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**TREATMENT OF GRANULOMATOUS EPULIS USING LASER**

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**ABSTRACT**

**Background:** Epulis is an epithelial tumor that is non-osteogenic. Epulis can be found in the oral cavity both on the gingiva and in the alveolar mucosa. Epulis is a benign enlargement of soft tissue. Granulomatous epulis is one type of epulis that is often found. This granulomatous epulis is a granulative tissue reaction with the characteristics of bleeding easily and having a reddish color. This epulis can disturb the patient both psychologically because there is a large mass in the oral cavity, causing it to be unaesthetic if it occurs in the anterior teeth area, disrupting the chewing process and even disrupting the speech process if it is in the posterior teeth. Apart from causing discomfort to the patient, there are several types of epulis that can cause pain. **Objective:** To find out how to make a diagnosis of granulomatous epulis accompanied by treatment using a laser. **Case:** A 45 year old female patient came with complaints of enlarged gums since 1 year ago. The patient initially used dentures, but currently the dentures cannot be used and the patient feels uncomfortable because he cannot chew food due to a large lump in the oral cavity. **Case Treatment:** At the first visit, an etiotropic phase is carried out in the form of elimination of local factors, then the patient is referred for supporting examinations in the form of panoramic radiography and FNA-B examination. This examination functions to determine whether there is malignancy or not. After the results showed no malignancy, we continued with the surgical phase in the form of excision of granulomatous epulis using a laser. **Conclusion:** Granulomatous epulis therapy using laser accompanied by removal of remaining tooth roots shows satisfactory therapeutic results.

**Keyword:** Epulis, Epulis Granulomatosa, Excision, Laser

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**INTRODUCTION**

Tumors are new tissues that arise in the body due to the influence of various causal factors. Tumors can be divided into odontogenic and non-odontogenic tumors. Odontogenic tumors are subdivided into tumors of ectodermal, mesiodermal and mixed mesio-ectodermal origin. Meanwhile, non-odontogenic tumors are divided into osteogenic tumors, non-osteogenic tumors, vascular tissue tumors and nervous tissue tumors.<sup>6</sup>

Non-osteogenic tumors are divided into epithelial tumors, inflammatory hyperplasia and mesiodermal tumors. In this classification, epulis is included in epithelial tumors.<sup>1</sup> Epulis is a gingival hyperplasia originating from periodontal connective tissue, which is thought to be caused by local chronic irritation or trauma such as subgingival calculus, cervical caries, remaining tooth roots, poor dentures, poor restorations, hormonal imbalances, and poor healing processes.<sup>6,8,12</sup> Epulis is fibrous, hyperplastic, and granulative.<sup>14</sup> The clinical picture

of epulis can be pedunculated and sessile.<sup>6,8,12</sup> The most frequently found epulis are hyperplastic fibromatosis, peripheral ossifying fibroma, pyogenic granuloma, and peripheral giant cell granuloma.<sup>11</sup> Based on the etiology of epulis, it can be classified as: congenital epulis, fibromatous epulis, granulomatous epulis, fissuratum epulis, telangiectatica epulis, gravidarum epulis, and giant-cell epulis.<sup>2,9</sup>

Granulomatous epulis can occur at any age, but this case is most often diagnosed in patients in the 40-60 year age group, and mainly occurs in women.<sup>16</sup>

Granulomatous epulis is also often called hemangiomas epulis, which originates from the large number of blood vessels visible on histopathological images.<sup>7</sup> Epulis also often appears between two teeth (interdental), which is richly vascularized so it bleeds easily with touch and is generally reddish in color.<sup>8</sup>

The size varies, most cases usually measure less than 2 cm, but there are cases whose diameter exceeds 4 cm. These lesions can grow into irregularly shaped masses that can ulcerate and bleed easily. Most of it consists of granulation tissue. Chewy consistency, bleeds easily when touched.<sup>15</sup>

### CASE

A 45 year old female patient came with complaints of enlarged left upper gum. The patient felt a lump since 1 year ago and it continues to grow until now. The patient admitted that he had removable dentures but had not used them since his gums had enlarged. The patient currently cannot chew food and only consumes liquid milk, the patient also admits that he does not brush his teeth.



**Figure 1.** Patients intraoral first visit



**Figure 2.** Panoramic view

On intra-oral examination, enlargement in regions 24, 25, 26 was visible (Figure 1). Solid mass with a diameter of 30 x 35 x 12 mm, fibrotic consistency, well-defined, the same color as the surrounding tissue, bleeds easily and has an uneven surface. Oral hygiene condition is moderate with OHIS 1.5. Based on the history and clinical examination that has been carried out, the patient is referred for a supporting examination in the form of a panoramic photo.

The results of the panoramic radiograph showed that there were remaining roots in areas 11, 12, 13, 14, 16, 21, 22, 24, 31, 32, 37, 41, 47, and 48. There was no alveolar bone resorption in the areas of teeth 24, 25, 26 but there was a remnant of the root of tooth 24, which was located apical to the mass (Figure 2).

### TREATMENT

Initial treatment begins with plaque control then refers the patient to the RSU Haji to Anatomy-Pathology Laboratory in Surabaya for sample collection and FNA-B examination. This histopathological examination was carried out to help confirm the diagnosis because the mass was quite large in diameter with an uneven surface. The results of the FNA-B examination obtained by taking 3 punctures on the mass of the left superior gingival region microscopically showed that the smear consisted of a distribution of PMN and mononuclear inflammatory cells as well as squamous epithelial cells, among a wide distribution of erythrocytes. The results of the examination showed no signs of malignancy in all the smears.

Based on the results of the FNA-B examination, it was concluded that the diagnosis for the above case was granulomatous epulis. Because the granulomatous epulis was not malignant, the patient was then planned to undergo surgical phase therapy in the form of excision of the epulis using a laser. The procedure using this laser is chosen based on its advantages, such as minimizing the occurrence of bleeding, and is adjusted to the patient's condition and case.



**Figure 3.** Intraoral from occlusal's view



**Figure 4.** Intraoral from sagittal's view

The patient came two days after the FNA-B results came out for epulis excision (Figure 3 and Figure 4). First of all, preparation is carried out for the patient, including education regarding what action will be carried out, post-excision risks that could occur to the patient and the patient's family, as well as filling out informed consent. Extraoral and intraoral asepsis was carried out using 10% povidone iodine, then continued with infiltration anesthesia (2% Lidocaine with 1:100,000 epinephrine). Excision was carried out using a laser with 400  $\mu$ c fiber, 15 W pulse mode, 10,000 Hz frequency, and 16  $\mu$ s pulse duration (Figure 5). The tissue mass resulting from excision was excised intact (Figure 6). Next, the remaining tissue around region 24 was curettaged using a Gracey curette to remove the remaining granulation tissue to prevent recurrence and then irrigated with saline solution (Figure 7). A laser with a 4 W pulse is used for coagulation in the postoperative area.



**Figure 5.** Excision using a laser



**Figure 6.** Epulis mass after excision



**Figure 7.** Intraoral after excision

After the surgical procedure is complete, the patient is instructed not to eat for one hour, not to rinse his mouth or suck on the post-operative area, to avoid hot food and drinks, hard food, sour food, spicy food, and not to consume alcohol. It is recommended to consume soft foods and take medication as recommended. The medication given is Amoxicillin 500 mg taken every 8 hours for 5 days and Mefenamic Acid 500 mg taken every 8 hours if sick. The patient was instructed to check in 1 week later for further action in the form of extraction of tooth 24, as well as the remaining roots of the other teeth.

At the control 1 week after excision, the patient did not complain of pain or tenderness, there was no swelling or bleeding. Clinical examination

showed redness in the gingiva of region 24 and an epithelialization process had occurred. Because there were no complaints from the patient, extraction of the remaining roots of tooth 24 was carried out. Furthermore, the patient was instructed to have a control 2 weeks after the extraction, the healing process of the post-extraction socket had occurred, and there were no other complaints from the patient. Next, the patient is scheduled to undergo extraction treatment for the remaining roots of the remaining teeth with the final treatment plan being the creation of a new removable denture.

## DISCUSSION

Granulomatous epulis often occurs in post-extraction tooth sockets, where sharp alveolar bone can cause chronic irritation of the periodontal tissue.<sup>5,7,13</sup> In this case, the remaining root of tooth 24 is still visible on panoramic radiography. It can be concluded that the etiology in this case is plaque and calculus bacteria accompanied by chronic irritation from the remaining tooth roots with rough edges. During the first meeting, it was seen that the patient's oral hygiene was not good, so this could trigger the body's response by forming epulis.

Chronic irritation that causes destruction of periodontal tissue over a continuous and long duration will cause a reduction in blood flow. This can cause tissue necrosis (cell death). With the presence of necrotic cells, the body responds by sending inflammatory cells to the area to eat the tissue with the aim of cleaning up the necrotic cells. The concentration of bFGF (basic Fibroblast Growth Factor) cytokines increases because this cytokine is synthesized and released by macrophages and mast cells during the process of forming new blood vessels (neovascularization) in granulation tissue and stimulates the synthesis of angiogenic proteins related to heparin and then induces a rapid angiogenesis process.<sup>4,9,12</sup> Therefore, epulis will get bigger as time goes by, which must be handled quickly and precisely.

Granulomatous epulis in this case the differential diagnosis is giant-cell epulis and carcinoma. Where giant-cell epulis is an exophytic lesion that is often seen on the gingiva and is clinically similar to granulomatous epulis, but giant-cell epulis is more purplish red in color than granulomatous epulis which is bright red. Although giant-cell epulis causes alveolar bone resorption more often than granulomatous epulis, the difference is minimal.<sup>15</sup> On clinical examination, it is difficult to differentiate between giant-cell epulis and granulomatous epulis but it can be seen from

histopathological examination, where in giant-cell epulis multinucleated giant cells are found and the source of infection is less.<sup>7,15</sup> Based on the histopathology results of this case, there were no multinucleated giant cells but instead there were many PMN cells and other inflammatory cells.

Carcinoma also has a clinical form that resembles granulomatous epulis. This lesion is also often found on the attached gingiva, then the second most common place is the tongue.<sup>15</sup> This is important to pay attention to not rule out the possibility that the lesion is malignant. However, it is more often found in male patients and histopathologically shows granulation tissue with chronic inflammatory cells.<sup>7</sup> In this case, there was also no malignancy or chronic inflammatory cells.

Management of granulomatous epulis depends on the clinical manifestations, and surgical therapy is the recommended therapy because it eliminates local factors that cause irritation.<sup>3</sup> In this case, the diameter of the epulis is large enough to interfere with the patient when eating or talking. To support the treatment plan that will be carried out, an FNA-B examination is needed as a supporting examination that supports the temporary diagnosis and ensures that the mass is not malignant.

Surgical techniques for excision of granulomatous epulis are divided into three types, namely conventional techniques using a scalpel, using a laser and electrosurgery.<sup>7,13,14</sup> In this case, excision of the epulis was carried out using a laser. Lasers provide significant advantages in that they can control bleeding so that the field of view of the working area is clearer for the operator. This clear working area will minimize the treatment completion time which will increase patient comfort. 10 Another advantage is that this laser technique also does not require suturing of the tissue after the excision procedure. When differentiated from conventional techniques using a scalpel, the use of a laser is more precise, so it can minimize mechanical trauma, reduce the number of bacteria and edema, and minimize scars.<sup>13</sup>

The main goal in this treatment is to excise the epulis correctly so that it does not cause repeated epulis (recurrence). In some literature it is said that epulis can recur even after surgical treatment. Therefore, a week after the epulis excision, the remaining root of tooth 24 was extracted. This was done to minimize the occurrence of recurrent epulis by eliminating factors that cause chronic irritation. The extraction of the remaining tooth roots is not carried out at the same time as the epulis excision because it takes into account the patient's

psychology and the patient's desire for treatment to be carried out in stages with a short therapy time. Granulomatous epulis is a benign, non-neoplastic tumor that grows above the gingiva and originates from periodontal tissue and periosteum tissue. This granulomatous epulis can be fibrous, hyperplastic and granulative. Granulomatous epulis therapy using laser for excision accompanied by removal of remaining teeth shows satisfactory therapeutic results.

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