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# Management of Anticoagulant and Antiplatelet Therapy for Patients Undergoing Dental Procedures

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Belief that warfarin should be discontinued before dental procedures, such as tooth extraction, existed as recently as eight years ago - despite evidence to the contrary.<sup>1</sup> More than half of all hematologists, oral surgeons, and maxillofacial surgeons surveyed in Ontario in 2005 routinely interrupted anticoagulation therapy for tooth extractions.<sup>2</sup> Surveys from other countries report that many dental professionals are unaware of their patients' coagulation status, and still discontinue antiplatelet therapy unnecessarily.<sup>3</sup> However, current literature and consensus indicate that anticoagulation with warfarin can be continued with many primary care dental procedures.<sup>4-9</sup> There is also growing evidence that antiplatelet agents such as ASA and clopidogrel can be safely continued. Dental recommendations for the new oral anticoagulants, dabigatran and rivaroxaban, are not available, but based on a comparison of their pharmacodynamic properties and bleeding risks with warfarin or low-molecular-weight heparins, these too can likely be continued.

## Balancing bleeding risks and thromboembolic risks

The gums and their supporting structures are highly vascular and prone to bleeding when damaged.<sup>6</sup> While visible bleeding in the mouth is not considered as dangerous as "silent" bleeding that occurs internally or at non-compressible sites, oral bleeding can be distressing for the patient and potentially life threatening.<sup>5</sup> However, many primary care dental procedures are unlikely to cause bleeding that cannot be managed with local measures. These include minimally invasive procedures such as periodontal probing, scaling above the gumline, polishing, and orthodontic procedures. Invasive procedures such as local infiltration, scaling below the gums, root planning, biopsies, tooth extractions, minor periodontal surgery, cavity filling, endodontic procedures (root canals), and prosthodontic procedures (crowns, bridges, and implants) are also unlikely to cause significant bleeding. Significant bleeding is more likely to occur with more invasive procedures such as extraction of impacted teeth and

use of periodontal flaps.<sup>5,6,10,11,12</sup> Patients with liver disease, kidney disease, hypertension, and gingival disease also have an increased risk of bleeding. The skill and experience of the dental practitioner and availability of hemostatic measures must also be considered when deciding whether to stop anticoagulants or antiplatelet agents.<sup>7,11,13</sup>

One of the most frequently cited studies regarding thromboembolic risks in dentistry is Wahl's literature review in which 5/493 patients who stopped anticoagulants for a dental procedure had serious embolic complications, including 4 deaths.<sup>14</sup> This report has been criticised because the patients had stopped anticoagulation for longer than usually recommended and the relationship to coagulation status was unclear.<sup>13</sup> However, considering that recurrent venous thromboembolism is fatal in ~6% of patients and arterial thromboembolism is fatal in ~20%, many consider the risks of thromboembolism outweigh the risks from bleeding from oral procedures.<sup>13</sup> Thromboembolic risks vary with the reason for anticoagulation or antiplatelet therapy. The American College of Chest Physicians has published a stratification of thromboembolic risk.<sup>8</sup> Dabigatran and rivaroxaban are not included, but risks would likely be similar to warfarin for similar indications.

### **Warfarin**

Evidence that it is safe to continue warfarin with dental procedures began surfacing in the early 1980's.<sup>9</sup> Numerous studies and thousands of patients later this has been confirmed, although high-quality evidence is sparse and inconclusive,<sup>6</sup> and the relative utility of continuing versus interrupting warfarin continues to be debated.<sup>16</sup>

Nonetheless, literature and guidelines from North America, the UK, and Australia all recommend that anticoagulated patients undergoing minor invasive dental procedures continue their oral anticoagulants, provided their INR is therapeutic (2-3 for most indications; 2.5-3.5 for certain mechanical heart valves).<sup>4-9,12,13,17,19</sup> Most of the studies considered here involve tooth extraction and, to a lesser degree, implants, so caution is needed when extrapolating to other dental procedures.

The INR should be checked 1 day prior to the procedure to ensure that the INR is within range,<sup>13</sup> although some suggest 3 days prior to the procedure if the INR is stable<sup>7</sup> or to allow time for corrective measures if the INR is too high.<sup>18</sup> In various reviews, problematic bleeding not responding to local measures occurred in 0.5 to 3.5% of patients.<sup>13,14,19</sup> Bleeding does not correlate with an INR less than 4, and stopping warfarin does not guarantee that bleeding will not occur.<sup>17</sup>

### **Antiplatelet agents**

Most of the available data on antiplatelet agents in dental procedures comes from studies of tooth extractions where ASA was being taken (2 controlled trials and one observational study, total exposed to ASA =89 at doses ranging from 75-325 mg/d). ASA did not significantly increase "excessive bleeding" (blood loss of > 30 to 50 mL) or in intra- and post-

operative bleeding complications.<sup>20-22</sup> Data on clopidogrel or clopidogrel+ASA is limited. In one retrospective review of 43 patients (total of 88 invasive procedures totalling 213 tooth extractions), there was no evidence of bleeding requiring phone calls or visits to the dental clinic or emergency department. Most patients were on clopidogrel monotherapy (n=13) or dual antiplatelet therapy (n=26).<sup>23</sup>

### **Dabigatran (Pradax<sup>®</sup>) and rivaroxaban (Xarelto<sup>®</sup>)**

Dabigatran is a direct thrombin inhibitor approved for the prevention of VTE after hip or knee replacement and for the prevention of stroke or systemic embolism in atrial fibrillation where warfarin is inappropriate. The risk of severe bleeding was similar to those of patients using low-molecular-weight heparin (LMWH) in orthopaedic surgery, and the same as or lower than patients with atrial fibrillation well controlled on warfarin.<sup>24</sup>

Rivaroxaban is a factor Xa inhibitor that is approved for prevention of VTE after total hip or knee replacement. It is likely to be approved for use in atrial fibrillation based on the results of the ROCKET-AF trial.<sup>25</sup> Clinical trials of orthopaedic patients report the risk of major bleeding is higher using rivaroxaban than LMWH, but not statistically higher;<sup>24</sup> data on bleeding risks in atrial fibrillation has not been published.

Coagulation monitoring is usually not required for rivaroxaban or dabigatran and reliable tests are not available. There are no evidence-based guidelines for the dental management of patients receiving these agents. However, because of their predictable and stable anticoagulant effects, comparable bleeding risks, and lower risk of drug interaction, dental management may be safer and easier with these drugs. However, more scientific evidence, time, and experience is needed.<sup>26</sup>

### **Bridging anticoagulant therapy with low-molecular weight heparins (LMWH)**

"Bridging therapy" means that short-acting anticoagulants are used to reduce the time a patient requiring anticoagulation is not anticoagulated, thus reducing their thromboembolic risk.<sup>27</sup> Bridging therapy may be appropriate for some dental patients if there are substantial bleeding risks involved. If bridging therapy is deemed necessary after a careful and detailed assessment of both the bleeding risks and thromboembolic risks, the LMWH dose should be based on the thromboembolic risk. Consider consulting an anticoagulation clinic or clinical hematologist.<sup>28</sup>

### **NSAID Analgesics**

The use of non-steroidal anti-inflammatory drugs (NSAIDs) with warfarin, ASA, and clopidogrel should be based on previously established advice and experience. Data on NSAID use with dabigatran and rivaroxaban is available from the orthopaedic surgery literature. For dabigatran the safety with NSAIDs appears to be similar to enoxaparin (the standard of care) with NSAIDs, and the risk of bleeding was not increased with concomitant NSAID use compared to dabigatran alone in patients undergoing major orthopaedic surgery.<sup>30,31</sup> The

rate of major and clinically-relevant non-major bleeding among orthopaedic surgery patients in the RECORD study receiving rivaroxaban and an NSAID was slightly higher than with no NSAID use, but not statistically significantly.<sup>31</sup> The UK recommends that if an NSAID is necessary, choose one with a shorter half-life and lower gastrointestinal and cardiovascular side effect profile, e.g. ibuprofen.<sup>31</sup>

### Management of bleeding

Bleeding from dental procedures can usually be managed with local measures including gauze compression, absorbable sponge packing, suturing, and extemporaneously prepared tranexamic acid 4.8% mouthrinse.<sup>19,32,33</sup> However, suturing may cause more soft tissue damage and increase bleeding,<sup>34</sup> and some believe that when added to compression and suturing the benefits of tranexamic acid are small.<sup>17</sup> Note that bleeding complications may be delayed 1-5 days after dental procedures.<sup>11</sup>

### Other practical advice for anticoagulated dental patients

Schedule dental procedures early in the day and early in the week to allow more time to deal with bleeding if it occurs. If anticoagulation is only temporary (e.g. VTE prophylaxis post-hip or knee replacement), consider postponing elective dental procedures until anticoagulation is no longer needed.<sup>11,13</sup>

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