

Anticoagulant in Oral and Maxillofacial Surgery

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ABSTRACT

Anticoagulant medications are prescribed to patients with cardiovascular diseases and other medical conditions to prevent the thromboembolic complication. These patients when require dental treatment are concerned for the risk of haemorrhage during and after operative periods. Approach towards treatment modality to the patient receiving anticoagulants are case dependent and still not well emphasized. The present paper is a review that outlines the various anticoagulants used and oral surgical care for patient on anticoagulants.

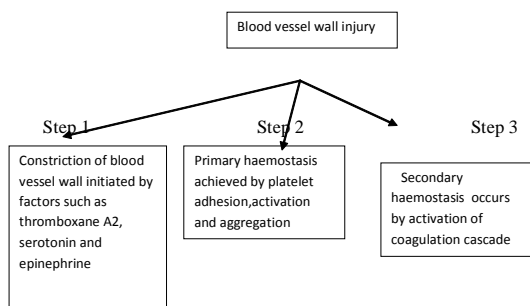
Key words: Anticoagulant, maxillofacial surgery, medical, anticoagulants.

INTRODUCTION

Normal haemostasis occurs immediately after injury by:

- Step 1 Vasoconstriction
- Step 2 Formation of platelet plug
- Step 3 Coagulation of blood and in due course dissolution of the clot by fibrinolysis.

HAEMOSTASIS MECHANISM



Many diseases and drugs can affect the vascular response to injury, platelet function or coagulation to create haemostatic problems. Anticoagulants, the substances which prevent coagulation of blood are used in thromboembolic

conditions by reducing the rate of fibrin formation. Patients under anticoagulant therapy have a tendency to bleed excessively for many invasive and surgical procedures¹. In the oral environment, after tooth extraction, when the bleeding from the socket reduces the inhibitors for fibrinolysis originating from blood also reduces. Under the same physiologic condition plasminogen (inactive form of plasmin that causes lysis of clot) is secreted into saliva, and thereby fibrinolysis is triggered after oral surgical procedures¹.

Oral anticoagulants

Oral anticoagulants are oral vitamin K antagonist⁵ and reduces the plasma levels of functional clotting factors. Anticoagulants are prescribed for the various cardiovascular diseases such as atrial fibrillation, deep vein thrombosis, prosthetic heart valves, myocardial infarction and haemodialysis⁶. The various oral anticoagulants used are bishydroxycoumarin, warfarin sodium, acenocoumarol and phenindione.

Warfarin

It is the most commonly used oral

anticoagulant .It is still controversy to stop warfarin preoperatively , that may increase the risk of thromboembolic complication .On the other hand it is suggested to continue anticoagulant therapy with minimum intraoperative and postoperative bleeding .Since there is not much evidence of increase in bleeding among anticoagulant patient .The treatment management for patient under warfarin therapy include⁷ ,

- Low risk → discontinue warfarin preoperatively, INR <1.5.⁷
 High risk → stop warfarin and start heparin or low molecular weight⁷ heparin. INR below the therapeutic range-Bridging anticoagulation⁷

Heparin

Heparin is a parenteral anticoagulant prevents blood clotting by its antithrombin activity often used as a hospitalization protocols for acute thromboembolic events⁹.

Available forms of heparin

- Standard or unfractionated heparin or low molecular weight heparins⁹.
- Patients with heparin therapy should always have physicians consultaion before any surgical procedures⁹.

Newer Anticoagulants

Vitamin K antagonist reduces the functional level of factor II ,VII, IX, X . Newer anticoagulants directs the particular coagulation factor to inhibit it .Dabigatran elexilate (direct thrombin inhibitor) and Rivaroxiban (factor Xa inhibitor) are the available new anticoagulants that are found effective⁹.

Evaluation of anticoagulant levels

Patients on oral anticoagulant requiring oral surgery are to be assessed for risk of procedures related bleeding if anticoagulant are continued measured against the thromboembolic risk if anticoagulant are stopped . Bleeding time, prothrombin time and partial thromboplastin time are used to measure anticoagulant level in blood ². The international normalized ratio (World Health Organization 1983 ²) is made to evaluate the patients under anticoagulant for operative procedures. INR is the prothrombin ratio (patient

prothrombin time/ control prothrombin time).²

International normalized ratio³

Normal	1
Therapeutic range	2-5
Minor oral surgical procedures can be carried	<3.5

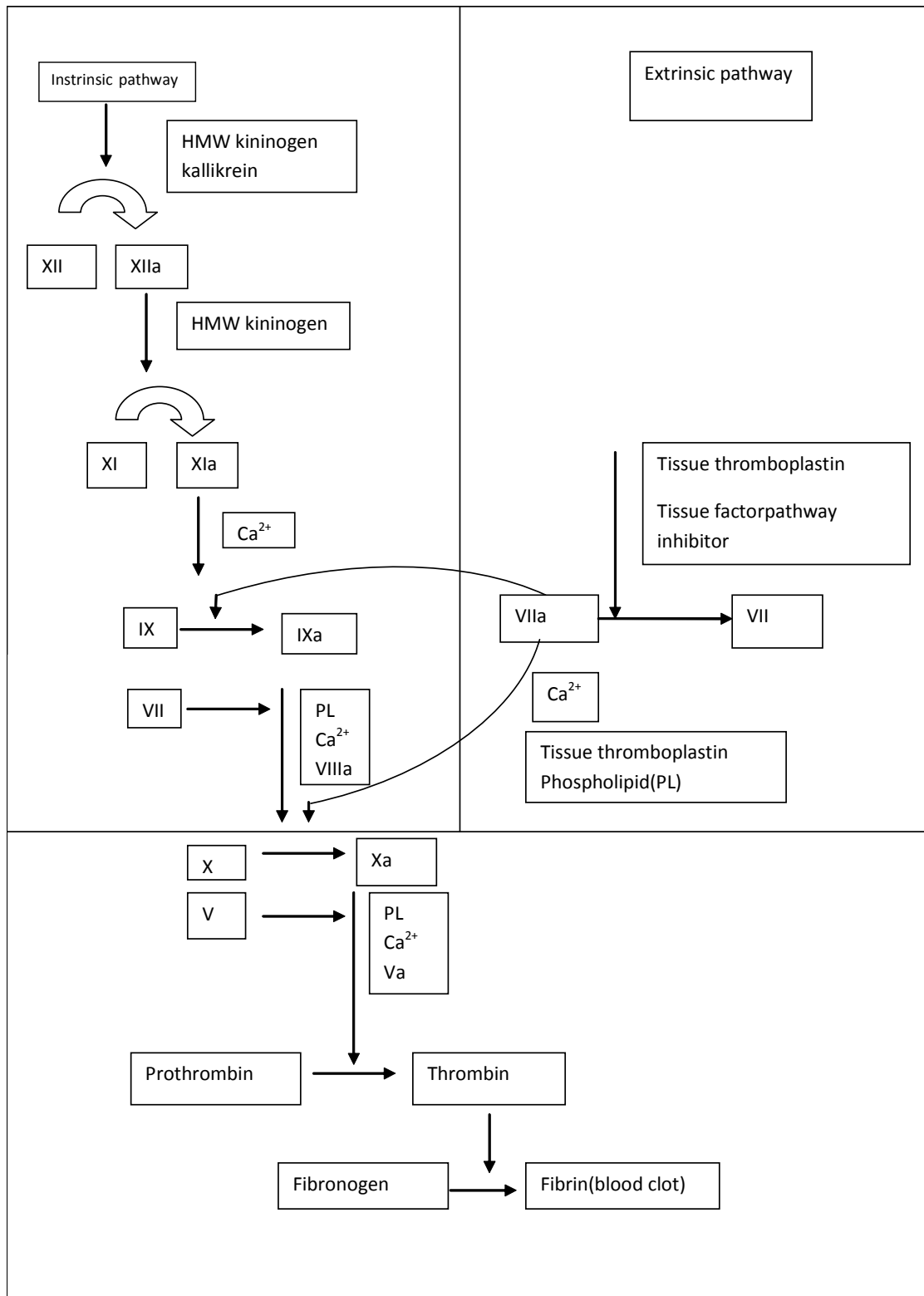
Therefore managing the patient on oral anticoagulant can be done by classifying into ,

- Low risk- patient can continue with anticoagulant therapy⁴
- Moderate risk- discontinuation of anticoagulant medication for 2 days preoperatively and check for the INR value a day before the procedure ⁴.
- High risk- post operative intravenous heparin is recommended⁴

Oral surgical care for patients under anticoagulant therapy:

- Proper case history with incidents of previous bleeding incidents should be recorded.
- Systemic conditions that increase the bleeding tendency like thrombocytopenia, coagulopathies, vascular disorder, renal diseases should be noted.
- Post operative instructions should be given such that the patients should not interfere with the extraction socket or the operative site by sucking or tongue pushing.
- All appointments are carried out in morning hours to allow more time for haemostasis during the day. During operative surgical procedures there should be minimum to no trauma to bone and the soft tissue⁹.
- Block anaesthesia injection may interfere with the fascial spaces compromising air way⁹.
- Also care should be taken during surgery , lingual tissues are not traumatized to haemorrhage into fascial planes⁹.
- Antiplatelet drugs (aspirin, clopidogrel), antibacterial ,antiviral ,antifungal can alter the metabolic interaction of anticoagulant drugs. Diet and alcohol also influence haemostasis in patient on warfarin therapy⁹.
- Low risk patient under anticoagulant therapy can be treated by local haemostatis such as sutures, cautery , oxycellulose ,collagen,

COAGULATION CASCADE



absorbable gelatin, fibrin glue etc⁹.

Recent advancement like chitosan derived HemCom(haemostatic bandages)¹⁰.

Tacho comb formula (collagen dressing) are effective local haemostatic agents¹¹.

5% tranexamic acid and epsilon-aminocaproic acid mouth washes can be used by patients to prevent local bleeding.

Applications of lasers induced haemostasis is also effective¹¹.

CONCLUSION

Patients under anticoagulant therapy can thus be treated depending upon the risk of post operative bleeding. Decisions to be individualized for patient's preferences. Conclusion on the relative efficacy and safety of different management strategies are still a controversy. The Goal is to minimize the risk of haemorrhage while continuing to protect the patient against thromboembolism formation. High risk patients should always be conservatively approached. More specific protocols are required for further observational studies.

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