

# Treatment of *Epulis Fissuratum* with Carbon Dioxide Laser in a Patient with Antithrombotic Medication

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*Epulis fissuratum* is a pseudotumor growth located over the soft tissues of the vestibular sulcus caused by chronic irritation from poorly adapted dentures. Treatment indication for these lesions is surgical excision with appropriate prosthetic reconstruction. The hemostatic capacity of carbon dioxide (CO<sub>2</sub>) laser is well described in the literature as a useful tool in oral surgery, especially in patients with clotting disorders. This paper presents a case of a 72-year-old female patient referred to the 'Nossa Senhora da Conceição de Valongo Hospital' at Porto, Portugal, with a massive growth of vestibular oral mucosa in the mandible and maxilla associated with ill-fitting dentures, suggestive of *epulis fissuratum*. The patient was taking antithrombotic medication. The lesions were excised with CO<sub>2</sub> laser, and no significant complications, such as hemorrhage, pain, swelling or infection, were recorded. Twenty days after surgery, both areas were completely reepithelized. Prosthetic rehabilitation and function were achieved with the fabrication of new maxillary and mandibular dentures. Follow-up 1 month and 1 year after treatment revealed the areas free of recurrence. The use of CO<sub>2</sub> lasers is currently the gold standard in the excision of this type of lesion, especially in patients with hemorrhagic diathesis or under antithrombotic therapy.

Key Words: *epulis fissuratum*, CO<sub>2</sub> laser, antithrombotic medication, oral cavity, oral pathology.

## INTRODUCTION

*Epulis fissuratum* is a pseudotumor growth located over the soft tissues of the vestibular sulcus caused by chronic irritation from poorly adapted prostheses with variable degrees of hypertrophy and hyperplasia. The treatment of choice is surgical excision with appropriate prosthetic reconstruction (1,2).

In modern societies, there is an increasing number of older patients with common systemic diseases such as cardiovascular diseases, especially those treated with anticoagulation therapy because of cardiologic indications. In the last years, some guidelines of dental management of patients using antithrombotic drugs have recommended not to routinely discontinue anti-platelet and anti-coagulation medication before dental surgery.

As a result, the risk of a severe bleeding during or after oral surgical procedures is increased (3).

Lasers have been used in dentistry for different purposes and have been the subject of different fields of dental research (4-10). The use of laser in oral and maxillofacial surgery has become more and more widespread over the last decades with favorable experiences (11,12). Carbon dioxide (CO<sub>2</sub>) laser emits energy at a 10.6 µm wavelength (infrared zone), which is absorbed by water. The high water content of the oral soft tissues makes this laser a useful tool in oral soft surgery with several advantages including excellent hemostasis, high precision in tissue destruction, no need for sutures, non-contact surgery, wound sterilization and minimal postoperative pain and edema (11-16). The hemostatic capacity of CO<sub>2</sub> laser is reported as an

additional benefit in oral surgery for patients that suffer from clotting disorders (17).

This paper presents the treatment of massive and simultaneous maxillary and mandibular *epulis fissuratum* with CO<sub>2</sub> laser surgery and the subsequent prosthetic rehabilitation in a patient under antithrombotic therapy.

## CASE REPORT

A 72-year-old female patient was referred to the

Oral Medicine and Surgery Department of the 'Nossa Senhora da Conceição de Valongo' Hospital at Porto, Portugal, for a maxillary/mandibular gingival mass with 12 months of evolution. She had arterial hypertension and congestive heart failure. Habitual medication included ticlopidine 250 mg and captopril 25 mg. On oral examination, a fibrous mass of 6 x 2 cm with multiple folds was located on the mandibular vestibular sulcus and two other similar fibrous masses, with 2 x 1 cm each, were found in the maxillary vestibular sulcus (Fig. 1A-C). The

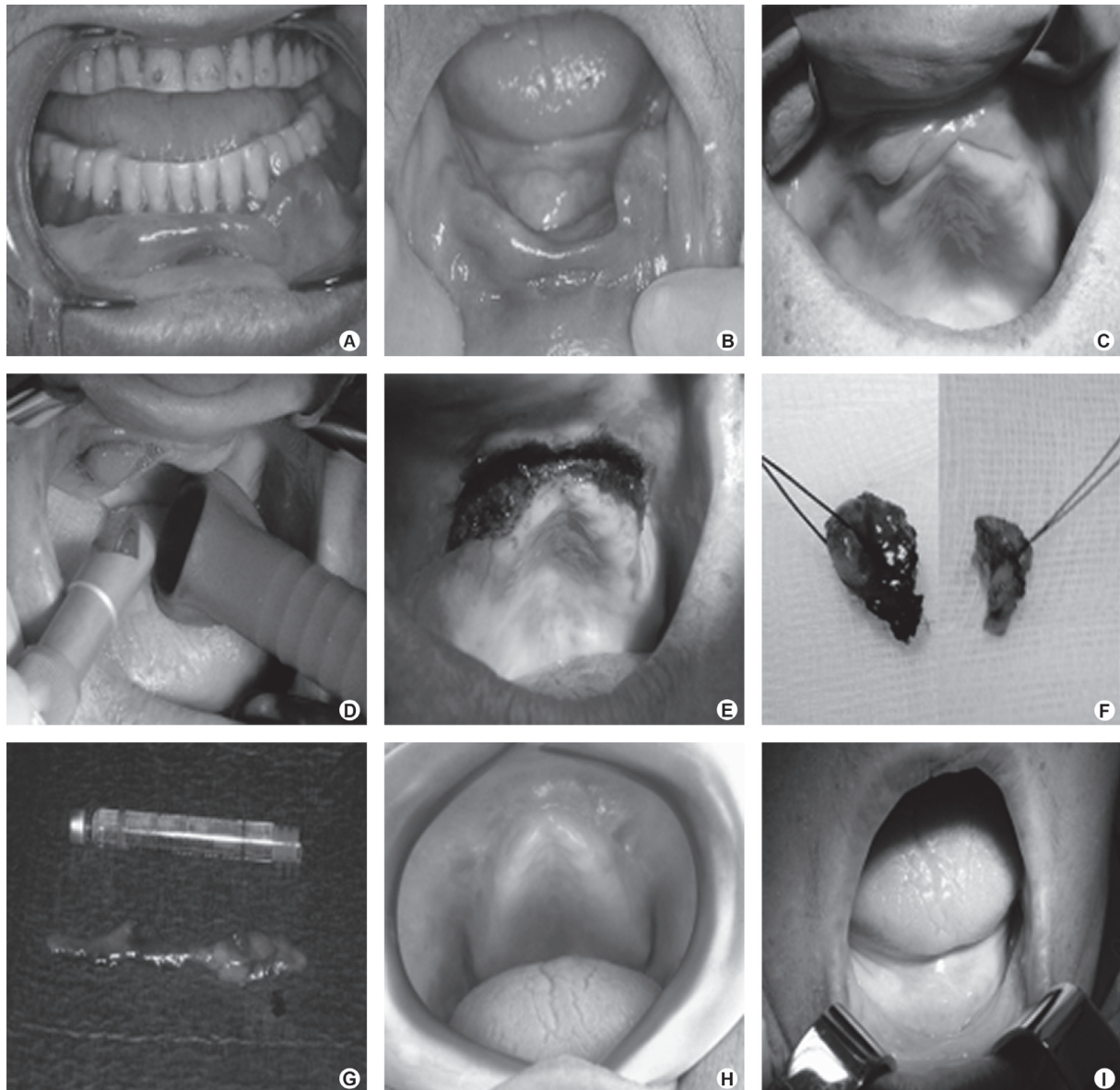


Figure 1. Clinical images of the case. A and B = Initial presentation of a mandibular *epulis fissuratum*; C = Initial presentation of the maxillary *epulis fissuratum*; D and E = Exeresis of the maxillary *epulis fissuratum* with CO<sub>2</sub> laser; F = Operatory specimen of the maxillary lesions; G = Operatory specimen of the mandibular lesion; H and I = Aspect of the treated areas 1 month after surgery.

patient had ill-fitted maxillary and mandibular complete dentures. *Epulis fissuratum* presumptive diagnosis was made. Complete blood count and general biochemistry were within normal values with an INR of 2.3. Habitual medication was not discontinued for surgery. The lesions were treated under local anesthesia (2% lidocaine with 1:100,000 epinephrine) with CO<sub>2</sub> laser (DEKA™ Smart US20D, Firenze, Italy), pulse mode, 0.9-mm focus, 5-6 W power, focalizing the beam for cutting of the mucosa and defocalizing the beam when tissue vaporization was required (Fig. 1D-G). Usual safety precautions of protecting the operator, patient, and assistant were strictly followed. First, hyperplastic tissue was peripherally delimited using the CO<sub>2</sub> laser in a focused mode. Then, using a suture, tension was applied on each area of the lesion and the surrounding tissue to obtain a clean cut in the excision procedure also using the CO<sub>2</sub> laser in a focused mode. At the end of the surgery the beam was used on a defocused mode to promote better hemostasis. Additionally, a partial vestibuloplasty was performed. Immediately after surgery, each old denture was relined with a tissue conditioner (Viscogel; Dentsply, Konstanz, Germany). Neither sutures nor dressings were used and the wounds were allowed to repair by second intention. Excised tissues were submitted for routine histological examination with indication of a CO<sub>2</sub> laser excision. Paracetamol 1 g every 12 h during 3 days and 0.12% chlorhexidine mouthwashes were prescribed. After 20 days, wound healing was completed uneventfully. A 3-mm-deep extension was gained in the maxillary sulcus, increasing denture retention. No postoperative pain or edema was reported. On histopathological report, both lesions revealed fibrous tissue with some lymphocytic infiltration, limited by a stratified epithelium with acantosis. There were no signs of malignancy. A final diagnosis of *epulis fissuratum* was established for both lesions. Appropriate new prosthetic rehabilitation was provided. The patient returned after 1 month and 1 year later, without any signs of lesion recurrence (Fig. 1H-I).

## DISCUSSION

Most cases of *epulis fissuratum* occur in the anterior region of the jaws (1,13,18). Simultaneous maxillary and mandibular occurrence, as in the present case, is less frequent. This pathology is more frequent in females and in elderly patients (1,18). The most common complaints are a fibrous mass in the mouth, as happened in the present case, disuse of dentures, pain or the need

for renewal of dentures (18).

Surgical excision is the definitive treatment of *epulis fissuratum*, always with appropriate prosthetic reconstruction. The treatment is usually performed with conventional surgery excision with scalpel. This technique, however, is associated with significant loss of sulcus depth, sometimes with full elimination of the vestibule (2,13). This could be reduced performing a vestibuloplasty with vestibular deepening without union of surgical borders. A denture covered with tissue conditioner is adapted and reinserted over the surgical bed, permitting the maintenance of vestibular sulcus. However, without suture of the wound borders, hemostasis could be difficult especially for patients with hemorrhagic diathesis or under antithrombotic therapy. Morimoto et al. (19) observed that, a surgical procedure such as tooth extraction was associated with a significantly increased incidence of postoperative hemorrhage in patients receiving antithrombotic therapy. Therefore, this technique could be problematic for these individuals. Moreover, based on recent guidelines, cardiologists rather prefer not to suspend any antithrombotic medication before oral surgery procedures (3).

In this sense, CO<sub>2</sub> laser excision appears a useful tool in this type of surgery. One of its main advantages over conventional surgeries is that CO<sub>2</sub> laser surgery provides an excellent hemostasis (20,21). Blood vessels smaller than 0.5-mm diameter are spontaneously sealed (1), allowing excellent visibility (bloodless operating field) and precision when dissecting through the tissue planes (1,20). Compared with scalpel surgery, a clot of denatured collagen is formed on the surface and the acute inflammation reaction is delayed and minimal after laser disinfection of wound, with few myofibroblasts and hence little wound contraction (11). All these advantages minimize possible postoperative hemorrhage. For these reasons there is no need for suture and the wound is allowed to repair by second intention. Over the past years, laser hemostasis has been established as an alternative to conventional techniques (11,17). Gáspár and Szabó (17) found no significant differences between the group of patients with hemorrhagic diathesis and control patients regarding the duration of operation, degree of bleeding and healing of the wound and complication using laser surgery. In the present case, there was a good bleeding control in both mandibular and maxillary epulis.

Additional and important advantages of CO<sub>2</sub> lasers, as observed in the present case, are the cutting precision, the uniqueness of its non-contact technique

and the reduction of postoperative complaints such as pain, infection and edema (2,20,22). Regarding the size of the lesions of this case, it is remarkable that pain was absent during the intraoperative and postoperative periods. This is an important advantage of CO<sub>2</sub> laser treatment reported by many authors. Pogrel et al. (23) attributed this reduction in pain to the fact that the inflammatory reaction associated with CO<sub>2</sub> laser application is reduced because of blood and lymphatic vessel sealing, with prevention of the extravasation of fluids responsible for inflammation and pain. Moreover, laser irradiation cause sealing of the nerve endings in the surgical contact area and the denaturalized collagen layer formed on the surface of the surgical wound serves to isolate from the oral fluids (24,25).

The healing process was completed after 20 days without scarring and with anatomic sulcus integrity. Fisher and Frame (25) suggested treatment of *epulis fissuratum* with CO<sub>2</sub> laser without first intention, since second intention healing was seen to cause scant tissue alteration and little loss of vestibular depth. In the present case, a 3-mm-deep extension was gained in the maxillary sulcus, increasing denture retention. Dentures must be readjusted and placed back into the mouth as soon as possible (2,23,24). Recurrences are rare as long as the sources of trauma and/or the patient's habits are eliminated and the appropriate prosthetic reconstruction is provided. Tamarit-Borrás et al. (1) observed relapse of lesion after *epulis fissuratum* excision with CO<sub>2</sub> laser in patients who had failed to replace or re-fit their dentures.

In conclusion, given the intrinsic qualities of CO<sub>2</sub> laser when used for oral tissue surgery, such as bloodless operating field, cutting precision, non-contact technique, no need for sutures, and reduction of postoperative pain, edema, infection and hemorrhage, it is reasonable to assume that this treatment option should become the gold standard in the treatment of denture-related hyperplasias, especially in patients with hemorrhagic diathesis or under antithrombotic therapy.

## RESUMO

*Epulis fissuratum* é um crescimento pseudotumoral localizado sobre os tecidos do sulco vestibular causada por irritação crônica de próteses mal adaptadas. O tratamento indicado para estas lesões é a sua excisão cirúrgica com reabilitação protética apropriada. A capacidade hemostática do laser de dióxido de carbono (CO<sub>2</sub>) está amplamente descrita na literatura como instrumento útil em procedimentos cirúrgicos especialmente em pacientes que sofrem de distúrbios de coagulação. Este artigo apresenta um caso de uma paciente do sexo feminino de 72 anos, enviada

ao Hospital Nossa Senhora da Conceição de Valongo, Porto, Portugal, que apresentou-se com crescimentos exuberantes das mucosas vestibular maxilar e mandibular associados a próteses mal adaptadas. A paciente estava sob uso de medicação anti-trombótica. As lesões foram excisadas com laser de CO<sub>2</sub>. Não foram reportadas complicações significativas como hemorragia, dor, tumefação ou infecção. Vinte dias após a cirurgia, ambas as áreas encontravam-se completamente reepitelizadas. A reabilitação protética foi promovida com a produção de novas próteses superior e inferior. O acompanhamento após 1 mês e 1 ano não mostrou evidências de recidiva. A utilização do laser CO<sub>2</sub> é nos nossos dias a técnica de eleição na excisão deste tipo de lesões especialmente em pacientes com diáteses hemorrágicas ou terapia anti-trombótica.

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