

## MATURING PYOGENIC GRANULOMA - A REPORT OF TWO CASES

\*SHARATH ASOKAN, \*\*A. VENKATACHALAPATHY, \*E. M. G. SUBRAMANIAN,  
\*\*\*M. S. MUTHU, \*\*\*\*N. SIVAKUMAR.

### ABSTRACT

*Pyogenic granuloma is an exuberant fibro-epithelial reaction to chronic inflammation or local irritation. Two cases of a recurring maturing pyogenic granuloma in children have been reported in this article.*

**Key words:** *Exuberant tissue reaction, Granulation tissue, Pyogenic granuloma, Epulis granulomatosa, Lobular capillary hemangioma.*

### INTRODUCTION

Pyogenic granuloma is a common tumour like growth of oral cavity, non-neoplastic in nature<sup>1</sup>. It is now believed to be unrelated to infection and is an exuberant tissue response to local irritation or trauma. The term pyogenic granuloma is a misnomer and it is not a true granuloma<sup>2</sup>. Pyogenic granulomas occur as a smooth or a lobulated mass that is usually pedunculated<sup>3</sup> (although some are sessile). The surface is characteristically ulcerated and ranges from pink to red to purple, depending on the age of the lesion<sup>4</sup>. Young lesions are highly vascular and older lesions are more fibrous, collagenised and are pink in colours. They range from a few millimeters to several centimeters in size. They are often painless but bleed excessively. The rapid growth of the lesion always gives a fear of malignancy<sup>6</sup>.

Pyogenic granulomas of the oral cavity are more common in the gingiva followed by lips, tongue and

buccal mucosa<sup>7</sup>. They occur more commonly in the maxilla (palatal aspect of the incisors) than in the mandible<sup>8</sup>. Anterior and facial gingivae are more commonly affected than posterior and lingual gingivae. Sometimes they extend between the teeth and involve both the facial and palatal or lingual gingiva.

In this article we report two cases of maturing pyogenic granuloma in children aged nine and six respectively.

### Case report 1

A nine-year-old boy reported to the Department of Pedodontics and Preventive Dentistry, Meenakshi Ammal Dental College and Hospital with a complaint of swelling in the gums in the upper front teeth region. The swelling gradually increased in size over a period of four months. History revealed that the patient had undergone excision of a similar swelling in the same region four months back. On examination the swelling was found to extend from the labial to the palatal aspect

---

\*Post Graduate student, Dept of Pediatric dentistry, Meenakshi Ammal Dental College and Hospital, Chennai - 95. India.

\*\* Associate Professor, Dept of Pediatric dentistry, Meenakshi Ammal Dental College and Hospital, Chennai - 95. India.

\*\*\* Reader, Dept of Pediatric dentistry, Meenakshi Ammal Dental College and Hospital, Chennai - 95. India.  
Professor and Head, Dept of Pediatric Dentistry, Meenakshi Ammal Dental College & Hospital, Chennai - 95. India.

**Correspondence:** N. Sivakumar MDS, Professor and Head, Dept of Pediatric dentistry, Meenakshi Ammal Dental College and Hospital, Alapakkam Main road, Maduravoyal, Chennai — 600095, Tamil Nadu — India. [Email: sivakumar@doctor.com](mailto:sivakumar@doctor.com), [dentist4kids@rediffmail.com](mailto:dentist4kids@rediffmail.com), Telephone: +91-44-23782566, +91-98416 57987, Fax No.: +91 44 23781631

of the upper right and left maxillary incisors (Fig). The swelling was larger on the palatal aspect than on the labial aspect. It was about 3 x 3 cm in size, firm and lobulated. Intraoral periapical radiograph of the maxillary central incisors revealed crestal bone loss and displacement of the incisors. Clinically the provisional diagnosis was pyogenic granuloma or peripheral giant cell granuloma. The lesion was excised under local anesthesia. Postoperative instructions and medications were given to the patient. A single soft tissue specimen was sent for biopsy. The tissue section revealed features of healed pyogenic granuloma with fibrous changes, calcifications and ossifications with few giant cells (Fig 2). From the history, clinical and histopathological findings a confirmative diagnosis of maturing pyogenic granuloma was made.



Fig. 2. Histopathological picture revealing features of healed pyogenic granuloma with fibrous changes, calcifications and ossifications with giant cells

### Case report 2

A six-year-old girl reported to our department with a chief complaint of pain and swelling in the lower right back tooth region. The swelling was present for a week before she reported for treatment. Her medical history revealed that she was a known asthmatic and she was under medication. The lesion had started as a small growth and enlarged to the present size. On intra oral examination a growth was seen in the retro-molar area of the mandible on the right side (Fig 3). Intra oral periapical radiograph of mandibular right second primary molar revealed erupting permanent first molar

and was at the level of oral mucosa. The growth interfered with occlusion resulting in inflammation and pain. The lesion was excised under local anesthesia and sent for histological examination. The tissue section showed numerous endothelial lined capillaries and diffuse inflammatory cell infiltration. Overlying stratified squamous keratinized epithelium showed secondary changes in the form of intracellular edema, ulceration, hyperplasia and thinning. A diagnosis of pyogenic granuloma was made from the histopathological report (Fig 4).



Fig. 1. Lesion extending from the labial to the palatal aspect of the upper right and left maxillary central incisors

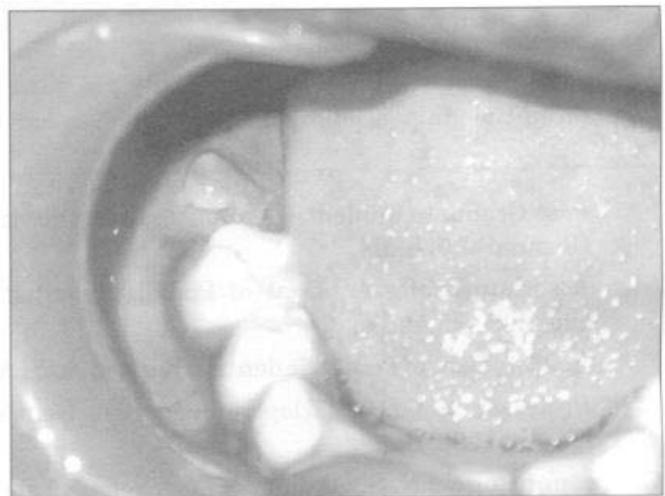


Fig. 3. Lesion in the retromolar area of the mandible on the right side



Fig. 4. Histopathological picture revealing numerous endothelial lined capillaries and diffuse inflammatory cell infiltration

## DISCUSSION

Gingival irritation, trauma, ill-fitting appliances, inflammation as a result of poor oral hygiene and even eruption of teeth can be a precipitating factor for the development of pyogenic granulomas. Pyogenic granulomas are more common in children and young adults. Females are more commonly affected than males because of the vascular effects of female hormones<sup>10</sup>

Pregnancy tumor or granuloma gravidarum are seen in females in the first trimester of pregnancy". These lesions enlarge in size upto the 7th month of pregnancy and this increase is related to the estrogen and progesterone levels. These lesions resolve without any treatment when the hormone level alteration occurs. Epulis granulomatosa is the hyperplastic growth of granulation tissue that sometimes arises in the healing extraction sockets also. They resemble pyogenic granulomas and usually represent granulation tissue reaction to bony sequestra in the socket.

Histopathological sections of pyogenic granuloma show increased vascular proliferations similar to granulation tissue. Numerous small and larger endothelium lined channels are formed that are engorged with red blood cells. When the vessels are organised in lobular aggregates the lesion is referred to as lobular capillary hemangioma. The surface is usually ulcerated and replaced by a thick fibrinopurulent mem-

brane. A mixed infiltrate of inflammatory cells are seen. The neutrophils are seen more on the ulcerated surfaces and the deeper lesions have more of chronic inflammatory cells.

Differential diagnosis for pyogenic granulomas includes granulation tissue, epulis, capillary hemangioma and peripheral giant cell granuloma". Pyogenic granulomas have lower ISTR (In Situ 3'-Tailing Reaction, a histochemical method for identifying apoptotic cells) labeling indices than granulation tissue and capillary hemangioma. Low apoptotic rate in pyogenic granuloma is closely related to its rapid growth and increased expression of Bcl-2 and Bax proteins".

Treatment options include thorough scaling of the region to prevent any irritation and surgical excision of the lesion. Gingival lesions should be removed down to their periosteum<sup>14</sup>. Pyogenic granulomas have been treated by cryosurgery, curettage, electrodesiccation, chemical cauterization, and laser surgery. Pulsed dye lasers (selective destruction of superficial capillary sized cutaneous blood vessels) have also been safely and effectively used in treatment of small pyogenic granulomas in children<sup>15</sup>. Solitary pyogenic granulomas can be treated with a vascular-specific (585 nm), pulsed (450 microseconds) dye laser using a 5-mm spot size with laser energy of 6 to 7 J/cm<sup>2</sup> without anesthesia". The combined continuous-wave pulsed CO<sub>2</sub> laser has also yielded a good result with low recurrence rates. Sclerotherapy with monoethanolamine oleate has also been tried in the treatment of pyogenic granuloma<sup>17</sup>. Though various treatment modalities exist, single shave excision and electrocautery are most widely used".

All the findings reported in the above cases were in accordance with the earlier literature on pyogenic granuloma. In the first case it was an exuberant tissue reaction formed due to irritants, nonspecific in nature. The lesion was present palatal to the maxillary central incisors and extended between the teeth involving both the labial and palatal gingiva. It was pink in colour and was lobulated. It became more fibrous in appearance (gradually) in a period of four months. The probable reason for recurrence could have been inadequate excision or the failure to remove the local predisposing factors. The lesion presented in the second case was

distal to deciduous lower second molar at the eruption site of the lower permanent first molar. The lesion could have occurred due to interference with occlusion resulting in inflammation and pain. This lesion was also fibrous in appearance and a simple excision was done.

## REFERENCES

- 1 William G. Shafer, Hine M.K, Levy W.M. A Textbook of Oral Pathology. IV edition; W.B. Saunders Co. P: 360.
- 2 Neville, Damm, Allen, Bouquot. Oral and Maxillofacial Pathology. II Edition; W.B. Saunders Co. P: 447.
- 3 R. A. Cawson, E. W. Odell. Essentials of Oral Pathology and Oral Medicine. II Edition; Churchill Livingstone Co. P: 260.
- 4 Stephen H. Y. Wei. Pediatric Dentistry: Total Patient Care. I Edition; Lea Feibeger Co. P: 39.
- 5 Cameron A, Widmer R. Handbook of Pediatric Dentistry. I Edition; Mosby-Wolfe Co. P: 162.
- 6 Ray E. Stewart, Thomas K. Barber, Kenneth C. Troutman, Stephen H. Y. Wei. Pediatric Dentistry — Scientific Foundations and Clinical Practice. I Edition; C. V. Mosby Co. P: 176.
- 7 Akyol MU, Yalciner EG, Dogan AI. Journal of Pyogenic Granuloma (Lobular Capillary Hemangioma) Of the Tongue. Int J of Ped Otorhinolaryngol 2001, 58(3), P: 239-241.
- 8 Al Khateeb. Oral Pyogenic Granuloma in Jordanians: A Retrospective Analysis of 108 Cases. Journal of Oral Maxillofacial Surgery 2003, 61(11), P: 1285-1288.
- 9 Kneafsey L, Hughes C. Quadhelix appliance therapy resulting in pyogenic granuloma of the tongue. Dent Update. Nov 2002; 29(9), P: 462-463.
- 10 Lawoyin JO, Arotiba JT, Dosumu OO. Oral Pyogenic Granuloma: A Review of 38 Cases from Ibadan, Nigeria. British Journal of Oral Maxillofacial Surgery 1997, 35(3), P: 185-189.
- 11 Ong MA, Chai WL, Ngeow WC Recurrent Gigantic Pyogenic Granuloma Disturbing Speech and Mastication: Case Report and Literature Review. Ann Acad Med Singapore 1998, 27(2), P: 258-261.
- 12 Ramirez K, Bruce G, Carpenter W. Pyogenic Granuloma: Case Report in a Nine Year Old Girl. Gen Dent 2002, 50(3), P: 280-281.
- 13 Nakamura.T. Apoptosis and Expression of Bax / Bc12 Proteins in Pyogenic Granuloma: A Comparative Study with Granulation Tissue and Capillary Hemangioma. Cutan Path 2000, 27(8), P: 400-405.
- 14 Mody RN, Raut D. Large Pyogenic Granuloma: A Case Report. Dent Update 1996, 23(10), P: 412-413.
- 15 Shah M, Kingston TP, Cotterill JA. Eruptive pyogenic Granuloma: A Successfully Treated Patient and Review of Literature. Br J Dermat 1995, 133(5), P: 795-796.
- 16 Yong-Kwang Tay, William L. Weston, and Joseph G. Morelli. Treatment of Pyogenic Granuloma in Children with Flash Lamp Pump Pulsed Dye Laser. J of Pediatrics 1997, 99(3), P: 368-370.
- 17 Matsumoto K, Nakanishi H, Seike T, Koizumi Y, Mihara K, Kubo Y. Treatment of pyogenic granuloma with a sclerosing agent. Dermatol Surg. Jun 2001; 27(6), P: 521-523.
- 18 Pagliai KA, Cohen BA. Pyogenic Granuloma in Children. Ped Derm. 2004, 4(1), P: 10-13.