



## Consideration of NOACs (novel or non-vitamin K-dependent oral anticoagulants) in dental procedure

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Over many decades, systemic oral intake of anticoagulants such as vitamin K antagonists was used for preventing thromboembolism or reducing its risk. Nowadays, three NOACs (novel or non-vitamin K-dependent oral anticoagulants) have been approved for use: dabigatran (Pradaxa), which is a direct thrombin inhibitor, and rivaroxaban (Xarelto) and apixaban (Eliquis), which are factor Xa inhibitors. They have several advantages such as a rapid onset time, concentration peaking immediately, and low drug-to-drug and food interactions in comparison with vitamin K antagonists such as warfarin and acenocumarol<sup>1-4</sup>. (Table 1)

According to the literature reviews, there is no evidence of that NOACs increase bleeding in simple dental procedures such as scaling, root planning, root canal treatment, restorative treatment, or simple extraction in comparison with vitamin K antagonists. Therefore, there is no need to discontinue the routine dosage of NOACs in patients with normal renal function and without other risk of bleeding tendency<sup>1</sup>. Local hemostatic measures such as local surgical sutures, antifibrinolytic treatment, and fibrin glue are used to prevent bleeding<sup>3,4</sup>.

In case of surgical or multiple tooth extraction, complex oral surgery, or head and neck surgery, NOACs are discontinued  $\geq 24$  hours before dental surgery in patients with normal renal function. Patients with renal failure discontinue NOACs earlier depending on the degree of renal impairment or switching to another anticoagulant before surgery. NOACs

**Table 1.** Characters of NOACs (novel or non-vitamin K-dependent oral anticoagulants) and warfarin

	Dabigatran (Pradaxa)	Rivaroxaban (Xarelto)	Apixaban (Eliquis)	Warfarin (Coumadin)
Action	Thrombin inhibitor	Factor Xa inhibitor	Factor Xa inhibitor	Vitamin K antagonist
Half-life in plasma (hr)	12-17	7-13	8-13	36-42

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are restarted at least 24 hours postoperatively<sup>1,3</sup>.

In conclusion,

1. NOACs do not need to be interrupted in routine dental procedures.
2. Interruption of NOACs  $\geq 24$  hours before dental surgery is needed in cases of high risk of maxillofacial bleeding such as during head and neck surgery, surgical or multiple tooth extraction, and according to patient's renal function.

Although the number of patients treated with NOACs is increasing, the available evidence-based guidelines are still weak. Further studies and cooperation of dental and medical doctors are needed.

### Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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