

LAPAROSCOPIC-ASSISTED ERCP
UNIVERSITY OF ALABAMA, BIRMINGHAM, ALABAMA
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BRANDON ROY, M.D.

Good morning from the University of Alabama at Birmingham. Thank you for joining us. This morning we have a webcast for your viewing. We had originally scheduled a laparoscopic gastric banding. That case will be broadcast at a later date, as we had to reschedule it, but we do have an interesting case for you, a somewhat unique case. My name is Dr. Roy. I'll be your moderator this morning. Dr. Clements, would you care to introduce the rest of the OR team?

RONALD H. CLEMENTS, M.D.

Sure. Thanks, Brandon. I'm Dr. Ronald Clements. I'm Director of the Alabama Minimally Invasive Institute. I'd like you to meet our people who are going to be helping us out today. Our scrub nurse is Crystal Overton. My camera assistant today is Dr. Doug Constant. Jim Martin is our circulator and Dr. Mel Wilcox will be joining us shortly to do the endoscopic portion of this procedure.

What we're going to be showing you today is a laparoscopic-assisted ERCP. The reason we're having to do this as an operative procedure is that this patient underwent a laparoscopic gastric bypass approximately 3 years ago. She has had a wonderful weight loss result and has lost about 125 pounds and maintained that weight loss over that time frame. However, she has had intermittent episodes of abdominal pain as well as fluctuating increased levels of liver functions. For example, her AST has been as high as 400 and then will go down within a day or two, back to normal. She has been worked up with MRCP, CT scans, percutaneous cholangiography, which showed only smooth tapering of the distal end of the bile duct, indicative of chronic scarring, probably secondary to a mild episode of cholangitis in the past. She had her gallbladder removed as an open procedure in 1979, so this is probably related to old stone disease or perhaps mild pancreatitis. She has had some elevation of her amylase and lipase in the past, but that has never been a severe episode of acute pancreatitis. So that's the reason we're having to do this operation as a laparoscopic procedure, rather than just a transoral ERCP. Brandon, I think you have some drawings to show why we're having to do this and maybe illustrate it a little bit better before we actually begin the operation.

BRANDON ROY, M.D.

Well, let's start with the normal anatomy here. Here's the esophagus. You'd eat food and this would come into your stomach, which acts as a large reservoir. The food travels on down the small intestine. We also have the liver here, on the right side in your upper abdomen, and the bile that is secreted by the liver is drained by some bile tubes that come together to form a large bile tube. This patient, as mentioned, had her gallbladder removed. The gallbladder would ordinarily be attached here. So stones can travel from the gallbladder into the bile tube and cause the scarring that was discussed. Most people who need an ERCP would have this done right down the esophagus, into the stomach. The bile tube would be cannulated. It would be anterior and then the dye study could be performed. However, in our patient today, she has had a gastric bypass, which means in this operation her stomach is physically disconnected from her remnant stomach, so this patient eats food. It comes into her pouch. The pouch is connected to a piece of small intestine. The food travels down the small intestine and joins in with the pancreatic and biliary secretions downstream. This makes it difficult for her to have an ERCP. As you can see, this length varies from 90 to perhaps even 150 cm and then the scope would have to travel up this limb as well to gain access to the bile ducts here. It just makes it impossible, really, for this patient to have a traditional ERCP, so today what we'll do is pass a scope through the abdominal wall, into a hole that's made in this gastric remnant. The scope will be advanced here, to where the bile duct is, and then we can do the dye study and address any issues with her bile duct there.

RONALD H. CLEMENTS, M.D.

Let me show you our port placement today, where our ports are going to be actually located. The camera is placed to the patient's left of the umbilicus. It's a little bit difficult to see, but this is the umbilicus here. The scope is approximately 2 cm lateral to the umbilicus, so that we have this port going through the rectus sheath. Then place a 15 mm trochar in the left upper quadrant in order to allow the scope to pass through. The ERCP scope has an external diameter of 13 mm, so it won't fit through our usual trochar, so we have to get a larger trochar to make this happen, in order to introduce the scope into the stomach and maintain pneumoperitoneum as well.

I have two additional 5 mm ports. One is just to the patient's right of the umbilicus and 1-2 cm cephalad to that. My other hand is placed in her open cholecystectomy incision in the right upper quadrant. This allows me to have easy access to the distal stomach that Dr. Roy just demonstrated in the drawing and allows me to manipulate the stomach while Dr. Wilcox will be doing the endoscopic portion. In a moment, we will be demonstrating some of the work we have already done on the inside and we will use this port to occlude the lumen of the biliopancreatic limb with an intestinal clamp during this procedure so that the air from the endoscope doesn't inflate all of the patient's bowels and we're not able to see.

If we could, let's look at the internal anatomy now and I want to just give you a run-down of the operation that she has had done before. This is the left lateral segment of the liver, obviously, and I'm going to retract it upward. We can look down...we have an Olympus deflectable laparoscope. It can go to most any angle we want, but you can see

this is the patient's...that's just an adhesion I'm holding there. This is the intestinal Roux limb, the jejunum, coming up in an antegastric fashion. This is the remnant stomach here. It's attached to the gastric pouch there. If you can see, the anastomosis is right here. That's her gastrojejunostomy from her small gastric pouch that you can see right here. That's her small pouch. Her food comes down here, through this little hiatal hernia she has as well, enters her gastric pouch here, crosses over into the jejunum, and traverses down. Her operation was constructed in a retrocolic, antegastric fashion. If you notice, the Roux limb comes up behind the transverse colon here. This is transverse colon with the attached omentum and the Roux limb comes up above the colon area in an antegastric, retrocolic fashion.

I went ahead and took the liberty of placing a purse string suture on the anterior surface of the remnant stomach. She's got some adhesions you can see over there, from her open cholecystectomy, but we've placed a purse string suture here laparoscopically. We still have our needle attached to that because we will use that suture in just a little bit to completely tie this off and perhaps even secure it up to the abdominal wall. We're going to leave a G-tube in here, but in a moment we'll make a gastrotomy here in order to introduce the endoscope and when we would traverse the pylorus and get down to the ampulla of Vater.

Now, I want to back up and show the biliopancreatic limb, which we need to occlude in order to prevent air from completely filling all of her intestines. This is the cut end of the biliopancreatic limb. Here is the jejunojejunostomy, the side to side connection, here. I need to occlude this lumen here so that the air that's instilled through the endoscope won't inflate the whole bowel, so we'll occlude that in just a moment, but I wanted to demonstrate the jejunojejunostomy here for you. When we come back down here, this is the lumen that we will be occluding so that air can't get across here and go all down into this bowel over here.

Before I do that, I want to go back and make my gastrotomy now. We will be introducing the therapeutic endoscope here in just a moment. I want to have my assistant come in over the top of my instruments and then look down with the laparoscope. I'm going to elevate the front wall of the stomach here so that I don't burn a hole in the back wall of the stomach and then use the ultrasonic dissector, the Sonosurge, here and make an anterior gastrotomy site right there. I'll need to extend that hole. This hole will need to be at least 13 mm in diameter so we can get the scope in. You notice we have an automatic mist evacuation system attached with this OR setup, the endo-alpha setup that we use, and it keeps our picture pretty clear. I hope you can appreciate that.

BRANDON ROY, M.D.

I have a question that was sent in previously. This was based on the thought that we would be doing the gastric band today. Would you mind answering just a few questions about a band while we get going? Phyllis wrote in and she was wondering do you do follow-up for patients that have had a band at another institution?

RONALD H. CLEMENTS, M.D.

Currently we don't. We've got more work than we can handle currently with our own patients and right now we're not doing follow-up for other surgeons at this point. We perhaps will be doing that in the future, but right now we're not.

One thing, talking about the band, if this patient had a gastric banding, this procedure wouldn't be necessary. The patient would be able to undergo this ERCP in the GI suite, rather than having to undergo an operative procedure.

BRANDON ROY, M.D.

Is this a common procedure, this laparoscopic-assisted ERCP?

RONALD H. CLEMENTS, M.D.

No, it's not. It's actually fairly uncommon. We have a series of about 600 gastric bypasses and this is only our third time to actually do this procedure, but when you do need to do it, there's really no other good therapeutic way to be able to do an ERCP, other than to do it with an open procedure as the other option, but you'd like to maintain minimal invasiveness if possible, especially in a patient who has previously undergone a gastric bypass that was done laparoscopically.

BRANDON ROY, M.D.

What can this patient expect as far as staying in the hospital, getting back to work, and those sorts of things?

RONALD H. CLEMENTS, M.D.

I'm planning on letting this lady go home tomorrow. If her ERCP goes okay, she will be discharged tomorrow. She should be back on her usual gastric bypass diet. As I said, this gastrotomy site will actually have a G-tube in it to allow future access to this area again. If it's necessary to do any other procedures in the future, this G-tube will give us access to her distal stomach.

BRANDON ROY, M.D.

How will you know if this is successful?

RONALD H. CLEMENTS, M.D.

Well, hopefully we won't see any more elevation of her liver function tests and her abdominal pain will go away. The stomach is always thicker than what you anticipate, so it's just taking me a few minutes to actually get into the lumen. The thing that always concerns me is am I going through the back wall? I don't think we're there yet, but I'm

just trying to take my time so we don't inadvertently make a hole in the front wall and in the back wall.

BRANDON ROY, M.D.

What sort of instrument are you using there to actually do the cutting? What is that?

RONALD H. CLEMENTS, M.D.

It's an ultrasonic dissector. It's called a Sonosurge. It vibrates 44,000 times a second, generating kinetic energy and actually coagulates the tissue and the blood vessels by kinetic energy. There's no electricity actually being sent through the patient.

BRANDON ROY, M.D.

Questions about this procedure can be directed to us here at the University of Alabama. You can click on the MDirectAccess button at the bottom of your screen.

RONALD H. CLEMENTS, M.D.

We'll get a gastrotomy here in just a moment and then we'll bring in the endoscope. I need a little bit more of a pointed instrument so that I can get through there safely. I'm a little bit concerned about just buzzing through there with that energy device. I'd rather just take my time. There's the mucosa.

BRANDON ROY, M.D.

You said you've done about 3 of these. Is that right?

RONALD H. CLEMENTS, M.D.

Yes, this is our third. There's the inside of the stomach, right there. Okay, now that I have this in place, I'm going to get Dr. Wilcox to come in in just a second and pass the endoscope into this hole and he should be able to see the pylorus in just a moment. What was the question again, Brandon?

BRANDON ROY, M.D.

Just about how common this is. You made it sound like a fairly rare event.

RONALD H. CLEMENTS, M.D.

It is. We've done, as I said, 600 gastric bypasses at this point and we've really not required any of these, only three of these, as I said, and this is actually not one of my 600. This patient is someone else's patient.

BRANDON ROY, M.D.

She had her operation at another institution?

RONALD H. CLEMENTS, M.D.

Yes.

BRANDON ROY, M.D.

And was this procedure successful in the other patients?

RONALD H. CLEMENTS, M.D.

Yes. We were able to demonstrate that the bile duct was successfully opened and free flow of the bile into the duodenum. This is Dr. Wilcox coming in now with the scope.

BRANDON ROY, M.D.

Dr. Wilcox, is there anything special about that scope you have in your hand?

CHARLES WILCOX, M.D.

No. This is just our routine therapeutic side-viewing duodenoscope.

BRANDON ROY, M.D.

So you look off the side of it, rather than off the end of it? Is that right?

CHARLES WILCOX, M.D.

Exactly, which is the type of endoscope you need to evaluate the ampulla, rather than the forward-viewing endoscope.

BRANDON ROY, M.D.

The ampulla is where the bile duct comes into the bowel.

RONALD H. CLEMENTS, M.D.

This is usually one of the more difficult parts of the procedure. Boy, you made it look easy today.

BRANDON ROY, M.D.

The scope is going into the hole in the stomach there.

RONALD H. CLEMENTS, M.D.

Yeah. Now we're going to stop here just a second. Let me have a needle driver first. We'll go down and clamp off this piece of bowel so we don't get grossly inflated.

BRANDON ROY, M.D.

Dr. Clements, there's a question from a viewer. Would you mind just reviewing why this particular patient got this issue?

RONALD H. CLEMENTS, M.D.

Sure. She has had to have this operation because of her previous bypass that no longer allows us to have access to her ampulla through her mouth because of her gastric bypass. She was having intermittent elevations of her liver function tests that were causing pain as well. It looks like she has sphincter of Odi dysfunction. Dr. Wilcox actually saw the patient and worked her up preoperatively. Mel, you might want to comment on the biliary pathology about why we're here as well, if you'd like.

CHARLES WILCOX, M.D.

I heard your comments initially and I guess she would fit probably what we call Type II sphincter of Odi dysfunction, intermittent upper abdominal, especially right upper quadrant pain, associated with abnormal liver tests. The liver tests have not been abnormal in every episode of her pain because she has some chronic component of her pain. She has also had a couple of episodes of elevation of her amylase and lipase in the range highly suggestive of acute pancreatitis, although her CT scan did not show acute pancreatitis.

RONALD H. CLEMENTS, M.D.

Okay, as you can see now, I've completely occluded the biliopancreatic limb there, above that anastomosis. I'm just going to let that lay there.

BRANDON ROY, M.D.

Is sphincter of Odi dysfunction a common problem?

CHARLES WILCOX, M.D.

It's one of the more common causes of unexplained pancreatitis that we see after cholecystectomy, but overall it's not a common disease, but it's definitely not rare.

BRANDON ROY, M.D.

Is this related to her bypass in any way?

CHARLES WILCOX, M.D.

It should not be.

RONALD H. CLEMENTS, M.D.

Okay, you can see on the laparoscopic view here, we've got the endoscope inside the distal stomach. I'm holding the purse string around it so that Dr. Wilcox can inflate air if he needs to and not have it leak out into the abdomen, and I've got the bowel clamped off so that when he inflates it, it shouldn't fill up the whole belly, so let's switch to the endoscopic view now so that Dr. Wilcox can demonstrate his portion of this now.

CHARLES WILCOX, M.D.

I'm trying to find the pylorus here, which should be down in this area. Fortunately, that was relatively straightforward. There's the minor papilla on the right and the major papilla on the left. We'll do our positioning here to try to get into adequate position to evaluate the bile duct. Normally we do this with the patient laying on their stomach. It makes it actually more difficult this way.

BRANDON ROY, M.D.

So Dr. Wilcox, what we're seeing here, we've entered the gastric remnant or that part of the disconnected stomach and you've gone out the natural exit into the proximal small bowel.

CHARLES WILCOX, M.D.

Right. So you can't really tell that we've done anything unusual. It looks like our typical position. You can actually see some bile pouring out of the sphincter there.

BRANDON ROY, M.D.

They have entered the gastrostomy here. Purse string here to hold the air. Dr. Wilcox's scope has entered through this hole and he has advanced it down to here and we're looking off the side at the opening to that bile duct, so we're out of the stomach, into the proximal small bowel, looking at the ampulla. You've heard that term several times, which is the opening of the bile duct into the small bowel.

CHARLES WILCOX, M.D.

I'm not sure why we got here better than the last time. I guess we'll take the luck. The plan now would be to hopefully open up the bile duct and preferably open up the pancreas duct as well.

BRANDON ROY, M.D.

Dr. Clements, Leslie has a question. She wanted to know does everyone who has had a gastric bypass eventually have the same procedure that we are doing today?

RONALD H. CLEMENTS, M.D.

No. That would be exceedingly uncommon. This is not a very common procedure at all. I hope we don't have to do it on everybody, but it is good to have this in your armamentarium, that if you did need to do this procedure in that exceptional patient, it's nice to have it so that you don't have to do a large incision on the patient in order to access the distal ampulla. This would normally require a right upper quadrant operation. Fortunately, we can do this with minimally invasive techniques. We only have 4 small incisions on this patient's abdominal wall, which makes it a much nicer procedure than a 6 or 8 inch procedure in the right upper quadrant, to do an open sphincteroplasty.

BRANDON ROY, M.D.

Dr. Wilcox, you have placed something in the bile duct there? What is that?

CHARLES WILCOX, M.D.

It's called a sphincterotome, which has a little wire on it. We're in the bile duct. We're aspirating bile.

BRANDON ROY, M.D.

For our viewers, if you're just joining us, we had a laparoscopic gastric band scheduled for this morning. However, we are going to have to schedule that broadcast and we're bringing to you a laparoscopic-assisted ERCP, which stands for endoscopic retrograde cholangiopancreatography. This patient has some troubles with the muscles that surround the distal bile duct. Up to this point, we have gained entry into the abdomen. We have made a small hole in the gastric remnant and advanced a site-viewing scope into the gastric remnant and into the small bowel. We have found the opening of the bile duct and placed a cannula in the opening of the bile duct. We'll use fluoroscopy and x-ray technique to confirm our placement and do a dye test.

CHARLES WILCOX, M.D.

You see the contrast going up into the bile duct. There are clips on the left. Looks like normal caliber here. Keep going. Good. We don't see anything obvious. We're hooking up the sphincterotome with the wire for cautery and we will incise the ampulla. We're incising the biliary sphincter here.

BRANDON ROY, M.D.

Is there some smoke from that?

CHARLES WILCOX, M.D.

A little.

BRANDON ROY, M.D.

So you're using some electrocautery, an electrical energy device.

CHARLES WILCOX, M.D.

Right.

BRANDON ROY, M.D.

And you're cutting that muscular band that surrounds that bile duct opening.

What should this accomplish for her?

CHARLES WILCOX, M.D.

If the abnormal liver test and episodic pain is related to sphincter spasm, then we've basically, by doing this, ablated the sphincter.

BRANDON ROY, M.D.

So the sphincter can't cause her any more trouble.

RONALD H. CLEMENTS, M.D.

How will you know when you've taken enough of that?

CHARLES WILCOX, M.D.

You can see we've started a little nipple-like structure, which is basically intra-duodenal bile duct, so you can see there's really nothing above where we are here, so there's really not too much more to cut.

RONALD H. CLEMENTS, M.D.

Looks like you have free-er flow of bile out of there too.

BRANDON ROY, M.D.

That's bile coming out of the hole there.

RONALD H. CLEMENTS, M.D.

Fluoro. We'll see how the contrast has drained significantly from the duct. Now what we'd like to do is see if we can find the pancreatic duct. The prominence of her minor papilla suggests to me that she could even have pancreas divisum.

BRANDON ROY, M.D.

Could you explain that term, pancreas divisum?

RONALD H. CLEMENTS, M.D.

Where the ventral and dorsal pancreas did not fuse, so there are 2 separate openings where the majority of the pancreatic juice comes from a smaller opening that you see up to the right of the minor papilla, rather than where we were here, which would be the major papilla.

BRANDON ROY, M.D.

On the fluoro image, the big black thing at the bottom of the screen is the scope and the contrast is the black vertical line there. There's sort of a tree and branching appearance.

RONALD H. CLEMENTS, M.D.

That's just the bile ducts in the liver.

BRANDON ROY, M.D.

Is this the only medical problem that ERCP is used for?

CHARLES WILCOX, M.D.

Any problem that involves the sphincter, we can do ERCP, but we can also evaluate the bile duct for stones, strictures.

BRANDON ROY, M.D.

Right now you're looking for the duct that drains the pancreas. Is this a painful procedure?

CHARLES WILCOX, M.D.

For the patient or the doctor? Well, the biggest risk is pancreatitis and I talked to her and her husband, so they are very attuned to the fact that the chance of getting pancreatitis if

she had sphincter of Odi dysfunction is about 20% because you can't put a stent in. It can be severe, but rarely is it severe, so the biggest risk is pancreatitis. Bleeding is usually self-limited. Perforation is rare. Of course, in this patient there's an anesthesia risk.

RONALD H. CLEMENTS, M.D.

The laparoscopic portion of this has very minimal risk as well. We've got two 5 mm ports and one 12 and one 15. It's very unlikely that there's going to be any substantial pain from that. There will, of course, be some, but it should not be so severe that it limits the patient's physical activity by tomorrow. There's a very small risk of injury to the bowel. Any time you manipulate the bowel, there's a small risk of causing unanticipated injury, but that's exceedingly small in this case, I think.

BRANDON ROY, M.D.

Had this patient not had a gastric bypass, you wouldn't necessarily have to put her to sleep to do this ERCP, would you?

RONALD H. CLEMENTS, M.D.

We would just use routine conscious sedation.

BRANDON ROY, M.D.

Can the patient feel that cutting of the bile duct?

RONALD H. CLEMENTS, M.D.

No. We can do biopsies or take out polyps in the colon and you really can't feel that. It's a very small catheter.

BRANDON ROY, M.D.

Dr. Wilcox, Ashley has a question. Her question is are there any complications of cutting that muscular band at the opening of the bile duct?

CHARLES WILCOX, M.D.

Other than bleeding and potential pancreatitis, you can get some stenosis

BRANDON ROY, M.D.

Healing with scarring?

CHARLES WILCOX, M.D.

Right.

BRANDON ROY, M.D.

Dr. Clements, Elaine had a question about the patient's weight loss. What was the reason for her original bypass?

RONALD H. CLEMENTS, M.D.

I don't have all of her complete history from when she had her bypass. As I said earlier, this was done at another institution, but her predominant indication was that she had morbid obesity.

BRANDON ROY, M.D.

I believe her preop weight was around 275.

RONALD H. CLEMENTS, M.D.

Yes and she has lost 125 of that. She is very close to her ideal body weight. Not quite there, but getting there.

BRANDON ROY, M.D.

I think her weight this morning was around 145 pounds, so her weight loss has been pretty remarkable.

RONALD H. CLEMENTS, M.D.

Yes, it has.

BRANDON ROY, M.D.

She also had resolution of her diabetes. She was a diabetic before the procedure and that issue has gone away with her weight loss.

CHARLES WILCOX, M.D.

I think there's a little sliver of duct that you see there. I don't know why it didn't really go all the way across. You can see the opening is very small, so it really is difficult to get selective cannulation. What we're going to try to do now is put a very small wire in, see if we can get it deeply in the duct, put a small stent over that, that we hope will pass spontaneously, and then incise this a little bit and hopefully we're finished.

BRANDON ROY, M.D.

Dr. Clements, Valerie has a question. She said, you mentioned the need for this procedure is less than 1% of the procedures you've performed. Is this due to the excellence of the UAB surgeons?

RONALD H. CLEMENTS, M.D.

Absolutely. No, I think it's just luck of the draw. This is just not a very common problem, at least not in the gastric bypass patients. It's just not a very common thing and I don't think it's really all that common even in the general population.

BRANDON ROY, M.D.

So if this patient had a band instead of a bypass, this could have been done without going to sleep, without the laparoscope.

RONALD H. CLEMENTS, M.D.

Yes. We would have simply deflated the band and that should have allowed passage of the scope. If it would not have and the internal diameter of the band was smaller than the diameter of the scope, then this would have been required, even with a band.

CHARLES WILCOX, M.D.

We are coming out a little bit on fluoro. We're going to see if we can selectively put this wire into the dorsal pancreatic duct.

RONALD H. CLEMENTS, M.D.

I know for those of you watching, it looks like just put it in, but you're talking about a movement of only approximately 0.5 mm or so there, at the end of a 1.5 meter scope, so that can be a daunting task to get that to go into that opening, which is probably only 1-2 mm.

BRANDON ROY, M.D.

Dr. Wilcox has dials on his instrument that control the movement of the tip.

RONALD H. CLEMENTS, M.D.

That's right, and those movements are translated from his hands to the tip of that scope. Sometimes those movements can be very small to accommodate what we need.

CHARLES WILCOX, M.D.

See the wire going across? Beautiful. Okay, so this is the glide. We want to do what we did yesterday.

BRANDON ROY, M.D.

Dr. Clements, Elizabeth wondered how big is the remnant stomach.

RONALD H. CLEMENTS, M.D.

Her remnant stomach is essentially the same as it was before the operation because less than 1 ounce of stomach was transected in order to make the pouch, so therefore 99% of the stomach is still intact where we've made this purse string suture. It's essentially the same as it was before the operation. The pouch itself, on the other hand, where the anastomosis has been created, is only about the size of your thumb. That's the ideal size for a gastric bypass, to make it less than 1 ounce, which is roughly the size of my thumb. We showed that earlier in the procedure and we can go back and show that at the end of the case, if we need to.

CHARLES WILCOX, M.D.

Our catheter is now in the dorsal duct. We're going to put a stiffer wire. We'll take this catheter off and put a small 3 French stent in, then incise the sphincter over the stent and hopefully the stent will pass spontaneously.

RONALD H. CLEMENTS, M.D.

I've been watching the endoscopic picture and it looks like there's a slow, continuous, steady flow of bile out from where you created the sphincterotomy on the bile duct. You see it flow down there, so I believe you got the major duct open nicely and disrupted that sphincter of Odi.

BRANDON ROY, M.D.

The other things you see in that endoscopic view at the top, that would be looking back up into the stomach?

CHARLES WILCOX, M.D.

Yes, going straight up is going back to where the stomach is and south is going down the duodenum.

RONALD H. CLEMENTS, M.D.

You can clearly see the bile just rapidly draining out of there now and that's exactly what we wanted to have accomplished with this procedure.

CHARLES WILCOX, M.D.

And the reason we're trying to address the minor papilla is, given her recurrent attacks of what we thought might be pancreatitis, we're fortunate we're able to hopefully take care of this. If it was just a bile duct issue, then we wouldn't be doing this portion at all.

BRANDON ROY, M.D.

Is this a common cause of pancreatitis?

RONALD H. CLEMENTS, M.D.

It's a common cause of recurrent unexplained pancreatitis. This type of anatomy is present in about 7% of the population, but obviously 7% of the population doesn't get recurrent pancreatitis, so we don't really understand why one group gets it and one group doesn't. We'll be looking for the wire coming out in a second.

BRANDON ROY, M.D.

As we're looking at this fluoro image, the scope comes in from the right and kind of makes a curl and heads down. It sort of looks like a J on its side, if you will. It's even difficult for me to see, but in the curl of that J, there's a very thin black line, which is the wire.

CHARLES WILCOX, M.D.

Yeah, there's the wire. You can see it was easy with the floppy wire, but this is much stiffer to get the stent in and it just doesn't want to go quite as easily.

BRANDON ROY, M.D.

If you're viewing at home, you should be looking toward the bottom of the screen, in the middle, below the big, black, horizontally oriented scope there, right in the crook.

RONALD H. CLEMENTS, M.D.

I know this may not be the procedure that a lot of the people tuned in to see, but I think this is a very nice demonstration of a technique where you use multiple minimally invasive procedures simultaneously in order to gain a wanted outcome and maintain the minimally invasive benefits of the laparoscopic procedure. This patient will not have a large incision, will not have pain. This operation would be very difficult for me to do alone with just my laparoscopic procedure and my laparoscopic instruments, but having Dr. Wilcox, with his specialty being gastroenterology, and having the tools that he normally uses on a routine basis, just brought them to the operating room and applied them and we're doing the same function at the end of his endoscope that he would do in the GI lab normally, but just giving him different access to a patient that would not have been a candidate for this before and allows us to offer a less invasive procedure that has a quicker recovery and equal function as the procedure that would have required an open

operation. That's one of the remarkable goals of the Alabama Institute for Minimally Invasive Surgery, is to keep our incisions and our morbidity from the procedure as low as possible by yet maintaining the same therapeutic outcome as what the traditional open operations required in the past.

BRANDON ROY, M.D.

How big will her biggest incision be, Dr. Clements?

RONALD H. CLEMENTS, M.D.

The biggest incision will be 15 mm. The endoscope that Dr. Wilcox is using has an external diameter of 13 mm, so we had to have a hole at least that large in order to get his scope in. My camera goes through an 11 mm port and each of my other instruments are only 5 mm in diameter, so the biggest incision would be 15 mm.

BRANDON ROY, M.D.

That's less than an inch.

RONALD H. CLEMENTS, M.D.

Roughly about 5/8".

CHARLES WILCOX, M.D.

See, this wire's stiff at the end. It just doesn't want to go all the way out. It doesn't want to push like the other one.

BRANDON ROY, M.D.

As you're watching at home, you can see in the left upper part of your screen, the darkness up there is her liver. There's some retained contrast from the previous injection, which outlines the bile ducts. It looks like the branches or the limbs of a tree. There's a cluster of clips in the center of the screen, just off to the left, and that's from her previous cholecystectomy, several clips on the bile tube, several clips on the artery.

CHARLES WILCOX, M.D.

We'll change for another wire. We need to get it really out there and we're going to try to exchange over the wire, which we don't like to do because it's very slippery.

RONALD H. CLEMENTS, M.D.

The nice thing that we've already demonstrated here is that we've gotten the common bile duct and the sphincter of Odi dysfunction has been thoroughly addressed and now we

need to address this minor papilla in order to have all of the possibilities of her elevated liver function tests and abdominal pain addressed because if we had to do something again, it would require coming back to the operating room, rather than repeating this in the GI lab, as we talked about earlier, so we only have about 15 more minutes left on the webcast and we may or may not be through with just getting this last little stent in. Hopefully we can so I can show you the way we're going to finish up, but if not, you're seeing the most important part of this procedure. You saw the laparoscopic portion, where we made the purse string suture and put the endoscope through the anterior gastric wall, into the intestines, and you've seen where Dr. Wilcox has actually disrupted the sphincter of Odi, which is the predominant reason for being here.

BRANDON ROY, M.D.

Dr. Clements, do you know why this patient had a bypass instead of a band?

RONALD H. CLEMENTS, M.D.

I know her surgeon personally, Dr. Andy DeWitt here in Birmingham. He's a fine surgeon. At the time, in 2002, the only procedure that was being offered was the gastric bypass. I'm not sure if Dr. DeWitt is actually doing bands now or not, but that's still the most common bariatric operation in the United States and that was the reason she had the bypass.

BRANDON ROY, M.D.

Gastric banding is a newer procedure?

RONALD H. CLEMENTS, M.D.

Yes, it is newer and fewer surgeons are offering it currently, mostly because the long-term results of that are not quite as well known as after a gastric bypass.

I hope you can see there's a difference in the color of those two. I hope it comes across on the web, but the color of the material coming out of the major duct there is a greenish-brown tint, but the color of the fluid coming out around that wire has a little blood stain to it, little streaks of red, but for the most part is a clear secretion and that is the normal color of pancreatic secretions.

BRANDON ROY, M.D.

Is that bile pooling there in the bowel?

RONALD H. CLEMENTS, M.D.

Yes. That's where it's supposed to go. We like to see that. That's a good place for it.

CHARLES WILCOX, M.D.

We've got a little curve on the wire, which is fine, so the wire's more likely to come back toward us, rather than injure her tail.

RONALD H. CLEMENTS, M.D.

The tail of the pancreas is the part that's the farthest away from actually what we're seeing with the endoscope. We don't want to damage the tail of the pancreas with the wire that we've placed in the duct. That small flexible wire will allow a little bit of spring action to it so that it's not a stiff needle, so to speak, just pushing out the other end of the duct, which could cause the pancreatitis that Dr. Wilcox was addressing earlier.

BRANDON ROY, M.D.

In this view, the pancreas is on the other side of the bowel wall.

RONALD H. CLEMENTS, M.D.

That's correct. All you're seeing there, where that wire goes in, is the actual opening where the secretions of the pancreas can empty into the intestines in order to help this lady digest her food.

BRANDON ROY, M.D.

How long have you been doing the gastric band, Dr. Clements?

RONALD H. CLEMENTS, M.D.

We started doing gastric banding about 4-5 months ago here at UAB. It's been done around the world probably 15 years or more, but it's only recently beginning to gain popularity in the United States. Some of the initial studies of the American experience with gastric banding were not as favorable as some of the European and Australian data. However, over time, with improvements in the technique, we've seen a slow but steady incremental increase in the use of gastric banding in the United States and we recently saw some of the longer term data after about 2-5 years to show that you don't get quite a much weight loss with the gastric band as you do with the gastric bypass over the long term, but it does come with fewer life-threatening complications than after a bypass.

CHARLES WILCOX, M.D.

We're going to put our small stent over this, do our incision, and I don't know how much time we have...

RONALD H. CLEMENTS, M.D.

We're in good shape. You go right ahead because what you're doing is the predominant portion of this operation. The only thing I've got left to do is put a tube where you've got that and then we're done.

BRANDON ROY, M.D.

How much weight can a person expect to lose after a gastric bypass or a gastric band?

RONALD H. CLEMENTS, M.D.

After a gastric bypass, most people can expect to lose about 60% of their excess weight and maintain that weight loss over the course of their life. A gastric band, patients tend to lose about 50-55% of their excess body weight. The bypass patients tend to lose the weight much quicker. They tend to lose their weight within one year to 1.5 years. The patients who have a laparoscopic gastric band tend to take approximately 2 years to lose that 50% of their excess body weight, so it's a slower weight loss. The benefits of having a band versus a bypass, a band is adjustable. It's easily reversed. It only restricts the size of the stomach; it doesn't alter the anatomy of the GI tract. You don't open the intestines. You don't cut the stomach in two, as this patient has had done in the past. As I said earlier, the risks of doing a gastric band are not as severe as the risks of doing a gastric bypass. The disadvantage of a band is that you do have a little bit less weight loss than after a bypass. Both of those operations can be accomplished with minimally invasive techniques, however, and the recovery from both of those operations is really quite quick.

BRANDON ROY, M.D.

Are there certain criteria for a bariatric procedure? How do we decide who gets an operation?

RONALD H. CLEMENTS, M.D.

Bariatric procedures are indicated when a patient's body mass index exceeds 40. Body mass index is calculated by dividing the weight in kilograms by your height in meters². There's all sorts of calculators available on the internet to calculate your BMI. In general, to have a body mass index of 40, you have to be twice your ideal body weight, so if a person's ideal body weight is about 120 pounds, then to get a BMI of 40, their weight is going to have to be close to 250 pounds. If their weight is less than that but they already have some of the serious comorbid conditions of obesity, namely type 2 diabetes, obstructive sleep apnea, hypercholesterolemia, some of the major complications, then they would qualify for a bariatric operation at a BMI of only 35. That's a brief recitation of the National Institute of Health's consensus statement back in 1992 about who should get these operations. The reason for those numbers is that the risks of the operation...let's go ahead and look at the endoscopic view. You see the stent going in there, the greenish-blue piece of plastic passing over the wire.

CHARLES WILCOX, M.D.

You can see where our pigtail is going to start here. We're trying to back away to deploy the stent.

BRANDON ROY, M.D.

That image that you're seeing on the screen, the static image, there are several small snapshots and the fluoroscopy image you're seeing right now is just a static one.

RONALD H. CLEMENTS, M.D.

That greenish-blue tube that you see with the marks on it, you see the wire now coming off of the stent. That plastic tube is in the duct there and it will keep that duct open so that the fluid can freely drain out of her pancreas and not allow her pancreas to be obstructed.

BRANDON ROY, M.D.

Is she going to need another operation to take the stent out?

RONALD H. CLEMENTS, M.D.

The stent should spontaneously pass in the near future. We hope it does. We hope we don't have to have another option to take that out.

CHARLES WILCOX, M.D.

The reason we put this in is to hopefully decrease the chance that she gets pancreatitis from cutting the sphincter and occluding the pancreatic ducts. Now we're going to hopefully quickly incise the minor papilla using a device called a needle knife, which is a cautery device which is just a needle. The other one was a needle, if you will, attached to the end of the catheter, so it's really more of a wire. This is a naked wire, so to speak.

RONALD H. CLEMENTS, M.D.

If you can go back to the laparoscopic image for just a moment, you see Dr. Wilcox's scope here going into the stomach and it's inflated there. If you'll notice, because of my bowel clamp placed down here, none of the other intestines are inflated, so the only thing that's staying filled with air is the stomach and the first part of the small intestine. Now, once Dr. Wilcox gets done with dividing the sphincter here, he'll pull that scope out and where you see me holding this suture here, I'll pass a different tube into there, as I said earlier, that will allow us to have access to that part of the stomach again. We'll pull that up to the abdominal wall, where that trochar penetrates the abdominal wall, and that will just give us access to that, plus we can decompress the stomach that way after the operation.

CHARLES WILCOX, M.D.

You can see the stent. You see the needle.

BRANDON ROY, M.D.

Are there any good sources of information out there for people who are interested in a bariatric procedure? Is there someplace on the web they could go?

RONALD H. CLEMENTS, M.D.

There are multiple sites on the web. We'd recommend the National Institutes of Health, where they have the consensus statement published. Also the American Society for Bariatric Surgery. That website is www.asbs.org. The NIH site is www.nih.gov. If a person is interested in our particular practice, you can go to www.uab.edu/obesitysurgery and you'll have our brief description of our practice and our standards by which we go, which is the same as the NIH but there's a little more personal information about our individual practice here. I think those are the most reputable medical organizations for information. There are also several patient-directed sites; for example, www.obesityhelp.com I think is a pretty good source of information. It's more patient-driven, rather than physician-oriented, so in that sense I think it's probably useful information for a lot of people.

BRANDON ROY, M.D.

We'll try to have a laparoscopic gastric band on sometime soon?

RONALD H. CLEMENTS, M.D.

Yeah. We have actually a couple other patients scheduled in a week or two, but unfortunately we didn't find out that the patient we were planning on doing was unavailable until yesterday afternoon at 4:30, so again I apologize for not having the advertised procedure on today, but it was truly something beyond our control and I apologize for not having what we said we were going to have.

You can see the pancreatic secretions dripping out of the end of the stent there when we had the view. You can see the clear liquid dripping out of the stent. That just ensures that the fluid is flowing out of that stent and into the intestine. We'll be finishing up here shortly and we will complete the operation by doing the gastrostomy tube, as I talked about just a few moments ago. Thank you very much for tuning in. Dr. Wilcox now is finished with that. We will hopefully be able to bring you a live laparoscopic adjustable gastric band in the very near future.

BRANDON ROY, M.D.

Thank you very much for joining us at the University of Alabama at Birmingham.
Hopefully soon we'll have a laparoscopic adjustable band for you to view. Again, thanks
for your questions.