

Podcast Transcript

Perioperative thromboprophylaxis revisited

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Tonke de Jong (COR2ED)

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Prof. Dimitrios A. Tsakiris

Welcome, everybody. My name is Dimitrios Tsakiris. I'm a hematologist at the University of Basel, specialised in hemostasis. My colleague, Daniel Bolliger, and me are delighted to offer you today an educational podcast with focus on thrombotic issues. This is the fourth in a series with a focus on thrombotic issues. We are dealing today with peri-operative thromboprophylaxis. We think that this is an important subject, and it will help you recognise the importance of thromboprophylaxis and anticipate the need for the right choice of product and right duration of treatment. But let us welcome Professor Bolliger first. Good morning, Daniel. Could we have a few words from you on this issue, please?

Prof. Daniel Bolliger

Hello, Dimitrios, and also welcome to everybody from my side. My name is Daniel Bolliger. I'm head of the non-operating anesthesia at the University Hospital, Basel, and I have a special interest in perioperative coagulation and patient blood management. In my view, perioperative anticoagulation strategies and thromboembolism prophylaxis is a very

important issue to avoid peri-and postoperative complications and to improve patient outcome.

Prof. Dimitrios A. Tsakiris

Thank you, Daniel. Let's start first with some thoughts on the pathophysiology of perioperative thrombosis. This is a subject which was recognised already in the '70s. And first studies by that time realised that most of the thrombotic events start intraoperatively, but about one third of them are self-lysed due to fibrinolysis and are not recognised later. But the risk for peri-and post operative thrombosis remains, but it changed during the time. It's not the same today as it was 30 years ago. Here we would like to hear your opinion, Daniel. Do you think that the risk has become less evident or changed due to evolution of surgical technology?

Prof. Daniel Bolliger

So thromboembolic complications are still a relevant problem after and during major surgery. We know very well that patients are in a prothrombotic state due to inflammatory reaction during surgery and also after surgery. However, if you give too much of anticoagulation, this may interfere with wound healing and bleeding after or during surgery. So in the last years, type and invasiveness of surgery have relevantly changed. I would say that usually surgeons aim for a minimal invasive surgery. In addition, the so-called early recovery after surgery, ERAS programmes aims for faster mobilisations, feeding, etc, after surgery. These changes may have decreased the risk of thromboembolism over the years. On the other hand, patients getting older and sicker and have more comorbidities. This will increase their risk of post-operative thromboembolic events. In addition, we have more patients with cancer surgery and these cancers may be at the later stage of cancer. And this will, of course, lead to a higher risk of thromboembolism after surgery. And it may even require a more intensified and more prolonged prophylaxis against thromboembolic events.

Prof. Dimitrios A. Tsakiris

This is interesting to hear that despite the technological development of surgical techniques, these improvements can be counteracted by the, let's say, higher burden for thrombosis, which is carried by the patients themselves. But we know in addition to that, that also newer anticoagulants have been developed, which can help us spread the treatment and give the treatment in situations which it was not so easy to do before. Let's go then to our next section of the discussion concerning the actual application of peri-operative prophylaxis. Now, the first thing which people would like to do in this situation is to stratify for the thrombotic risk. And in the American literature, risk scores have appeared such as the Caprini score or Rogers score, which have been used to define whether a patient has a low, middle, or high risk for thrombosis. What is your experience with such scores, Daniel, in the European centres? Do we need them? Are they in use?

Prof. Daniel Bolliger

So from my clinical perspective, we do not use such risk certification tools. Of course, they may allow to estimate the general thrombotic risk of the patient. But I think it's more important to have an individual assessment and adjustment of antithrombotic therapy due to the patient risk. Of course, they may be estimated by such scores and also by the surgical

risk which have changed. So these scores may not be very adequate at the present time and I think that's why we do not use them regularly.

Prof. Dimitrios A. Tsakiris

But still there is a need for, let's say, guidance. Do you use in-house guidelines for thromboprophylaxis in your institute?

Prof. Daniel Bolliger

We have, of course, guidelines for thromboembolism prophylaxis in-house, but they are not based on such scores and they are mainly based on the surgical experiences. And of course, the surgeon has to see when we have to or when we are allowed to start thromboembolic prophylaxis and also how long we should use such prophylactic therapy.

Prof. Dimitrios A. Tsakiris

Yes, I think you have to balance the thrombotic risk with the bleeding risk that the patient carries, and then take the right choice for the anticoagulant. Now concerning this choice of the antithrombotic agent, we have for a long time heparins as a first choice treatment in use. But in the last 10 years, additional newer anticoagulants, direct anticoagulants appeared, which have found their place in some kinds of surgery. Could you say there is a general preference for the one or the other? Or is the choice based on individualised issues?

Prof. Daniel Bolliger

To be honest, I would say it's an individual approach to each patient. Of course, we need some guidelines, as I said before, but in general we have to adapt these guidelines. There are scores, as we talked about Caprini score, modified Caprini score to estimate the thrombotic risk, but there are also scores to estimate the bleeding risk, for example, the HAS-BLED score. But I have to admit that both of them have similar risk factors. So a patient, an old patient with hypertension is at risk for thromboembolic events, but also for bleeding events. So they may not be very helpful in general or in the specific patient.

Prof. Dimitrios A. Tsakiris

But concerning the choice of the agent, would you prefer a low molecular weight heparin as first choice or the newer direct coagulants, let's say, for major orthopedic surgery?

Prof. Daniel Bolliger

So from a patient's perspective, the use of oral anticoagulants and especially the newer direct acting oral anticoagulants, they may be much more comfortable as they are, as I said, oral drugs and they need no stitches as the low molecular weight heparins. In addition, DOACs seem as safe as low molecular weight heparins and have less or equal bleeding risk. However, the action time of the DOACs may be a bit longer, which may be a problem if the patient needs emergent revision of his surgery or if he is bleeding. One possibility is, for example, that you use a low molecular weight heparin or unfractionated heparin for the very early postoperative phase or during hospitalisation, and then change to DOAC after wound healing and/or hospital discharge.

Prof. Dimitrios A. Tsakiris

Yes, you have mentioned discharge now, and that brings us to the question of duration of thromboprophylaxis. Do you extend thromboprophylaxis in the time behind discharge or do you stop it at the discharge of the patient? What is your practice in the hospital?

Prof. Daniel Bolliger

I think this depends really on the type of surgery. Let's say for hip surgery you should for sure extend at this time because the patient needs more than three, four, five weeks to be fully mobilised and during this time he should be under thromboembolic prophylaxis. Similar patients, let's say, with large thoracic surgery for lung cancer, they often need a prolonged and very strong thromboembolic prophylaxis because they are at especially high risk even weeks after surgery. These are typical examples where you need prolonged thromboembolic prophylaxis. But it depends also on the patient and his bleeding risk. In a patient with a very high bleeding risk, you may stop it earlier than in a patient with a generally low bleeding risk.

Prof. Dimitrios A. Tsakiris

This is also my experience on that issue that there is a trend for longer duration postoperatively, because if a thrombotic risk factor persists longer time after hospitalisation, then the patient needs coverage, needs the protection against thrombosis. So this is also taken care of in the guidelines. I think that this is clear, especially for major orthopedic surgery or for cancer patients, as you mentioned. But let us go shortly to a couple of more practical issues. I would like to discuss a little bit three subjects. Aspirin has been published as an efficient and safe antithrombotic in major orthopedic surgery lately. Do you see acceptance of those studies from the orthopedic community, or did it find, let's say, an application or not, compared to the classical low molecular weight heparins or DOACs?

Prof. Daniel Bolliger

So again, this depends very on the bleeding and thromboembolic risk of the patient. Usually, we would use DOACs or low molecular weight heparins and not aspirin for thromboembolic relapses. However, there may be some special patients, let's say, with a very high bleeding risk with DOACs or low molecular weight heparins, in which you could choose aspirin as an alternative. But this is really an exception and should not be a recommendation for all patients. In agreement, the ESAIC guidelines from the European Society of Anesthesiology and the Intensive Care from 2018, they recommended the use of aspirin as a 2C recommendation. So you could potentially use it, but it's for sure not the first choice.

Prof. Dimitrios A. Tsakiris

Yes, 2C is practically expert opinion. It's not absolute evidence-based medicine. That is correct. Then let's go to the next one. Using anticoagulants in the post-operative period, do we need to monitor them for their intensity? What is your experience on that?

Prof. Daniel Bolliger

So using low molecular weight heparins or DOACs do not need monitoring in general. In contrast, using the older vitamin K antagonists, they need monitoring with INR testing to have a safe range of this anticoagulation. So however, there are some exceptions where monitoring also may be recommendable with patients taking DOACs or low molecular heparins. For example, one typical example is that patients needing emergent surgery or

surgical revision or which are bleeding, in these cases you might consider to monitor the drug efficacy of DOAC or of low molecular weight heparins. Usually, we recommend to stop DOACs 24 to 48 hours before surgery. If the patient has renal failure, then add another 24 hours. If there is a low-risk surgery, 24 hours may be sufficient. If high risk surgery or if bleeding is a major complication, then you should stop the work for 48 hours. But now you have to undergo emergent surgery and you do not know exactly when the last intake of the drug was. In this case, I would recommend to use monitoring. There are drug-specific tests that you can use, but usually you can just use your normal anti-Xa activity tests, which can also be used for low molecular weight heparins or unfractionated heparin.

Prof. Dimitrios A. Tsakiris

Yes. Thank you on that. And the last, let's say, practical issue, which I would like to touch briefly concerns inferior vena cava filters. You have mentioned patients with bleeding complications. If a patient is not anticoagulable, let's say, or eligible for anticoagulation, some treaters use inferior vena cava filters as thromboprophylaxis. From the hematology point of view, if I can say it a little bit provocatively, we do not see any indication for inferior vena cava filters because you just generate additional problems afterwards. What is your opinion on that, Daniel, and your experience?

Prof. Daniel Bolliger

So, inferior vena cava filters, they may be considered in very specific patients. It should be then an individualised and personalised approach based on the discussions between the surgeon, the intensivist, the hematologist, and potentially also the anesthesiologist. But from my own experience, we use such filters in less than five patients per year. So it's an exception, really.

Prof. Dimitrios A. Tsakiris

I would just say also that if the choice of inferior vena cava filter is taken, then it should be a removable filter, which can be removed after one to two weeks. That solves a lot of problems later on. Very well. Now we have covered the subject that we have planned to. Dear listeners, let me summarise the discussion that we have just done and give you a couple of takeaway messages. First, thrombotic risk is a constant threat in postoperative patients, but it gets lower with evolution of surgical technology. In addition, a shift from low molecular weight heparins to direct oral anticoagulants, and from short to longer duration was established in the guidelines in the last years. And third aspirin in a low dose can be used instead as an exception in major orthopedic surgery for having low risk for venous thrombosis and if DOACs are not applicable or in case of high risk for bleeding. Professor Bolliger, would you like to add any last words to these statements? Daniel, please.

Prof. Daniel Bolliger

I completely agree with what you said. Prophylaxis of thromboembolic events is still an important issue because such complications are a relevant threat of our perioperative patients, which may relevantly affect their morbidity and mortality after surgery. Thank you.

Prof. Dimitrios A. Tsakiris

Thank you, Daniel, for your contribution today. Thank you, listeners, for being with us today.

Tonke de Jong

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