



OXIDIZED CELLULOSE WRAP IN SECONDARY INTENTION HEALING OF THE ORAL MUCOSA IN THE TREATMENT OF ONJ

Davide Caruso¹, Francesco Ferragina¹, Ida Barca¹, Elio Giofrè², Elvis Kallaverja¹, Alfonso Sorrentino¹, Alessandro Antonelli¹, Maria Giulia Cristofaro¹

¹ Università degli Studi "Magna Graecia" di Catanzaro

² Azienda Ospedaliero - Universitaria "Mater Domini"

Funding: The author(s) received no specific funding for this work.

Potential competing interests: The author(s) declared that no potential competing interests exist.

Abstract

Osteonecrosis of the jaws (ONJ) due to the use of bisphosphonate drugs is a particularly complex condition. The mechanisms through which this pathology develops are manifold. To date, the management of ONJ is controversial. This study analyzed out-patients with documented ONJ treated in Oral and maxillofacial surgery Unit of University "Magna Graecia" of Catanzaro.

A total of 11 patients, 8 women and 3 men, were enrolled. The inclusion criteria were: (1) refusal to surgical treatment with flaps; (2) absence of antiplatelet therapy which would also make it impossible to prepare gel from platelet-rich plasma (PRP) or similar; (3) absence of antineoplastic therapy in the healing phase. Each case was staged according to the classification of the Italian Societies of Oral Medicine and Maxillofacial Surgery (SICMF-SIPMO classification): a clinical-radiological bone involvement.

The following data were recorded: clinical data, comorbidities and concomitant drugs, antibiotic drugs used, type of treatment adopted, clinical mucosal healing time.

Each patient underwent antibiotic protocol prior to surgery. Endpoint with surgery was: complete removal of necrotic tissues, packaging of a “re-epithelialization trench” (RET) and apposition of a compress of oxidized cellulose inside this RET. 100% of the patients endured the post-surgery very well, 10 out of 11 (90,91%) patients had excellent healing by secondary intention of the surgical wound. Only one patient (9.09%) had prolonged bone exposure; he subsequently resumed antitumor therapy and was therefore excluded from work.

The results indicate how the use of an oxidized cellulose pack associated with the correct packaging of a re-epithelialization site can guarantee satisfactory post-operative comfort and rapid wound healing. Radiological follow-up was performed at one year. It confirmed the correct healing of the site (clinical and radiological healing).

BACKGROUND

In recent years there has been an increasing number of cases of osteonecrosis of the jaws (ONJ) and this is due to the use of antiresorptive, antiangiogenic and other drugs. Bisphosphonates are often used to prevent bone damage associated with osteoporosis and to manage patients with both solid and liquid tumours and their bone metastases. The aim of this study is to evaluate the presence of bone exposure in patients with drug related ONJ (stages I and II) and to compare it after the packaging of the “re-epithelialization trench” (RET) and the placement of the regenerated oxidized cellulose graft.

MATERIALS AND METHODS

The study includes 109 patients with drug related ONJ (stages I and II) admitted to Maxillofacial Unit of University “Magna Graecia” of Catanzaro from January 2017 and December 2019.

The main cause of the osteonecrosis' onset is the use of antiresorptive drugs for the treatment of osteo-metabolic diseases (43.1%), oncological diseases (53.2%) and other causes (3.7%).

All patients were staged according to the SICM-SIPMO clinical-radiological staging, and it was found that:

- patients with stage I ONJ (focal MRONJ) are 35,7%.
- patients with stage II ONJ (diffuse MRONJ) are 48,6%.
- patients with stage III ONJ (complicated MRONJ) are 15,6%.

The most commonly used drugs were Alendronate (39%) and Zoledronate (22%).

A total of 11 patients, 8 women and 3 men, were enrolled. The inclusion criteria were: (1) refusal to surgical treatment with flaps; (2) absence of antiplatelet therapy which would also make it impossible to prepare gel from platelet-rich plasma (PRP) or similar; (3) absence of antitumor therapy in the healing phase.

Search Strategy

For all patients included in the study, a pharmacological, physiological and pathological history was acquired, a clinical examination was performed and an orthopantomography was requested.

In addition, discontinuation of the drug (bisphosphonates, corticosteroids, chemotherapy) was required 15 days before surgery, until the wound healed. Thus, a protocol with antibiotic drugs was provided to the patient. This protocol provided for two courses of antibiotic therapy lasting 10 days each, interspersed with a 10-day break. The drugs used were the following: amoxicillin with clavulanic acid (1g orally twice a day for all 10 days of the cycle), metronidazole (500 mg orally three times a day for 5 days, in the second half of the cycle) nystatin (100,000 IU / ml orally three times a day for all 10

days). Surgical treatment was carried out in the middle of the second course of antibiotic therapy. The surgical procedure was carried out under local anaesthesia and involved sequestrectomy, surface osteoplasty, packaging of the RET and grafting of regenerated oxidized cellulose inside the RET. Post-surgical follow-up included an initial clinical check-up at two weeks (with removal of the cellulose graft) and four weeks after surgery; subsequently, both clinical and radiological checks (with orthopantomography performed) were quarterly.

RESULTS

100% of the patients endured the post-surgery very well. After two weeks, the graft was removed, and no patients had bone exposure. After four weeks, 10 out of 11 (90,91%) patients had excellent healing by secondary intention of the surgical wound. Only one patient (9.09%) had prolonged bone exposure; he subsequently resumed antitumor therapy and was therefore excluded from work. After three months a orthopantomography was performed which showed absence of disease at the surgical site in 100% of cases. Furthermore, in two patients (20%) the presence of a new localization of the disease was found elsewhere.

CONCLUSION

In the literature there is still a considerable disparity in the evaluation of the efficacy of treatments for MRONJ, due to a lack of evaluation criteria. It must also be considered that the healing of the oral mucosa is a particular biological process as it occurs in a humid environment colonized by a saprophytic bacterial flora. It is a complex process in which cellular, immunological and hormonal components interact with each other; it's enough to alter even only one substance or cell involved for the whole process to not work properly. Finally, postoperative bleeding is known to disturb the formation of granulation tissue and slow down the healing process [42]. Oxidized regenerated cellulose has a haemostatic action and is used in surgical procedures to facilitate monitoring of small haemorrhages [43]. It also has bactericidal action as, if positioned in situ, it creates an acid environment (pH <4) which prevents the survival of many bacterial strains. As shown by the study, the use of regenerated oxidized cellulose guarantees faster wound healing, a reduction in the rate of infection and greater compliance for the patient. Probably the non-healing of the wound is due to the poor performance status of the patient, being a cancer patient.