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## Life-Threatening Trauma Anticoagulated Bleed Cases & Approaches

### Announcer:

Welcome to CME on ReachMD. This episode is part of our MinuteCME curriculum.

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### Dr. Sarani:

The two case studies I want to show you. This is a true story. This is a gentleman shot with a high-power rifle. I actually think it was an AR but I'm not quite sure, through the liver. And you can see that that liver is gone, right? Half of that right lower of the liver is simply not present any longer. Presents with massive hemorrhagic shock.

Rapid and anybody who's living in the trauma center will know how exactly how to dance this dance. Immediately intubated, massive transfusion protocols activated. We start the transfusion going. We go ahead and juice the MTP with PCC. There's some data out there that suggests if you were to give a one-to-one and add four-factor PCC on top you get more bang for your buck. So, we went all in on him, and on top of that we gave him tranexamic acid too. So, we took the kitchen sink at the hospital and just threw it at him. Why not? His liver's gone. We put a chest tube in this patient. He puts out 1,800 milliliters of blood instantly. That, as you may remember from your ATLS it's an immediate go for the OR. Now I'm getting all excited even up here right now. We're gone. So, we're in the OR, we're going to do a right thoracotomy, guess what? There's nothing there. That's disappointing. What we did find is a large hole in the diaphragm with blood just emanating up from the liver. So, we turn right around to an ex-lap on the spot, liver's toast. We pack the liver, send him to intervention radiology and embolize him. He does well. Wakes up, comes off the ventilator. Amazing, amazing.

However, he develops a dialysis-dependent renal failure. Can't say I'm surprised. He kind of skirted a death a few times. And on post update 11, he has a PE. Short of breath, the whole signs. We get a CT scan, sure enough, he's got a big old segmental PE. Not the world's most elegant decision. Some people decided to put him on apixaban. Never mind, he's on dialysis-dependent renal failure and his liver is toast. So up goes the apixaban and about two days later, out comes the hemorrhage. So, he goes right back into hemorrhagic shock. Mind you, by now, he is 13 days out from injury which goes to show you. So, the apixaban is stopped, give him some transfusions, get the CAT scan, send them to IR. You know how time is going by when you're having fun and the angiogram is negative cause he's actually oozing from the liver parenchyma. He's not having an arterial bleed he's having a parenchymal ooze. But significantly so. By the time that happens, he is more than 15 hours out from the stoppage of the DOAC. And the pharmacy says, "We're not going to give you Andexanet because you, Bob, are the gatekeeper. You wrote the protocol; you can't violate yourself." We then give the patient four-factor PCC based on the study I just told you and I can tell you today, honest true story. The bleeding stopped instantly. He immediately stopped bleeding. He just came right off a blood transfusion, did very well. Thankfully, he's home actually now, safe and sound. Believe it or not, his kidney actually came back which is remarkable onto itself. So, the point of that story is drug buildup, drug metabolism, delayed bleed. You will see these things in your emergency department, I think. Secondly, PCC does work. I'm not saying it's better than AA, but it surely is better than doing nothing, which is kind of what was happening while they were getting the CT scans and the angiograms.

Second patient, I'll show you and then we'll hopefully stop for the Q and A portion is a 74-year-old female. This may be a little bit more

relevant to the emergency medicine physicians in the room who do not work in a trauma center. This woman fell, presents the outside hospital, non-trauma center regular old ER complaining of obviously inability to walk, pain. You can see the broken tibia there. She's on apixaban for atrial fibrillation, has the usual new deal abbreviations of comorbid conditions. And we get a phone call saying, "Hey, can you accept her?" Of course, we're going to accept her. So, we all know that transfers don't occur instantly.

So, by the time they call the ambulance the ambulance shows up, hours are going by. We get a call back from the outside facility. The physician says, "Hey the leg is getting more and more swollen." Initially, when the patient arrived, I had an easily palpable dorsalis pedis posterior tibial pulse, I've lost my DP and the leg is getting more swollen. Okay, so now we're concerned that the DOAC is in fact working quite well. This person is at imminent risk for a compartment syndrome. We're looking at an amputation if we just wait long enough. So, we say, "Forget your ambulance we're going to send you, our ambulance." I tell the ambulance guys, haul it on diesel. Go there, pick her up. Bring them back right away. Rapidly bring them back to the ER at my hospital. But of course, time has gone by. Arrives and she arrives exactly as build. Awake, alert leg is completely swollen, no DP, but a PT, but a tense leg. So, what do you do? We get an arterial brachial, an ankle-brachial index at 0.6. Now, she's old. She's atherosclerotic. Are we going to say this is because you're old, atherosclerotic, diabetic? No, we're going to say this is because you're developing compartment syndrome. So, we're going to act on this information very quickly. And we went ahead and gave her Andexanet Alpha, took her to the operating room.

Two days later I told the ortho guys take it easy for just a couple of days let things settle out and then we'll take her to the OR. And you can see the picture here of the ORIF, she did very, very well. Was the Andexanet Alpha necessary? I don't know. I only know what I know. What would've happened had I not given her AA? Maybe she would've gotten a compartment syndrome and she would've ended up with an amputation. Maybe she wouldn't have. But I think in this instance, it was rapid, we saw the hematoma expanding. We saw a change in the physical exam. We acted on that information, reversed her. And then because I was concerned about the possibility of drug rebound and repeat bleeding and all that I asked the orthopedic surgeons just to kind of slow down for a sec, which they're more than happy to do. And we took her to the OR, and she did very, very well. I'll end with one last I'll end with one last little anecdote. A very, very good friend of mine who is an emergency medicine physician had a patient who fell and presented with, he was on Coumadin and presented with a gluteal contusion, really, not even a massive hematoma, but just a lot of ecchymosis around the buttock coming up the flank. And you know, my friend made the conscious decision to give him two units of FFP and some vitamin K, and that's it.

And I was like, you know we really probably should give this person four-factor PCC. And he was like, "Nah, you know what Bob? I just, I don't think it's necessary to bruise. I got a CT scan. There's nothing really bleeding. And you know, why you're blowing 4,000 bucks when you know, a little bit of vitamin K, and some FFP will cost you, what? 50, 100 bucks, 200 bucks." I was like, "Oh, okay. Well, you're my friend. I'm not going to say anything to you." That percent ended up in the operating room for a gluteal compartment syndrome. AVAC, multiple washouts. So, in our attempt to save two \$3,000 we actually spent well over a hundred thousand dollars, right? So, point being, don't worry about the cost of these medications, be more worried about the operative intervention that will be necessary if the person fails. And now we're going from four digits to six digits very quickly. That's it. Thank you for the opportunity.

**Announcer:**

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