Commentary

A perspective on "The mythology of anticoagulation interruption for dental surgery"

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In this issue, Wahl[1] illustrates how common dental practices can be established in the absence of solid evidence. In his article, Wahl tackles the issue of anticoagulants, the decision to continue or temporarily interrupt these drugs for most dental surgical patients, and information that supports this decision. The article does an excellent job of delineating the risks involved in making this decision, the outcomes associated with continuation versus interruption, and the path, in Wahl's opinion, dentistry should pursue. The presentation of his argument based on a series of "myths" introduces the premise that broadly held ideas can be hard to dispel. However, whether these beliefs are widely held remains unclear, since surveys of a wide spectrum of dentists' beliefs on this topic do not yet exist.

Anticoagulants include coumarins (warfarin, dicumarol, phenprocoumon, and acenocumarol) and the newer direct oral anticoagulants (DOACs): dabigatran (Pradaxa), apixaban (Eliquis), rivaroxaban (Xarelto), and edoxaban (Savaysa, Lixiana). These drugs antagonize specific proteins in the coagulation pathway, thus contributing to their pharmacologic utility in preventing blood clots (that is, deep venous thrombosis and pulmonary embolism) and strokes in patients who have atrial fibrillation, valvular heart disease, or artificial cardiac valves. A main concern of anticoagulant use is bleeding, which can be minor or major. Current data indicate that warfarin and DOACs, when used at proper therapeutic doses, demonstrate similar low frequency (1.8%-3.1% per year) of major bleeding (gastrointestinal and intracranial bleeding) from daily use.[2-6] Bleeding after medical surgery associated with these drugs occurs in 0% to 8% of cases and is of concern to physicians because this bleeding can occur within body cavities, which can be difficult to observe.[7]

SO WE SHOULD ASK, DOES THIS BLEEDING RISK TRANSLATE TO SURGICAL DENTAL PROCEDURES FOR BOTH COUMARIN AND DIRECT ORAL ANTICOAGULANTS?

Many studies indicate that dental patients can safely undergo routine outpatient oral surgical procedures without interruption of coumarin as long as the international normalized ratio (INR) is within therapeutic range (2.0-3.5, and up to 4.0).[8-10] The infrequent postoperative bleeding that may occur has been shown to be easily controlled with local hemostatic measures.[11-16] Furthermore, there are strong data that the embolic risk exceeds the risk of interrupting anticoagulation and the potential complications associated with bleeding.[17] Thus, there is strong support for Wahl's statement that coumarin "*should not be interrupted for most dental surgical patients because the increased risk of developing bleeding complications . . . is outweighed by the increased risk of developing embolic complications*."

In contrast, bleeding rates associated with DOACs and dental surgery are less well documented. Initial rates of bleeding from 2 large studies, Randomized Evaluation of Long-Term Anticoagulation Therapy (RE-LY) and Apixaban for Reduction in Stroke and Other Thromboembolic Events in Atrial Fibrillation (ARISTOTLE), in which dabigatran and apixaban were used, respectively, ranged from 1.6% to 5.1% in association with dental extractions and other dental procedures.[18,19] However, these data are a bit incomplete. Reports from both the RE-LY and ARISTOTLE studies do not state whether the anticoagulant was discontinued before the procedure, the type of dental procedures performed, or the relationship of these factors to the frequency of major and minor bleeding. As a result, several smaller studies[20-24] in which DOACs were continued for dental extractions help contribute to our knowledge base. Collectively, these studies document that postoperative bleeding occurred in 10.2% of 205 patients who continued their DOAC. Bleeding was minor in ~99% of cases, and in all cases the bleeding was stopped with local measures

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including the use of gauze, gelatin sponge, oxycellulose, *n*-butyl-2-cyanoacrylate, fibrin glue, sutures, or tranexamic acid solution.

NATIONAL MEDICAL AND DENTAL GROUP STATEMENTS

We benefit from Wahl's collation of statements from 9 medical and dental groups that address the issue of anticoagulation, surgery, and dental patients. These statements are from the American Heart Association and the American College of Cardiology,[25] Haemostasis and Thrombosis Task Force of the British Committee for Standards in Haematology,[26] American Academy of Neurology,[27] American Society of Anesthesiologists, Society for Neuroscience in Anesthesiology and Critical Care,[28-31] American Dental Association,[32] and American Academy of Oral Medicine.[33] The consensus here is to continue oral anticoagulation therapy for most patients undergoing dental surgery. However, there are caveats and considerations. Readers should be aware that these guidelines include statements such as "for single tooth extraction," "minor dental procedures," and "coadministering [of] an oral prohemostatic agent" and mention the INR levels and timing. Moreover, these guidelines as well as the 10 systematic reviews cited by Wahl rely on a disproportionate amount of data from studies of warfarin use; there are limited evidence and bases for DOACs. Nevertheless, the consistent message is that *in general, the risk to the patient from altering the warfarin (or DOAC) dosage appears to exceed the potential of bleeding risk following dental procedures*. Thus, the guidelines are consistent with Wahl's message, who clearly points out that discontinuing an anticoagulant for any amount of time increases the risk of experiencing a thromboembolism.[34-36] However, and of note, most cases of severe adverse outcomes (that is, embolic complications) have been associated with anticoagulant interruption of 3 or more days[36-42]; the precise risk of shorter interruption is not yet known.

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SPECIAL CIRCUMSTANCES

The risk of complications developing in association with any dental treatment requires assessment of the patient and procedure. Patients can seek treatment for health issues, laboratory abnormalities, or medication issues that can influence the outcome of care. A comorbidity such as kidney disease can affect anticoagulant clearance, a laboratory abnormality such as an INR out of therapeutic range could affect bleeding risk, and concurrent medications could influence drug binding or metabolism. Whether these issues or major oral surgical procedures contribute to higher clinical risk has not been well established.

WHAT TO DO IN THE MEANWHILE

Unfortunately, old habits are hard to break and many practitioners may continue to temporarily interrupt the use of a DOAC perioperatively unless there is a contrary message that is evidence based and well communicated. Consistent with this, in a recent study, 52.9% of surgeries (involving 39 nonsurgical extractions, 59 surgical extractions, 2 implant placements, 14 quadrants of alveoloplasty, 2 tuberosity reductions, and 2 tori removal) were associated with DOAC discontinuation.[43] The average time the DOAC was discontinued before surgery varied from 12 through 120 hours. Thus, like the findings of others,[21,24] DOACs were frequently discontinued before surgery, decisions to continue or temporarily discontinue DOAC use during dental extractions were inconsistent or not criterion based, and documentation of these decisions was not always found in the health record.

ADDITIONAL STUDIES

The findings, controversies, and concerns raised by Wahl as well as the information presented here indicate that greater scrutiny of this issue is required. Support for additional studies arises because DOAC use is increasing, warfarin use people will likely decrease, and more elderly people will be affected by these changes.[44,45] This means national guidelines need to adapt and seek consensus on the basis of the best evidence available. Opportunities abound in which unbiased and scientifically valid guidelines should be developed on the basis of contemporary formal systematic reviews.[46]