

JOSE M. NIETO: I am a gastroenterologist at the Groover Clinic in Jacksonville, Florida. I want to talk to you today about AXIOS and basically how to approach it-- how to get everything ready prior to doing an actual procedure.

So you can see here we'll go over a brief introduction. I'm going to skip the definitions and the publications that have been put out. And the reason is that was covered in an earlier presentation.

But we'll concentrate more on the pre-procedure set up, what we do during the procedure, and what are the techniques when you get into trouble-- when you have problems deploying the AXIOS or there's an issue with the AXIOS. And then basically at the end we're going to show two cases. One's going to be a pseudocyst and one's going to be a walled-off approach with a necrosectomy.

So you know the acute pancreatitis 85% are interstitial acute pancreatitis. And 15% is necrotizing pancreatitis. And as we all know the [INAUDIBLE] criteria is what we're basically using. This was already presented, so I'm going to go ahead and just skip to the pre-procedure.

So what are the things that we need prior to getting-- you know, doing this procedure for either a necrotic pseudocyst with walled-off necrosis or just a pseudocyst? I would say anesthesia's part is extremely important. You need to instruct your anesthesiologist that there's a chance that these patients need to be intubated, especially if there's a lot-- a 20 centimeter cyst.

So you want to basically-- you don't want to deploy an AXIOS half over-- you know, a liter of necrotic fluid in the stomach, and the anesthesiologist is not going to be very happy with that. So for safety of the patients, you basically have to [INAUDIBLE] these patients and make sure that the anesthesiologist knows the patient will require general anaesthesia and intubation.

Nursing support. Nursing is extremely important as we will demonstrate during one of the procedures what your tech's responsibility is. And how important it is for them to have everything ready so you can make this an effective treatment and a very fast procedure. But you want to make sure that it's effective and safe.

And obviously we always need a surgeon as a back up. You never know when there could be a significant amount of [INAUDIBLE]. There could be, obviously, interventional radiology [INAUDIBLE]. There could be a pseudo-aneurysm that can burst. There's a lot of different surgical complication-- excuse me, complications that can occur. You may require a surgical back up. To this day I haven't had to send any patients to surgery, but you always want to have a surgeon on board when you're doing this procedure.

Fluoroscopy tech. It's extremely important to have an fluoroscopy tech. The majority of the cases that I'm currently doing with hot actions are not requiring fluoroscopy. But just in case for the first five cases you may want to consider having a-- you know, fluoroscopy during those procedures, as well as a wire-guided AXIOS.

So what's important? Obviously you want to know a patient's coagulations, INR, and basic laboratory. Radiology. There's CT and MRI, or some kind of imaging prior to the procedure so you understand that there isn't any splenic aneurysms or anything else you may be-- could potentially be missing.

IV antibiotics. I currently use either Cipro or [INAUDIBLE]. You all-- once you start the patient-- as you give it pre-operatively, you actually then give it for an extra seven days.

And most importantly these days is patient consent. You know explain to the patient what kind of procedure you're doing. If you're planning to do a necrosectomy, explain to them that you're going to be, you know, entering their pancreatic cyst. And also there's a potential for perforation-- very high risk for perforation. Although it's less likely, but patients need to understand this.

And also explain to them what, you know, in the future if you're going to have the stent removed, or they may require future necrosectomy, or future sessions. And obviously fluoroscopy is important as well, if necessary in some cases.

A linear therapeutic echoendoscope. An upper endoscope. If you're planning to do a necrosectomy you definitely want to go in to the pancreatic cyst and do your debridement. A 19 gauge needle and a long wire. I had this in red, because with a hot AXIOS after you get very proficient with it, you may not require a 19 gauge needle and a wire.

Some of the infectious disease physicians will want you to actually culture what's inside if it's an infected necrosis, so a culture-- a sterile culture tubes are extremely important.

Contrast. You know I was using contrast at one point in time. I currently don't use contrast. That's why it's in red. That was another one we were using the cold AXIOS.

A balloon dilator and a needle knife with a modified tip. That's if you're doing the cold AXIOS. We can actually pretty much skip that.

So what are our options? Now we're going to have to decide what we're going to use. 10 millimeter or 15 millimeter? I currently use a 10 millimeter AXIOS if it's just, you know, 80 plus percent pseudocyst. It's heavily fluid. They actually-- they-- once you deploy it, you pretty much get resolutions of the cyst. And we'll see a case just like that.

A 15 millimeter-- I try to keep those for the patients who have extensive walled-off necrosis, because you want to gain access. You want to do your first necrosectomy at site. Even at times I'd use-- if it's a very large walled-off necrosis and cyst, and it's extended into the duodenum, I will actually use a multi-port approach. I would enter the duodenum, as well I'll place one in the transgastric. To be able not only to do my debridement, but also to actually place a nasocystic tube after. Or, you know, have that flow of fluid through, especially with gravity pulling it down.

The solution that I use during necrosectomy is 20 ml's of hydrogen peroxide, and 40 ml's of sterile water. And I basically have-- my nurses pretty much have this already set up. And I pass it through the endoscope. And, you know, we'll see that example in one of my cases that I'm going to show.

Snares, baskets, and nets. I tend to use a cold snare. And I tend to use either a basket [INAUDIBLE] removing the large pieces. So I use this cold snare to just start cutting up the necrotic tissue. You'll see that in the video, as well.

A water pump is necessary at times, because it really helps you clear out the field. And sometimes it actually helps you-- you know, do the debridement in a much gentler approach.

Double pigtails. When do I-- when do we use double pigtails? You just put an AXIOS. Why use a double pigtail? Well, there's certain cases the necrosis is just so bad that you fear this necrosis is actually trying to migrate through and causes an obstruction of that-- of the AXIOS stent. So I tend to put in two double pigtails. That usually happens at the first, you know, deployment of the stent. The second round of necrosectomy should clear it pretty well enough that we don't require any more pigtails.

So what's the room set up? Patients-- I put the patient in the left lateral position. Intubation if required. And I use two monitors-- an endoscopic view and an EUS view. And I try to concentrate on the EUS view, because in some cases you cannot look for the black. You can't look as you're deploying-- you can't look for the black to deploy.

You actually can do everything under EUS guidance, especially when you're in a small space or there's a lot of necrotic tissue that's actually coming out, or even bleeding at times. And obviously for the hot AXIOS you want the patient grounded and ready to go. Maybe the modified special adapter.

Antibiotics for 10 days. Repeat necrosectomy within a week. So if they have a bad necrotic walled-off necrosis, I'd come-- I'd bring them back, or just go ahead and schedule them right away. Bring them back within a week. And I do my second procedure then. Most of the time I can actually get everything done in two sessions, especially if you do your initial session.

So imaging in one month. And stent removal anywhere between 15 to 60 days. Now I've had-- I've removed them as early as 10 days. And those are usually pseudocysts that I've just completely resolved. And I've done a few-- we're going to skip this video because this video has already been shown.

And we're now going to concentrate on-- [INAUDIBLE] this video right here. And if I can see the scope. And I'll stop the video through out. So right there-- so we just went in and punctured. Now we're using a 19 gauge needle. This is a cold AXIOS.

And after we [INAUDIBLE] the 19 gauge needle, we're going to pass our wire. We're then going to dilate. You can see the dilator right up here. So we can dilate our tracking and pass the AXIOS.

Now with hot AXIOS, we avoided doing a whole [INAUDIBLE] of things. The reason I'm showing this video is just to show the-- you know, basically you can pass-- there's a guide wire part to this. And in certain cases, you're going to want to actually do this, especially your first five cases.

So we passed-- let's say we're getting ready to approach. You're ready. You found your cyst. Your assistant hands you this. You know you selected either a 15 or a 10. You need to make sure very importantly that this is a hydrophilic catheter. That it's nice and wet so you can actually pass it very well down the scope.

So as it's being passed down the scope, your assistant is going to hold it until it actually reads-- reaches the knob and you're able to secure it in place. You always want it facing you. And from there-- now you have your position. You're ready to do your puncture. You ask them to make you hot. Obviously you are locked.

You test where you're at and you see your projections. You see the projection where it's going to. You pass it through. You never want to do it more than that. So there's a-- what's called a rule of thumb. You always want it no less than this. Then-- you know, your thumb. More than that you risk of actually deploying it within the track.

So you want to make sure that it's at least that deep. So basically about a centimeter is the most you have. Or if possible, all the way down. The second step is to lock it. OK?

Then we're get ready to deploy. There's yellow, safety, and remove up and down. You push it through. And I like to hold it like this. Very-- you know a lot of control. And slowly deploy it until you hear the click. This is where-- the image that we're currently on now.

One thing to understand is if it's a pseudocyst, it's going open up very quickly because it's just fluid. If it's a necrotic tissue, it's going to take it's time to slowly open up. So make sure that distal phalanges has opened up. Like it's blossomed like a rose.

Then you're going to make a decision once you've done this. Are you going to deploy this-- the other-- the second phalange? Are you going to do it under EUS guidance? Or are you going to do it just directly under endoscopic guidance?

So if you're going to do it under endoscopic guidance, the next step will be number three. So unlock, slowly retract. And also moving your scope back, visualizing the black. If you see the black, you lock your device, and you do the fourth step. So we'll go ahead with the video. And finish the part. So I'm slowly retracting back, as you see.

Here's the fluid collection. I have it-- set it right at the wall. You actually see this dome-like football. And then I deploy this. This one's actually being deployed under EUS guidance. As you can see here-- the next one's deployed under non-EUS guidance.

So under EUS guidance, you're making, basically, a football. You're pulling back. And you're actually doing number four-- the deployment inside the scope. And slowly pulling back as you're basically pushing the stent out into the lymph-- to the stomach or the duodenum.

Oh, sorry. That's a different video.

So the next case is going to be a walled-off necrosis. So again, very similar approach. As you can see here's a large necrotic cyst. We've looked at the cyst. We're in position. We're going to burn in this trajectory. So I've already set my trajectory. And I go as far as I can all the way down.

I'm going to deploy the distill phalange. And in this one I'm going to slowly pull back until I see the black. Once I see the black, I lock and I completely deploy. And as you can see there's a significant amount of necrotic tissue.

I'm going to-- it's a 15 millimeter, so I'm going to dilate to a 15-- with a 15 millimeter balloon. And then I'm going to enter the cyst right after with a standard upper endoscope. You can also use a pediatric colonoscope that has a water jet. And it has a better suctioning mechanism.

So this is-- it's already been pre-washed. I-- you know I already washed it with 20%-- I'm sorry. With 20 ml's of hydrogen peroxide and 40 of sterile water.

So the objective here when you do your first intervention is to try out this-- you know do your best necrosectomy as possible. Get as much tissue out as possible. I mean this is where the majority of the tissue is at. So I'm going to spend an extra 20, 30 minutes basically doing as much debridement as possible, and actually retracting this tissue.

So my technique is basically using a cold snare, cutting as much as I can. Just shaving it off as much as I can. Then using a, you know, regular basket-- a sewn extraction basket, and actually extracting the tissue through.

The good news is if you bring the patient back in a week later, or two weeks later, for their secondary [INAUDIBLE] by that time the fissure already has matured. And at that time, you can actually, you know, either push the stent inside the cyst or pull it out, and build directly. And it makes the tissue much easier to come out after that. But you need to make sure that you're going to finish off. You're not going to have any more necrosectomy sessions before you do that.

So what are the things that we-- did we run into? What are the potential mistakes that can occur? A potential-- one of the most common mistakes in the deployment is not having the trajectory. Not pushing out initially the AXIOS to see in what trajectory. So I'm going to go back to the same video.

And just stop it there.

I'm just going to stop it right there. See right here I'm measuring my trajectory. So I'm actually seeing exactly where it is up against the wall. And I know I'm going to go into this direction.

Sometimes you-- actually your angle could be in this direction. You don't want to deploy in this direction. This [INAUDIBLE]. Because you're going to have less than 4 centimeters in that trajectory. So for here to here I have about 8 centimeters. That's plenty of room for me to advance the AXIOS. So now I've actually localized it. I'm ready to go. I can see the tip. And I'm in.

So the other question I ask is, you know, regarding cautery. Do you look down? The first thing I do is I actually put my foot right between the yellow pad and the blue pad. I know that if you go to the left, it's yellow. I don't have to make the mistake of looking down. So I'm always looking at my EUS screen. And as I'm ready, you tap it, you're in, you let it go. You have your assistant remove the electrocautery device. And now you have your projection in all the way down you lock, and you're ready to deploy your first phalange.

Again one of the mistakes that's made is deploying in the wrong trajectory. You know, deploying it-- [INAUDIBLE]. So you need to make sure that you have at least five centimeters-- four or five centimeters of distance from the wall.

Here we're going to see the black. Once you see the black, you're safe. You can lock it right away and deploy, as you can see, very quickly. You follow up with the dilation.

Why is dilation so important? I'm just going to stop it right here. The reason that dilation is important is because this is a lumen opposing stent. When you actually dilate it, you're opening it up, and you're actually contracting. You know you're actually causing that-- the opposition of the wall of the stomach and the cyst. So you're actually making a tighter seal and actually creating that fissure a lot quicker.

Then you obviously-- you have access now to go directly into the cyst and do any type of therapeutic work that needs to be-- needs to be done.

You also have the ability-- here is another thing that could happen. What happens if you deploy the stent completely inside the cyst? You deploy it completely inside the cyst.

What do you do next? So although you may not be using a wire guided method, you still have access through a wire. You can actually pass a wire right through as you're-- remember, you're still inside-- the stent's a cavity. You just deployed it inside the cyst. You pass the wire through. You exchange to another AXIOS. You go down the same track and you place the stent correctly this time.

Now you have access to grip-- to grab that stent and pull it out. If you want the-- you know if you're kind of worried about dislodging that second stent, you can wait a week and then pull it out. But you need to make sure within a week you're back to pull out that stent that's inside the cavity. You don't want a free flowing stent in there.

What also happens if, you know, you deploy correctly and you're beside the cyst. You do as much of a necrosectomy as you can. But this is a very large cyst with significant amount of necrotic material that's actually coming up to the wall and actually causing a partial blockage. In those patients especially-- as you can see here, it's partially blocking. So if I don't do a very nice necrosectomy on my first stage, there's always that chance. And the patients represent with fevers and chills within a week.

This is just, again, reiterating the necrosectomy technique. There's different ways of doing it. And some physicians will like to wait a week later. I'm actually-- I feel that if-- the earlier the intervention, the better results you're going to get. And most importantly, you're going to be able to remove this stent as soon as possible.

I was going to go to previous-- to actually-- the previous slide to actually show-- I'm sorry.

The previous video to demonstrate the EUS guided method of deploying the AXIOS.

We're going to go-- we're just going to skip-- here is the AXIOS being deployed. As you can see here-- first of all it's made into a-- let me go back so I can go step by step.

So the first thing you want to do is you want to create this football. OK. As you create this football against the wall, the next stent is actually pretty easy. It's slowly deploying the fourth step, which is-- it's a philange.

So this philange is going to be deployed inside your scope. So as you can see there it's slowly being deployed. You can see the wall right here. And then it's pushed out. So causing that opposition. And that's done inside the scope. And then here's-- after you've deployed inside your scope, you're just using the number three to kind of slowly push it away from the scope into the lumen. Sorry about that.

So any questions regarding methods, or any type of complications that can arise? And you know-- can you do two actions at the same time? Actually that's more for the larger cysts. The ones that are 20 plus centimeters, or extending down into the duodenum.

So another big topic that a lot of people have-- I've been getting a lot of questions about is, when do you remove the stent? So when do you remove it? So let me give you a perfect example of a case I had last week.

It was a girl that had a biliary pancreatitis. I had a pretty significant cyst on it. Six-- almost six by eight centimeter cyst, and a 10 millimeter AXIOS. The reason I did a 10 was because it was completely-- it was a true pseudocyst. There was very little necrotic tissue.

When inside, did a very small debridement. It was small tissue. Within-- in front of my eyes it actually completely collapsed. So as soon as I was done with the procedure, the cyst had completely collapsed. So it pretty much has resolved.

I kept it there for a week. Brought her back a week later-- about 10 days later. And it had completely collapsed under EUS, and it completely resolved.

So what do you do? Do you keep it for another three weeks? Or do you remove it at that point in time? What would-- you know basically I removed it, and did extremely well. So once there's resolution, my recommendation is that you remove it. Usually you want to wait at least 10 days, but you're able to remove it.

And now start letting these cysts-- these the AXIOS stay in for a longer time there's always the risk of it collapsing and actually penetrating through the other side of the wall. So you don't want to leave these AXIOS stents in for six months. There's no reason why you're really going to leave them in that long.

So it's extremely important that you bring that patient back for a necrosectomy right away. If a necrosectomy is not required, and the fissure resolves, bring them in, again, right away and remove the stent. So you have to-- you know you can get a CAT scan prior to your next EUS with removal. But it's extremely important that we don't leave these in too long. OK.

So look for resolution, that's the key. Resolution of either the walled-off necrosis or resolution of the pseudocyst for removal of the stent. Any other questions or-- no. All right. Yes?

AUDIENCE: And how to remove the stent? Do you have the experience of stent migration?

JOSE M. NIETO: Yes, great question. I'm glad you asked it. You actually help my presentation, because that's a key point that I needed to explain. So how do you remove the stent?

So well there's basically two ways of doing it. Once you approach the stent, you can actually just put a snare around it. And actually grasp it, you know, behind the cuff and just time that interlumen and you'll see it nice and tight. So looks kind of like a barbell. Like you're do like a biceps curl. And you just slightly pull it out.

And it will-- slightly-- it will put out very easy without an issues. There's very low risk of bleeding or any injury-- or any other problems. It's a fibrotic tract with very little vascularity. So it will be very easy to remove. You can also use a [INAUDIBLE] forceps. Just grab it and pull it out as well. So that's actually very simple to do.

But let's just talk about-- actually this has happened to me three times. And I should probably have a video on it, but you just can never predict it. Is when you get overgrowth of the tissue and all you have is just a small little orifice. So what do you do?

What you basically do is you find it, you pass it-- with EUS you can find it. You can actually pass a wire through a stent and then you dilate it. If it's a 10, you dilate it a 12. If it's a 15, you can dilate it to 17 or 18. So you're passing a wire through that you're dilating. You're using an esophageal dilating balloon, or your 10 mil-- [INAUDIBLE] to 12 millimeters, or 16, or 18, whatever you like to use. But what that basically does is it opens up the track.

Now once you open up the track, you get a forward viewing endoscope. You go into the stent. You get the distal philange. You grasp it with a [INAUDIBLE], and you pull it out inverted. And it comes out beautifully. 100% success.

And when I-- that when-- the first time that happened to me, happened to me in 2012 when I was part of the cold AXIOS trial. And when I was able to remove that, I said, you know, the key thing is if the worst thing that can happen to a stent, you can fix it, then this is a good product.

And any time that's happened, I'm not worried, because I know that I can take care of it. And even if it's completely occluded, you can still under EUS find the stent-- under EUS-- and actually puncture through, pass your wire, do your dilation, and remove your stent with the technique that we described. So thank you for that question-- that excellent question. Any other questions?

Thank you very much.