

A Review on the Management of Patients on Anticoagulant Therapy Programmed for Dental Extraction and Minor Oral Surgery

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Abstract:- Oral anticoagulants (OACs) are frequently used for the treatment and prevention of deep vein thrombosis and pulmonary embolism in patients with atrial fibrillation and/or heart valve prosthesis. In order to obtain the desired therapeutic effect and minimise the side effects associated with both excessive anticoagulation and the management of these drugs, proper monitoring and dose adjustment is necessary (which causes bleeding) and with insufficient antithrombotic action (which can produce thrombosis). This is essential for people who need to have surgical procedures like teeth extractions. Numerous guidelines are available in this context for the management of anticoagulated patients scheduled for tooth extractions. The majority of studies do not advise reducing or stopping anticoagulation before tooth extraction, as long as therapeutic international normalised ratio (INR) levels are kept constant for the management of haemostasis.

I. INTRODUCTION

Hemostasis is a mechanism that causes cessation of blood by formation of a clot in a injured blood vessel. This mechanism is important in healthy healing of tissues especially in the maxillofacial region. There are various conditions and diseases where an anticoagulant is given for

patient as a day to day medication. In case of diseases related to cardiovascular system are most commonly administered with anticoagulants. Management of these patients under oral anticoagulants are critical in order to achieve hemostasis. Most treatments of dental origin are considered self limiting that can be controlled with help of local hemostatic agents[1,2]. There certain procedures where there is a need for discontinuing anticoagulants for some days such as reconstructive surgeries etc. Based on the related bleeding risks, the Scottish Dental Clinical Effectiveness Programme (SDCEP) advice offers a thorough classification for dental procedures.[table 1][3]. Intervention of the anticoagulants and management is a serious problem in ones day to day maxillofacial practice. Medical professionals face a challenge in managing these patients since they require careful balancing. When antithrombotic medication is temporarily stopped, there is a significant risk of bleeding with thromboembolic consequences. According to some studies, patients who are receiving single or dual antiplatelet therapy or vitamin K antagonists have a low risk of potential perioperative bleeding complications but a high risk of thrombotic events due to changing or stopping antithrombotic therapy in the case of dental and maxillofacial procedures. [4,5,6,7]. This article deals with various anticoagulants and their intervention for dental procedures.

Table 1[3]: Comprehensive classification for dental interventions based on the associated bleeding risks

Dental procedures that are unlikely to cause bleeding	Low bleeding risk procedures	High bleeding risk procedures
<ul style="list-style-type: none"> •Local anaesthesia by infiltration, intraligamentary or mental nerve block •Local anaesthesia by inferior dental block or other regional nerve blocks •Basic periodontal examination (BPE) •Supragingival removal of plaque, calculus, and stain •Direct or indirect restorations with supragingival margins •Endodontics (orthograde) •Impressions and other prosthetic procedures •Fitting and adjustment of orthodontic appliances 	<ul style="list-style-type: none"> •Simple extractions (1–3, with restricted wound size) •Incision and drainage of intraoral swellings •Detailed six-point full periodontal examination •Root surface instrumentation (RSI) •Direct or indirect restorations with subgingival margins 	<ul style="list-style-type: none"> •Complex extractions, adjacent extractions that will cause a large wound, or more than three extractions at once •Flap raising procedures Elective surgical extractions Periodontal surgery Preprosthetic surgery Periradicular surgery Crown lengthening Dental implant surgery •Gingival recontouring •Biopsies

II. DENTAL PATIENTS RECEIVING SINGLE OR DUAL ANTIPLATELET THERAPY

A wide range of anticoagulants are available for managing cardiovascular disease patients. They can be used either individually[SAPT] or in combination with other drugs [DAPT]. According to European Society of Cardiology[ESC] using dual antithrombotic regimens consisting of low-dose acetylsalicylic acid and P2Y₁₂ inhibitors, such as clopidogrel or the new agents ticagrelor and prasugrel serves the first line of medication for one year after acute coronary syndrome[8]. In a systematic review by Gouya et al they conveyed that DAPT is widely used following percutaneous coronary intervention (PCI) with stenting, in patients with symptomatic peripheral vascular disease undergoing percutaneous lower extremity revascularization and also for the prevention of recurrent stroke [9].

As said by Napenas et al and Lillis et al[4,5] Simple dental extractions with small wounds can be done safely because the risks of thrombotic events from changing or stopping the use of single or dual antiplatelet therapy are much greater than the low risk of postoperative oral bleeding complications from low bleeding risk dental procedures and those that are unlikely to cause bleeding. [10]. In another systematic review by Napenas et al, they concluded that no clinically significant increased risk of postoperative bleeding complications from invasive dental procedures (tooth extractions [single and/or multiple, including third molar extractions], alveoloplasty, apicoectomy, implant placement, torus removal, excisional biopsies, flap surgery, periodontal surgery, and deep scaling and root planning) in patients who are receiving either single or dual antiplatelet therapy[11]. So for any dental procedure discontinuing acetyl salicylic acid and clopidogrel is not recommended for intervention[12,13]. For high risk procedures local hemostats are must to achieve hemostasis. There are limited evidence with prasugrel and ticagrelor in dental and oral surgery as proposed by Johnstan S[14].

III. VITAMIN K ANTAGONISTS

Vitamin K Antagonists [VKA] are important in management of certain cardiovascular patients. According to Nemmatullah et al it is suggested VKA should not be altered are stopped before dental procedures[15]. The current guidelines of the American College of Chest Physicians (ACCP) on the perioperative management of antithrombotic therapy recommend dental surgery without VKA interruption with the co-administration of a prohaemostatic agent[16]. According to Perry et al majority of the patients doesn't require VKA to be stopped before any dental procedures[17]. According to various studies the post operative bleeding after dental surgeries was the same in both VKA patients and other patients[18-20]. INR plays a critical role to decide whether to alter the dose of VKA or not. According to if INR is >3.5 then there is a need for dose adjustment until the desired dose is achieved. If INR is <3.5 24hrs before treatment then there is no need for altering the dosage[21].

IV. DIRECT ORAL ANTICOAGULANTS

Direct factor Xa inhibitors such as rivaroxaban, apixaban and edoxaban, and the direct thrombin inhibitor dabigatran are some recent direct oral anticoagulants that are developed and are in clinical trial all over worldwide. These new medications are used for a variety of conditions, including the acute treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE), stroke prevention and systemic embolization in non-valvular atrial fibrillation (NVAF), post-orthopaedic surgery venous thromboembolism (VTE) prophylaxis, in hospitalised medically ill patients, and for the management of ACS.[22,23,24]. At present there are no evidenced based study that are available for the dental management of patients under these direct oral anticoagulants[25].

Practical recommendations and the summary of product characteristics (SmPC) of DOACs contain recommendations for the management of dental patients[22,23,24]. It is recommended that the dental procedures are done 12 or 24 hrs after last intake depending on once or twice daily doses. Peak plasma concentrations are stages where interventions should be avoided[26]. The Scottish Dental Clinical Effectiveness Programme advises delaying the morning dose of once-daily drugs (rivaroxaban, edoxaban), and skipping one dose of twice-daily medications on the day of dental treatment (apixaban, dabigatran) [3]. 6-8 hrs after procedure if hemostasis is achieved DOAC's can be resumed in these patients. These DOAC's have a short duration of peak plasma concentration so resuming it 8 hrs after procedure provides a rapid restoration of anticoagulation and so compensating with other anticoagulants is not necessary[27].

V. CONCLUSION

Most dental treatments can be performed without intervention of anticoagulants. But current health of the patient, their underlying disease, risk of severe bleeding, availability of local anticoagulants are key factors that has to be considered before dental treatments. INR plays a critical role. It has to be assessed before treatment. It is better to consult a cardiologist and get opinion before procedure, as prevention is better than cure.

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