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IS DISCONTINUATION OF ORAL ANTICOAGULATION THERAPY NECESSARY FOR ORTHOBIOLOGIC INTERVENTIONS?

Joseph Purita, MD
Institute of Regenerative Medicine, Boca Raton, FL, USA
José Fabio Santos Duarte Lana, MD
Cidade Nova, Indaiatuba, São Paulo, Brazil
Morey J Kolber, PhD, PT
Nova Southeastern University, Fort Lauderdale, FL, USA

Author for correspondence: Joseph Purita: jpurita@aol.com

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More than 8 million people in the United States alone take oral anticoagulant (OAC) medications, which include warfarin, heparin, novel anticoagulants, aspirin, and other drugs or supplements that have anticoagulant effects such as nonsteroidal anti-inflammatories and curcumin.[1,2] Anticoagulation therapy is recommended in the presence of atrial fibrillation, deep venous thrombosis, pulmonary embolism, thrombocytosis, stroke history, coronary artery bypass or percutaneous interventions, and after prosthetic heart valve placement.[3,4]

Management of patients on anticoagulation therapy may be challenging for physicians performing orthobiologic interventions as discontinuation may increase thrombosis risk, whereas noninterruption may increase the risk of hematoma, hemarthrosis, and ecchymosis.[3–7] In general, invasive procedures with a "high risk" of inducing bleeding will benefit from anticoagulation interruption or bridging, whereas those procedures with a low risk require an individualized risk assessment to determine noninterruption feasibility.[3] Because high quality research trials are not available to guide the decision to interrupt OACs during orthobiologic procedures, an approach grounded in clinical judgment should guide practice. The purpose of this viewpoint is to address OAC noninterruption during the periprocedural phase of orthobiologic interventions. Although factors such as platelet aggregation and thrombosis are important to consider, the focus of discussion will be the risk for procedural bleeding with noninterruption.

Most agree that a holistic approach for managing patients who are taking OACs includes determining the thromboembolic risk of discontinuation as well as the procedural bleeding risk.[3] Risk is generally determined based on the level of procedural invasiveness as well as individualized patient assessment. Our approach of performing orthobiologic procedures (injections, lipoaspirate, and bone marrow aspiration) on patients taking OACs comes from our specialty practice that is limited to regenerative medicine. Factors considered in our risk stratification model include individual patient assessment, expert consensus guidelines on procedural risk, available research, and strategies to minimize and monitor post-procedural bleeding.

With regard to bleeding from an interventional procedure, consensus-based guidelines from the American Society of Regional Anesthesia and Pain Medicine, European Society of Regional Anesthesia and Pain Therapy, American Academy of Pain Medicine, and the World Institute of Pain classify musculoskeletal tissue and joint injections as low-risk procedures.[4–6] Furthermore, the Society of Interventional Radiology consensus guideline, which is endorsed by the Cardiovascular and Interventional

Radiological Society of Europe, classifies both musculoskeletal injections and bone marrow aspiration as low bleeding risk procedures.[3] In fact, the risk of uncontrolled bleeding from a bone marrow aspiration is less than 1%.[6] Although numerous consensuses-based guidelines do not recommend routine discontinuation of OACs when undergoing low-risk procedures, a paucity of evidence exists to guide decision-making for patients undergoing lipoaspirate harvesting. In our experience, lipoaspiration offers a low risk of bleeding based on both technique and the preaspiration injection of a tumescent solution containing epinephrine, which minimizes bleeding. Data do exist in other specialties performing core needle biopsy of breast tissue, which have shown comparable bleeding and ecchymosis in patients who received OAC and those who did not, which suggested that core needle biopsy on anticoagulated patients is safe.[7]

While routine discontinuation of OACs is not indicated, certain conditions may support an interruption or bridging, such as a supratherapeutic international normalized ratio (INR) levels in the case of warfarin, prior bleeding incidents, coagulopathic conditions such as liver or renal disease, use of >1 OAC, or for patients undergoing an intradiscal injection which has been classified as moderate risk. In these situations, it is important to recognize that while the thrombosis risk of a brief pause in anticoagulation is minimal, there is a risk of miscommunication between patient and clinician regarding when to resume medications, potentially putting patients at further undue risk for thrombosis. As stated, we recommend weighing the risks and benefits of stopping anticoagulation for each patient, paying special consideration to risk-reduction strategies. Moreover, facility procedures that aim to identify and mitigate post-procedural bleeding irrespective of decision to interrupt OAC use should be established.

Approaches used to mitigate excessive bleeding include individualized assessment of comorbidities and medications to identify those at greater risk, as well as procedural strategies.

One aspect is the management of patient anxiety and pain to optimize procedural positioning, accuracy, and minimize tissue trauma. Furthermore, ultrasound and fluoroscopy offer a tool to enhance the precision of both harvesting and injections. Post-procedural care at our facility includes educating patients on how to recognize hemorrhage and how to seek care, should this occur. Additionally, pressure is applied to the injection and harvest sites until homeostasis occurs. Moreover, procedural sites are assessed multiple times for bleeding over a period of 30 min at conclusion of care.

In summary, routine OAC discontinuation is not recommended for low-risk procedures such as musculoskeletal injections and harvesting of fat and bone marrow, unless an individual comorbidity or prior event indicates the need. Extra vigilance toward post-procedural homeostasis should minimize bleeding risk.

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