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Chapter 10

COMPARISON OF FIBROUS EPULIS
CASE MANAGEMENT TECHNIQUES USING
CONVENTIONAL AND ELECTROSURGERY

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ABSTRACT

The word epulis is a clinical term to describe a localized growth on the gingiva. A fibrous epulis is a common tumor-like lesion of the gingiva that usually appears in the interdental papilla as a result of local irritation. Lesions are asymptomatic and have a variable growth rate. The management of a fibrous epulis includes surgical excision and flap surgery using conventional or electrosurgery. To compare fibrous epulis surgical management techniques using conventional and electrosurgery. Two cases of fibrous epulides are compared in this case report. Both cases presented bone loss and non-hemorrhagic and pedunculated lesions. The first case was a 36-year-old male with a 1.8 cm x 1.4 cm x 0.5 cm lesion located on the palatal gingiva of teeth 15 and 16. The second case was a 54-year-old female with a 1.5 cm x 1.0 cm x 0.3 cm lesion located on interdental teeth 31 and 32 on the gingiva buccal and lingual area. The first and second cases were managed by excision followed by flap surgery. Excision in the first case was managed using a conventional blade, while the second case used electrosurgery.

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A four-week evaluation in both cases showed satisfactory results with no recurrence. Electrosurgery provides better access and visuals compared to excision than conventional surgery.

Keywords: fibrous epulis, electrosurgery, flap surgery

1. INTRODUCTION

The most common mechanisms in the development of a soft-tissue tumor-like lesion in the oral cavity are reactive hyperplasia and neoplasia. The majority of localized overgrowths are considered to be reactive rather than neoplastic [1, 2]. Localised gingival enlargements have been termed as epulides [3]. An epulis is a lesion that occurs on the gingiva but exhibits distinct epithelial changes with no histologic description of a specific lesion [3, 4]. An epulis often is described as a “reactive lesion of the gingiva” rather than a neoplastic lesion. Reactive lesions are swellings that develop in response to chronic and recurring tissue injury that stimulates an exuberant or excessive tissue response [1]. They are usually responses to chronic inflammation caused by various forms of low-grade chronic irritations to the oral mucosa, such as dental plaque and calculus, sharp edges of grossly carious teeth, faulty dental restorations, chronic biting habits, ill-fitting dental/oral appliances and food impactions [5].

The characteristics of epulides are their derivation from the supraboronic fibers of the periodontal ligament and their primary reactive and non-inflammatory nature [3]. They can occur at any site along the free gingival margin and characteristically grow out from the gingival sulcus with a cervical displacement of the gingival margin. An epulis is usually an asymptomatic, pedunculated or sessile swelling with a variable growth rate. The defining features of this group are shown like derivation from periodontal ligament, reactive etiology, develop from under free gingival margin, not primarily plaque related, high recurrence rate, specific management requirements, and high growth rate [3].

Many classifications of this lesion are reported in the literature because of several different clinical and histopathologic variables observed in epulides. One of the most recent classification systems is the fibrous epulis, pyogenic granuloma, vascular epulis, pregnancy epulis and peripheral giant cell granuloma (giant cell epulis) [6, 7].

The most common reactive inflammatory hyperplasia of the oral mucosa is the fibrous epulis, with 129 (38.7%) cases, followed by the pyogenic granuloma, with 94 (28.3%) cases, and more females than males were affected per year [5]. A fibrous epulis is progressively mature and undergoes fibrosis. The lesion typically presents in adults as a firm, pink and uninflamed mass growing from under the free gingival margin or interdental papilla. The lesion is generally painless unless traumatized during tooth brushing, flossing or eating. There is no erosion of underlying bone and no interdental
spread unless there is a pre-existing diastema or pre-existing interdental bone loss due to chronic periodontitis. They may slowly increase in size, and some can reach impressive proportions [3].

The treatment of a fibrous epulis focuses specifically on an understanding of the derivation from the periodontal tissues, and therefore, a superficial gingivectomy-type procedure will frequently result in recurrence. Elevation of the mucoperiosteal flaps is needed so the lesion can be excised entirely, and suprabony connective tissue should be curetted and the adjacent tooth and root surfaces debrided of plaque and calculus or plaque-retaining factors to eliminate irritation to minimize recurrence [3]. Surgical treatments of an epulis include the surgical excision of the lesion, along with the removal of the involved periodontal tissue. Extraction of the involved tooth occasionally is recommended in case of recurrence [6]. Guided tissue regeneration (GTR) is performed if an infrabony defect is present. Bone regeneration is one of the most important issues in periodontal therapy [8].

Surgical excision of an epulis may be performed using conventional scalpels, electrosurgery or laser [2, 9]. Conventional scalpels have been used for many years because of their ease of use, accuracy, low cost and because they cause minimal damage to the surrounding tissue. The disadvantage of conventional scalpels is the insufficient control of bleeding, and this prompted researchers to search for new alternative methods, such as electrosurgery. Although scalpels do not produce lateral heat, which is considered to be harmful to surrounding tissues, they cannot provide hemostasis. Hemostasis is an issue when operating on highly vascular tissues, such as the oral cavity. The main advantage of the electrocautery is the coagulative effect that provides a bloodless area and a clear view of the operative area [10]. The strengths and weaknesses of the conventional scalpel incision technique and electrosurgery are still under debate [9]. Some have depicted electrosurgery as successful for gingivectomy, while others have held it responsible for bone necrosis and delayed healing. In the present study, 2 different management techniques for cases of fibrous epulides were compared.

2. CASE REPORT

2.1. Case 1

A 36-year-old male was referred to the Periodontics Clinic, Universitas Indonesia Dental Hospital, with a chief complaint of swelling about his upper right teeth for 6 months. The swelling had started as a small painless growth 6 months prior which gradually had increased to the present size. It was a painless mass, except when eating hard food or tooth brushing. An intraoral examination revealed that the color of the gingiva was redder than the surrounding tissue, it was partially covered by ulcerated
mucosa and the size of the mass was approximately 1.8 cm x 1.4 cm x 0.5 cm, arising from the gingiva in the region of palatal teeth 15–17 (Figure 1). It was firm in consistency, pedunculated, and was a non-hemorrhagic extrusion of tooth 16 with no tooth mobility, and no regional lymph nodes were detected. The plaque, calculus and oral hygiene indices were 1.7, 1.9 and 3.6 (poor), respectively. The patient’s medical history indicated no systematic diseases and no medication was taken. An intraoral periapical radiograph of teeth 15, 16 and 17 showed no interproximal bone loss (Figure 2). Scaling and root planning had been performed 1 month prior, but no improvement had occurred.

Figure 1. Epulis found on palatal side tooth 15 to 17 region.

Figure 2. Intraoral periapical radiograph 15, 16, 17. No interproximal bone loss was found.
During the first visit, oral hygiene instruction was provided, and scaling and root planning were performed. The patient also was prescribed chlorhexidine gluconate 0.2% mouthwash for 1 week. After evaluation of oral hygiene, biopsy and removal of the epulis were performed the same day. The base of the epulis was tied using dental floss, followed by excision using a conventional scalpel at the inferior point of the bond. The excised tissue was put into a 10% formalin buffer solution and sent to the Pathology Anatomy Department of Universitas Indonesia after the surgery. After excision, the palatal full-thickness mucoperiosteal flap from the 15–17 tooth region was elevated. Granulation tissue was debrided, and the root surface and bone were carefully planned (Figure 3). Bone loss and recession occurred on palatal gingiva tooth 16. There was
excessive bleeding on the base of the epulis in distal tooth 16. The pressure was applied to the flap for 10 minutes with gauze pads until the bleeding reduced. The flap was sutured with interrupted sutures using nylon 5.0. Mouthwash continued for another week. The patient presented for follow-up visits 1, 2 and 4 weeks postoperative. The control evaluation showed satisfactory healing (Figure 4).

The histopathologic descriptions showed hyperparakeratinised stratified squamous epithelium with ulceration of the stratum spinosum. The underlying dense fibrous connective tissue stroma showed chronic inflammatory cell infiltration consisting of lymphocytes and plasma cells and a moderate number of endothelial-lined blood vessels suggestive of inflammatory fibrous hyperplasia.

2.2. Case 2

A 54-year-old female was referred to the Periodontics Clinic, Universitas Indonesia Dental Hospital, with a chief complaint of swelling about her lower front teeth lasting 5 months. It was a painless mass, pink in color, with ulcerated mucosa on the top of the lesion. The size of the mass was approximately 1.5 cm x 1.0 cm x 0.3 cm located in the interdental gingiva of teeth 31 and 32 on the buccal and lingual aspect (Figure 5A).

It was firm in consistency, pedunculated, and non-hemorrhagic. Teeth 31 and 32 had 2 degrees of mobility, and no regional lymph nodes were detected. There was blocking present in anterior articulation between teeth 21 and 31. The plaque, calculus and oral hygiene indices were 1.3, 1.5 and 1.8 (good), respectively. The patient’s medical history revealed she had hypertension and was taking 5 mg amlodipine once a day. An intraoral periapical radiograph of teeth 31 and 32 showed 1/3 apical bone loss at interproximal (Figure 5B). Scaling and root planning were performed 1 month prior, but no there had been no improvement since. Before surgery, oral hygiene instruction was given, and scaling root planning, and occlusal adjustment of tooth 31 was performed. The patient was prescribed chlorhexidine gluconate 0.2% mouthwash for 1 week. At the next visit, an incisional biopsy was performed under local anaesthesia. It was sent to the Pathology Anatomy Department of Universitas Indonesia in a 10% formalin buffer solution. The histopathologic description confirmed inflammatory fibrous hyperplasia. The following week, epulis excision and open flap debridement were performed under local anaesthesia. The epulis was tied using dental floss at the base of the lesion. The inferior side was cut by an electrosurgery cautery (Figure 6A – 6C). A full-thickness flap was elevated from teeth 41 to 32 (Figure 6D). The defect was curetted to remove granulation tissue, calculus and necrotic cementum. The allograft and collagen membrane were then placed in the infrabony defect between teeth 31 and 32 (Figure 6E). The flap was sutured with interrupted mattress sutures using nylon 5.0 (Figure 6F). The patient presented for follow-up visits 1, 2 and 4 weeks postoperative.
Figure 5. A. Labial view of epulis B. Occlusal view. C. Periapical radiograph showed interproximal bone loss between tooth 31 and 32.

Figure 6. A and B. Excision the base of epulis with cautier; C. Excision completed, hemostasis achieved; D. Mucoperiosteal flap elevated; E. Bone graft and membrane inserted; F. Flap sutured.

3. DISCUSSION

Most tumor-like lesions in the oral cavity are considered to be more reactive hyperplasia than neoplasia. The most common reactive inflammatory hyperplasia of the oral mucosa is a fibrous epulis [2]. These observations are similar to that of a study in which 129 of 333 cases of reactive localized hyperplasia were found to be fibrous epulis [5]. In contrary, a retrospective study of 2068 cases suggests that the most prevalent lesion was peripheral giant cell granuloma (n = 623, 30.12%) [11]. The differences were mainly due to different classifications and terminology of lesions and the number of cases. The predilection of fibrous epulides was higher in females than males [5, 6, 12]. This finding is not in agreement with other studies showing the prevalence of fibrous epulides in males were higher than in females [11, 13]. The ethnic differences among studies could be the reason for different outcomes of the reports. The current clinical report examined cases of both a male and female affected by epulides.
The precise mechanism of fibrous epulides is unknown [13]. They usually are responses to chronic inflammation caused by various forms of low-grade chronic irritations to the oral mucosa, such as dental plaque and calculus, sharp edges of grossly carious teeth, faulty dental restorations, chronic biting habits, ill-fitting dental/oral appliances and food impactions [5, 14]. Since trauma is a common etiologic factor, any parafunctional occlusal habits should be investigated and treated in addition to removal of a fibrous epulis. The recurrence rate is low once the irritating factors are eliminated [4, 14]. The patients we describe in this report had underlying local irritants, such as plaque and calculus, and also, in case 2, were exacerbated by trauma from occlusion, which favored the diagnosis. Both cases were treated by scaling and root planing, and in case 2, the occlusal adjustment was performed to eliminate the trauma. Many cases of gingival enlargement will persist for long periods before patients seek treatment because of the lack of symptoms associated with the lesion. This may lead to the destruction of the bone [13]. Since their duration is long, it is not uncommon to see ulceration of the epithelial surface due to trauma [14]. This was apparent in both cases in this report.

The treatment of a fibrous epulis focuses specifically on an understanding of the derivation from the periodontal tissues, and therefore, a superficial gingivectomy-type procedure will frequently result in recurrence. Mucoperiosteal flaps are best raised so that the lesion can be excised entirely, suprabony connective tissue curetted and the adjacent tooth and root surfaces debrided of plaque and calculus or plaque-retaining factors [3]. Based on this consideration, both cases 1 and 2 proceeded with open flap debridement after excision of the epulis to clean all remaining lesions. In case 2, an infrabony defect was present. After debridement, GTR was performed in case 2. There was an infrabony defect on tooth 32. Bone regeneration is one of the most important issues in periodontal therapy. Biomaterial innovation is needed for bone substitution and can help the osteogenesis process of periodontal tissue regeneration [8].

Three established methods of cutting oral soft tissue in dentistry are conventional surgery (scalpel), electrosurgery and use of lasers. Each of these methods works. However, they are different from the standpoints of hemostasis, healing time, cost of instruments, the width of the cut, aesthetic required and disagreeable characteristics, such as smoke production, odor of burning flesh and undesirable taste [15, 16]. Cutting soft tissue with a scalpel is a most common technique used. The negative characteristics associated with cutting soft tissue with a scalpel, including excessive blood flow and inadequate visibility caused by blood in the operating field. However, there are desirable aspects of using a scalpel for soft-tissue cutting, including ease of use, low cost and relatively fast and uneventful healing [15].

Electrosurgery is the least frequently used technique in the contemporary dental armamentarium because of the misconceptions caused by fear and inadequate knowledge. Electrosurgery provides homeostasis by coagulation, seals the capillary and lymphatic vessels and permits adequate contouring of the soft tissues [16]. Damage may occur using
electrosurgery when the surgical site is overheated or dehydrated. Therefore, it is very important to keep the surgical site irrigated and to develop proper technique. Two factors for the proper technique are the intensity of the setting and the electrode’s smoothness and speed of passage over the surgical site.

A comparative study of electrosurgical and scalpel wounds was observed. The healing of electrosurgical wounds was delayed. Electrosurgical wounds have a more inflammatory response and more tissue destruction. On the contrary, Glickman and Imber found that there was no difference in wound healing between electrosurgery and conventional surgery when the gingival resection was shallow [15]. In deep resection, however, they found intense inflammation and loss of bone height resulting from bone necrosis. In a study comparing conventional and electrosurgery, the clinical wound-healing response is better 7 days postoperative in the case of electrosurgery as compared to conventional surgery [16]. This variability between reports of healing after electrosurgery can be attributed to differences in the current waveform, shape, and size and the speed of the electrode through the tissue.

Successful wound healing after oral surgery is strongly influenced by the revascularization rate as well as by the preservation and reconstruction of the microvasculature of the tissues. Repair of connective tissue also depends on the development of a new vascular system, which can supply blood and nutrients to the wound area. A study showed that there was about 30% more blood flow by the 7th day, 19% more blood flow by the 15th day and 11% more blood flow by 30th day with the scalpel technique when compared to that with the electrosurgery technique. Doppler results, in this case, showed comparatively decreased blood flow with electrosurgery, especially by the 7th day, which could be a reason for delayed wound healing [17]. In this case report, the complication of excessive bleeding was persistent in case 1, while in case 2, the bleeding was under control during excision. The healing in both cases showed satisfactory results, with case 2 showing a more even healing process than case 2 after 4 weeks (Figure 7).

Figure 7. One month after surgery.
CONCLUSION

The greatest advantages of electrosurgery are that it is fast, free of hemorrhaging and provides easy access to reach the operation zone. Electrosurgery should be seen only as an auxiliary technique, not as a method that will solve all the problems of soft-tissue management. For treating such a type of lesion as a fibrous epulis, a complete surgical excision along with its base and the elimination of irritating factors seems satisfactory to prevent further recurrence.

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