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CASE STUDY

Fibrous epulis: a case report on the management of a massive benign tumor on the right mandible with local anaesthesia

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ABSTRACT

Epulis is a gingival hyperplasia that originates from the connective tissue of the periodontal membrane, caused by chronic irritation. Fibrous epulis presents clinically with or without a stalk; has a pale color, a resilient consistency, well-defined borders, firm texture; does not easily bleed; and does not cause pain. When epulis reaches a significant size, it can interfere with oral cavity function and the patient's nutritional intake. An 82-year-old female patient presented at the oral surgery clinic of RSPAU Hardjolukito with a complaint of a lump on the right mandible. The patient reported that the lump had appeared since the last several months and caused difficulties eating and speaking. Clinical examination revealed a mass with resilient consistency, well-defined borders, firm texture, no tendency to bleed, and no pain, measuring 4.5 x 2.5 x 2.5 cm on the right mandible, preventing the patient from chewing and closing her mouth. The lesion was removed surgically under local anesthesia and histopathological examination findings showed fibromyxoid connective tissue, confirming the definitive diagnosis of fibrous epulis without signs of malignancy. No complications occurred, and the patient reported a significant improvement in the oral cavity function and facial aesthetics. This case highlights the importance of early identification and appropriate management to achieve good outcomes with minimal risk. Excision with local anesthesia is a safe option to avoid the risks associated with general anesthesia.

Keywords: case report; excision; fibrous epulis; local anesthesia

INTRODUCTION

Lesions on the gingiva come in various types, ranging from neoplastic to non-neoplastic, and can be either benign or malignant. Clinical examinations are conducted on these lesions to detect various possible primary lesions within the soft tissues of the oral cavity. These include lesions causing loss of substance (erosion, injury), lesions with excessive growth (increased volume, localized or disseminated with normal or speckled surfaces), and variations in color (white areas, red areas, white and red areas, dark areas).[1] In general, fibrous lesions of the gingiva are classified into localized hyperplastic lesions and neoplasms.[2] Neoplasm, also referred to as a tumor, can be defined as new growth. Neoplastic cells undergo transformation as they continuously replicate and tend to increase in size. Neoplasms can be either benign or malignant, depending on the extent of their growth and whether they have the potential to spread invasively into surrounding tissues.[3] Non-osteogenic tumors are divided into epithelial tumors, inflammatory hyperplasia, and dermal tumors. According to this classification, epulis falls under the category of epithelial tumors.[4]

Epulis is a gingival hyperplasia that originates from the connective tissue of the periodontal membrane or parenchyma.[4] Factors supporting the occurrence of epulis include chronic local irritation such as plaque and calculus, sharp teeth, fractured dental restorations, biting habits, ill-fitting dentures, and impacted food particles.[5] Epulis can also be caused by hormonal imbalances and excessive healing processes.[6] The clinical condition of the lesion reflects various stages of development. In the early stages, it appears

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red and rough, and easily bleeds upon touch or spontaneously. In the later stages, the lesion forms strong, mature, avascular fibrous tissue that can be sessile, pedunculated, or leaf-shaped.[5] There are four types of epulis, depending on the histological components present: fibrous epulis, granulomatous epulis (pyogenic granuloma), angiomatous epulis, and giant cell epulis.[6]

Fibrous epulis arises due to the proliferation of fibroblasts with collagen fibers, as a response to inflammation caused by chronic irritation. Fibrous epulis has clinical appearances that can be pedunculated or sessile. It typically exhibits a pale color, a resilient consistency, well-defined borders, as well as a firm and solid texture; it does not bleed easily.[7] Tissue biopsy and histological examination are considered the gold standard for determining a clinical diagnosis.[1] Histologically, there is a spectrum of changes ranging from granulation tissue rich in chronic inflammatory cells to a mass of collagen that is relatively low in inflammation and avascular.[5] Fibrous epulis consists of the proliferation of fibroblasts and collagen fibers with minimal infiltration of inflammatory cells and dilation of blood vessels. Epulis is often benign, localized, and not painful. Most epulis are small in size, and lesions with a diameter greater than 1 cm are rare. However, it can affect aesthetics, oral cavity function, and the patient's nutritional intake. The management for fibrous epulis involves eliminating the causes of chronic irritation and performing an excision.[8]

Figure 1. Pre-operative extraoral photos of the patient. (A) Frontal View, (B) Bird's-Eye View, (C) Worm's-Eye View, (D) Left Lateral, (E) Right Lateral

Figure 2. Pre-operative intraoral photos of the patient

The prevalence of fibrous epulis is approximately 0.09%. It can occur at various age groups and is more common in women than in men.[7] In a study involving 6344 oral pathology specimens, the three most common histological diagnoses were fibrous hyperplasia (15.2%), chronic periapical granuloma (9.6%), and radicular cyst (9.5%).[9]

METHODS

An 82-year-old female patient came to the oral surgery clinic at RSPAU Dr. Suhardi Hardjolukito with complaints of difficulty eating and speaking due to a large lump on the right mandible. The patient stated that the lump appeared approximately since the last 8 months, starting small and then enlarging. According to the patient's account, there was a loose tooth in that area that eventually fell out on its own. The patient has been prescribed antibiotics, anti-inflammatory, and pain medications at a previous healthcare facility, but the lump had not decreased in size. The patient reported a weight loss of around 5 kg in the last 5 months due to difficulty eating.

The patient's vital signs indicated a blood pressure of 177/101 mmHg, with other vital signs within normal limits. An extraoral examination (Figure 1) shows facial asymmetry with enlargement of the right cheek due to pressure from the intraoral mass. An intraoral examination (Figure 2) reveals a pedunculated mass with a resilient consistency, well-defined borders, firm texture, non-bleeding, and painless, measuring 4.5 x 2.5 x 2.5 cm on the right mandible, causing the patient to have difficulty chewing and closing her mouth. The patient's oral hygiene was poor, with calculus and debris on the entire tooth surface. In the area around the lesion, tooth 44 showed first-degree luxation, tooth 45 had a sharp edge, and tooth 47 showed second-degree luxation.

A radiographic examination with panoramic X-ray (Figure 3) reveals an indistinctly bordered radiolucent image in the region of the tooth socket 46, measuring 7 mm. A radiopaque image was visible, representing the remnant root of tooth

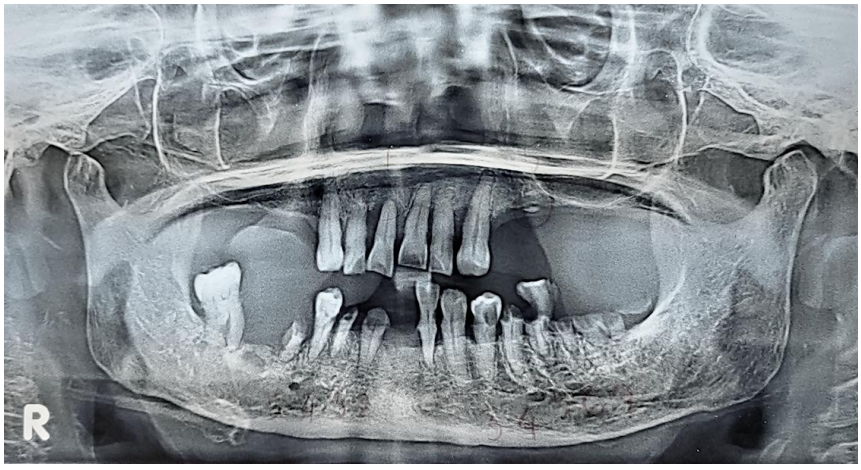

Figure 3. Panoramic photo of the patient

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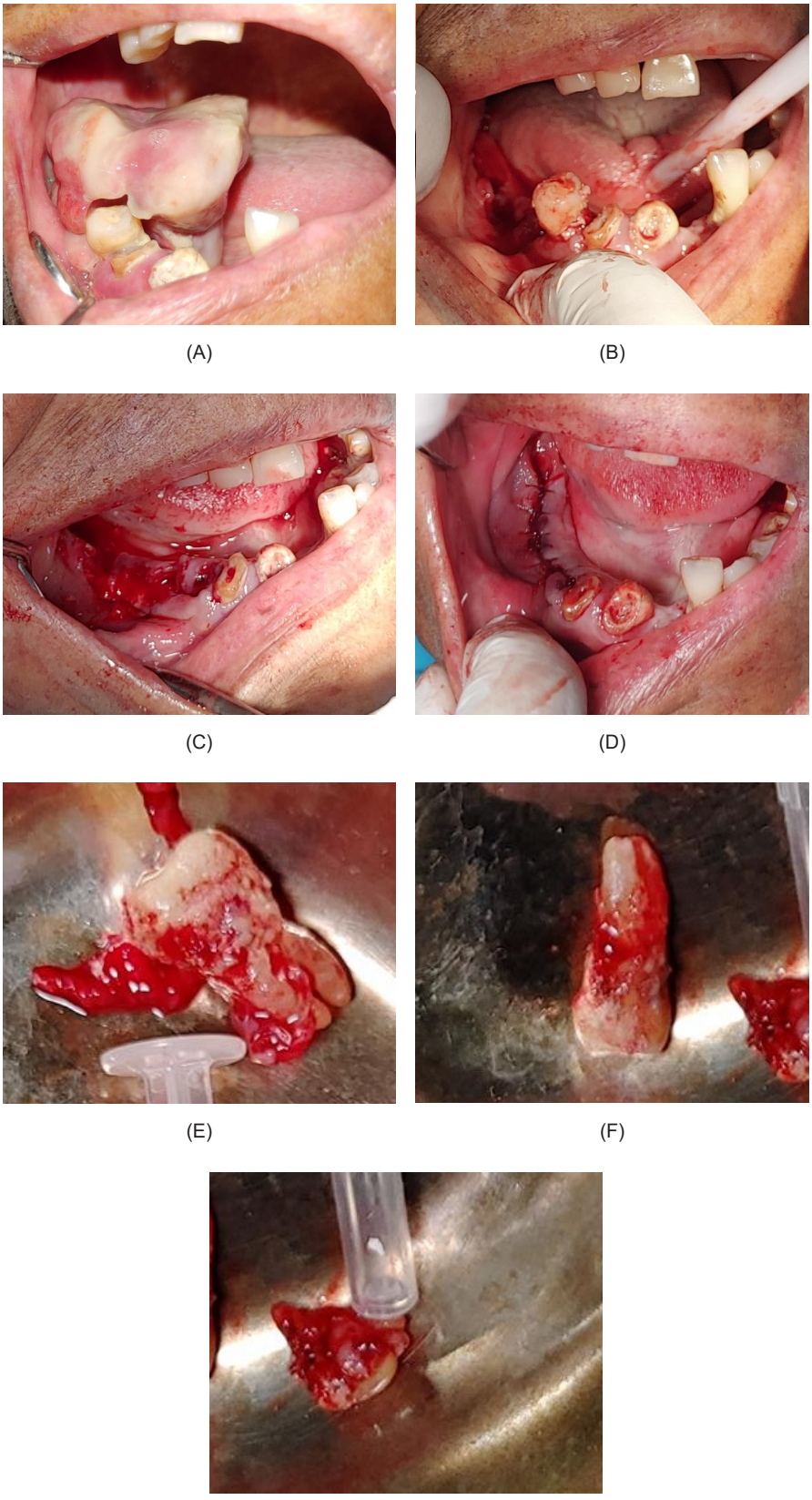

(A) (B)

(C) (D)

(E) (F)

(G)

Figure 4. Photos during the patient's surgery. (A) Pre-Operation, (B) Post-Excision, (C) Post-Multiple Extractions, (D) Post-Hecting, (E) Tooth #47, (F) Tooth #44, (G) Tooth #45

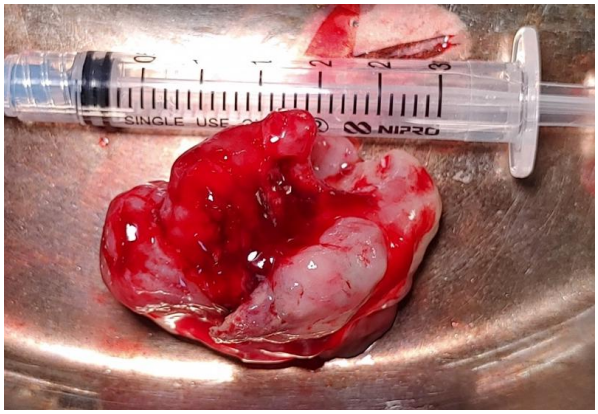

Figure 5. Photo of the lesion after excision

45 with sharp edges, and there was evidence of teeth 44 and 47 with horizontal bone loss. A thin radiopaque mass was observed on the patient's right side, with the lesion's stalk located in the socket area of tooth 46. Blood test results showed several parameters below normal levels, including Hb 11.3 g/dL, Hematocrit 34.3%, and Albumin 3.26 g/dL. Meanwhile, other blood test parameters were within normal limits.

Based on the clinical examination results, characterized by a pedunculated lesion similar in color to the surrounding tissue, slow lesion growth, absence of pain, and minimal weight loss, and supported by blood test and X-ray results, there were no suspicious signs of malignancy. The provisional diagnosis for the mass was fibrous epulis with a differential diagnosis of pyogenic granuloma. The treatment planned for this case was an excision biopsy of the mass under local anesthesia. A written informed consent was obtained from the patient for the publication of this case report and accompanying images. The initial treatment management involved consulting with the internal medicine department about the patient's hypertension. The internal medicine department prescribed amlodipine to control the blood pressure and confirmed that the patient could undergo surgical procedures. The surgical procedure was performed after the blood pressure was controlled.

The treatment began by infiltration anesthesia because the size of the lesion obstructed access for performing an inferior alveolar nerve block. Infiltration anesthesia was administered around the lesion using one ampule of 2 cc lidocaine compositum solution. Subsequently, the lesion was dissected to expose the base of its stalk. A full-thickness incision was made with a No. 15 scalpel blade, tracing the edges around the lesion on the buccal and lingual sides, followed by separating the lesion from the periosteum using a raspatory until the lesion was detached. Curettage was performed in the socket of tooth 46, and then the sharp bone was smoothed (Figure 4B). The excised tissue was measured and placed in a 10% formalin fixation solution for pathological anatomical examination (Figure 5).

(C) (D)

Figure 6. Patient follow-up 1 week after the procedure. (A) Before hecting aff, (B) After hecting aff

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Figure 7. Patient's follow-up photos 2 weeks after the procedure (A) Frontal View, (B) Bird's-Eye View, (C) Worm's-Eye View, (D) Left Lateral, (E) Right Lateral (F) Intraoral photos 2 weeks after the procedure

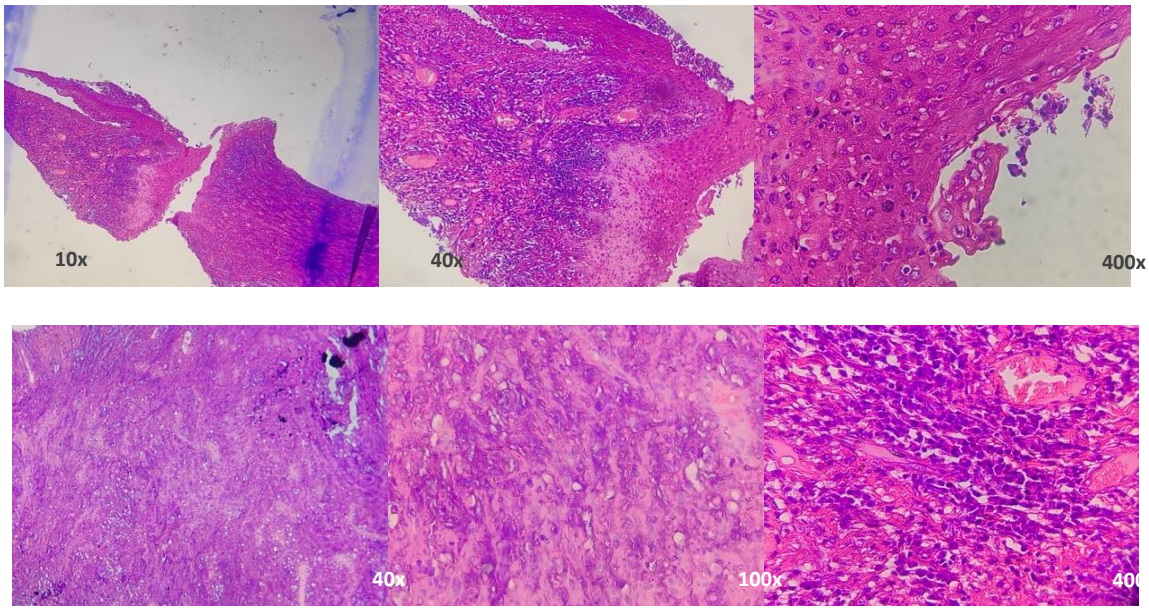

Figure 8. Histopathological examination with H&E staining reveals an encapsulated tumor tissue consisting of proliferating cells covered with complex monomorphic squamous epithelium. Subepithelial tissue shows fibromyxoid connective tissue with numerous lymphocytes, neutrophils, and macrophages

After the lesion was removed, a direct Fischer block anesthesia and buccal infiltration for teeth 44, 45, and 47 were performed for extraction due to traumatic effects on the gingiva (Figure 4). Subsequently, curettage was carried out in the extraction socket and alveolectomy. Bone smoothing was necessary as it is one of the causes of lesion formation. Spongostan application was done in the post-extraction socket, followed by simple continuous suturing (Figure 4D) and the placement of bite tampons.

The medications administered include amoxicillin 500mg, diclofenac sodium 50mg, paracetamol 500mg, and tranexamic acid 500 mg. The patient was instructed to bite the tampon for 1 hour, avoid frequent gargling and spitting, refrain from consuming hot or warm food and drinks, maintain oral hygiene, and attend follow-up appointments at 1 week and 2 weeks post-surgery. During the first-week follow-up (Figure 6), the patient reported no complaints of pain or swelling and no numbness. The sutures were removed, and irrigation with saline was performed; the patient's mouth opening was normal at 3cm. At the second-week follow-up (Figure 7), the patient reported no pain or swelling, the wound had closed, and the patient stated she could eat and speak properly.

The results of the anatomical pathology examination at RSPAU dr. S. Hardjolukito on a macroscopic level revealed encapsulated tissue measuring 4.5 x 2.5 x 2.5 cm. On sectioning, the tissue appeared white, resilient, and shiny. Microscopically (Figure 8), the specimen showed tissue protrusions, partially covered with complex monomorphic squamous epithelium. Subepithelial tissue consisted of fibromyxoid connective tissue with numerous lymphocytes, neutrophils, and macrophages. No malignant signs were found.

DISCUSSION

This case report indicated that epulis can reach a very large size, causing facial deformities, as well as difficulty eating and speaking. The greatest challenge when dealing with tumor cases is determining a definite diagnosis. Often, some colleagues consider large or recurrent epulis as a malignant lesion, such as fibrosarcoma, Burkitt lymphoma, or squamous cell carcinoma.[6] Most epulis are small in size, and lesions with a diameter larger than 1 cm are rare.[8] Out of 2638 cases of epulis, the average size of epulis lesions is 1.25 cm, with diameters ranging from 0.20 to 7.80 cm. A total of 74.45% of epulis cases have a diameter between 0.6 to 1.5 cm.[10] Based on that information, the epulis case in this report was considered rare and unusual.

Epulis typically presents as a single pedunculated lesion arising from the alveolar bone.[6] The clinical aspect of fibrous epulis involves the growth of well-defined tissue with a smooth surface, usually exhibiting normal-colored mucosa. It may have a sessile or pedunculated base with a firm consistency in the interdental papilla.[11] In this case report, the characteristics of the mass, such as its resilient consistency, well-defined borders, firm texture, non-bleeding, and lack of pain, support the features consistent with fibrous epulis.

Predisposing factors for epulis include chronic local irritation, such as sharp tooth edges, calculus, cervical caries, and residual tooth roots.[12] Epulis often occurs around teeth or bones causing irritation (supernumerary teeth, ectopic teeth, poorly adapted prostheses). Additionally, poor oral hygiene plays a role in the development of epulis.[13] In this case, several relevant predisposing factors were identified, including sharp residual tooth roots and poor oral hygiene, marked by the presence of calculus and debris on the patient's teeth throughout all regions. The substantial volume of the lesion in this case was attributed to long-term chronic irritation caused by the residual root of tooth 46, located directly beneath the lesion. Poor oral hygiene further exacerbated the condition, allowing the lesion to grow larger. Therefore, in this case, tooth extraction and alveolectomy were performed to prevent recurrence in the future.

The differential diagnosis for epulis includes tumors commonly occurring on the gingiva, such as papilloma, granuloma, and fibroma.[8] Papilloma is a benign tumor of the oral cavity epithelium

(squamous epithelium) that is most frequently encountered. It can occur at any age and is typically located on the lips, tongue, oral floor or soft palate, cheeks, and gingiva. The tumor appears as an exophytic growth that may protrude from the stalk or have a sessile base. Papilloma is non-malignant, but surgical excision is recommended.[4] Fibroma is a proliferation of fibroblasts with abundant collagen fibers that arises as a reaction to chronic irritation. The tongue and buccal mucosa are preferred areas because these tissues are frequently subjected to biting. This lesion is termed traumatic fibroma. The benign hyperplasia of this tissue is non-neoplastic and grows slowly. Once it reaches a certain size, the growth generally stops.[4]

In this case, the large volume of the tumor raises suspicions toward malignant tumors such as squamous cell carcinoma. However, the characteristics of a pedunculated lesion, similar color to the surrounding tissue, slow lesion growth, the absence of symptoms such as pain, minimal weight loss, and the absence of satellite lymphadenopathy support the initial diagnosis of epulis. The treatment for epulis involves total excision down to the underlying periosteum, followed by thorough bone curettage and the removal of local irritants.[6] Epulis in the posterior region of the mandible in this case was vascularized by anastomoses from the inferior alveolar artery. The nerves involved in this epulis region were the inferior alveolar nerve and the lingual nerve.[14] The complicating factor or challenge in this case's surgery was the large size of the mass, making it difficult to access for an inferior alveolar nerve block. Therefore, the anesthesia started with infiltration, and a direct Fischer block was added after the base of the epulis was detached from the gingiva. The decision to perform surgery with local anesthesia in this case was based on the results of the supportive and clinical examinations, which did not suggest any signs of malignancy, and the patient's preference for surgery with local anesthesia.

Local anesthesia offers several advantages over general anesthesia. Local anesthesia avoids common side effects such as nausea, vomiting, dizziness, residual muscle relaxation, and the risk of aspiration pneumonia associated with general anesthesia. The analgesic effects of local anesthesia can begin early in the postoperative period, providing immediate pain relief and contributing to a more comfortable recovery. Supplementing local anesthesia with peripheral nerve blocks reduces the need for narcotic analgesics, thus diminishing opioid-related side effects such as nausea, vomiting, and constipation. This can result in a quicker recovery and a faster return to daily activities. Infiltration of local anesthesia or nerve blocks at the surgical site enhances postoperative pain management, reducing the doses of anesthesia and analgesics required, shortening recovery time, and alleviating pain-related anxiety. As a key component of multimodal analgesia, local anesthesia enhances analgesic effects while minimizing side effects associated with specific medications, thereby providing a smoother recovery process and an improved overall experience for patients undergoing ambulatory surgery.[15,16]

The definitive diagnosis of epulis is histological, which determines the type of epulis and distinguishes it from other lesions.[17] Histologically, epulis contains aggregates of collagen fibers covered with keratinized squamous epithelial cells. Infiltration of inflammatory cells in the ulcerated areas may be visible if the lesion experiences trauma due to chewing or tooth brushing.[18] Histopathological findings of fibrous epulis include hyperplastic squamous epithelium covering the tissue, with fibrous tissue surrounding proliferative capillaries. Additionally, neutrophils, lymphocytes, histiocytes, and plasma cells may infiltrate the stroma. Proliferation of fibroblasts and collagen fibers occurs with minimal infiltration of inflammatory cells and blood vessel dilation.[8,19] The histopathological examination results in this case supported the diagnosis of fibrous epulis. The specimen showed tissue consisting of protrusions, partially covered with monomorphic complex squamous epithelium. The subepithelial area consisted of fibro myxoid connective tissue with numerous lymphocytes, neutrophils, and

macrophages. No signs of malignancy were detected.

CONCLUSION

The case of epulis presented in this case report is considered rare and unusual, with the significant volume of the lesion attributed to long-term chronic irritation from the residual root of the tooth located directly beneath the lesion and poor oral hygiene. Clinicians should conduct thorough clinical examinations, as it can be challenging to diagnose and treat fibrous epulis, especially when patients often present with delays. A comprehensive understanding of the various aspects of a gingival lesion is essential for accurate diagnosis and effective treatment planning. Due to the unusual size of the lesion, it is important to discuss and consider different potential diagnoses carefully to avoid causing unnecessary distress to patients and their family. Complete removal of tissues followed by histopathological examination is determined to be the most effective management approach for fibrous epulis. Histopathological examination is required to differentiate it from other malignant oral cavity tumors. The decision to proceed with surgery under local anesthesia is based on supportive clinical findings indicating the absence of malignancy signs and the patient's preference for this approach. Inadequate removal of the lesion can lead to multiple recurrences, causing the surgeon to question the nature of the condition and potentially causing unnecessary concern for the patient. Regular postoperative examinations are also recommended to monitor for the possibility of recurrence or complications.

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