



Hemorrhagic Complications and Dental Management of Patients with Anticoagulant Therapy: Case Report.

Claudio Bravo Valdes^{1,2} & Victor Rivas.²

ABSTRACT

Introduction: There are different protocols for the management of anticoagulated patients that can be used when performing oral surgical procedures. **Objective:** To report the previous evaluation and management of a hemorrhagic complication in the maxillofacial region in a patient undergoing oral anticoagulant therapy and the recommendations described in the literature for these patients. **Clinical Case:** Sixty-eight year old male patient, hospitalized in the cardiology unit due to heart failure, pending surgery for valve replacement. Treating physician requests evaluation for dental infection foci by a maxillofacial surgeon. Prior to medical examination and corresponding blood tests, four carious teeth are extracted, controlling hemostasis with local measures. During the night of the same day, the patient is referred again to the dental unit because of an alveolorrhagia, being treated and controlled with new local measures; new standard blood tests are performed. Forty-eight hours later the patient presents an increase of volume in the right mandibular region compatible with hematoma and ecchymosis. It is decided to perform treatment, removing sutures, collagen and draining through the alveolus. Subsequently, new local measures are performed and the anticoagulant is suspended for 24 hrs. **Conclusion:** There are different care protocols for patients undergoing anticoagulant treatment in the literature, so each patient should be studied in advance to define what is the best therapeutic procedure to prevent complications.

Keywords: hemorrhagic complications, oral anticoagulants, alveolorrhagia, oral surgery.

INTRODUCTION

The continuous aging of the world's population has had an impact on the increase of chronic diseases and in the number of patients under pharmacological treatment. Among the latter, the use of anticoagulants to prevent cardiovascular diseases such as patients with artificial heart valves, venous thrombosis or pulmonary embolism, among others (*Ripollés de Ramón et al., 2012*), has become prevalent.

Interventions in oral surgery, either minor interventions, such as extractions, or more complex procedures, may have immediate or short-term complications in terms of hemorrhage in patients undergoing oral anticoagulant treatments (OAT) compared to non-anticoagulated patients (*Rodríguez-Cabrera et al., 2011*).

Treatment with oral anticoagulants aims to preventively reduce the coagulability of the blood. Most of these drugs act as antagonists of vitamin K. In Chile the most used anticoagulants are Neosintron (*acenocumino*) and Coumadin (*warfarin*). Their mechanism of action is to inhibit K-dependent coagulation factors (*II, VII, IX and X*) produced at hepatic level (*Shi et al., 2017; Pedemonte et al., 2005*).

Several methods have been described for the dental and surgical treatment of these patients in the literature, in order to approach them medically, from completely suspending the anticoagulant 48 hours before the intervention, replacing the active principle and keeping the pharmacological maintenance of the patients, and their management with local measures if necessary (*Ripollés de Ramón et al., 2012; Shi et*

Affiliation:

¹School of Dentistry, Universidad de Concepción. ²Maxillofacial Urgency Unit, Hospital Clínico Regional de Concepción, Concepción, Chile.

Corresponding:

Claudio Bravo Valdés. Av. Roosevelt 1550, Concepción. Phone: 94423689 E-mail: claudiobv@gmail.com.

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al., 2017; Jeske & Suchko, 2003; Mauprivez et al., 2016; Wahl, 2000; Weltman et al., 2015; Evans et al., 2002; Carrizo & Carrasco, 2015; Miranda et al., 2016).

The objective of this article is to report the previous evaluation and management of a hemorrhagic complication in the maxillofacial region in a patient undergoing therapy with oral anticoagulants and the recommendations described in the literature for these patients.

CASE REPORT

A 68-year-old male patient, a taxi driver from the city of Linares, Chile, sought treatment at the dental and maxillofacial emergency unit at Hospital Guillermo Grant Benavente in Concepción, referred from the cardiology unit for dental foci prior to cardiac surgery for valve replacement. The patient had a history of hypertension, cardiac, mitral, aortic and tricuspid insufficiency, being hospitalized for acute dyspnea and waiting for cardiac surgery. The patient was under daily treatment with the following drugs: Furosemide 20mg/day, Carvedilol 6.25mg/day, Aspirin 100mg/day and low-molecular-weight Heparin (Clexane) 60mg/day.

The intraoral examination revealed that the patient was partially toothless in the upper and lower jaws with active infections in teeth 1.7, 4.6, 4.5 and 4.4, diagnosed as chronic periapical periodontitis due to caries. Prior to cardiac surgery, additional tests were requested that showed the following readings: PT: 12.8 sec, aPTT: 34.1 sec, and INR: 1.09.

The patient underwent the procedure in the morning. Extractions of teeth 1.7, 4.6, 4.5 and 4.4 were performed, controlling hemorrhage with local measures such as hemostatic sutures and local compression. The patient was administered Amoxicillin 500mg every 8 hours for 7 days, Diclofenac Sodium 50mg every 8 hours, and asked to discontinue Clexane intake during the day of the procedure.

The patient was referred to dental emergency on the night of the same day of the extractions because of an alveolorrhagia (Figure 1). Suture removal, cleaning of the surgical region, and a new hemostasis with intralveolar suture and collagen were performed, in addition a local compression was applied with gauze soaked in tranexamic acid. A new laboratory test was requested yielding these results: PT: 14 sec, aPTT: 29.4 sec, and an INR: 1.19, which are considered good/indexes/readings for local management.

Examination and evaluation of the patient at 48 hours showed an increase in mandibular volume compatible with hematoma and ecchymosis of the right mandibular region (Figure 2). It was decided to perform a new intervention to clean and drain the hematoma, applying local hemostatic measures such

as sutures, topical tranexamic acid, submucosally (one ampoule diluted in 10cc of saline solution) and in gauze soaked for local compression, and discontinuing Clexane for 24 hours.



Figure 1. Intraoral view, active alveolorrhagia is observed despite initial post-extraction measures (hemostatic sutures).



Figure 2. Extraoral view of the examination of the patient at 48 hours, there is an increase of volume in the right mandibular region compatible with hematoma and ecchymosis of the surgical area.

A new examination was performed on the 5th and 6th days, showing a reduction of the hematoma and ecchymosis (Figure 3 and Figure 4). The patient was hemodynamically stable, afebrile, asymptomatic, without clinical signs of infection, and sutures were in situ.



Figure 3. Post-operative examination on the fifth day, lower view, reduction of hematoma, persistence of ecchymosis, without active hemorrhage.



Figure 4. Post-operative examination on the fifth day, anterior view, reduction of hematoma and persistence of ecchymosis.

Nine days later suture removal was performed, without hemorrhage, without signs of ecchymosis, without symptoms and without signs of infection (Figure 5 and Figure 6). The patient was calm and grateful for the treatment.



Figure 5. Post-operative examination on the ninth day, extraoral view, no signs of ecchymosis.



Figure 6. Intraoral view, removal of sutures on the ninth postoperative day, with no signs of active bleeding, infection or inflammation.

DISCUSSION

According to the literature, the dental management of a patient under oral anticoagulant therapy remains controversial and depends on multiple factors. The most used protocols indicate that any surgical dental procedure in patients with alterations in their coagulation must be preceded by the normalization of parameters of coagulation. For the above-mentioned reasons, anticoagulant drugs are discontinued, but this would increase the risks of thromboembolism (Ripollés de Ramón *et al.*, 2012; Pedemonte *et al.*, 2005; Wahl, 2000; Oake *et al.*, 2008). Other authors suggest not suspending anticoagulant therapy and managing the risk of hemorrhage with local hemostatic measures (Rodríguez-Cabrera *et al.*, 2011; Pedemonte *et al.*, 2005; Maurprivez *et al.*, 2016; Wahl, 2000; Carrizo & Carrasco, 2015). In any case, prior to any surgical procedure, a coagulation and INR analysis should be performed, defining as a safe range for intervention a reading below 3.5 (Shi *et al.*, 2017; Pedemonte *et al.*, 2005; Wahl, 2000; Weltman *et al.*, 2015; Carrizo & Carrasco, 2015; Oake *et al.*, 2008).

Another aspect to consider when deciding to discontinue the anticoagulant therapy is the risk of hemorrhage and the half-life of different drugs. *Evans et al. (2002)* reported a 26% increase in bleeding risk in patients who did not discontinue the use of warfarin prior to minor oral surgery, compared with 14% of those who discontinued its use, which is a clinically non-significant difference (*Weltman et al., 2015*). Each of the anticoagulant drugs has a different half-life to consider, if they are suspended or discontinued. The effect of warfarin on clotting factors takes between 48-72 hours, and its half-life once suspended can be from 2-5 days (*Shi et al., 2017; Pedemonte et al., 2005; Weltman et al., 2015; Evans et al., 2002*). Discontinuation of warfarin should be done at least two to three days prior to surgery (*Weltman et al., 2015; Carrizo & Carrasco, 2015*). Low-molecular-weight heparin has a half-life of 4-7 hours, hence it is often used as a replacement drug prior to surgeries that may involve a high risk of hemorrhage for patients (*Ripollés de Ramón et al., 2012; Pedemonte et al., 2005; Mauprivez et al., 2016; Miranda et al., 2016*).

The therapeutic decision made in this clinical case was based on INR, which was in normal parameters. On the other hand, the risk of bleeding from the surgery to be performed was classified as low. However, hemostatic complications were evident and two interventions were required.

Measures taken when performing the extractions complied with the current protocols (*INR reading below 3.0 (Oake et al., 2008), applying local hemostatic measures, and not discontinuing OAT with low risk of bleeding (Carrizo & Carrasco, 2015)*). The management of bleeding 12 hours after the procedure was carried out only with local hemostasis and maintaining anticoagulant therapy. The active bleeding stopped, but it evolved into a submandibular hematoma. The decision to discontinue the anticoagulant therapy for 24 hours in the second intervention was based on the lack of INR data at that moment and the presence of hemorrhagic complications.

The initial INR readings were within therapeutic ranges, supporting the management without suspension of the drugs and favoring the application of local hemostasis measures. Notwithstanding, there were hemorrhagic complications. For this reason, despite having an INR within therapeutic ranges, discontinuation of Clexane could have prevented the complications. The latter has been described in the literature for low-molecular-weight Heparin (*Carrizo & Carrasco, 2015; Miranda et al., 2016*).

Tranexamic acid is a synthetic derivative of the amino acid lysine, it is an antifibrinolytic that prevents breakdown of fibrin and helps maintain blood clots. The local measures in this clinical case regarding the use of this drug were in different forms, local application and rinses, and compression gauze soaked in tranexamic acid. These uses have been described in

the literature, but the use of submucosal infiltrations has been poorly documented (*De Abreu et al., 2017; Mithiborwala et al., 2016; Quintero et al., 2004*).

The management of this type of patients in oral surgeries depends on many factors and is still controversial. For this reason, the pre and post-operative standards must be met, and the patients' thromboembolic risk and other pathologies that may alter their hemostasis must be evaluated and taken into consideration. Integrating all these concepts is essential to develop an appropriate care protocol for each patient.

CONCLUSION

Each patient under anticoagulant therapy should be studied in advance to define a successful therapeutic procedure. Even with a low risk of hemorrhage, complications may occur. Local measures should always be taken into consideration in the event of any hemorrhage in the maxillofacial region.

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