesions become more collagenized and pink. The hormones progesterone and oestrogen influence the growth to grow faster. This explains the high incidence in women, particularly pregnant and oral contraceptive consumers.<sup>10</sup> In general, it appears in second to third month of pregnancy, with the tendency to bleed and a possible interference with mastication<sup>11</sup>.

Peripheral giant cell granuloma, peripheral ossifying fibroma, metastatic cancer, hemangioma, and conventional granulation tissue hyperplasia can be considered as differential diagnosis [Table 1].<sup>5</sup> The presence of multinucleated giant cells and lack of an infectious source helps in histopathological identification of a peripheral giant cell granuloma and hence can be easily differentiated from pyogenic granuloma after histological examination. Peripheral ossifying fibroma or peripheral odontogenic fibroma occurs exclusively on the gingiva. Unlike a pyogenic granuloma the vascular component is very minimal.<sup>12</sup> Peripheral ossifying fibroma appears as a nodular mass either pedunculated or sessile that usually emanates from the interdental papilla.

**Table 1. Differential diagnosis of growths that occur in hard palate and are similar to pyogenic granuloma.**

Differential Diagnosis of palatal soft tissue tumour	Site	Size/Colour/Surface texture	Age and gender predilection	Symptoms	Histopathology
<b>Pyogenic granuloma</b>	75% of all cases are seen in gingiva [maxilla > mandible] > lips > tongue > buccal mucosa > others	Smooth or lobulated mass, usually pedunculated and sometimes sessile. Surface is characteristically ulcerated ranging from pink to red to purple depending on age. Can be few millimeters to centimeters	Children and young adults, definite female predilection	Painless, bleeds easily	Highly vascular proliferation that resembles granulation tissue
<b>Peripheral giant cell granuloma</b>	Exclusively on the gingiva or edentulous alveolar ridge (mandible > maxilla) > others	Red, reddish-blue or bluish-purple nodular mass, < 2cm in diameter, sessile or pedunculated	5 <sup>th</sup> and 6 <sup>th</sup> decade of life, 60% occur in females	Asymptomatic unless ulcerated	Proliferation of multinucleated giant cells within a background of plump ovoid and spindle shaped mesenchymal cells
<b>Peripheral ossifying fibroma</b>	Exclusively on the gingiva ( maxilla > mandible) > others	Nodular, pedunculated or sessile, red to pink in color frequently ulcerated, < 2 cm in size	Teenagers and young adults, between 10 years to 19 years, two-thirds of all cases occur in females	Usually asymptomatic	Fibrous proliferation associated with mineralized product
<b>Metastatic cancer</b>	Gingiva – 50% cases Tongue : 25% cases > others	Nodular mass with surface ulceration	Males > females, middle-aged and older adults	Symptomatic, painful, surface ulceration seen	Most of them resemble carcinoma
<b>Hemangioma</b>	60% of all cases are in head and neck > others	Superficial : bright red colour, Deep: bluish hue	Most common in infancy, female : male = 3:1 Complete resolution by 5 years and 90% by age of 9	40% show permanent changes like scarring, atrophy, telangiectasias, wrinkling. Ulcerations, secondary infections	Numerous plump endothelial cells and often indistinct vascular lumina
<b>Irritation fibroma</b>	Buccal mucosa along the bite line > labial mucosa > tongue > gingiva > others	Smooth surfaced, pink, white or pigmented, commonly sessile and sometimes pedunculated, less than 1.5 cm nodule	4 <sup>th</sup> to 6 <sup>th</sup> decade of life Male:Female = 1:2	Asymptomatic unless secondary traumatic ulceration	Fibrous connective tissue covered by stratified squamous epithelium

The colour ranges from red to pink, and the surface is frequently but not always ulcerated. Red ulcerated lesions are often mistaken for pyogenic granuloma and pink non ulcerated ones are clinically similar to

irritation fibroma. It is predominantly a lesion of young teenagers and adults with peak prevalence between the ages of 10 and 19.

Almost two-thirds of all cases are in females with site predilection for maxillary arch in the incisor-cuspid region. Histopathologically, the lesion has mineralised component consisting of bone, cementum-like material or dystrophic calcifications.<sup>5</sup> Differentiation of pyogenic granuloma from a hemangioma is made histologically due to the proliferating blood vessels. Hemangioma shows endothelial cell proliferation without acute inflammatory cell infiltration, which is a common finding in pyogenic granuloma. Metastatic tumors of the oral cavity most commonly affects the attached gingiva. Clinically they resemble pyogenic granuloma, but microscopically they resemble the tumor of origin. Conventional hyperplastic gingival inflammation resembles pyogenic granuloma in histopathologic sections and it is extremely difficult for the pathologist to reach a histopathological impression. In such cases the diagnosis relies on the description given by the physician and the operating surgeon<sup>12</sup>.

Excisional biopsy is the treatment of choice for pyogenic granuloma, except when the procedure would produce marked deformity. In such cases incisional biopsy is recommended. Although conservative surgical excision and removal of causative irritants (like plaque, calculus, foreign materials and the source of trauma) is the treatment protocol for gingival lesions, the excision should extend down to the periosteum. The adjacent teeth should be thoroughly scaled to remove the source of continuing irritation.<sup>9</sup>

Powell et al. reported the use of Nd:YAG laser for excision of pyogenic granuloma because of the lower risk of bleeding compared to other surgical techniques. The choice of Nd:YAG laser over the CO<sub>2</sub> laser was because of its superior coagulation characteristics.<sup>13</sup> New approaches for treatment such as cryosurgery, flash lamp pulsed dye laser, injection of ethanol or corticosteroid and sodium tetradecyl sulfate, sclerotherapy have been reported as alternative therapies<sup>9</sup>. Pyogenic granuloma is a common tumour like growth in the oral cavity, but, its predilection to hard palatal region is a rare occurrence. Hence, utmost care should be taken in arriving at a proper diagnosis and prompt treatment. The specimen should be submitted for microscopic

examination to rule out other more serious diagnosis. Early identification, thorough removal and frequent follow up is the key to treating pyogenic granuloma.

## REFERENCES

1. Sivapathasundharam B, Gururaj N. Bacterial infections of the oral cavity. In: Rajendran R, Sivapathasundharam B, editors. Shafer's textbook of oral pathology. 7<sup>th</sup> ed. India: Elsevier. 2012;334.
2. Akyol MU, Yalçiner EG, Doğan AI. Pyogenic granuloma (lobular capillary hemangioma) of the tongue. *Int J Pediatr Otorhinolaryngol*. 2001;58:239-41.
3. Epivatianos A, Antoniadis D, Zaraboukas T, Zairi E, Pouloupoulos A, Kiziridou A et al. Pyogenic granuloma of the oral cavity: Comparative study of its clinicopathological and immunohistochemical features. *Pathol Int*. 2005;55:391-7.
4. Greenberg MS, Glick M, Jonathan A. 11th ed. Hamilton: BC Decker; Burket's Oral Medicine; 2008;133-4.
5. Neville BW, Damm DD, Allen CM, Bouquet JE. 2nd ed. WB Saunders, Philadelphia, Oral & maxillofacial pathology. 2002;437-95.
6. Vilmann A, Vilmann P, Vilmann H. Pyogenic granuloma: evaluation of oral conditions. *Br J Oral Maxillofac Surg*. 1986; 24:376-382.
7. Hullihen SP. Case of aneurism by anastomosis of the superior maxillae. *Am J Dent Sc*. 1844;4:160-2.
8. Hartzell MB. Granuloma pyogenicum. *J Cutan Dis Syph*. 1905;22:520-5.
9. Jafarzadeh H, Sanatkhan M, Mohtasham N. Oral Pyogenic granuloma: a review. *J Oral Sci*. 2006;48:167-75.
10. Ojanotko-Harri AO, Harri MP, Hurtia HM, Sewon LA. Altered tissue metabolism of progesterone in pregnancy gingivitis and granuloma. *J Clin Periodontol* 1991;18:262-6.
11. Sills ES, Zegarelli DJ, Hoschander MM, Strider WE. Clinical diagnosis and management of hormonally responsive oral pregnancy tumour (pyogenic granuloma). *J Reprod Med*. 1996;41:467-70.
12. Arora V, Kathuria B, Yadav SPS, Hernot S. Pyogenic granuloma of hard palate masquerading as papilloma. *IJSR*. 2015;4:2037-9.
13. Powell JL, Bailey CL, Coopland AT, Otis CN, Frank JL, Meyer I. Nd:YAG laser excision of a giant gingival pyogenic granuloma of pregnancy. *Lasers Surg Med*. 1994;14:178-83.