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# Peripheral Giant Cell Granuloma of Mandible: A Case Report.

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**ABSTRACT:-**
Peripheral giant cell granuloma (PGCG) is an exophytic lesion of the oral cavity is not found frequently in the oral cavity.It is also called as giant cell epulis, osteoclastoma, giant cell reparative granuloma. Any chronic irritation, poor oral hygiene due to chronic negligence can be a factor for occurance.It is a benign reactive lesion of gingiva, can be pedunculated or sessile, firm ,soft.These lesions are painless and varies in size. This case report describes a rare case of Peripheral giant cell granuloma in a 60 year old female patient with abundant calculus and plaque deposition and excision with the help of diode laser.

**KEYWORDS:-** Peripheral Giant Cell Granuloma, Laser, Excision, Biopsy.

## I. INTRODUCTION

Any swelling which is localised over the gingiva can be called as an Epulis.It can be restricted normally to a developmental or reactive swelling of gingiva or periodontal ligament in origin.

Peripheral giant cell granuloma (PGCG) is an uncommon pathology affects gingiva or alveolar mucosa.These are tumor like non neoplastic lesion of gingiva and alveolar ridge.It is a non- odontogenic and not seen in any other bone of skeleton.

It is also called giant cell reparative granuloma, giant cell epulis, osteoclastoma, giant cell hyperplasia, pyogenicgranuloma, hemangiomatous, fibrous,fibro-inflammmatory , fibroblastic, giant cell and osteoid[2]

It is usually found in adults in 4th to 6th decades of life with highest prevalence in women than men. According to Giansanti and Waldron, PGCG occurs in incisors and canine region but Pindborg confirmed that common site of occurance are molar and premolar region[1]

Etiological factors stays indefinite, but it can be due to result of local deposits such as calculus or poor adaption of margins of dental restorations.

Clinical presentation can vary from round or oval , pedunculated or sessile,from bluish red pale pink or reddish pink, regular or irregular in shape.[2]

Comprehensive surgically excision of the reactive gingival lesion,followed by thorough removal of local factors is the main principle for further prevention of the lesion from recurrence.

Treatment includes eradication of causative agents and removal of the lesion. Techniques for removal of the hyperplastic lesion are surgical excision by surgical scalpel, electrical scalpel, carbon dioxide laser, Erbium: YAG laser, Neodymium: YAG laser, and diode laser.

## II. CASE REPORT

- A 60 year old female reported to Department of Periodontology and Implantology of Government Dental College And Hospital ,Aurangabad with the chief complaint of swelling over gums in lower right back region of jaw since 8 months. Initially swelling was small in size, gradually the size increased ,swelling was painless and was not associated with pus discharge
- Patient also tried to ruptured the swelling by sharp object( tooth pick) but apparently the size of the swelling increased to the present size.

Plaque and calculus was abundantly present in the patient. Patient was systemically healthy. The intraoral examination reveledthat Apico-coronal extent was 13mm and Mesio-distal extent was 17-18mm.It was alocalized and regular growth and consistency was firm and fibrotic, pedunculated pulsation was absent
surface was smooth, intact, no oozing out of blood or pus.non- palpable, non tender cervical and submandibular lymph nodes.
The Colour was reddish pink .Tooth involved were 44,45,46. There was generalized recession and

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GRADE 1 MOBILITY wrt 43 44 45 46 33 34 35 36
GRADE 2MOBILITY wrt 42 41 31 32

The procedure was explained to the patient and informed consent was taken from the patient . Oral hygiene instruction and motivation was given to the patient for optimal plaque control. Thorough scaling was performed to remove plaque and calculus which had contributed to the progression of the overgrowth and all necessary homecare instructions were given for the maintenance of a good oral hygiene.

IOPA radiograph was taken, blood investigations were done.

All the necessary precautions including wearing of protective glasses by clinician, attendant and the patient were done prior to the laser treatment. A local anaesthesia with 2% lignocaine and epinephrine at 1:100,000 was administered, Growth was completely removed by diode laser (Clean cut) without obvious heamorrhageThe growth was resected by continuous mode wave (contact mode) during the surgery, and the output power was set at 2.0 W and the wavelength at 810 nm. After the removal of the tissue periodontal dressing was placed on the excised site and the tissue was sent for histopathological study.

On Histopathological examination of the excised tissue with H&E stained section showed parakeratinized stratified squamous epithelium with varying degree of proliferation with arcading pattern at places. Beneath epithelium band of connective tissue with moderate vascularity is seen separating lesionaltissue.Stroma is predominantly fibrocellular consisting fibroblast and fibrocytesand haphazardly arranged collagen fibres. The lesional tissue consists of rounded to ovoid multinucleated giant cells chiefly lymphocytes and plasma cells is seen.Severe degree of vascularity with extravasated RBCs are evident throughout the stroma.Features were suggestive of **"PERIPHERAL GAINT CELL GRANULOMA"**

**Post surgical examination was done after 7 days ,1 month, 3 months, 6 months for surgery.**

**Fig 1:- Shows IOPA wrt 44,45,46**

**Fig 2:- Before and After phase 1 therapy**

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**Fig 4:-Mesiodistal width**

**Fig 5:-Apicocoronal height**

**Fig 6:- Laser tip placed at the base of the growth in contact mode**

**Fig 7:- excised growth**

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**Fig 8:- Debridement of plaque and Calculus beneath the growth.**

**Fig 9:- Periodontal dressing placed over the excised region**

**Image Courtsey:- Oral pathology and Microbiology Department GDCH, Aurangabad**

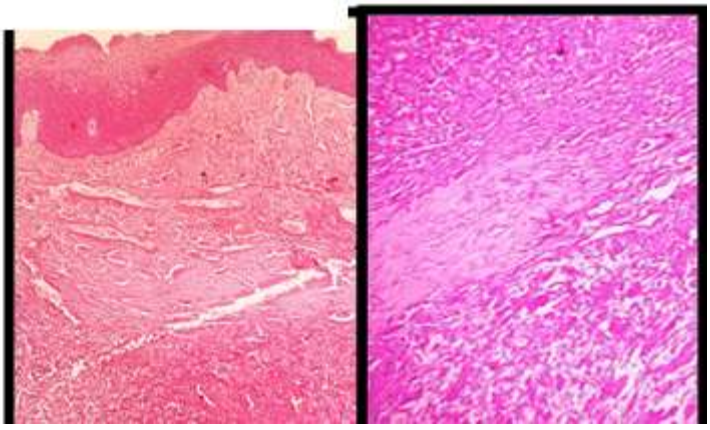

**Figure 10Hematoxylin and eosin staining lesion showing proliferation of multinucleated giant cells covered by parakeratinised stratified squamous epithelium.Figure 11 shows multinucleated giant cells and spindle shaped mesenchymal cells**

**Fig 12:-Follow up after 7 days**

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**Fig 13:-Follow up after 3months**

**Fig 12:- Follow up after 6months**

## III. DISCUSSION

PGCG accounts for <10% of all hyperplastic gingival lesions. Incidence of PGCG varies from 5.1% to 43.6% .Capacity of PGCG to grow is 0.1 to 3cm., 94% of lesions are <1.5cm. Extent rarely crosses 2cm in diameter.[9]

Reparative giant cell granuloma (RGCG) comprises a type of neoplasms which clinically can look like aggressive but evaluated histopathologically, are not a true neoplasm but are reactive hyperplastic process of periosteum or the periodontal membrane because of local irritation or chronic trauma originating from a sharp tooth edge, ill-fitting dental prosthesis, foreign-body lodgement in gingiva, dental restoration, calculus[2]

Although an equal predilection of its occurrence in both the genders is reported, there are studies which show preponderance in females explained by the hormonal influence of estrogen on the multinucleated giant cells and males, respectively.[2]

The PGCG is an exophytic lesion of the oral cavity that seems to arise from the periodontal ligament or periosteum and affects mainly the gingival or alveolar mucosa of dentate and edentulous persons Histologically, the presence of multinucleated giant cells is characteristic of this lesion, and various stages in giant cell evolution from formation to degeneration have been described. Multinucleated giant cells may represent a reaction to unknown stimuli from the stromal components of the PGCG[9].Ratio of PGCG:CGCG is 3-4:1. Histologically CGCGs are similar to PGCG; however, CGCGs present frequent bone resorption. Localised bone resorption and erosion were observed in 26–28% of the cases. PGCGs are usually localized on the gingiva without adjacent tissue destruction, but in this case adjacent bone resorption is seen.

The etiology of this lesion is still not exactly defined, local irritating factors such as , ill-fitting prosthesis, poor restorations, plaque, calculus, may play a vital role in the etiology[9].The lesion was called previously as peripheral giant cell reparative granuloma ,but its reparative property has not been proved yet, so the osteoclastic activity is seen doubtful. The etiological factors in present case likely could be plaque, calculus[9].

The distinctive feature of PGCG is mainly due to giant cells that are circulated in the connective tissue stroma. The exact basis of giant cells is unsettled. Many opinions have been identified in the literature as osteoblasts, phagocytes, endothelial cells, and spindle cells are thought to be responsible for giant cell proliferation[9]. The proliferation of giant cells associated with resorption of deciduous teeth has been implicated in the development of giant cell

lesions. The origin of the multinucleated giant cells is unknown; some believe them to show immunohistochemical features of osteoclasts while others suggest them to arise from mononuclear phagocyte system. Numerous foci of multinuclear giant cells and haemosiderine particles are seen in connective tissue stroma. Areas of chronic inflammation are scattered throughout the lesion, with acute involvement occurring at the surface. The overlying epithelium is usually hyperplasticand ulceration is present at the baseline.

Due to the large size of the lesion, an excisional laser biopsy and histopathologic evaluation were done for the diagnosis of the progressively enlarging gingival mass. Laser excision was considered over surgical scalpel excision to ensure painless treatment and removal of the aggressive lesion. Diode lasers are effective tools for precise cutting and make minimal change to adjacent tissues. The laser vaporization method coagulates and seals small vessels providing no postoperative bleeding[1.]

Patient experience less pain with diode laser. This is because the thermal necrosis created by the laser through vaporization of the tissue seals sensory nerves, decreasing their ability to transmit stimuli (of pain) and denaturation protein aids in decreasing pain.Diode laser proves to have not only a bactericidal effect but also an anti-inflammatory effect in the oral cavity, reducing chances of infection.[14,15]

Recurrence rate of PGCG varies between 5% and 70.6%, but it is generally accepted that the recurrence incidence for PGCG is approximately 10% .Therefore to minimize the chances of recurrence wider excisions extending to the periosteum and including the entire base of the lesion are warranted. The high power diode laser is an excellent soft tissue surgical tool indicated for cutting and coagulating gingiva and mucosa . Laser surgery usually requires local anesthesia, but rarely needs sutures. Advantages of laser excision of these lesions are When radiant energy is absorbed by tissue, four basic types of interactions or responses may occur which are Photochemical interaction, Photo thermal interaction , Photo mechanical interaction , Photo electrical interaction[16] least hemorrhage, lower post-surgical pain and rapid wound healing after surgery. Diode laser cuts and coagulates as well as sterilizes the area, leading to minimal inflammatory response eventually resulting in less post operative discomfort. Numerous studies have given credible evidence that lasers have attained hemostasis enhancing post operative wound healing with reduced discomfort without the need for any analgesics. The application of diode laser can stimulate fibroblast proliferation, collagen synthesis, vessels proliferation accompanied by enhanced epithelial cell division resulting in faster wound healing.

## IV. CONCLUSION

The presented case is a Jaw- dropper for the dental community.It is the duty of the patient to maintain oral hygiene. Despite the awareness programs in social media regarding general and oral health, the resultantcare on the part of patients reappears. Therefore, patient awareness programmes as well as reinforcement of good oral hygiene and the interrelationship between oral health and systemic health at each patient visit should be promoted.Poor oral hygiene and local irritating factors are promoting factors for Epulis.Lasers are the useful tool in modern dentistry due to the rapid and regular wound healing without sutures.

Properties such as coagulation associated with the use of diode laser are beneficial during removal of tumors of inflammatory origin with bleeding tendencies. There is less post-operative bleeding, pain and swelling.

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