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Managing Anticoagulation Reversal Before Orthopedic and Trauma Fracture Surgery

Announcer:

You're listening to *Clinician's Roundtable* on ReachMD, and this episode is sponsored by CSL Behring. Here's your host, Dr. Charles Turck.

Dr. Turck:

This is *Clinician's Roundtable* on ReachMD. I'm Dr. Charles Turck, and today I'm joined by Dr. John Scolaro, who's an Associate Professor, Residency Program Director, and Chief of Orthopedic Trauma in the Department of Orthopedic Surgery at the University of California, Irvine. We'll be taking a closer look at the factors that inform anticoagulation reversal decisions in orthopedic and trauma fracture patients—specifically, how patient profile, comorbidity burden, and transfusion-related risk all come together before a patient reaches the operating room.

Dr. Scolaro, welcome to the program.

Dr. Scolaro:

Awesome. Thank you so much for having me. Really appreciate it.

Dr. Turck:

Well, to get us started, while direct oral anticoagulants, or DOACs, have become more common in this population, a meaningful subset of trauma fracture patients are still on warfarin, and those cases often carry their own complexity. When one of these patients needs urgent surgery, what factors influence your initial risk assessment the most?

Dr. Scolaro:

That's a good question. I think one of the things, as you highlighted, that we do see is that fewer of these patients are on warfarin compared to maybe even a decade or so ago. So it has changed our practice a little bit. But given the fact that most of these patients are usually elderly or on the older end of the spectrum with regard to the age range, their fractures and their injuries are in keeping with that, right? We see a lot of hip fractures, maybe geriatric acetabular fractures, and low energy fragility-type fractures. And thankfully, the intervention or treatment for most of these involves some sort of percutaneous operation, or operation that involves limited incisions. And so we're not thinking about the same surgical morbidity as the patient who comes in following a high-energy vehicular trauma or motorcycle trauma as we tend to see here in Southern California. So I think the surgery itself is probably the most common consideration; the surgery that they need is probably the most common consideration for what we're going to do or how we're going to address their anticoagulation and whether they need to be reversed.

And then second, and I think we'll probably get into this at some point, is just, what is the reason for their anticoagulation? And what is the physiologic danger or risk that they're going to be subject to if we do reverse them or bring their INR down to a level that we would be more comfortable with?

And so these are all discussions, and I think one of the things I'll probably highlight is that communication between teams is probably the most important thing that occurs.

Dr. Turck:

Now, a key consideration with these patients is that cardiac and pulmonary reserve shape how well they can compensate for blood loss if bleeding occurs in surgery. How does that influence how aggressively you manage their risk?

Dr. Scolaro:

I think that's another good question. One of the things that I really think is important is talking to the anesthesiologist about very specific things: what's the procedure that we're going to be doing? What does that involve? And I talked a little bit about more percutaneous interventions, such as maybe a hip fracture nail or placing screws around a pelvic or an acetabular fracture in an older patient. All interventions that just involve incisions about the size of maybe my thumb.

And then again, the length of time that they're going to be in the operating room and where those patients are starting out from a physiologic standpoint. Is this patient on home oxygen? Do they have right-sided heart failure? Do they have aortic stenosis? All things that are important for us for sure, but very important for the anesthesiologist to know about and manage because they're going to be on the other side of the drapes monitoring these patients.

And so I think having a very clear discussion about, "We anticipate needing 45 minutes in the operating room; we anticipate our blood loss to be x, and please feel free to chime in or be vocal about any physiologic issues that you may see the patient is having at any point during this procedure." And I think that communication and open dialogue is very important in the management of some of these more complex patients.

Dr. Turck:

Now, bleeding risk tolerance also intersects with the risks of transfusion itself, particularly in older or higher comorbidity patients, where volume overload and added strain on cardiac and renal function become important considerations. So how do those transfusion-related risks factor into your overall assessment of these patients?

Dr. Scolaro:

A little bit of it is preparation, right? Making sure that we are giving folks or recommending blood products instead of just crystalloid in terms of volume resuscitation if they need it.

And again, being efficient and effective in the time that we have in the operating room with a lot of these patients who are medically complex.

Dr. Turck:

For those just tuning in, this is *Clinician's Roundtable* on ReachMD. I'm Dr. Charles Turck, and I'm speaking with Dr. John Scolaro about anticoagulation reversal decision-making in fracture patients requiring orthotrauma surgery.

So Dr. Scolaro, once you've completed your risk assessment, how do you decide whether reversal is necessary before proceeding?

Dr. Scolaro:

One of the things that there's been a growing amount of literature on is that the morbidity of waiting for reversal is oftentimes greater than the risk of blood loss for these patients, right? And so letting these patients sit for an extra 24 or 48 hours, especially with some of these hip fractures, which are probably the most common intervention, let's just say—for patients who are on the older end of the spectrum who have fragility fractures, hip fractures are probably the most common lesion or pathology that we're dealing with—the morbidity of letting these patients sit in the hospital waiting for reversal or waiting for the DOACs to not present them with as much of a bleeding risk is actually worse for them than just being able to operate through them. So at least at our institution, I think a growing amount of literature shows the benefit of early intervention.

Now, that being said, we spoke about warfarin previously, and obviously, if somebody is supratherapeutic, I think in general, we like these patients to be below three with their INR. If they can be within their goal of two to three, if they're supratherapeutic and they're going to be at risk for a hemorrhagic stroke or excessive bleeding with an open procedure, then I think that's a little bit of a different conversation.

Dr. Turck:

Now, if you do choose to reverse anticoagulation, what factors guide your choice of therapy, especially considering the potential consequences beyond the immediate procedure?

Dr. Scolaro:

Yeah. A lot of times I will defer some of these conversations and some of these decisions to some of our medicine colleagues, and then again, if they are anticoagulated because of a valve replacement or something that requires a little bit more aggressive anticoagulation, that's where I start to have a discussion again with whoever the specialist is, whether it's the cardiothoracic team or the cardiologist, about, "What is the risk to this patient with reversing them?" and "Can we safely proceed even if they are anticoagulated?"

And that's, again, a back-and-forth discussion because they need to know a little bit more about what we're doing in the operating room, and I need to know a little bit more about what they're doing and why that patient is anticoagulated.

Dr. Turck:

Building on that, how does the clinical reason behind a patient's volume needs, whether that's active bleeding requiring resuscitation or limited tolerance for additional fluid, shape your choice between reversal approaches?

Dr. Scolaro:

Again, I think the push more so now, especially with the DOACs, is to just operate through them, and not really have these patients sit for any longer than they need. With things like warfarin, I'm okay with these patients usually under three, especially if I'm doing something percutaneous. I'm fine with that INR level.

And then it goes back to that initial discussion that we had about talking with the anesthesiologists intraoperatively, or before the operation, about what the expected blood loss is, where that patient is starting from a physiologic standpoint, and then figuring out what they need to know and opening a line of communication. Because oftentimes, for these patients, whether they have a central line or an arterial line, they'll want to make sure these patients are safely monitored, especially as they become more medically complex.

Dr. Turck:

And before we close, Dr. Scolaro, looking back on your experience with these patients, what has most influenced the way you approach reversal decisions before urgent fracture surgery?

Dr. Scolaro:

That's a great question, and it's been interesting to see that change, especially over the last 5 to 10 years. When I was going through training and even in fellowship, there was a lot of waiting. We would wait for certain fractures because we thought that the bleeding risk was too great after some major fractures—specifically acetabular fractures, or hip socket fractures in the pelvis. And so when I was going through training, we'd wait for the clot to form because we thought that intervening too early would create a bleeding risk for these patients. Now, that's changed. Now, we intervene on those patients much sooner. Same thing with hip fractures and anticoagulation. But previously, I remember watching people's INRs and waiting for people's INRs to come down to an acceptable level, that level being whatever the surgeon preferred or believed was the safe level.

And that changing over time after the realization, at least from not only the medical teams, but also from the orthopedic standpoint, that these patients need to be mobilized—they do better when they can be fixed, started with therapy, and allowed to weight bear—that dogmatic approach of waiting for reversal or waiting until the bleeding risk was an acceptable level has kind of gone away.

I think one of the most important things, again, is just highlighting the fact that the management of these patients involves multiple teams and multiple subspecialties. And so from the orthopedic trauma standpoint, we're working very closely with our medicine colleagues and working very closely with our anesthesia colleagues to determine what's the best and safest way to get these patients into the operating room, get them taken care of, and then begin their rehabilitation afterwards, knowing that time to surgery and the ability to get them mobilized is probably one of the most important and critical factors.

Dr. Turck:

Well, with those insights in mind, I want to thank my guest, Dr. John Scolaro, for joining me to discuss how we can apply a structured profile-based decision framework to anticoagulation reversal in fracture patients requiring surgery.

Dr. Scolaro, it was great having you on the program.

Dr. Scolaro:

Awesome. Thank you so much, doctor. Appreciate it.

Announcer:

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