

**LAPAROSCOPIC ADJUSTABLE GASTRIC BANDING FOR THE OBESE TEENAGER  
MORGAN STANLEY CHILDREN'S HOSPITAL OF NEW YORK-PRESBYTERIAN  
NEW YORK, NY  
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00:00:01

STEVEN ROTHENBERG, MD: Hello, I'm Dr. Steven Rothenburg, and we're here today at the Morgan Stanley Children's Hospital at Columbia Presbyterian Medical Center in New York City to watch the performance of a bariatric case in an adolescent female. This'll be an example of a placement of a laparoscopic band for morbid obesity. Our host and surgeon this morning is Dr. Jeff Zitsman, who is the director of the adolescent bariatric program at the Morgan Stanley Children's Hospital. I'd like to turn it over to Dr. Zitsman now to give us a brief description of the patient and the indications for the surgery. Dr. Zitsman?

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JEFF ZITSMAN, MD: Thanks, Steve. Our patient today is a 16-year-old who has suffered from obesity since about age 6. Starting about five years ago, she began going through a variety of treatments, including some of the commercial programs [ drop ] Weight loss camp, which interestingly enough was the only place where she was able to lose weight. She could lose 20 to 25 pounds per summer, but once she left that environment and came back home, she would, as many kids do, invariably gain the weight. So she came to us having really exhausted all the standard possibilities of trying to lose weight and not being successful. She went through our program, and if we have time, we can talk a little bit about what that involves. But basically assessing her, what she had done, the criteria that she met for banding. Our team decided that she was a good candidate, the family was eager to proceed, and so here we are today. We started the case by putting the ports in to save a little bit of time, and we can show you where they are and the order in which we put them in.

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STEVEN ROTHENBERG, MD: If we can go to a [ drop ] we can show the ports as they are in place. Again, the ports have already been placed to save a little bit on the broadcast time, but we'll go through those with you. We need to aim the overhead camera. If you can put the surgical light on, please. Can we have [ drop ] one of the monitors? Okay, here we -- there we go. We have a little bit of glare, maybe we can turn -- there we go. Okay. So, Jeff, maybe you can just run through us the port placement and the order in which you put them in.

00:02:45

JEFF ZITSMAN, MD: Okay. Her navel is here. And superiorly, her head is up in that direction. [ drop ] put in is a clear port. We insert this with a zero-degree five millimeter scope and go directly into the abdomen. We try to keep the port at a [ drop ] angle to the patient because it's the minimum amount of tissue that the port will go through and reduce the torque.

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STEVEN ROTHENBERG, MD: Is that right on her costal margin?

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JEFF ZITSMAN, MD: It's about a centimeter below the costal margin. I'm sorry, about a fingerbreadth below the costal margin area. And it's located pretty much in the mid-clavicular line.

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STEVEN ROTHENBERG, MD: And so that's put in with an optical -- that's an optical port?

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JEFF ZITSMAN, MD: That's an optical port and a zero-degree lens. We then insufflate. We feel usually through between 15 and 20 millimeters of mercury, depending upon what we need. She's at 15 today. That gave us adequate exposure. We then switched over to a 30-degree five millimeter scope for the second port. Now with her insufflated, we don't make the marks on the skin ahead of time, because once we put gas in the abdomen, it changes the position externally. So our second port was a port that we've screwed in over here. This is a reusable port, and we screw this in with the valve open. It's closed at this time, but we leave the valve open. That way we both have visual and auditory confirmation when we're in, because of course you've got a rush of gas coming out.

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STEVEN ROTHENBERG, MD: And that's a five millimeter port?

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JEFF ZITSMAN, MD: That also is a five millimeter port. The third site is actually not a port but it's placement of the Nathanson liver retractor. This is a curved retractor that goes in, and when we show you the inside shots, you'll see how it fits up under the left lobe of the liver and exposes the esophagogastric junction.

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STEVEN ROTHENBERG, MD: And how do you mark the site for that port? How do you determine where it should be?

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JEFF ZITSMAN, MD: That's generally placed to the left of the midline, and it's above the level where the other two are. Where I look is really to see where the anterior edge of the liver is and try to stay at or just above that. If you put it too far up, then you really won't get a good angle and it'll be very hard to fix the port. You can see the apparatus to which it's fixed here, and that's attached to the table before we start the case, the bar down there is. So that's our third site. Now we have the liver up out of the way. We have to put a port in, an injection port, for the band, so we make our incision for that here just off the midline. I've made it a variety of places, sometimes just to the right of the midline, sometimes bridging the midline. And then using a 15-millimeter port, we angle that slightly upward and go into the abdomen, and that's done under direct vision. The location of that is at or below the line that you can draw between these two ports.

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STEVEN ROTHENBERG, MD: And you use a 15 because that's what you need to get in the band?

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JEFF ZITSMAN, MD: That's right. That's right. And the final port is off to the side. This is primarily a retracting port. Again, this is one of the reusable screw-in ports, also five millimeters, that we put in, and that gives us our setup so that we can proceed. Sometimes you'll get a little bit of bleeding at the skin level. That usually stops. Sometimes you'll get a little bit of bleeding at the peritoneal level, that also usually stops. We always look, of course, when we take the ports out, but it's very rarely a problem. So I think if we can now switch to the inside, we can go ahead and start the dissection.

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STEVEN ROTHENBERG, MD: So you're -- you start -- you're operating through the epigastric in the right upper-quadrant port?

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JEFF ZITSMAN, MD: That's correct. The -- the epigastric, or the -- we generally call it the port port or the 15-millimeter site would be the one. Let's just back off and show the Nathanson retractor and how it's positioned. It comes in -- one of the things about the Nathanson, you can hopefully see the curve of it, we'll get the camera cleaned up here in just a second, but it comes in, curves -- curves underneath the left lobe of the liver and holds it up. It's important not to put that under too much pressure because you can damage the liver doing that and also -- let's screen left a little bit. You can see, there's a little bit of congestion in the liver, but that's going to be okay. Let's -- and now let's screen right. You want to keep it out of the cleft because it can slice through the liver at that point, too. If you'll notice, her liver shows some signs of fatty infiltration, but it's a relatively -- it's a relatively friendly liver as far as this surgery goes. It's not terribly engorged, it's not massive, and it's fairly easy to get out of the way. So at this point, we'll go ahead and start our dissection.

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STEVEN ROTHENBERG, MD: Jason, yeah, can you just maybe touch the liver? Sometimes that'll... still a little foggy. If we -- if we can clean that real quick, just so we want to give you a good view as we start the dissection.

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JEFF ZITSMAN, MD: And we'll go back and we'll keep an eye on the liver from time to time, just to make sure that nothing's changed. [ drop ] -- is that we want to expose the crus on the left side. So Artella's going to grasp the stomach and bring it downward.

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STEVEN ROTHENBERG, MD: So the assistant is working through the left-most port.

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JEFF ZITSMAN, MD: He's working through the most lateral port. And here we have the fat pad over the stomach. We want to assess that. You can see there's not too much fat, so I don't think we're going to have to take too much of it. And looking at this, it's not a bad time to decide what size band you're going to use. She's relatively small, so I've asked the nurse to prepare a 10-millimeter -- or correction, a 10 -- size 10 band for her. And I'm going to begin by opening using a hook cautery.

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STEVEN ROTHENBERG, MD: And do you always use hook cautery for this maneuver?

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JEFF ZITSMAN, MD: Usually a hook cautery. Occasionally use the LigaSure. The hook cautery seems to be -- it has the geometry and it's flexible enough that you can get it into areas where you need to do the dissection. So we're not interested in taking a lot of this tissue. And if you follow this fat, it will lead you down to the crus, and that's really where we want to be. So once this area's open, I just want to make a little bit of space down here. Some people do quite a bit of dissection down here, and there are actually some instruments that will hook around behind the stomach.

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STEVEN ROTHENBERG, MD: Is it true with the band that if you do too much dissection, you can increase the risk of slippage?

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JEFF ZITSMAN, MD: Yeah. And in part, the reason for that is that the more you mobilize, the more can herniate. So we want to get a pretty good view of the diaphragm here and just be able to see where we're going to be coming through.

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STEVEN ROTHENBERG, MD: So as opposed to an anti-reflux procedure, you're well above the short gastrics and don't want to be down there.

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JEFF ZITSMAN, MD: We want to leave them alone and just want this space here where we can see the muscle back in this area. And this is really about what you need to do. You can always do a little bit more if you have to, but that's basically about it for that side. I don't think we're going to have to do much with this fat, but I'm going to remove a little bit of it anyway just so it gives us a clearer view when we go to put in the fixing sutures.

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STEVEN ROTHENBERG, MD: So Dr. Zitsman has actually created a fairly small window. It's probably two to three centimeters in length just to try and help identify the left crus.

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JEFF ZITSMAN, MD: The next part of the dissection is going to be on the opposite side, and so now Dr. Fischer will pull down to open this area up.

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STEVEN ROTHENBERG, MD: So again, the retraction you're seeing going laterally is being done by the assistant who's also running the camera.

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JEFF ZITSMAN, MD: So we want to open up the gastrohepatic ligament here and give ourselves enough space to work. This bare area is pretty safe and the vessel is -- the left gastrics is often quite variable. Sometimes it'll be coming right across like this. We've also had cases where it's coming down and branching across. And other times where it's not in the field at all. And you can use hook cautery for this, you can use the LigaSure, Harmonic scalpel if you want. And now we're looking to, on this side, find the same. So I'm seeing a vessel here, and...

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STEVEN ROTHENBERG, MD: There are often vagal fibers crossing. I think we see some right there. Do you usually preserve those?

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JEFF ZITSMAN, MD: We try to leave them alone. So looking back in this area here, we're back, I believe, on muscle back here. And so what I'll do -- here's the vessel, of course, crossing down there -- is just try to make a small opening in this area, fairly low down.

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STEVEN ROTHENBERG, MD: So as we can see, he's dissecting directly on the right crus. Now this patient is on a specially made table?

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JEFF ZITSMAN, MD: This patient is actually not on a table. So here I've started to make a little window back in here. Some people will make this more of a dissection. I generally don't. That in some ways makes it a little bit more difficult going through, and the argument in favor of doing that is the more you see, the safer it should be. But in part, a large part of this dissection is by feel, so I think we have the crus identified here, and so using my left hand, that is the grasper that's coming in from the port on the right side, I'm going to see if I can find the passageway behind the stomach -- not behind the esophagus, but behind the stomach -- over to where we just were. And this should fit through with no resistance. People describe it as like passing a warm knife through butter.

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STEVEN ROTHENBERG, MD: Do you have anything in the esophagus?

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JEFF ZITSMAN, MD: We have an 18 SALEM SUMP. Some people put bougies in. And I'm meeting a little bit of resistance, which tells me that I'm not quite in the right place yet. So, Jason, let's come back a little bit.

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STEVEN ROTHENBERG, MD: Generally you find it not necessary to put a bougie in?

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JEFF ZITSMAN, MD: Usually the SALEM SUMP has been adequate. Okay, so I slipped into a space where it just sort of fell in. I think I was just a little bit too anterior. Sorry. So now we're going to look for the instrument on this side.

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STEVEN ROTHENBERG, MD: And this is totally a blunt dissection once you make your openings.

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JEFF ZITSMAN, MD: This is totally blunt. And now you can see -- and you have to be very careful here, you have to see the instrument well because that's one of the hazardous parts of the case. You can go through the back wall of the stomach here and not realize it. And so if there's any resistance, you're in the wrong place. You can also go too far north and wind up in the chest. I'm just getting a little bit of adventitial tissue on the instrument itself, but we're through and it's in the proper space. We're just caught in the blades.

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STEVEN ROTHENBERG, MD: Some people will talk about using some sort of articulating instrument that will actually curve and go behind the stomach, but you don't find that necessary to --

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JEFF ZITSMAN, MD: I haven't been using that. Now at this point, we're going to put the band in.

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STEVEN ROTHENBERG, MD: And again, can you tell us a little bit about how you chose the size of the band.

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JEFF ZITSMAN, MD: [ drop ] -- what I estimated the size of the esophagus to be. And [ drop ] this young lady, even though her body-mass index is almost --

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STEVEN ROTHENBERG, MD: Before you put that in, can we just get an overhead shot of showing how you set up the band to go in the port. All right, great. [ drop ] okay, thank you. Yeah, I think we're good.

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JEFF ZITSMAN, MD: Okay, so the band -- the band tubing is filled with saline, and then this grasping end tip is put on the end of it. That just makes [ drop ]. And since the band tubing is filled with saline, the balloon on the inside is filled and then emptied to get all the air out. We put this on the end so that whatever residual fluid is in doesn't continue to leak out as we're doing it. So the band goes in the 15-millimeter port. I chose this, as I was saying, primarily based on her size. The bands come in three different sizes at this point, and for a relatively small-bodied patient, particularly the female patients, the tens seem to be adequate. I think one of the advantages of a ten is that it requires less fluid in order to fill. One of the disadvantages is that it's smaller, and so it's a tighter band, and at least in theory can cause problems in terms of eroding into the stomach if it's too tight.

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STEVEN ROTHENBERG, MD: What are the other sizes, the other two sizes?

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JEFF ZITSMAN, MD: There's a band called VG and then there's a new band which I've not used yet called an AP band that has a balloon that goes 360 degrees around. So I've brought the band behind the upper part of the stomach here, and now, if you can screen over this way, Jason.

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STEVEN ROTHENBERG, MD: I think we can see that slid behind relatively easily, showing that there was -- there was free passage and that diminishes the risk of any injury to the stomach.

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JEFF ZITSMAN, MD: And so at this point, we just bring the band around. And it tends to -- it tends to position itself pretty well in place. That looks like it's going to be an adequate size, so I'm pulling up on the band. And where it often gets hung up is this little shoulder right here, so what's sometimes helpful is to take the open instrument and just use that to just slip it around, and now the band's around. I think I'm stuck. Of course, you can go too far and pull the band around completely, which you don't want to do. So now I'm going to hold this end and we're going to find the tip. Okay, so that's down this way. Grab -- go on the other side. Swing around to the other side, because I think we're going to be a little... Okay, you want to check and be sure that you're not inadvertently putting a knot in. The way the band is constructed, and this becomes evident when you see the band in a case...

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STEVEN ROTHENBERG, MD: We've got a little bit of fog on the screen. I don't know if we can -- maybe we could clear that up before you pass that, Jeff. I'm sorry. That's better, thank you. So now you're trying to pass the end of the strap --

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JEFF ZITSMAN, MD: Right, we feed it through this opening. I may not have left myself -- let me -- Jason, grab a little bit behind, and I'll give myself a little more room to do it.

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STEVEN ROTHENBERG, MD: Okay. So what we're trying to do now is to secure the band through the -- through the opening, and this will set up the circumferential function of the band.

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JEFF ZITSMAN, MD: There's a locking apparatus on the band itself. So what we've done now is that. And it's also important when you're doing this to have instruments that don't slip very much. And people have their preferences as far as the instrument. I'm using here in my left hand, holding on to the band itself, a fenestrated grasper which has a pretty good grip on it.

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STEVEN ROTHENBERG, MD: Are there certain parts of the band that you don't want to grasp in concern of rupturing the balloon or rupturing the tubing?

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JEFF ZITSMAN, MD: Well, I think you can -- you can break them down into three areas. There are areas that you can grab virtually at will, those that you can grab but you want to be careful, and those that you don't want to touch at all. This sort of very firm reinforced port right here -- or this cone right here, I should say, you can grab and hold on to, and you have to because it's tough to manipulate otherwise. The same thing with the part of the handle that I'm holding here. The tubing you want to be very careful with. And the inside of the balloon, as you were suggesting, you want to stay away from because you can rupture that and then you have an ineffective part. So here I'm pulling and pushing to lock this into place, and you can see now the band is locked in position.

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STEVEN ROTHENBERG, MD: So there's just a single lock, if you will. It's not a step-wise progression.

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JEFF ZITSMAN, MD: No, just a single pulling in opposite directions with the loop in place. And then I want to bring the buckle, which is what we just created, over to this side so that it's out of the way. And that band looks to be in pretty good position.

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STEVEN ROTHENBERG, MD: And how do you assess that? What are you trying to look for to determine whether or not the band sits too high or too low?

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JEFF ZITSMAN, MD: I'm looking at a couple of things. I'm looking at, number one, where we went through, because that's really a set of landmarks that guide you. It's very hard, for me anyway, to get a sense of orientation to -- to the world as far as the angle of the band. You want the band to be somewhere 30, 40 degrees relative to the spine on an x-ray, angling up towards the left shoulder. I think 55 may be about the tops. If it's down in the 5, then the band is probably not in the best position. I also see it's in, I think, a good position because we have a little bit of space underneath it, so it's not too tight. A very large patient with a lot of stomach, it may be very tight, and that would be a patient who, if I were anticipating that might be the problem, I would put in one of the two bigger bands. The next step is we want to make sure that the band not just stays in place but that the stomach doesn't herniated either under the band, which this is going to want to tend to do, or behind the band. And the way that we do that is by putting in sutures to hold the band in place. There are a variety of ways to do that. It can be done with free suture, it can be done with -- that are tied internally, sutures that are tied externally. And it can also be done with clips. We have been using the ENDO STITCH. That's what we're going to use today. So if we can load that up.

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STEVEN ROTHENBERG, MD: Can you just give us an idea about where the GE junction is just so people can have a little bit better idea of the orientation?

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JEFF ZITSMAN, MD: We haven't dissected it, but the GE junction is probably right about here. So the pouch that we're making is going to hold maybe three ounces. And that'll be sufficient for her to feel very full very quickly. When we put the first stitches in, we want to make sure that we get way over on the side, because there's a lot of stomach over here, and that can herniate up, so we really want to get a good view and look way in the back over there.

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STEVEN ROTHENBERG, MD: So you're trying to create a pouch that's up to 90 cc's?

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JEFF ZITSMAN, MD: Three to four ounces is about the maximum pouch. They look a lot smaller, but the stomach is a very distensible organ, so it's going to get bigger. This is the ENDO STITCH. You can put these in and do interrupted [ drop ] -- put these in and do, as you can with any sort of stitch for this purpose, you can put these in [ drop ] -- running sutures. I like interrupted better. Just a personal preference.

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STEVEN ROTHENBERG, MD: So this is a -- basically a 10-millimeter suture assist device.

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JEFF ZITSMAN, MD: Right, it's sort of a mini sewing machine, for anybody who's not familiar with it. It has a needle whose action can be switched from side to side, and

I'm doing that here at the handle. And I'm going to try to get this as far back as I can, so if we can come all the way back in here.

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STEVEN ROTHENBERG, MD: So this looks to be near the apex of the greater curvature.

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JEFF ZITSMAN, MD: Right. So I'm going to take a bite here.

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STEVEN ROTHENBERG, MD: And I think you can see that most of the attachments of the stomach are still in place. Most of the phrenoesophageal ligament is in place.

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JEFF ZITSMAN, MD: Reach over and just pull down on the band towards the right lower quadrant. I've asked my assistant to pull the band towards the right lower quadrant, and that'll bring over this area. Here's the fat pad where we began the dissection, but I don't want to get fat alone, because that certainly won't hold anything. I want to make sure that I have stomach. So...

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STEVEN ROTHENBERG, MD: So again, this is to create a almost wrap of stomach around the band to prevent slippage and herniation of the stomach up through the band.

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JEFF ZITSMAN, MD: And it looks like we have some there. Okay.

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STEVEN ROTHENBERG, MD: Is that the biggest complication in this procedure afterwards, is herniation of the --

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JEFF ZITSMAN, MD: Well, the biggest complication is actually vomiting, and that's not a complication of the surgery itself per se, but I tell the patients that according to the numbers, about 50% of the patients who have had bands put in are going to have vomiting. I may have to switch to a different instrument. This one seems to be slipping. Do you have the --

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STEVEN ROTHENBERG, MD: So you'll put in four to five of these stitches?

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JEFF ZITSMAN, MD: Four to five. Again, it's mostly just to protect this area so that the band doesn't have much room to move out of the way. The problem -- this is a polyester-coated suture, and while it slips in nicely, it also slips through the instrument sometimes nicely. So I've switched over to one that I think will be a little bit easier to manipulate.

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STEVEN ROTHENBERG, MD: So one thing we didn't talk about at the beginning was sort of the patient positioning. And this patient is in a relatively steep reverse Trendelenburg, which helps with sort of passive retraction of the intestines and the stomach with gravity. Also of note is there's a foot board on the end of the table to help keep the patient from [ drop ] down on the table, which can be quite a problem. Do you always perform these procedures from the patient's right side?

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JEFF ZITSMAN, MD: I've done them from the right side and I've done them with the patient in lithotomy position. [ drop ] I have done more of them standing on the patient's right side. Can we have the scissors? And I've just become more comfortable with that, but I think the sewing is actually easier standing between the patient's leg with them in the lithotomy position, but -- let's get this one, too -- but I just -- I'm concerned about having a patient who has big heavy legs necessarily

being in lithotomy for any period of time. The cases generally run, in my hands, between an hour and an hour and a half, and while certainly they're padded and everything is protected, it just seems to me potentially a little more hazardous to have them in that position than to have them down like this. I don't think either one is particularly hard. As you've so often pointed out, the most important thing is port placement, and getting the ports in the right position is really essential. One of the things that we've decided to do here is to make sure that whoever's going to be doing these procedures -- and at this point, I'm the only one who's doing these operations in adolescents -- is well proctored in how they're -- how they're doing these. [ drop ] -- a lot of expertise. Many people who are going to be doing bariatric surgery are doing so after having done -- if you can pull down on the band, Jason -- after having done a laparoscopic fellowship. And I didn't do a laparoscopic fellowship. I'm a pediatric surgeon who has done a lot of laparoscopy, but that's been on the job training over a period of years. And so for quality and patient safety, we just thought it would be -- it would be better -- let's go over the band -- it would be better that I be proctored not the standard two times but we decided that the first 25 cases that we did, I would do with one of our bariatric surgeons. And so the benefit of that is, with any training program, is that I've seen a number of different ways to do this.

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STEVEN ROTHENBERG, MD: I know certainly in our adult program back home, they'll often set up six to eight of these in a day. What do you think the advantages are of doing a band as opposed to a bypass procedure?

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JEFF ZITSMAN, MD: Well, I think that a band procedure, it -- I think that the literature shows that people lose weight with each one. The standard dialogue is that patients who have bypass operations lose the weight more quickly. Patients with bands do so more slowly, but at about three years, the numbers are pretty much the same.

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STEVEN ROTHENBERG, MD: Certainly the -- the morbidity from the band would seem to be much less than that associated with bypass.

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JEFF ZITSMAN, MD: Right. And so, just continuing on with that thought, with patients who are having bypass, there is much greater morbidity with the operation. The potential for complications is higher and the -- and the morbidity is real with that operation. Numbers quoted as high as .5-1%. But in spite of that, what concerns me more is that the patients we're operating on still have developing bodies, and every patient who has a bypass operation, whether it's a gastric bypass or a duodenal switch, has some degree of malnutrition and they have to be on nutritional supplements for the rest of their lives. And a lot of the complications that occur are nutritional complications. So I'm just concerned that if we subject patients who are growing to nutritional -- potential nutritional hazards, then that may not be such a good thing. There are very few nutritional complications with -- with the band. Certainly if somebody eats a diet that's a screwy diet, somebody eats nothing but celery, they're going to wind up with nutritional deficiencies anyway. But if you eat a regular diet and you have a band in place, then the likelihood of having a nutritional problem is very small. I'm going to put a couple more stitches in and maybe Dr. Kubaky (sp?) would like to talk a little bit about -- Tatiana, what are some of the -- some of the concerns that you have as an anesthesiologist regarding the patients, their preparation and issues that might be germane post-op?

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TATIANA KUBAKY, MD: Well, this type of -- this group of patients, [ drop ] have a pretty severe disease, obesity per se. And it usually comes with quite a few

comorbidities, some other diseases that are precipitated by obesity. So we have a special approach for this patient, and we usually see them all somewhere in between one or four weeks before the surgical date so we can focus on their comorbidities, identify any potential problems which can make the perioperative period more complicated. And hopefully if there's something we can optimize and make it better before the surgical date, we try to deal with that.

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JEFF ZITSMAN, MD: Are there things you do in the operating room that are different or special because of somebody's size?

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TATIANA KUBAKY, MD: Well, we do have a specially designed protocol, which basically means the approach to the airway and also the medications that we use for anesthesia per se which help us to wake these patients faster and make their recovery a little bit faster and make them comfortable. There are potential problems which we have to address before the patient even wakes up, like postoperative nausea or vomiting, so we have a specially sort of designed protocol for that. And postoperative pain as well as potential DVTs, deep vein thrombosis, and pulmonary embolism.

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JEFF ZITSMAN, MD: Do they have much in the way of pain postoperatively?

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TATIANA KUBAKY, MD: They usually -- the pain ranges from almost nothing, very mild, to moderate. And the way we usually approach it is by giving them intravenous patient-controlled analgesia when the patients can actually be in charge of their own pain medications.

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JEFF ZITSMAN, MD: I should mention that we use a lot of Bupivacaine in the course of the procedures.

00:39:32

STEVEN ROTHENBERG, MD: What is the sort of standard postoperative course of these patients?

00:39:38

JEFF ZITSMAN, MD: [ drop ] Patients go initially to the recovery room, or the PACU. And from there, once they're stable, they're transferred over to a monitored room. We probably don't have [ drop] but it's just because -- because of the protocols that we're doing and because we want to make sure we have as high a nursing ratio as we can. They don't require an ICU. They'll go there -- the evening of surgery, they're out of bed. They've usually started sips of liquids by then. Pain generally decreases dramatically overnight, and most of the kids are pretty comfortable by the morning. We get a barium swallow the next day, looking both at the position of the band and making sure that they can drink without any problems. Here I'm keeping the buckle over on this [ drop ]. Maybe two more stitches to finish this up and we should be okay. Tatiana, have you had problems with kids having sleep apnea issues afterwards?

00:41:00

TATIANA KUBAKY, MD: A lot of patients -- a lot of morbidly obese patients do have sleep apnea, and we [ drop ] address it in a way by referring them for the sleep study so we can assess the severity of sleep apnea and also when they go for sleep studies, they also have an opportunity to get a CPAP hydration. So if they need palliative-pressure treatments during the night for their sleep apnea, it can be -- the amount of palliative pressure can be measured to the best benefit of the patient. So and it basically helps us a lot with their postoperative management because if a patient has severe sleep apnea, we do know that and we fully prepare to treat sleep

apnea, which can potentially can become very bad or worse or cause airway obstruction or even some serious complications, like cardiac arrhythmias if the patients develop airway obstruction after the surgery. So we usually prepare a recommended amount of CPAP or palliative pressure treatments for them in the recovery room. The other issue with obstructive sleep apnea which we see very often is also that if it's a longstanding disease, it can lead to cardiac problems, like right-heart hypertrophy and even pulmonary hypertension. So one of the parts of our preoperative evaluations if the patient has severe or moderate sleep apnea, we do ask them to visit the cardiologist and get an echo done, a cardiac echo done, so we can see whether there's any finds of pulmonary hypertension or right-heart hypertrophy. And again, we'll -- because of that, we can change our anesthetics appropriately. And as well as postoperative care and the monitoring.

00:43:15

JEFF ZITSMAN, MD: Okay. I think this is probably fine as far as the band. I don't think the band is going to go anywhere. I'm going to take [ drop ] here just because this area could slide up and I want to secure that more in place.

00:43:33

STEVEN ROTHENBERG, MD: So this stitch is more to prevent herniation than slippage of the band.

00:43:36

JEFF ZITSMAN, MD: That's right.

00:43:38

STEVEN ROTHENBERG, MD: Jeff, maybe while you're doing this, maybe you can just tell us a little bit about what your selection criteria are in the program that these kids have to go through before you'll perform a band or other bariatric procedure on them.

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JEFF ZITSMAN, MD: The patients come from two sources. We get patients who are self-referred and we get patients who are referred [ drop ]. Generally they'll be screened by telephone, and our office manager will ask a number of questions regarding their size, weight loss programs, and that sort of thing. We're approved to put bands in patients between the ages of 14 and 17 under an FDA protocol. And of course, 18 and above is approved for standard use. We use the same criteria that's used for adult patients, which is somebody with a body mass index of 40 or greater or somebody who has a body mass index greater than 35 with associated comorbid conditions such as diabetes, hypertension, polycystic ovary syndrome, sleep apnea, things like that. They have to have been in some type of weight loss program for a minimum of six months and they have to have had longstanding obesity. [ drop ] -- four years. We also are not encouraged to have anybody who has major psychiatric illness, and by that, I'm talking about somebody who's schizophrenic or psychotic who really can't participate in the decision-making that's important in having success with the band. The initial pathway is people will come in and they'll meet with our program director, Maryanne Witt, who's a nurse practitioner and they'll meet with me. We'll do interviews and discuss the program with them. If it turns out that somebody is appropriate for the procedure, then we'll -- we'll enter them into the program. They'll see six people altogether: they'll see the medical director, who is a pediatric endocrinologist, they'll see our psychiatric [ drop ], they'll undergo exercise physiology testing and probably most important of all, they'll meet with our nutritionist. Every one of those people will do an interview, they'll do specific testing. We've got a whole battery of tests on these patients to see how they -- how they do. And we collect a lot of data. [ drop ] -- who have -- let me just -- just move over just a -- I just want to show the final position of the band and how we've secured it. Fairly narrow space behind, a small pouch above, relatively bloodless operation. Most

of the bleeding that you see is from port sites. And so now, just to jump -- the next step of the procedure is we're going to be bringing the tubing out and then securing that to the port. That's going to be done on the outside. I'll need that other port.

00:47:18

STEVEN ROTHENBERG, MD: So you're going to bring the tubing out through your 15-millimeter --

00:47:21

JEFF ZITSMAN, MD: I was doing that, and then one of my colleagues showed me a technique whereby we put in [ drop ] -- we put in a five millimeter port, so we're actually not bringing it out through the same hole, theoretically to prevent any herniation around the site, because herniation is a -- is a real problem in bariatric operations, particularly -- if you can look up this way.

00:47:48

STEVEN ROTHENBERG, MD: So this -- this [ drop ] through the 15-millimeter skin incision but through a different fascial defect.

00:47:57

JEFF ZITSMAN, MD: Right, I'm going just above that site. Maybe Dr. Fischer can catch a little bit of the site. And I'm angling it. She has a -- she has a body configuration that makes this somewhat favorable and relatively easy to do because her body -- her body wall is not all that thick.

00:48:24

STEVEN ROTHENBERG, MD: So this is in a sense tunneling the catheter, and then you'll close the 15-millimeter defect directly?

00:48:31

JEFF ZITSMAN, MD: Actually, we won't, because it's a non-cutting def-- [ drop ] close on its own. But we won't have a foreign body coming through it that might in any way prevent it. Now usually but not always the tip of the band finds its way to the right lower quadrant, so we have to go down there to find it.

00:48:54

STEVEN ROTHENBERG, MD: Have you had any herniations at port sites?

00:48:58

JEFF ZITSMAN, MD: I have not, no. You're looking over here. While we're doing this, just to continue on with the screening of the patients, patients who have met all the criteria then fall into two categories. Those who have already been through many weight loss programs, have good documentation of what they've done and have not been successful in losing weight for any -- any significant length of time become candidates for what we call the fast track, which means that after we've assessed them and generally had them come back for about two to three months of evaluations to make sure that they're going to be compliant, they'll be eligible for surgery, provided that's what they want and that's what we want. Patients who come in who have not been in any programs have to go through a minimum of six months attempting to lose weight. Now I'm just going to bring this back out with the port and bring it out through the port and with [ drop ] -- get that out.

00:50:16

STEVEN ROTHENBERG, MD: So again, the catheter is coming out through the port, through the same skin incision but a different fascial incision, and this is to try to diminish the risk of herniation.

00:50:24

JEFF ZITSMAN, MD: You might want to get an overhead shot at this point.

00:50:27

STEVEN ROTHENBERG, MD: I think we're getting it. We're getting the shot of this.

00:50:31

JEFF ZITSMAN, MD: Okay. You'll notice -- I'll move my hand, but I've taken out the larger 15-millimeter port that was here, and that's gone. In the hole just above that is this five-millimeter port. The tubing is coming out directly through that. And I'm just going to take that out.

00:50:53

STEVEN ROTHENBERG, MD: And this is then the tubing which you connect your subcutaneous port to.

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JEFF ZITSMAN, MD: Right. Okay, now at this point, I'm going to make this pocket a little larger because we're going to put the port in, and I'm going to fix the port to the fascia itself. Do you have the Deever retractors? Mark, can we get the overhead lights? The spotlights is fine.

00:51:31

STEVEN ROTHENBERG, MD: So that's a final view of the band in place. So at this point, you're basically done with the --

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JEFF ZITSMAN, MD: We're done [ drop ]

00:51:38

STEVEN ROTHENBERG, MD: -- portion of the procedure.

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JEFF ZITSMAN, MD: Right. We're going to be putting these fascial sutures in. I need the other Deever.

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STEVEN ROTHENBERG, MD: Now, I don't know if we can -- yeah, the overhead maybe the overhead cam can get in on this. Jason, I don't know if you can bring that in on it.

00:52:00

JEFF ZITSMAN, MD: If we can switch to that.

00:52:01

STEVEN ROTHENBERG, MD: Let me see. There we go. Okay, so you have two small Deevers in there.

00:52:12

JEFF ZITSMAN, MD: Okay, good. So that's -- that's that. Now, we're not going to -- we're going to put in a zero-polyester suture, and we use this device to put it in. So you're going to have to go back to the -- we don't need these to do the stitching. I just wanted to show you where in the fascia we put four of these in. You were talking before about complications, and one of the areas where adult patients and some of our male patients have had morbidity is these stitches, if they're put too far apart, can pull on the peritoneum and the fascia and can be very painful. And so -- and so we put them in under direct vision, and I'll infiltrate that area with quarter-percent Bupivacaine afterwards.

00:53:10

STEVEN ROTHENBERG, MD: So the device you're using is basically a fascial closure device, isn't it?

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JEFF ZITSMAN, MD: That's exactly what it is, right.

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STEVEN ROTHENBERG, MD: And this is a reusable one.

00:53:22

JEFF ZITSMAN, MD: Yep, so I'm going to come out and I'm going to come back in [ drop ]

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STEVEN ROTHENBERG, MD: And what is that suture that you're using?

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JEFF ZITSMAN, MD: It's a polyester, a zero-polyester.

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STEVEN ROTHENBERG, MD: And these are going to be [ drop ] -- in place?

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JEFF ZITSMAN, MD: Right, I'll show you in a minute fixing the band to the port.

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STEVEN ROTHENBERG, MD: And again, you don't worry about the fascial defect from the trocar itself.

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JEFF ZITSMAN, MD: No.

00:54:04

STEVEN ROTHENBERG, MD: So once you have the port in and it's secure, do you inflate the port -- the balloon at all initially?

00:54:13

JEFF ZITSMAN, MD: Only during the priming process. It's put in empty because the patient is going to have some edema from the surgery. [ drop ] Going to have some edema from the surgery, and we don't want her to be obstructed. So what we'll do is we'll see her postoperatively at two weeks. She'll go home on a liquid diet and [ drop ]. At about four weeks, she'll go to a solid diet, and at that point, the edema's gone down and the patient's, generally, if the band is not too snug, and it doesn't appear in her case as though it is, they'll start feeling hungry. And when they start feeling hungry, that's the sign to us that you want to start to tighten up the band. And we have a whole written protocol as to how many cc's of saline to put in to tighten the band up. And then we see them on a regular basis, because as they lose weight, just as you would imagine, with the belt on your trousers, it gets looser, and so...we want to tighten it up. We aim for them to lose between a pound and a pound and a half a week. Any faster than that, there's a real risk that they'll get dehydrated and possibly develop some headaches. And so from -- from the very start, when I meet with them and describe weight loss with the band, I start to implant those numbers so they begin to [ drop ] -- a lot of weight quickly. Going back to comparing the bands and the bypass, patients who have bypass operations can expect to lose about 50% of their excess weight in the first year. If you look here, that's about as far apart as I ever want to go between these two because any more than that, it's really going to be pulling on the peritoneum. You can see, it'll pull up on it when I do that. And we tighten these down. Patients who have a band [ drop ] -- more like 30% of their excess weight in the first year, which in most cases is still more than they've ever done. [ drop ] -- catch up. At this point, I'm going to take the Nathanson retractor out. You'll see the shape of it as it's coming out. You have to be careful watching the tip. I pull up on it and then rotate it out and away from the spleen. I'm pulling up and following the path of the retractor.

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STEVEN ROTHENBERG, MD: Again, you know, that retractor [ drop ] -- as with --

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JEFF ZITSMAN, MD: Let's just look at the liver.

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STEVEN ROTHENBERG, MD: -- lower gut surgery, the operation really takes place under the liver.

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JEFF ZITSMAN, MD: So you can see, the liver's in good shape, the band is in good shape, so the internal part of the opera-- [ drop ] take some marcaine and we'll infiltrate these different sites. And then we can release the --

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STEVEN ROTHENBERG, MD: So we're nearing the end [ drop ]. And at this point, you'll attach the port to your tubing and secure it to the fascia. Right now we're just putting in a little bit [ drop ] -- for local anesthetic.

00:58:23

JEFF ZITSMAN, MD: We're going to release our CO2, but we'll leave the ports in now so that we can go ahead with the -- shut that off. So we can go ahead with the fixing the port. So I use a Deever retractor. You don't want to leave too much because the bowel can herniate around it. Can I have an 11 blade? But you want to leave a little bit in case for any reason you have to go back in and fix tubing, it's always better to have a little bit. So we make a square cut right across the tubing. You can see there's been saline on the inside. And then we'll fix it to the port, which has also been primed. This is -- this doesn't seem like it should be, but it's actually one of the technically more difficult parts of the case sometimes because this material, the silicone, slips in your hand. So it slips in your hand, it slips around the little metal joint that we're putting in, and so it's helpful to use a pair of dry sponges to push it in. you also want to be careful when you're pushing it in that you don't bunch up and gather any of the material on the other side, because that'll obstruct the port.

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STEVEN ROTHENBERG, MD: And when you start doing the injections, do you do these in your office?

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JEFF ZITSMAN, MD: These are done in the office, right. Some people do them under fluoroscopy. We have not been doing them under fluoroscopy unless we have some difficulty accessing the port. We do have one patient who had a port that was put in, and as he lost weight, the port actually moved so that it flipped 90 degrees and we couldn't access it. So he's a patient we had to bring back to the operating room to reposition the port. So now we have it joined together, looks as though it's okay. and the final step before we close, we'll feed this extra tubing back in and then together we'll thread the sutures and tie these down.

01:00:47

STEVEN ROTHENBERG, MD: Well, Jeff, that was a very nice demonstration of the technique. I think you gave everybody a good idea of the basic principles of placing a band and some of the issues involved with patient selection and management. Are there any closing comments you'd like to make?

01:01:05

JEFF ZITSMAN, MD: No, I think that the [ drop] most important parts of the surgery are not so much the surgery itself but getting the patient to surgery and selection criteria. I think it's important for the success, and I think other groups have shown this, that particularly with band operations or banded patients who have a lot of need for follow-up, it's essential to have a team in place that's going to follow these patients and provide the kind of support that they need to have good success. As far as the procedure itself, I think that this -- this went pretty smoothly, but the areas where my heart beats a little bit faster are putting the Nathanson in to make sure that there's no injury to the liver, going behind the stomach, and identifying where the vessels are. And then when putting the sutures in, just making sure that you do have stomach above the band on the one hand and that you can miss those vessels on the other. I think those are the main points. What we're going to do is I'm going to hold this in place while my assistant ties these down to make sure that it stays flat on the [ drop ]. That'll be it.

01:02:27

STEVEN ROTHENBERG, MD: Well, Jeff, again, I'd like to thank Dr. Zitsman and his team for such a great demonstration [ drop ] of a gastric band in an adolescent. I'd like to thank both Karl Stortz Endoscopy for the educational grant and support for

putting on this production, as well as OR-Live for making this happen. And we'll be leaving you now. Again, this is the Morgan Stanley Children's Hospital at the Columbia-Presbyterian Medical Center in New York City, and we will be available for questions during this broadcast that you'll be able to access us live over the internet for any questions you might have about the procedure. Thank you for joining us and good night.

01:03:15

[ end of webcast ]