

## Therapeutic Effects of Diode Laser on the Treatment of Epulis : A Case Report.

### Abstract:

**Introduction:** Epulis is apseudo-tumor growth characterized by fibrous connective tissue hyperplasia in gingivobuccal region. The swelling is usually a result of a local irritant such as calculus formation or a poorly adapted margin of a dental restoration.

**Aim:** The aim of this case report is removal of an epulis using diode laser, which was located at the aesthetic zone of the lower incisors, and to report on associated changes in the periodontal parameters such gingival inflammation and the position of the tooth following the introduction of an effective oral hygiene regime for the patient.

**Objective:** To evaluate the outcome of surgically excised Epulis using diode laser located at the aesthetic zone of the lower incisors in a 27 years old female patient.

**Methodology:** Surgical excision of Epulis by diode laser (810 nm) under local anesthesia.

**Result:-** Complete re-epithelization and healing was seen at 1 and 4 weeks time interval.

**Conclusion:** Epulis is observed in patients with poor oral hygiene in areas with local irritating factors. Tissue excision should not extend beyond to the periosteum and adjacent teeth should be thoroughly scaled to remove any source of irritation. Coagulation properties 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.

**Key-words:** Diode laser, Oral lesions, Epulis granulomatosa, Female

### Introduction:

Any localised swelling of the gingiva may be called an epulis although its usage is normally restricted to developmental or reactive swellings of the gingiva or periodontal ligament origin. The swelling is usually a result of a local irritant such as calculus formation or a poorly adapted margin of a dental restoration.[1]

Epulis is a very common pathology, especially in women, which, if neglected, can reach a considerable volume. We report a case of giant epulis which posed a diagnostic problem because of its location and its volume. In addition, other factors favoring the genesis of these conditions in female patients have been described such as anemias, hemostasis disorders and parasitic eosinophilias.[2]

The epulis is a rounded or oval tumor with regular or multi-lobed surface. It can be sessile or pedunculated, with elastic consistency and vinous red color. It usually sits on the vestibular slope of the second and third teeth area, more rarely in the palatal region. Its diagnosis of certainty is histological and distinguishes among others, inflammatory epulis, Pyogenic Granuloma (inflammatory hyperplasia), hemangiomas, fibrous, fibro-inflammatory, fibroblastic, giant cell, and osteoid.[3,4]

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### Quick Response Code



Treatment includes elimination of the causing factors and surgical removal of the lesion. If the causal factor persists, the tissue becomes more fibrous over time. The most common techniques used for removing the hyperplastic lesion are surgical scalpel, electrical scalpel, carbon dioxide laser, Erbium: YAG laser, Neodymium: YAG laser, and diode laser.[5]

**Case Report:**

An 27-year-old female patient referred to the Department of Periodontology, D.J. College of Dental Sciences and Resarch, Modinagar, U.P. complaining of a gingival mass in the lower front tooth region since 1 month, which bled often and interfered with normal eating and brushing. There was no history of systemic disease with poor oral hygiene with plaque deposits. The patient had no deterioration in general health, and she described the gingival overgrowth as a simple discomfort. She noticed the growth 2-3 months back which started as a size of peanut and gradually increased to reach the present size. The intraoral examination revealed a single growing exophytic lesion measuring approximately 8 x 9 mm which was attached to the marginal gingiva extending between the teeth no. 41,42 and 43. The lesion was reddish in color, oval in shape, pedunculated with a smooth surface, and bleeding was present on probing(Figure. 1 A). There was noticeable mobility of the mandibular first incisor, and these findings were confirmed. The lesion was asymptomatic but caused some mastication problems. Patient's blood examination results were within normal limits.

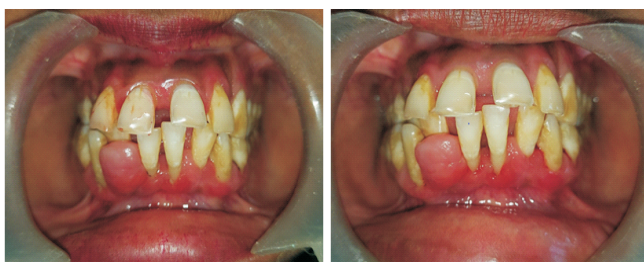


Figure 1.A) Pre operative intraoral view , B) 1 week after scaling and root planing.

Intraoral periapical radiograph of teeth no. 41,42 and 43 and orthopantomogram revealed interproximal alveolar crestal bone loss and root resorption (Figure 2 A, B). The diagnoses mentioned were fibroma and inflammatory epulis.

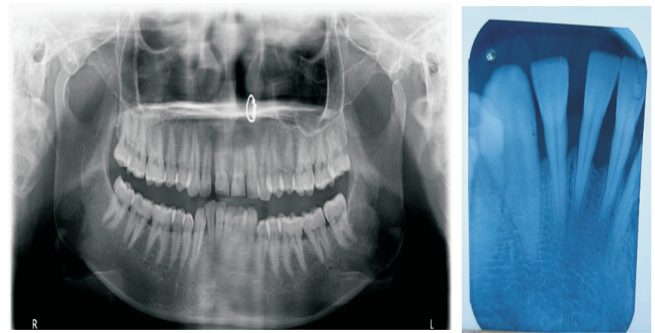


Figure 2.A) OPG, B) IOPA radiograph shows crestal bone loss. The procedure was explained and an informed consent taken from the patient. Oral hygiene instructions and motivation was given to ensure optimal plaque control. Thorough scaling was performed to remove the extensive supragingival calculus (Figure. 1B ) which had contributed to the progression of the overgrowth and all necessary homecare instructions were given for the maintenance of a good oral hygiene. Following mechanical debridement and an antiseptic prescription, a marked improvement in gingival health was noted during the reassessment. All the necessary precautions including wearing of protective glasses by clinician, attendant and the patient were done prior to the laser treatment. A localanesthesia with 2% lignocaine and epinephrine at 1:100,000 was administered, epulis was completely removed by diode laser (Fona) without obvious hemorrhage (Figure. 3 A).



Figure 3.A) Diode laser (FONA), B) Incision with diode laser (810nm) C) Immediate Post Operative

The epulis 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. (Figure. 3 B, C).After the removal of the tissue periodontal dressing was placed on the excised site and the tissue was sent for histopathological study. (Figure.4 A-B)



Figure 4.A) Coe – Pak placed, B) Excised tissue dimensions – (8 x 9 mm)

On Histopathological examination of the excised tissue H & E stained section shows a parakeratinized stratified squamous epithelium with underlying dense fibro vascular connective tissue stroma. The stroma shows fascicles of dense collagen bundles interspersed with spindle shaped fibroblasts arranged in radiating or haphazard fashion. The connective tissue is arranged in lobular aggregates with mixed chronic inflammatory infiltrate chiefly composed of neutrophils, lymphocytes and plasma cells. Numerous small and large blood vessels lined by plump endothelial cells are also evident. The specimen shows PYOGENIC GRANULOMA. (Figure. 5)

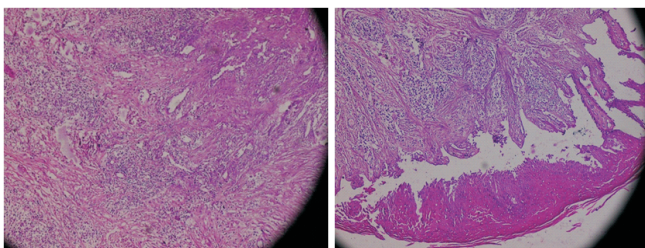


Figure 5. Histopathological examination shows Pyogenic Granuloma. A) 10X and B) 40X

The postsurgical examinations were done after 7 and 30 days showed good healing (Figures 6 A, B).



Figure 6.A) 1 week Post operatively ,B) Post operative view after 1 month of surgery.

### Discussion:

Recent advances have shown that laser therapy can be used as an alternative or complement to traditional methods[6,7]. Laser surgery usually requires local anesthesia, but rarely needs sutures. Advantages of laser excision of these lesions are least hemorrhage, lower post-surgical pain and rapid wound healing after surgery[8]. Today, diode laser is widely used in oral surgery to excise lesions[9]. The relatively small size and lower costs of diode laser have made it interesting to dental practitioners for use in different indications, In our present case report, we have used the diode laser with a wavelength of 810nm for the excision of the Epulis. Unlike the other lasers which have affinity towards water and hydroxyapatite, a diode laser has an affinity for pigmented and vascular lesions comprised of chromophores like melanin and hemoglobin, making it an efficient tool for coagulation<sup>10</sup>. Hence with the use of diode laser we were able to attain immediate hemostasis with enhanced visibility and were able to mark the boundaries of the outgrowth. 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[11-14].

Benefit of diode laser over traditional surgery with scalpel comprises convenient mucosa removal, high precision in tissue destruction[15,16], easy ablation of soft tissue, immediate sterilization, decreased mechanical trauma, increased patients acceptance, no or few sutures<sup>7</sup>, homeostasis, decreased bacteremia, decreased edema, less operative and postoperative discomfort, little wound contraction and minimal scar [6,7]. The application of diode laser can stimulate fibroblast proliferation, collagen synthesis, vessels proliferation accompanied by enhanced epithelial cell division resulting in faster wound healing[17,18].

### Conclusion:

Epulis is observed in patients with poor oral hygiene in areas with local irritating factors. Tissue excision should not extend beyond to the periosteum and adjacent teeth should be thoroughly scaled to remove any source of irritation. Due to the rapid and regular wound healing without sutures, lasers are useful for soft tissue surgery in modern dentistry.

Coagulation properties 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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