

Preoperative Management of Anticoagulation and Antiplatelet Agents

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KEYWORDS

• Anticoagulation • Antiplatelet • Warfarin • Clopidogrel • Aspirin

KEY POINTS

- Given a higher frequency of comorbidities and frailty, older adults often take anticoagulants or antiplatelet agents, which present a challenge when optimizing patients for surgery.
- Actively managing reversal of anticoagulation may reduce time to surgery and complications.
- The approach to reversal of anticoagulation requires consideration of bleeding and clotting risk.

INTRODUCTION

Anticoagulants and antiplatelet agents present a unique challenge in the preoperative management of hip fractures. Assessment of bleeding risk is an important part of perioperative management. Delaying surgery to manage the effects of these medications can increase the likelihood of adverse events, such as delirium,¹ pneumonia, pressure ulceration, and mortality.^{2,3} The urgency of surgery must be balanced against the increased risk of bleeding for patients on anticoagulation and antiplatelet agents.

Four variables must be considered when deciding how to manage periprocedural anticoagulation and antiplatelet agents with the goal of optimization for surgery (**Box 1**). The first is the risk of thromboembolism if the anticoagulation/antiplatelet agent is discontinued. The second is the risk of bleeding from the procedure if the anticoagulation/antiplatelet agent is continued. The third variable is the effectiveness and safety of interventions, such as receiving fresh frozen plasma or vitamin K (phytonadione). Lastly, an overriding principle is the importance of timing of surgery, because

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Box 1**Issues to consider with reversal of anticoagulant or antiplatelet agent**

1. Risk of thromboembolism if anticoagulation/antiplatelet is discontinued
2. Risk of bleeding from the procedure if anticoagulation/antiplatelet is continued
3. Effectiveness and safety of interventions to reverse anticoagulation
4. Timing of surgery

those on anticoagulants or antiplatelet agents often have a large number of comorbidities.

The assessment of perioperative bleeding risk in the context of anticoagulant and antiplatelet use should take into account the procedure planned for the patient. For example, percutaneous screw fixation has a much lower risk of bleeding than total hip arthroplasty.⁴ The consequences of a major bleed in a patient with a total hip arthroplasty include hematoma, infection, and possibly joint removal.

ANTICOAGULANT MANAGEMENT

For patients who are admitted on anticoagulant medication, the steps in **Box 2** should be taken. The first 3 steps must be addressed preoperatively. The fourth step should be considered preoperatively, but is implemented postoperatively, and is therefore addressed in the article on Venous Thromboembolism and Postoperative Management of Anticoagulation elsewhere in this issue by Friedman and Uy.

Medications and Reason for Use

The first question to ask when a patient presents on anticoagulation is “why are is an anticoagulant being used?” Older adults are often anticoagulated for various medical conditions, including

- Atrial fibrillation (AF)
- Thromboembolic disease (venous thromboembolism, hypercoagulable states, deep vein thrombosis, pulmonary embolism)
- Prosthetic heart valves to prevent arterial or venous thrombosis

Warfarin is the most common and most studied anticoagulant used. However, 3 novel anticoagulants are being increasingly used in the older adult population: apixaban, a factor Xa inhibitor used to prevent strokes in patients with nonvalvular AF; dabigatran, a direct thrombin inhibitor approved for stroke prevention in nonvalvular AF; and rivaroxaban, a factor Xa inhibitor used for stroke prevention in patients with nonvalvular AF and for the prevention of thrombosis after total hip and knee replacement surgery.

Box 2**Anticoagulation management steps**

1. Determine why the patient is taking an anticoagulation agent
2. Determine the short-term perioperative risk of thromboembolism related to the underlying condition if anticoagulation is stopped
3. Decide how to manage the patient in preparation for surgery and the timing of surgery
4. Decide whether to bridge

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