

A combined two wavelength laser treatment of Prosthesis-related Fibrous Hyperplasia - Report of a Clinical Case

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ABSTRACT

Purposes: Prosthesis-related Fibrous Hyperplasia, also many times referred as epulis fissuratum, is one of the most common benign oral soft tissue lesion, that appears due to chronic trauma, usually caused by a poorly adapted prosthesis. It is more common in the anterior region of the maxilla, being an exophytic lesion, which affects mainly elderly and female patients. Our aim is to present the usefulness of Er:YAG and Nd:YAG lasers in the surgical treatment of an Prosthesis-related Fibrous Hyperplasia (PRFH).

Case report: The present paper reports a clinical case of two PRFH located in the maxillary vestibulum mucosa and in the palate in a 56-year-old female, caused by a poorly adapted prosthesis. For excision of the lesions in the vestibule and palate we used Er:YAG Laser (2940nm) and ND:YAG (1064nm), respectively. In the postoperative period, the patient did not report any discomfort, and presented a good tissue healing. Histological examination revealed the presence of Fibrous Hyperplasia.

Conclusions: Elimination of PRFH is the treatment of choice with the confection of a new prosthesis. The two lesions were correctly eliminated, with the use of an Er:YAG and Nd:YAG lasers, with excellent recover and without recurrence.

KEYWORDS

Fibrous hyperplasia, chronic trauma, prosthesis retention, oral surgery, Er:YAG laser; Nd:YAG laser.

INTRODUCTION

Prosthesis-related fibrous hyperplasia (PRFH) is a benign lesion, resulting from a hyperplastic reaction of fibrous connective tissue in response to chronic, low-intensity irritation.¹ It appears more frequently in the anterior region of oral cavity, being more common in the maxilla, with a greater predilection by the female sex, and by elderly patients.¹ Also known as epulis fissuratum, the appearance of this condition is largely related to the use of maladaptive dental prosthesis,^{1, 2} although other etiological factors, such as sharp edges, diastemas or poor oral hygiene could be involved.³ Clinically, the lesion is characterized by the presence of a single or multiple fold of hyperplastic tissue. The tissue mass can present itself erythematous and ulcerated, with a firm and fibrous consistency, of varied dimensions. In general, it reaches the vestibular surface of the alveolar mucosa, but may also be present on the palatal or lingual surface. It presents a slow growth, with no pain, except in cases where there is ulceration or secondary infection.⁴ Histologically, we have the presence of a keratinized stratified squamous epithelium, involving hyperplastic fibrous connective tissue with a high number of collagen fibers, as well as a high number of chronic inflammatory cells and a variable amount of blood vessels.¹ Histopathological examination is an important factor to confirm the clinical diagnosis, since fibrous hyperplasia makes a differential diagnosis with lipofibroma, neurofibroma, rhabdomyoma, pyogenic granuloma or tumours of oral cavity.^{1, 5} The treatment for fibrous hyperplasia is its surgical removal, using conventional scalpel or other instruments such as laser. The treatment also includes, readapting the existing prosthesis, or performing a new one.⁶ Our aim is to present the usefulness of erbium-doped: yttrium-aluminum-garnet (Er:YAG) and neodymium-doped yttrium aluminium garnet (Nd:YAG) lasers in the surgical treatment of an PRFH, one lesion on the anterior part of the maxillary vestibulum mucosa and other lesion on the middle palate.

CASE REPORT

A 56-year-old female patient was referred to the Oral Medicine consultation at the Nova Saúde CESPU Clinic, referring complaints of "discomfort" and "inflamed gum". During the anamnesis, the patient reported having arterial hypertension and hypercholesterolemia, the daily use of escitalopram, valsartan e hydrochlorothiazide and sinvastatina, without presenting allergies to other medications. During the clinical examination, we observed the

presence of a poorly adapted superior prosthesis with a lesion in the upper anterior zone, sessile and with a movable base, smooth surface, pinkish color, measuring 8 cm (Figure 1). We also noticed during clinical examination another lesion with a fibrous texture in the middle part of the palate in the end part of the prosthesis (Figure 2). Due to the clinical characteristics of the lesions and its relation with the prosthesis present in the oral cavity, it was suggested as presumptive diagnosis for the both lesions of the prosthesis-related Fibrous Hyperplasia. We gave information about the treatment plan that included the correction or elaboration of new prosthesis additionally to the excision of both lesions with the use of the Er:YAG Laser for the first lesion in the vestibular area, and the use of the Nd:YAG Laser for the second lesion. After informed consent, the patient underwent infiltrative local anesthesia, and the complete excision of the two lesions was



Figure 1. Frontal view of the lesion located in the vestibular part of the upper gingiva



Figure 2. Palatal view of the lesion located in the middle palate

performed. The parameters of Er:YAG laser (wavelength of 2940nm, LightWalker®, FOTONA, Slovenia) was used with "long pulse" (LP), energy of 250mj and frequency of 25 Hz (Power Density: 1250 W/cm²; Fluence: 50 J/cm²); and Nd:YAG laser (wavelength of 1064nm, LightWalker®, FOTONA, Slovenia) with a short pulse, frequency of 70 Hz, using a fiber of 320- μ m giving a Power Density of 4375 W/cm² and Fluence of 62.5 J/cm². Usual safety precautions to protect the operator, patient and assistant were followed. Additionally to excision of PRFH, we performed vestibuloplasty to maintain a uniform sulcus depth. Both lesions were removed, with a uniform cut, through its base. The two samples obtained from the surgical procedure were placed in a 10% formaldehyde container and were sent for pathological analysis. In the postoperative evaluation, the patient did not report any discomfort or pain, presenting a good tissue healing, without scar, and other potential complications (Figure 3). Histological examination revealed the presence of fibrous hyperplasia for both lesions, which confirmed our initial diagnosis of PRFH. After one year of follow-up the patient is free of recurrence.



Figure 3. Palatal view of the oral cavity 6 months after surgery

DISCUSSION

The treatment of PRFH consists in an appropriate prosthetic reconstruction with surgical excision of the lesion. This can be performed with conventional surgical excision using scalpel but other treatment modalities are reported such as laser, electrotome or liquid nitrogen cryosurgery.^{10,11}

Advantages of laser treatment over conventional methods include minimal cellular destruction and tissue swelling, good hemostasis control, increased visualization of surgical sites and reduced post-operative pain. Er:YAG laser is used in several procedures in the oral cavity, in soft and hard tissues, performing gingivectomies, ulectomies, vestibuloplasty (as in the clinical case presented), among other applications.⁷ This type of laser has a great versatility due to its characteristics, from which it stands out its affinity for water, allowing cutting, vaporization and photocoagulation of oral tissues.⁷ Various authors point out several advantages in their use in soft tissue surgeries,

among which a highly effective cut, reduction of postoperative pain and symptomatology, no need for suture, reduction of trauma, edema and scarring.⁸ It is also reported a reduced need for anesthesia in approximately 55% of procedures.⁷ On the other hand soft tissue clinical applications of the Nd:YAG lasers includes gingivectomy and gingivoplasty, operculectomies, biopsies, frenectomies or even treatment of aphthous ulcers.⁹ The main advantage is the excellent hemostatic capacity allowing the performing of surgery without hemorrhage. In the case presented here, we use the Er:YAG laser in the vestibular lesion for a better recover repair of the oral mucosa as these lesions are usually related with a severe discomfort and pain in the post-operative period. As we observed, the patient referred no pain or any problem after surgery which confirm the useful of this wavelength not only to an efficient excision but also to promote a better post-operative period.

The laser capacity for the reduction of pain could be related with the sealing the vessels and nerve endings in the surgical area by laser, with prevention of the extravasation of fluids responsible for inflammation and pain. Additional denaturalized collagen layer formed on the surface of the surgical wound serves to isolate from the oral fluids contact.^{12,13}

The repair period is reduced comparing with scalpel or other wavelength such as carbon dioxide laser.¹⁴ We didn't use any suture or dressing materials as one of laser advantages is their hemostatic effect. The Nd:YAG laser was used in the palate for a better hemostatic control as palate is more prone to mechanical trauma due alimentation.

CONCLUSIONS

The excision of both lesions, through the use of the Er:YAG and Nd:YAG lasers, demonstrated effectiveness, with no significant complications and good tissues repair. To date no recurrence of the lesion was observed, which suggest that this modality of treatment could be a valid option for these lesions.

CONFLICT OF INTERESTS

The authors declares that there is no conflict of interest regarding the publication of this article.

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