

# Vermilionectomy: a treatment alternative for actinic cheilitis

## Vermelhectomia: uma opção de tratamento para queilite actínica

### Abstract

**Purpose:** Ultraviolet radiation is the main etiological agent associated with the development of actinic cheilitis, a premalignant irreversible disease that frequently affects the vermilion border of the lower lip. This paper aimed to describe the case of a patient with actinic cheilitis and treated with scalpel vermilionectomy.

**Case Description:** A male, Caucasian, 66 year-old subject sought dental treatment complaining of "wounds on the lip that not heal" for approximately 15 years. The patient reported that he had worked in farms since the age of 5 year-old and was a frequent user of alcohol and tobacco. Atrophic and erosive areas associated with many ulcers covered with eschars were observed throughout the length of the lip. Based on the patient history and clinical exam, scalpel vermilionectomy was proposed. The histopathological analysis revealed a superficially invasive squamous cell carcinoma with free borders. The patient was monitored for two years with no relapse.

**Conclusion:** Scalpel vermilionectomy was chosen to treat this case due to its low cost, relatively short time for repair, and possibility of histopathological analysis of the removed tissue.

**Key words:** Actinic cheilitis; ultraviolet rays; photosensitivity disorders; vermilionectomy

### Resumo

**Objetivo:** A radiação ultravioleta é o principal agente etiológico associado ao desenvolvimento da queilite actínica, uma lesão pré-maligna que afeta o lábio inferior. Este trabalho descreveu o caso clínico de um paciente que apresentava várias ulcerações recobertas por crosta no lábio inferior e foi tratado pela técnica da vermelhectomia.

**Descrição do caso:** Um sujeito do sexo masculino, Caucasiano, de 66 anos de idade, procurou tratamento odontológico com queixa de "feridas no lábio que não cicatrizavam" por 15 anos. O paciente relatou que tinha trabalhado em fazendas desde os 5 anos de idade e fazia uso frequente de tabaco e álcool. Áreas erosivas e atróficas associadas a múltiplas úlceras cobertas com escaras foram observadas em todo o lábio. Com base na história do paciente e exame clínico, foi proposto tratamento por vermelhectomia. O diagnóstico histopatológico foi de carcinoma espinocelular superficialmente invasivo, com margens livres, e o paciente foi acompanhado por um período de 2 anos sem recidiva.

**Conclusão:** A técnica da vermelhectomia foi a escolha preferencial de tratamento por ser de baixo custo, ter um tempo cicatricial relativamente curto e, especialmente, permitir que o tecido removido possa ser examinado histopatologicamente.

**Palavras-chave:** Queilite actínica; raios ultravioleta; transtornos de fotossensibilidade; vermelhectomia

**Angelo Luiz Freddo<sup>a</sup>**  
**Beatriz Farias Vogt<sup>a</sup>**  
**Marcos Antonio Torriani<sup>b</sup>**  
**Elaini Sickert Hosni<sup>b</sup>**

<sup>a</sup> Graduate Program in Dentistry – Oral and Maxillofacial Surgery, Pontifical Catholic University of Rio Grande do Sul, Porto Alegre, RS, Brazil

<sup>b</sup> Department of Maxillofacial Surgery, Traumatology and Prosthetics, School of Dentistry, Federal University of Pelotas, Pelotas, RS, Brazil

### Correspondence:

Angelo Luiz Freddo  
Rua Amélia Teles, 167/401  
Porto Alegre, RS – Brazil  
90460-070  
E-mail: angelofreddo@hotmail.com

Received: August 12, 2008  
Accepted: April 17, 2009

## Introduction

The vermilion border of the lower lip is the anatomical site most frequently affected by actinic cheilitis, a premalignant condition associated with exposure to the ultraviolet (UV) rays of solar radiation (1). This condition is closely related to leukoplakia and epidermoid carcinoma, which is often the final stage of a process that began as cheilitis or hyperkeratosis. Besides UV radiation, other carcinogenic agents are commonly involved, such as tobacco and alcohol, which act as additive agents for the development of epidermoid carcinoma. Due to the cumulative and irreversible action of sunlight, subjects constantly exposed to the sun for longer periods, such as farmers and fishermen, are more prone to develop actinic cheilitis. Furthermore, light-skinned subjects have a higher risk for developing this condition than persons with dark skin (2). The prevalence ratio according to gender is 10:1 for males/females (1), which may be attributed to the use of cosmetics by females, acting as a protection factor, as well as lower exposure to sunlight in professional activities of women.

When the DNA of the basal layer cells is altered by UV radiation, there is a reduction in mitotic activity and capacity to produce keratin, causing the typical atrophy of actinic cheilitis. This process leads to a reduction in the thickness of the epithelium, increasing its susceptibility to damage (2). Clinically, the progression of actinic cheilitis has a rather slow course. Atrophic areas occur at first as eruptions in the vermilion of the lower lip; over time these areas become rough and squamous in the dry outer regions, and leukoplakic lesions may appear in the innermost portion of the lip. Chronic ulcers may develop in one or more sites, which may last for months or years and develop into epidermoid carcinoma (1). Areas of hyperpigmentation, keratosis, flaking, cracking, and surface erosion are frequently observed (3). Typical carcinoma of the vermilion consists of a hard, rigid, exsudative ulcer with eschar, usually less than 1-cm maximal diameter, and associated with actinic cheilitis. As the lesion progresses, rough, squamous areas develop in the more dried outer portions. Tumors grow slowly, and metastasis occurs late affecting lymph nodes in less than 2% of the cases.

Early molecular events of lip cancer include the activation of proto-oncogenes and changes in tumor-suppressor genes with an altered expression of their protein products. UV radiation causes damage to epithelial cells, has mutagenic effect, induces local immunosuppression, and facilitates the action of co-carcinogens (5). Mutations in gene p53 caused by UV rays seem to be important for the pathogenesis of early stages of lip cancer. The presence of cells positive for p53 and the expression of cell proliferation markers in potentially malignant lesions, such as actinic cheilitis, may represent a molecular sign of neoplasm activation in morphologically benign lesions (6).

For actinic cheilitis, a biopsy should always be performed before any surgical procedure in order to determine the morphology of the area and degree of accidental dysplasia (7).

Nico et al. (8) also indicate vermilionectomy after biopsy in cases of actinic cheilitis because epithelial alterations are not uniform throughout the lip vermilion, and an incisional biopsy alone may not reveal more severely affected areas. Multiple modalities are available to treat actinic cheilitis, such as cryosurgery, electrocautery, 5-fluorouracil, carbon dioxide laser, and scalpel vermilionectomy (9,10).

The aim of the present study was to discuss the main characteristics of actinic cheilitis and to describe a clinical case, highlighting the need for a well-conducted diagnosis and proper treatment.

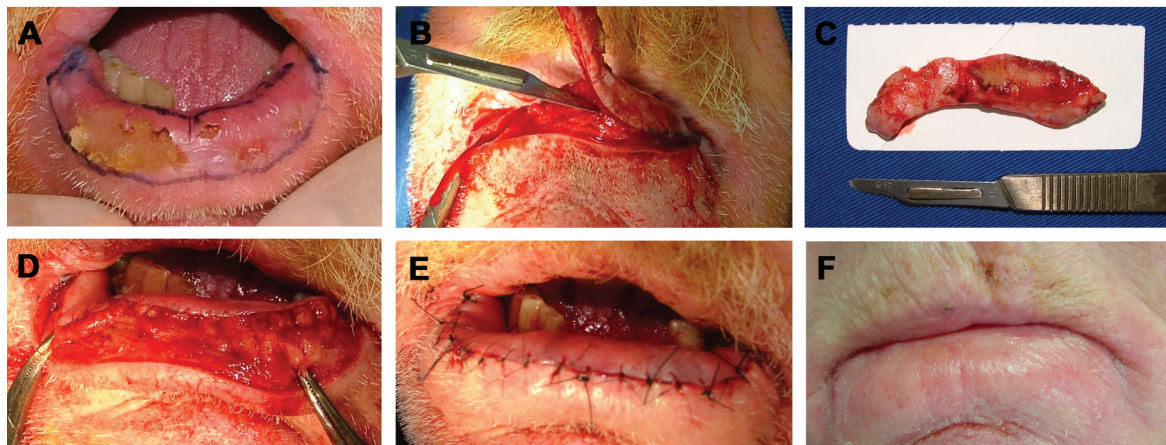
## Case Description

A male, Caucasian, 66 year-old subject sought dental treatment at the School of Dentistry of the Universidade Federal de Pelotas (Pelotas, RS, Brazil) complaining of "wounds on the lip that not heal". The patient reported that he had worked in farms since the age of 5 year-old and was a frequent user of alcohol and tobacco. He noticed abnormalities roughly 15 years earlier, but no type of treatment was carried out with a specialized professional. The clinical exam revealed that the patient had a rather prominent lower lip turned outwards. Atrophic and erosive areas associated with many ulcers covered with eschars were observed throughout the length of the lip. Based on the patient history and clinical exam, scalpel vermilionectomy was proposed (Fig. 1A).

The procedure was carried out under bilateral regional nerve block anesthesia, and the incisions were marked with methylene blue. The first incision was performed on the border of the skin with the vermilion of the lip, and the second incision was performed on the border of the pseudomucosa with the labial mucosa throughout the entire length (Fig. 1B). The tissue of the vermilion was carefully sliced, removed, and immediately fixed in 10% formalin for the histopathological analysis (Fig. 1C). Note the hemostat clamping of the labial arteries frequently used in this type of surgery (Fig. 1D).

Next, two vertical incisions were made in the labial mucosa, beginning with the commissures and proceeding towards the bottom of the vestibular groove. The flap was sliced throughout its entire length in order to allow suturing with the skin in the anterior portion when tractioned, covering the wound resulting from the removal of the vermilion. Suturing was performed with isolated points so that the entire exposed portion was covered by the labial mucosa (Fig. 1E). In the immediate postoperative period, routine minor oral surgery recommendations were made, and analgesics and non-steroid anti-inflammatory agent were prescribed. The suture was removed after seven days.

The histopathological exam revealed dysplasia represented by the loss of normal stratification, cellular and nuclear pleomorphism, and atypical mitosis. In some regions, tumor cells were evident in the conjunctive tissue of the lamina propria, along with a well-defined strip of solar elastosis, thereby establishing a diagnosis of superficially invasive squamous cell carcinoma with free borders.



**Fig. 1.** (A) Initial clinical aspect of the lesion and incision marks. (B) Incision of the vermilion border of the lower lip. (C) Tissue sent for histopathological analysis. (D) Excision of the lower lip and clamping of labial arteries. (E) Suture. (F) The two-year postoperative follow up shows good clinical results.

After two years (Fig. 1F), no relapse was detected, and the patient was satisfied with the treatment. The patient will remain in periodic follow up as a routine procedure of the Department of Oral and Maxillofacial Surgery and the Oral Disease Diagnosis Center of the School of Dentistry of the Universidade Federal de Pelotas.

## Discussion

The treatment of actinic cheilitis should begin as soon as the diagnosis is established because the development of squamous cell carcinoma occurs in 6 to 10% of the cases. Patients should be carefully examined, with periodic follow up for a long period of time in order to detect lesions with malignant characteristics as early as possible (3). The physical and socioeconomic characteristics of the patient in the case described here are in agreement with the literature: An occupation with intensive cumulative sun exposure was related to the development of actinic cheilitis, with the possible subsequent development of malignant tumors. The presence of atrophy, eschars, and local dryness are also common clinical characteristics in these patients (4).

A large number of treatments are proposed in the literature for lip lesions, including lip protectors, fluorouracil, peeling with trichloroacetic acid, cryosurgery, vermilionectomy, and CO<sub>2</sub> laser. Patients who do not agree to follow up should be treated with either vermilionectomy or CO<sub>2</sub> laser due to the possibility of relapse with use of fluorouracil or trichloroacetic acid (7). Orenstein et al. (9) treated actinic cheilitis patients with Er:YAG laser, with satisfactory cosmetic results, and no relapse after three years. Dufresne et al. (10) report that vermilionectomy offers advantages over the use of CO<sub>2</sub> laser, such as shorter healing and material for the histopathological exam.

In the present case, scapel vermilionectomy was chosen because it is also economically advantageous in

comparison with other treatment modalities, as there is no need of chemical substances or specific equipment. The socioeconomic factor is important in most public dental services and for the majority of patients with actinic cheilitis as they usually have limited budget and income. Also, vermilionectomy provides the removal of all affected tissue and allows histopathological analysis, which should always be performed to establish the morphology and degree of tissue dysplasia (8). In the present clinical case, the histological exam was fundamental, revealing areas of dyplasia as well as regions that already had tumor cells in the conjunctive tissue of the lamina propria, and a band of solar elastosis. The differential diagnosis is only possible with vermilionectomy, which allows the histopathological assessment of the entire vermilion of the lip and not only a specific area, such as in cases where incisional biopsy alone is performed.

The treatment of actinic cheilitis should begin as soon as the diagnosis is established, as its progression may culminate in a malignant transformation. Vermilionectomy is a good treatment option due to its ease of execution, effectiveness, and possibility of histopathological analysis. Regardless of the treatment proposed for this pathology, follow up must necessarily be carried out in order to prevent the development of a malignant condition and to detect relapses. The risk for developing leukoplakia and squamous cell carcinoma of the lip increases as cheilitis progresses when preventive and treatment measures are deficient along with the persistence of etiological agents. Therefore, patients should be aware of their condition and collaborate with the proposed treatment. Besides patient awareness and adoption of practices aimed at prevention, it is fundamental for dentists to perform routine clinical exams not limited to the investigation of dental caries and periodontal disease. Soft tissues and the skin of the oral-maxillofacial region must also be evaluated to determine other possible pathological lesions (4).

## References

---

1. Neville BW, Damm D, Allen CM, Bouquot JE. *Patologia Oral & Maxilofacial*. 2. ed. Rio de Janeiro: Guanabara Koogan; 2004.
2. Lundeen RC, Langlais RP, Terezhalmay GT. Sunscreen protection for lip mucosa: a review and update. *J Am Dent Assoc* 1985;111: 617-21.
3. Markopoulos A, Albanidou-Farmaki E, Kayavis I. Actinic cheilitis: clinical and pathologic characteristics in 65 cases. *Oral Dis* 2004;10:212-6.
4. Cavalcante AS, Anbiner AL, Carvalho YR. Actinic Cheilitis: clinical and Histological Features. *J Oral Maxillofac Surg* 2008;66: 498-503.
5. Crosthwaite N, Teale D, Franklin C, Foster GA, Stringer BM. p53 protein expression in malignant, pre-malignant and non-malignant lesions of the lip. *J Clin Pathol* 1996;49:648-53.
6. Martínez A, Brethauer U, Borlando J, Spencer ML, Rojas IG. Epithelial expression of p53, mdm-2 and p21 in normal lip and actinic cheilitis. *Oral Oncol* 2008;44:878-83.
7. Robinson JK. Actinic cheilitis. A prospective study comparing four treatment methods. *Arch Otolaryngol Head Neck Surg* 1989;115:848-52.
8. Menta Simonsen Nico M, Rivitti EA, Lourenço SV. Actinic cheilitis: histologic study of the entire vermilion and comparison with previous biopsy. *J Cutan Pathol* 2007;34:309-14.
9. Orenstein A, Goldan O, Weissman O, Winkler E, Haik J. A new modality in the treatment of actinic cheilitis using the Er:YAG laser. *J Cosmet Laser Ther* 2007;9:23-5.
10. Dufresne RG JR, Curlin MU. Actinic cheilitis. A treatment review. *Dermatol Surg* 1997;23:15-21.