

Case report of dental intervention in intensive care unit in patient with face burns

Relato de caso de intervenção odontológica em unidade de terapia intensiva em paciente com queimadura de face

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ABSTRACT

Burns are identified as a trauma that has a high degree of mortality and disability, both functionally and aesthetically. In the head and neck region, burn injuries can evolve mainly due to hypertrophic scars and contractures. This study aimed to observe the progression and outcome of healing in face burns with the use of a low-power laser and oral splint. A descriptive and observational study was carried out, which corresponds to the case report of a severely burned patient with burns in the orofacial region. Early odontologic treatment care during hospitalization is essential to reduce hypertrophic scars and contractures in a severely burned patient with burns in the orofacial region.

Indexing terms: Burn. Dentistry. Laser.

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RESUMO

As queimaduras são identificadas como um trauma que possui alto grau de mortalidade e incapacidade, tanto no aspecto funcional quanto na estética. Em região de cabeça e pescoço, as lesões por queimadura podem evoluir principalmente com cicatrizes hipertróficas e contraturas. O Objetivo foi avaliar a progressão e o desfecho do reparo tecidual em queimadura de face com o uso do laser de baixa potência e splint oral. Trata-se de um estudo observacional descritivo, que corresponde ao relato de caso de um paciente grande queimado. A intervenção odontológica é fundamental para que se diminua cicatrizes hipertróficas e contraturas, restabelecendo da melhor forma possível a função do sistema estomatognático.

Termos de indexação: Queimadura. Odontologia. Laser.

INTRODUCTION

Burns which occur on the head and neck region can generate changes in the muscles responsible for facial movements and modifications in the muscles responsible for cervical movements. Functions of the stomatognathic system may be compromised, such as suction movement, articulation of words, breathing, swallowing, chewing, adhesion of the tongue to the floor of the mouth, microstomia, oral incompetence to contain saliva inside the mouth (resulting in drooling), in addition to causing deficits in lip sensitivity and facial deformities [1,2].

The importance of interventions which reduce the development of functional and aesthetic sequelae in these patients is evident.

Treatment for burns on the head and neck region may involve the use of 1% silver sulfadiazine or Collagenase, oral splints, Low-Level Laser Therapy and surgical intervention [3-6].

Dentistry is extremely important in the care of patients with burns in the orofacial region, with the installation of oral splints, when necessary, and mainly using Low-Level Laser Therapy for biostimulation of injured tissues.

There are few studies in the literature about the role of the dental surgeon in severely burned patients, which justifies the interest in reporting a case of orofacial burns in the Intensive Care Unit (ICU) from Polydoro Ernani University Hospital in Santiago, in the Federal University of Santa Catarina (HU/UFSC/EBSERH), the treatment used, its follow-up and outcome.

CASE REPORT

A 23-year-old male patient was sent to the ICU of HU/UFSC/EBSERH, in the city of Florianópolis, Santa Catarina, for treatment of 2nd and 3rd degree burns, due to an explosion with a flammable substance. The estimated burn was between 36%- 40% of the body, involving the face. The patient was intubated at the accident scene due to signs of airway damage presented, followed by extensive left pleural effusion in the hemithorax.

On physical examination, the patient presented 2nd degree burns on the face (figure 1), ears and neck in a circular shape.

The patient was taken to the ICU, where he received the first intensive care and on the second day of hospitalization, he underwent a superficial debridement of the burned area and vaseline gauze and silver sulfadiazine were applied on all injuries by the plastic surgery team at the surgery Center.



Figure 1. 2nd degree burns on the face.

As coverage, in order to care for burns on the head and neck region, the nursing team applied collagenase on the face and silver sulfadiazine on the cervical region and ears.

It was only on the ninth day after the accident that the dentistry was called in, and as therapeutic measures, photobiomodulation sessions were carried out by Low-Level Laser Therapy on the perioral region, creation and installation of an oral splint, initiating specific dental care for burns.

The patient remained hospitalized for 23 days in the ICU, being extubated on the 18th day of hospitalization, and discharged from the hospital one day after leaving that sector. He was monitored weekly for another 5 weeks by the dentistry.

During the hospitalization, Low-Level Laser Therapy (Helium-Neon and Gallium Arsenide) was held, with the xt-DMC laser therapy device, having a spot of 0.028cm². As an adopted protocol, during the hospitalization, for 11 consecutive days, a red laser (wavelength of λ 660nm) one joule and an infrared laser (wavelength of λ 808nm) two joules with constant power of 100mW were applied, on every centimeter of the entire extent of the burn on the perioral region. And after discharge, a weekly application for five weeks respecting the same protocol.

The oral splint, or orthosis, was made with an 8mm EVA (ethylene vinyl acetate) mouthguard (figure 2).



Figure 2. Oral splint.

The protector is thermal-activated, so it adapts to the oral cavity at the moment of installation. In order to manufacture it, it was submerged in boiling water (temperature 100°C) and kept until it reached a softened consistency that was easy to integrate. The protector, after heating, was quickly immersed in cold water to reduce the temperature and not burn the mucosa and right afterwards, it was adapted to the oral cavity so the lip tissue was tensioned. Adjustments were then made and the protector was fixed with dental floss and tied to the orotracheal tube to prevent its displacement (figure 2).

The patient used the orthosis continuously for six days, and after extubation, for another 2 days alternately, summing up to 8 days of use.

The oily lotion AGE (sunflower oil) was also used as a topical agent, at least once a day in the perioral region.

As a result of the case, the patient presented complete repair of the burned perioral region in the fifth week after hospital discharge (figure 3). The region healed well, with no deformities and no changes in facial expression or vocal changes.

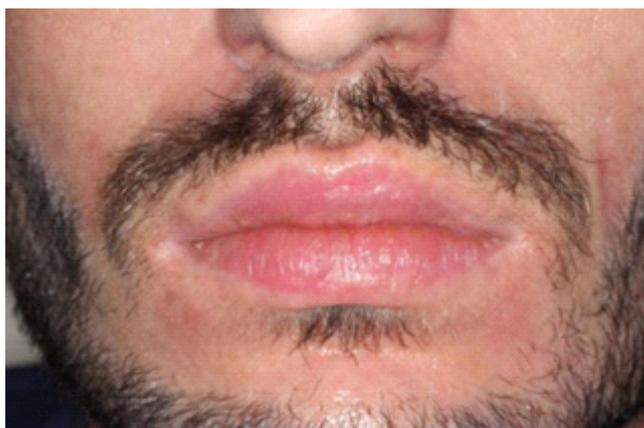


Figure 3. Outcome of the case.

DISCUSSION

The Low-Level Laser Therapy can generate angiogenesis, analgesia, anti-inflammatory and biostimulatory action, decrease the edema, generate tensile strength of healing and increase the speed of the re-epithelialization [5].

The process of tissue regeneration in 3rd degree burns was evaluated in 80 rats distributed into four groups in the study. Group one received no treatment, group two was treated with 1% silver sulfadiazine, group 3 was treated with Low-Level Laser Therapy (658 nm-10mW and energy density of 4J/cm²) and group four was treated with laser and 1% silver sulfadiazine. The rats suffered euthanasia and the material was stained with hematoxylin and eosin (HE), and analyzed. It is concluded that the use of laser favors the healing process in burns and that 1% silver sulfadiazine is more efficient when used associated with Low-Level Laser Therapy [7].

A case of 2nd and 3rd degree burns on the face was reported after an electrical panel explosion in the workplace. The patient presented changes in chewing, swallowing, speech articulation, facial expression,

as well as trismus and the beginning of microstomia. So, in addition to all the multidisciplinary care, an oral splint was used daily for an average of ten hours a day at rest during 12 months. Reaching gains of oral opening as evolution [8].

In a study in which the patient suffered 2nd and 3rd degree burns on the face by caustic soda, there was trismus and difficulty in lip movement with diagnoses of microstomia and adhesion throughout the anterior buccal mucosa and gums. We opted for surgical treatment and placement of an oral splint. The result was a 300% increase in the range of mouth opening, thus improving the ability to speak, eat food and chew [9]

CONCLUSION

Facial burns are difficult to treat and can have major functional and aesthetic consequences.

Based on the literature and case report, dental intervention is essential to reduce the consequences of burns in the facial region. The dental surgeon is essential in the multidisciplinary team for the patient's rehabilitation to occur.

Collaborators

JM Voltolini and A Becker, writing- first essay. AMB Santos, writing- proofreading and editing.

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