No Visible Scar Colectomy

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This program is presented by Ethicon Endo-Surgery. Welcome to this OR-Live webcast presentation featuring a no visible scar colectomy. During the program, viewers are urged to e-mail their questions to the surgeons. Just click the button on your webcast screen. Now let’s join the doctors.

Good evening and welcome. We’re coming to you live from Orange County, California. My name is James Fleshman, and I am a colorectal surgeon at Washington University School of Medicine in St. Louis. Today we are going to discuss and look at the surgical techniques involved with creating a no visible scar colectomy. We hope you find this an exciting and educational program, highlighting the evolution to the no visible scar colectomy, and we’ll show you surgical footage of this new technique. Joining me is my colleague and friend, Dr. Michael Stamos. Dr. Stamos is a colorectal surgeon at the University of California, Irvine, and the chairman of the Department of Surgery there. Good evening, Mike. Welcome. Glad for you to be here.

Thanks, Jim. Good to be here. How are you?

Just fine, thanks.

Good. We want to remind our viewers during this presentation, please, if you have questions during the webcast, you can send them into us via email. Simply click the button on your webcast screen and we’ll be answering those questions throughout the program. Well, why don’t we begin now.

Talking about the no visible scar colectomy and really how did we get here? What was the process of what you call the evolution? Really, the evolution has taken place over the last two decades as we transition from open surgery to multiport trans-abdominal surgery, and really, the old paradigm of a midline incision is rapidly disappearing. We, more recently, have heard about single site trans-abdominal surgery, so called “LESS,” laparoendoscopic single site surgery. And now we’ve also heard a lot about NOTES, single port trans-oral or trans-visceral surgery.

How are NOTES and single site related and how are they different? Now are they indeed two paths or two points in an evolutionary trail? Well, NOTES requires one port. It requires all flexible equipment. The potential benefits are, obviously, no abdominal scar and perhaps other benefits including faster convalescence and perhaps less pain. Currently, as practiced, at least in the United States, all NOTES procedures are hybrid procedures; that is, there is some element of a trans-abdominal trocar, and they all require pretty advanced endoscopic skills, which not every surgeon possesses.

Single-site surgery, on the other hand, also requires one port and one site, but instead of using all flexible equipment, actually can use a good bit of rigid equipment as well that we’re more comfortable and used to using. The benefits, once again, are the scar, that is either no abdominal scar or minimal scar, and again, there may be other benefits yet to be proven, including faster convalescence and less pain. Most of these are straightforward
trans-abdominal operations. Some are hybrids, and they require really, truly laparoscopic skills, which most of us possess.

What about LESS or single site colectomy? Well, it's not so simple. There's increased complexity because of trocars due to the multi-quadrant nature of the operation, and trying to get to two- or even three-quadrants through a single site can be quite complex and difficult. The location of that single site is most commonly the umbilicus because you could hide a scar within the umbilical ring for a laparoscopic appendectomy or a cholecystectomy for example. But when you're talking about a colectomy, it's a bit of an awkward site.

Number one, it's a little too close to the organ of interest, once you mobilize it, and especially if you do a medial lateral approach you're a little too close. In addition, extraction of a colon typically requires an incision, at least three, and often four to five or even six centimeters, depending on the size of the tumor or the pathology. When you start making incisions that big you really cannot hide it within the umbilical ring, and incisions I've seen that are through the umbilicus that go outside the umbilical ring and actually don't look so great. And finally we have a lot of concern about hernia-formation at that site because the area of concern is difficult to close adequately, et cetera. And, again, I think it's important to consider what the goal of single site surgery is, in other words, it's really all about cosmesis.

Absolutely.

So we've come up with what we call the no visible scar colectomy or for short, “INVIS”, and we've tried to make it a very standard approach, very similar to our standard laparoscopic colectomy. It's applicable to right and left sigmoid colons. The only difference between standard laparoscopic colectomy and LESS colectomy or No Visible Scar colectomy really, for the right, is you have to an intracorporeal anastomosis. And we've actually not used single site. Most commonly we've used two sites.

We use a suprapubic site, which is our main working port, and we actually put two trocars just above the pubis, below the hairline, and the size of that incision can vary, as small as three or four centimeters, but more commonly five to six centimeters to allow extraction of the specimen. And then the umbilicus is what we call a “freebie,” we put a five millimeter through there and it typically is not seen at all and of course there's no concern about a hernia with such a small trocar. And so we've regained some of the triangulation that we really need to do these operations in sort of a standard fashion. So this is sort of a standard sigmoid or left colectomy approach with a five millimeter left upper quadrant, a twelve or a ten millimeter umbilical, and a ten or twelve millimeter right lower quadrant, and then using extraction site somewhere in the left lower quadrant.

Our current approach for a standard laparoscopic left or sigmoid colectomy or low interior would be three five-millimeter trocars, a little more to the right than most surgeons use perhaps, the main camera being to the right of the umbilicus, and then we put a twelve millimeter in the left lower quadrant or occasionally suprapubic, and then use that as our extraction site. So at the end of the operation we close our extraction site and the other trocars don't need to be closed.

With the no visible scar or “INVIS” approach we actually use a five and a twelve in the suprapubic location. We make those transverse skin incisions, planning out our extraction site by connecting the two incisions, if you would, connect the dots, and then we use a five millimeter at the umbilicus. And this is what it might look like after the operations complete with, again, a five millimeter hidden at the umbilicus and then the two smaller trocars down at the suprapubic connected for extraction site. Another example of how it looks two weeks post-op.

Why don't we look at some of the videos now?

So when you're trying to decide who you're going to use this for, it's for cosmesis, as we've already mentioned, who do you think are real candidates for this?
Well, obviously, sort of by definition it has to be somebody who has a cosmetically pleasing appearance now in their abdomen. So if somebody has an old midline or multiple old incisions, obviously this is not really applicable. There we’re just happy to get in and not have to make a laparotomy to do the operation.

And what kind of disease processes would you think would be candidates for this operation?

You know, pretty much any disease process. Now we have not yet done total colectomies but certainly that’s feasible to do. We have, right now, been doing segmental colectomies, so left colectomies for either diverticular disease or for cancer, and right colectomies most commonly for cancer.

Let’s take a look at the video then. What is this going to be?

This first patient is a 69 year-old female with really, very little comorbidity, quite healthy, asymptomatic, who was found on a screening colonoscopy to have a mid to distal sigmoid cancer. It seemed to be early stage based on pre-operative imaging.

So you’re establishing your pneumo and putting you’re camera port.

The five millimeter trocar, that’s right, right in the umbilicus.

Okay.

Again, within the umbilical ring, hidden, and we’re first going to do a screening laparoscopy, and we discovered a little bit of surprise that she has a little bit of early cirrhosis for no obvious reason.

Now how do you position the patient?

The patient is positioned in lithotomy position in the Allen stirrups. The right arm tucked by her side because during the operation, both of us – both myself and my assistant, which is my fellow standing on the right side of the abdomen.

Okay. Do you ever operate between the legs?

For the splenic flexure, yes, that can be helpful.

Okay.

Not routinely, but we certainly can move there if we have any difficulty. Now we’re putting our second and then our third trocar in, again, in the suprapubic spot. Obviously you need to be careful not to injure the bladder. We actually, if you notice here, we’ll put the incision down quite low, about one-finger breadth above the pubis. They really try to hide it within the hairline. And we’ll kind of tunnel up, if you noticed, a little bit higher so that when we actually get into the abdomen, we’re a little bit higher to avoid injuring the bladder and also to give us a little more reach towards the upper abdomen.

So that keeps you from making a fulcrum over the top of the pubis.

That’s right.

Okay. So, now what are we looking at?
Now we're just looking at the actual sigmoid colon. You can see she's got some unusual adhesions, congenital adhesions, but not a big deal. We're now doing a medial lateral approach so our left hand, which is that left trocar in the suprapubic spot, is elevating the mesosigmoid up and then the right-sided one is using this instrument to try to dissect out and identify that retromesenteric plane that you see right there. There you see right there, that's the IMA being elevated right now. And you look behind that you'll see the pelvic nerves, hypogastric nerves, and eventually you will see the left ureter through there as well.

So during this dissection for a cancer, what are you trying to accomplish at the base of the IMA?

There's the left ureter, by the way, Jim, I'm sorry to interrupt.

Okay.

We're trying to get a high ligation, and we're also trying to mobilize enough that we have adequate reach that will reach down into the pelvis for a tension-free anastomosis.

Is there anything that you're trying to protect at this level, other than the ureter, which you've already defined?

Well the ureter, the iliac vessels, as well as the pelvic nerves.

So where are you on the IMA?

Right now we're cleaning off the mesentery anterior, or the fat, if you would, anterior to the IMA, and we're about – probably about, at that point right there, about two centimeters distal to the takeoff of the IMA. So we're going to clear this off, we'll down a little bit lower, and then we'll do a high ligation, but not an ultra-high ligation, I don't try to take it right at the takeoff from the aorta.

And so is the IMV going to be taken here or are you going to take it up again higher?

I think you can see IMV on the video there, just on the left side of the IMA, if you would,. And typically we take them both to this level, and then if we need mobility such that we're doing a low, low anastomosis, for example, we'll take them – the IMV again at the level of the pancreas. I think you can see right there the EnSeal device going across, grabbing both the IMA and the IMV.

And what's the instrument you're using there?

That's a five-millimeter EnSeal bipolar sealing device.

Okay. And it's taking what size vessel, do you reckon?

Well, in this particular patient, she's a rather slight built Asian female, it's probably in the order of, perhaps four millimeters, maybe five at most. But I have no concern with this device taking up to seven millimeters.

Okay. Let me just remind the viewing audience that we would certainly like to answer any questions you have if you'll just e-mail them to our website, and we'll get them and we'll answer them after the first video.

I think the key maneuver to sealing vessels, of any size, quite frankly, but anything bigger than a trivial vessel when you're using these devices is you'll notice that we put the instrument across the vessels and then we relax all tension before we seal and divide them. So we relax our left hand that's holding the tension, and we also relax our right hand to bring it close to the root of the vessel.
So how far does the heat that that generates travel?

You mean the collateral spread, if you would?

Yes.

One millimeter or less. It’s really not of any significant concern as long as you’re even minimally careful.

Okay. Where are we now?

We’re now taking down the lateral attachments. Now, what we didn’t see, because the video is edited for obvious reasons, is that extensive medial lateral dissection we did once we took the IMA and the IMV. We then elevate that mesosigmoid with our left hand and sweep up and down along that rectoperineal plane, and so when we go lateral to medial, then all we have to do is take down that lateral attachments, and boom, it’s totally mobile.

Okay. And you’re protecting the left ureter as you’re doing that?

That’s correct. If you identify, like we did earlier, and you sweep and you elevate the mesocolon off of the retroperitoneum, there really isn’t much reason to protect anymore because it’s safe by being back where it belongs in the retroperitoneum.

Okay. What if you hadn’t seen the ureter at that point?

Real quickly, just to point out what we’re doing here, we’re now on the left side of the rectum. You can see we’ve gone from behind and now we’re going up along the left colic gutter. If we don’t find the ureter on the medial lateral approach, we convert to a lateral medial approach and we find it in that plane and then find it typically high up and then follow it down, safely making sure that we don’t elevate it or tent it up into our field.

Okay. So, now you’re releasing the colon from the left side?

That’s correct.

Okay. Is there any advantage to doing that earlier than later or --

You know, I don’t really think it matters but I think it’s helpful not to be moving the patient around a lot back and forth, and so when you get up to the actual splenic flexure, we often put the patient in reverse Trendelenburg to assist us, and at that point, you don’t want to be going back and forth. So I think you make a fundamental decision, I’m going to go there first and release the splenic flexure and take it down first and then go down into the lower abdomen and pelvis or vice versa. I don’t really think it matters that much.

Okay. I’m going to comment on the size of the patient at this point because we don’t see many like this in Missouri.

You’re just jealous.

Yeah, well we don’t eat a lot of green stuff there either, so.

Wait until dinner tonight.

Oh, good. So what are we doing now?
Well we're getting – now we're just taking down more of those lateral attachments and you can see behind that plane, it's already free. You can see a little bit of blood back there. We've already been there from our medial lateral approach.

Okay. So purple, that's what you're looking for?

That's purple, exactly right. That's staining. And now we're heading up towards the actual splenic flexure, we're getting very close. And you'll notice here that there's a lot of omentum stuck to the descending colon here. You're not really able to see the colon very well. So you'll see in a minute here we're going to convert to sort of a medial lateral splenic flexure mobilization where we actually are going to come above the transverse colon, take the omentum off, and then go from the patients’ midline over to the left side.

So how did you mark the tumor, or how did you know where the tumor was?

In this case the tumor was in the mid to distal sigmoid and was tattooed.

Okay. And you do that regularly?

We use tattooing very frequently. Now if the patient comes in already having had a full colonoscopy we will do a couple of things. We will look at the CT scan and see if the tumor is visible on a CT scan, which it often is. Even if the radiologist doesn’t see it, you can often find it. We want to know exactly where it is before we get to the OR if at all possible.

So you do a CT scan pre-op. Do you do ultrasound intra-op?

We do ultrasound intra-op of the liver if there’s any reason to do so, so if we find something abnormal or if we suspect something based on the preoperative imaging.

And what about finding the tattoo if it’s hidden on the mesenteric surface, as opposed to anti-mesenteric surfaces?

Then if we’re pretty sure where it is, we’ll mobilize it fully and then find it. If we’re not really sure where it is, for example, if it’s anywhere around the transverse colon, which is, of course, notorious for being inaccurate, we’ll bring out the colonoscope. We had the colonoscope in the OR. Here’s where I was talking about, Jim, the transverse colon. That's the transverse colon that you’re looking at right there, going from the mid portion over to the left to the splenic flexure, and you can see the omentum is stuck, not just to the transverse colon but also to the descending colon, and that’s – I have to tell you, maybe it’s a California thing, but it’s very, very common in my practice that we find that omentum kind of making the transverse and descending colon kiss each other, if you would. And if you don’t take that down then you really don’t get full mobilization of that descending colon.

So we use intra-op colonoscopy. We use tattooing. We use, again, CT scan imaging. And then often in my office, I’ll just take out the flexible sigmoidoscope and scope somebody the day I see them without a prep, because you’re not looking for a polyp, and almost always you can find a tumor; if it’s less than 40 centimeters I’ll almost always do that to look at it myself.

Okay. You’re releasing the transverse colon and the splenic flexure from the under surface of the omentum, but you haven’t divided the IMV at its origin.

Correct. There’s no reason to in this case because this patient has a – as I said, a mid to distal sigmoid tumor, and we know we’re not going to be worrying about tension. She hasn’t had radiation, so we’re not worrying about our proximal bowel margin being radiated and having to mobilize more. If somebody is having a low anterior for a
rectal cancer where they've had radiation therapy, they all get full stomach flexure mobilization. And what does that mean, it means what we've here and taking the IMV once again at the level of the pancreas so that that thing will reach down and reach to their knees if need be to get the anastomosis safely done.

Okay. Can you tell us what it takes when you’re doing retraction with a single instrument to be able to see well.

Well I think it takes experience, number one, and I think you have to liberally use gravity to help you. And I think it also means that you've got to have a very secure patient on the table, and so we use very large gel pads to secure the patient with large amounts of very wide tape, not taping the patient but taping the gel pads to the bed. You can also use a bean bag. I think that works equally well. But you want to make sure that patients not going to move and then using a lot of gravity to assist you to get the patient down there. And then when you use the graspers themselves, I think it’s important that because you can see the graspers are largely out of the field of view, so you better be very careful using those and not torque or twists them so that the end of the grasper doesn’t dig into the colon wall, because that’s how you get injuries. You want to pull tangentially, if you would, or in line with the actual grasper, pull the colon, or better yet, grab the mesentery instead of the colon. The problem with grabbing the mesentery is you can get bleeding without realizing it if you’re not careful.

I always teach my fellows that they should use two-dimensional retraction as opposed to one-dimensional.

That’s right. And for those in audience who are not sure what Dr. Fleshman means by that, what he means is you don’t just pull lateral or medial, you also pull either anterior or posterior, most commonly anterior. So, for example, when you’re mobilizing the descending colon laterally, you want to pull the colon medially, but you also want to pull it anteriorly off of the retroperitoneum, and that's really what gives you the safety to do this operation, particularly from a medial lateral approach. So you can see right there finally we’ve released the omentum so that the colon can straighten itself out, if you would, and reach down to the pelvis, and now you'll see we'll grab it – we'll grab our proximal margin and be sure that we’re happy that that’s going to reach all the way down to do an anastomosis without tension.

Okay. It looks like it’s got a long way to go and it’s going to get there. So now where are we?

Now we’re going back. Again, we’re in the pelvis, you can see the left tube, I think, right there. And we’re going to just take down a little more of that perineal reflection there, attachments, so that that rectum and colon are mobile. We’re not taking any blood supply here. Obviously the blood supply all comes in through the mesorectum and/or lower through the middle rectal vessels. We’re not that low in this case because this is not a rectal cancer, it’s a sigmoid cancer.

Okay, so when you got your pathology report back, what did you find? Did you have twelve lymph nodes in your specimen and –

No, we didn’t have 12, we had 23.

Okay.

So we’re happy as long we get twelve but we had – this particular patient had zero out of 23 nodes and had a T2 non-transmural cancer, so really a stage one cancer. So, obviously, the overwhelming odds are that she is cured.

Okay, so what’s doing here?

Now we’re putting in the new flex 60-millimeter stapler.

And it looks like you’re doing two things at once. You’re holding the camera and the stapler?
That’s correct. Well this was the first time we had used this new stapler and so I wanted to have the opportunity for myself to do it, and I typically teach fellows and I teach them by holding the camera. I’m the director, if you would, and I let them do the operating with two hands, but just for the stapling part of it I wanted to do it myself.

Okay. And does it always fire straight across with one firing or --

Not always, but I tell you, more commonly than not it does now. I think it’s important that you clear off the mesorectum, which I think you saw us do. And then this new Echelon Flex really gives you some pretty good articulation and allows, you can see right here, a pretty darn straight tangential division of the colon at that level. Obviously the lower you get the harder that is to do.

Okay. So, now you’ve got your specimen.

We’re going to divide the colon right here, and after we divide it, then we’re gonna take those two trocar sites in the lower abdomen, connect them, put a small wound protector or retractor in there, extract our specimen, divide our proximal margin, put our anvil in, and then drop that back inside for our planned anastomosis. And that’s what we’re doing right here.

So let’s say you didn’t get the splenic flexure taken down and you had a lot of difficulty, what are the alternate approaches that you might consider?

So if you can’t get the colon to reach down low for your anastomosis?

Right. If there were so many adhesions and everything is difficult, what would you do?

Well I think if you’re doing a no visible scar approach and you’re just struggling, put another trocar or two in. I mean, you know, again, remember what this is all about, patients’ safety has to come first. I think the second option you have is to put in a hand port. I mean, you can try putting a hand port in through your extraction site, and if you can reach your arm all the way up and help yourself, that’s great, because then you’ve preserved your intent, if you would. And then finally, of course, you could convert to an open operation, although I’ll tell you, for me the splenic flexure is easier laparoscopically than open even when it’s a really tough one, so I will not do that myself.

So what are we look at here, Mike?

So we’ve passed the anvils, sizers, and then staplers in transanally. We could not reach the top of the staple line safely. I didn’t want to force it, so I chose to go ahead and do a side to end – colon-end to rectal-side anastomosis. And that probably indicates that we may not have been down to the true rectum, although, if you can see here, it looks like we are. So nevertheless, she had a little bit of tapering up there and so we were very comfortable with that, no big deal. If we were doing diverticulitis, we would have resected that segment because we would believe that that segment is probably sigmoid colon or behaving like sigmoid and would leave that patient with a higher risk of recurring diverticulitis.

Okay. Very good, you passed your boards. So do you check this now?

Now what we’re going to do – you know, I like to secure that distal bit a little bit while I pull out the stapler after we fire it, and then we’re going to air test it, yes. Now, at this point in time, because we’ve now extracted our specimen, we’ve put in our anvil, we’ve put the colon back inside. Now we have, then, taken that extraction site and reclosed it and then put a single trocar back in that site again. And so now we only have two trocars.
Good.

So right now we have two five-millimeter trocars. So we first irrigate and fill the pelvis with fluid, take the irrigation out, and now we'll put the bowel clamp in. We'll clamp off the vowel, above the anastomosis, of course, and then we'll insufflate from below with a rigid proctoscope.

Now did you protect the wound when you extracted your –

We sure do. I mentioned that earlier, briefly, but we use a wound protector/retractor.

Okay. All right. How do these patients do after this operation? Is there any difference in their recovery, pain, et cetera?

Well, certainly, compared to an open colectomy, there's a vast difference. Compared to a laparoscopic colectomy, I don't think we can say that there's any difference yet. I think there seems to be a little bit less pain because the highest trocar site is the umbilicus, and with our standard approach we put a trocar in the sort of the – not subxiphoid, but upper-gastric area that tends to be the one that hurts the most when they breathe. So I think there's a little less pain but not enough to make that a claim at this point and time.

And do you take any measures to give local anesthetic or use epidurals or infusion of anesthetic to the wound?

All of the above; so I use preemptive analgesia at all my trocar sites before I even make the various needle insertion, and then we use epidurals liberally, so that means we offer every patient an epidural. If they want it, great, if they don't want it, they're not forced to have it, certainly. If they don't take an epidural we, again, use preemptive analgesia either way, and we also give them that Anapecia [PH], typically Toradol post-op, if they don't have an epidural.

Okay. Well we've got a couple of questions here from our audience.

That's great.

So here's a question. “Are the postoperative adhesions more or less likely using endoscopic single site surgery in the abdomen?”

Well laparoscopic surgery, when we've re-operated on those patients for a variety of reasons, we've found very, very little adhesions, except for right at the site where the surgery was; that is, at the anastomotic site, et cetera. So there really isn't any reason to think this is going to be less adhesions than that, because it's hard to get less than none. So it's unusual to get adhesions in any laparoscopic operation in my experience.

Okay.

The only place you get them, again, is the surgery site and perhaps a little bit at the extraction site, which is going to be the same.

So is there a role for adhesive barrier use in this case, do you think?

I don't think so.

Okay. So, another question is, “Do you have experience with the hand-assisted approach, and if so, what does this add to the efficacy of doing a colectomy?”
You know, I think the hand-assisted approach is absolutely valid. I like it best as a sort of a learning curve issue, if you would, step-wise approach, or for allowing a surgeon to take on more challenging cases that they wouldn’t be able to take on with a straight approach or to avoid conversion to open operation. Others, I think, find the hand-assisted approach useful routinely for splenic flexure mobilization and for low pelvic dissections, for example.

Well you use your technique of running the camera to guide the operation. I actually use my hand as a teaching tool. So I will stand between the legs, put my hand through a suprapubic Pfannenstiel incision –

Right.

-- and then I guide the operation doing that –

Right.

And I think that speeds the operation up and increases the safety during a learning curve for the fellows or the trainee. But on the other hand, when I’m doing my own operations I’m usually doing it straight laparoscopic and use the hand-assisted approach only as a safety valve or an alternating approach.

To avoid conversion.

To avoid conversion.

That’s right. Right.

So, here’s another –

So you’re a director, I’m a producer.

You make more money than I do, but that’s all right. So how far apart are your suprapubic trocars and what type of camera were you using?

So those are great questions. So the trocars are as far apart as I can put them within the realm of the incision I’m planning. So we try to plan out how big of an incision we’re going to make. And how do we decide that? Based on the patient’s body habitus and based on the pathology we’re dealing with. So if we’re dealing with a thin patient like we just saw who has a small tumor, then our incision will be, at most five centimeters, more likely four, four and a half, and therefore, we will make our – we will draw that line on the suprapubic area before we start the operation and then put our trocars at the lateral edges of that incision. If the tumor is bigger or the patient is a little bit more hefty, then we’ll make it a little bit wider, and again, put our trocars at the lateral aspects. We have them as far apart is possible for two reasons, one is to allow more triangulation and to avoid colliding, if you would, of the trocar during the operation.

So you do a little fighting with yourself while you’re operating there?

Yeah. I think if you – you know, we initially started out doing true single site colectomy, and really, after doing a few of those, other than the really simple ones, got a little, if you would, conflicted, or frustrated is maybe a better word, because you have a lot of fighting there. And you can buy some low-profile trocars and use those and they can help you out a little, bit but you can’t avoid that fighting or scissoring if you do that and that’s why we have evolved, if you would, to this approach.

So what do you think your learning curve is for this technique?
I think with this approach here if you – let’s say you’re already at your learning curve for a colectomy, doing a standard approach like we do, I think your learning curve is two or three cases. I think it’s very, very short. Now going back to the camera, I think that’s a critical issue. I think, for us, we use a flexible tip five-millimeter camera, and we find that completely un-replaceable, quite frankly. I think it really facilitates and allows you to do these operations because it really regains your triangulation that otherwise lose.

So how much instrument exchange do you do during this operation? I noticed you using that EnSeal quite a bit. Is there a reason you picked that specific instrument or –

Yeah. I think the evolution of my approach, over the last decade at least, has been using a lot of monopolar and then using bipolar or other devices for the larger vessels or for the vascular structures, the omentum, et cetera. Because this new EnSeal is quite fast and it really is what I call a “smart device,” that is, allows you to decide when to cut and when to go. I think it’s fast and I think it has allowed me to replace the monopolar and not have to have those instrument exchanges. I don’t think it’s quite as fast as a monopolar scissors but it’s close, and I think if you factor in the amount of time it takes to exchange instruments, I think it’s a little bit faster.

So have you used harmonic in this instance as well?

Yeah, I have used harmonic but very little because I like to use a large vessel ceiling and because I’ve already got the EnSeal device open for the large vessel sealing I just continue to use the EnSeal device, but I think the harmonic is a good alternative.

Okay. Well we have another video I think that we’re going to look at, so why don’t we go there.

We do. This is a upper-rectal cancer in a male patient, and no chemo or radiation because it was an upper-rectal cancer, relatively early stage. And again, we’re starting out the same way with that medial to lateral dissection. Again, mobilizing up, elevating the IMA, identifying at some point in time, we’ll see the left ureter and then taking the IMA and then the IMV again at this level.

So this almost looks exactly like the last video that you showed.

It looks a lot the same until you get to the point where you’ll see we have a little bleeding this time but that’s –

No. Come on.

All of our patients look the same on the inside, Jim, because they’re all skinny eating those greens.

Oh, man. Okay. Well I wouldn’t like living in California, I can tell it right now. So you’re going to start the same operation with a high ligation of the IMA, and you’re going to dissect in the same plane.

That’s right.

Where is your tumor in this patient?

In this patient, again, it’s really just below rectosigmoid junction.

Okay. And did this patient get neoadjuvant therapy?

He did not. Again, because of the location of the tumor, we don’t use radiation for upper-rectal or rectosigmoid tumors.
So when you – when you’re looking at a patient with true rectal cancer below 12 centimeters, what’s your policy now, using laparoscopy for rectal cancer?

Well, my policy or my practice? So I think what I do and what I teach may not be in congruity here. Because what I do is I do laparoscopic approaches to all patients, but I’ve also been doing this for 18-plus years now and have fully ascended the learning curve, and I do it because I think it’s safe. But I also do a hybrid in many cases, so if I have any concern at all, I’ll go through Pfannenstiel and complete the operation, from Pfannenstiel through an open approach.

I think that rectal cancer done laparoscopically, at that level, especially with neoadjuvant therapy still unproven. As you know the classic trials raise some concerns. I don’t think they were at all definitive and I don’t lose sleep over them. But I do think there are concerns about the ability to do an adequate mesorectal dissection, and I think the ACOSOG trial that you’re leading is important. We’ve got to get those answers and we’ve got to get them answered in a proper way.

Okay. So tell me what’s going on here now?

So, again, we’re elevating our mesosigmoid up. We just divided our IMA and IMV, and now we’re just confirming they’re, you see the left ureter, and I like to see it once again peristalses or vermiculate and so I’m going to just kind of beat on them a little bit until it will perform for me.

Okay. So don’t tell your fellows to do that, okay?

I’m just kind of tickling, dude, that’s all.

All right. So how can you make that exposure better? What can you do to help yourself see the plane without having to struggle too much, from your tricks in the trade?

Sure. I think the most important thing is to start in the right plane. But even before that, a step that’s often neglected is to get the bowel out of the pelvis.

Okay.

And the only way to do that, in my opinion, is to have the patient in completely maximal steep Trendelenburg, and so you’ve got to prepare ahead of time for that. We put large gel pads above the shoulders, we make sure the anesthesiologist is comfortable, and then we put that patient in maximal Trendelenburg. The small bowel will typically fall out of the pelvis and stay out. Now, often, there are some adhesions that are congenital between the terminal ileum and the right pelvic sidewall or cecal area. And I tell you, if it’s at all hung up, there I take those down, I spend the extra five minutes, take those down. I want that small bowel nowhere near me because otherwise you’ll get frustrated. You’ll be a third of the way through the operation and that small bowel is falling in your face and really blocking your view. And then I think, what you talked about earlier, that two-dimensional retraction, so elevating that mesosigmoid off of the retroperitoneum, and doing as much medial laterally as you can. Again, these videos don’t really show that because of – you can see the tattoo mark, Jim, at the tumor site right there.

Right there.

So we’re taking down the left side now. Here we’re on the left side of the rectum. And you can see, look behind there, we’ve already done all the dissection from behind and so it’s really just a matter of taking down, and now we’re going to go up along the sigmoid colon here, lateral to medial.
So this is all purple tissue that’s –

Because we’ve already been there from behind.

Right.

And you can see it just elevates right out there. You don’t have to worry a bit about the ureter. I mean you can injure the ureter doing this but it’s pretty hard.

Okay. And finding the ureter is a critical step in your procedure.

That’s right. So here’s that maneuver right here, over and then up. You notice how we elevate –

Yes.

-- anteriorly.

It opens it up nicely.

It opens it right up, that’s right.

Okay, so this is a patient who has not had radiation, who has a rectosigmoid tumor on the top of the rectum.

That’s right.

How much are you going to mobilize for this?

Well, you know, I’ll mobilize as much as I need to get a tension-free anastomosis. I think distal margin needs to be two centimeters and maybe a little more at this level. There really is not a lot of reason not to have more if you can get it. Once you get down into the mid to low rectum, I think it’s important not to have too much of a margin because I think you compromise the patient’s quality of life with their residual native rectum. And then proximal margin, quite frankly, is dictated by blood supply. You’ve taken the IMA and then we take that sort of pie-shaped piece of mesentery that really lends itself to making sure you get all the lymph nodes that drain that tumor.

Okay.

And so in my mind that typically means near the descending sigmoid junction, but you can occasionally preserve some of the proximal sigmoid if it looks like it’s healthy. If it’s got diverticular disease it comes out.

Okay. All right. So we’re getting into the splenic flexure again.

That’s right.

Now you’re testing it.

We’re just making sure it will reach.

Okay.
And then now this is a little bit lower, you can see, and it's also a male pelvis. We're going to go ahead and take down some of the anterior perineal flexion now, and not nearly as easy to get a stapler across this one tangentially, you can tell that from here. You see how much we're angling down. Even though we're at the suprapubic site, you can see the instruments angled pretty severely down there to get it to the pelvis.

So is there a problem with the bladder or the uterus getting in your way ever, on these?

You know, I think the bladder can get in your way if it fills up, and so we typically run the Foley catheter below the leg so that doesn't happen and we don't get too much distension of the bladder. The uterus can be a big problem. We just did a case last week where the patient had a cesarean section one year earlier, actually, and had a rectal tumor and the uterus was stuck up to the intra-abdominal wall of the Pfannenstiel incision. We were very happy because it actually held it out of our way. But we often will put a stitch in that uterus and hold it up if we need to.

Okay. So a previous operation, obviously, doesn't preclude you using this approach.

No. I mean if they have a previous Pfannenstiel, it actually lends itself quite nicely because the patient ends up with no additional or no new scar. We had one patient who had a previous transverse right lower quadrant appendectomy incision, and it was kind of an ugly incision because it had been a perforated appendicitis, and we actually did a scar revision and used that site for our no visible scar approach. And so she had a visible scar but it was better than the one she came in with.

So how many times have you fired the stapler across this?

I believe -- in this case, I believe we had to fire it twice.

This is, again, an articulated stapler?

That's right. But even with maximal articulation you can see we're not getting a completely tangential division, although we're pretty happy with it.

Okay. How low have you been able to go with this technique?

Well this is actually the only patient we've done that's had a rectal cancer, so this is the only one, we haven't gotten that much lower. And I think that is one of the limits, is being able to get the stapler across here through a suprapubic site.

Okay. And then you've got your specimen.

That's right.

So what are you using as the indicator that you've done a good operation? What's your pathologic –

There's the (INAUDIBLE), by the way, you can see that's about three to four centimeters from our mark.

It looks like a pretty good mesorectal incision, I have to say.

Yeah, we like to grade our own mesorectum. I mean, we don't have pathologic grading, although we do get radial margin reports back and we make sure that we have a good radial margin so.

Okay. And so you extract that with protecting –
Absolutely. Always.

At your site.

We use an Alexis retractor.

So those are great videos.

Thanks.

Thank you for a job well done. I’d like to remind the audience that we’ve still got time, and please send in your questions. I’ve got a few questions that we’ll go through and let’s see if we can get some more information out.

So what diameter of the circular stapler were you using on that first case and on this second one?

Do they make more than size?

Okay.

95% of patients get a 29 millimeter.

Well some of them are as big as my thumb, so you have to be careful. Do you think it makes a difference?

I think it makes a difference. I think if — I’m more worried about being too big and too small. I’d much rather err on a too small than a too big. I can always dilate it later if it really is a problem but that rarely is the case.

So the big one stretches the bowel.

I think it makes it ischemic.

Okay.

Yeah.

All right. How long are these procedures taking you?

For a sigmoid colectomy, maybe two hours with this approach. For a right colectomy, a little bit longer, only because we’re doing intracorporeal anastomoses.

Okay. And how do you do those anastomoses?

Well, basically we’re doing them the way they do jejunostomy for a Roux-n-Y gastric bypass because, in fact, we have our four gut surgeons come in, and they’re actually in the process of training us to do those anastomoses. So people who are facilitated with doing those, no problem. I’m not that comfortable doing those, and so I’ve decided not to subject my patients to a learning curve.

So Dr. Wynn comes in and handles those.

Oh, Dr. Evans, that’s right.
Okay. What other surgery can you do through this approach? I guess we’re talking pouches or IBD or –

Oh, I think to a certain extent, the sky’s the limit. I mean, you know, you really can do any segment, so therefore you can do a total colectomy. It will be a little bit longer, and so you’ve got to decide how much, you know, stomach you have for the extended length of time it will take you. It definitely – you know, a total colectomy done laparoscopically is already somewhat of a long operation, particularly with a pouch, so do you want to add another half-hour or hour, that’s, you know, I think, within reason, dealer’s choice. Obviously, if you’re operating beyond four or five hours, I get worried, I don’t, you know, I don’t have the –

But you wouldn’t hesitate to try to do a terminal ileal Crohn’s disease with a small phlegmon or something like that?

No. I think the issue there is going to be the size of the phlegmon and how big the extraction site would need to be.

Okay. So how do you manage these patients after their surgery? Is there something that you do? Do you use fast tracking?

Well, you know, all of our patients get what we call a “Care path.” I don’t know – I’m not sure I like the term “fast tracking” myself, because I think it’s got some negative implications, even though it shouldn’t. But we do use a care path, and all of our patients go on that care path, and that includes things like – we don’t use orogastric or nasogastric tubes. The only time we even have them in the OR is if the stomach’s full of air from the intubation process. They’re all given ice chips the day of the night of surgery. I typically offer them full liquids the morning after surgery, so post-op, day one. And typically advance them to a regular diet on post-op, day two. I don’t feel compelled to advance them sooner because it’s rare that a patient will go home on post-op day one anyway, and so if they have breakfast on post-op day two and they tolerate it on a regular diet, they can go home that day. Most of our patients actually stay about three or four days. Our average length of stay is four days.

Okay. So if you had to ask for a new instrument to help you do this operation what do you think it would be?

Well I think if you don’t have it, right now the most important instrument, in my mind, is the flexible tip laparoscope.

Okay.

You know, we already had it so that wasn’t a big issue for us. So, for us – I mean, I think the beauty of this approach is you don’t need a lot of new instruments. I mean you even can get by without the flexible tip laparoscope, but that’s the one I would want the most, just because I think it really gives you back the triangulation you somewhat lose when you switch to a single port or a double port like this, or a double site, if you would, surgery.

So if – and if patients come to you and say, “I want INVIS surgery,” what do you tell them now?

Well, I look at them, I look at their pathology, I look at their current body habits, then I say we’ll take that approach. But every patient, whether it’s INVIS or a standard laparotomy gets counseling regarding the need for conversion, and conversion can mean lots of things; it can mean converting from an INVIS to a straight laparoscopic, it could mean adding another trocar too. It could mean adding a hand cord. It could mean making an open incision that’s big or quite small, depending on the individual characteristics.

So you don’t really see this as being the next step before single port, or do you think this is single port?
I think this satisfies all of the single port advantages for what we do, colectomies.

Well what we’ve been talking about this week at the Minimally Invasive Robotic Association in San Diego, California, is where the robot may take place and where the indication for single port is versus NOTES, which is no incision.

Right.

What are your thoughts?

Well, you know, I think NOTES is a ways off because of technology, I don’t think we’re there yet. I’d love to see it happen, but I think in the meantime, we need to prepare for what we can do short of NOTES.

Okay, do you have any other slides or data you wanted to show us?

I just want to sort of wrap things up a little bit and just, you know, really say, in my mind, this is an exciting time to be in surgery. I’m reenergized or I continue to stay energized throughout my career. And I think this evolution from open to minimally invasive surgery to what I call a “minimalist approach,” and really, to me, it’s all about minimizing the footprint that we leave behind. And the dual site, you know, in my hands at least, allows the use of my current skill set and instrumentation, and I’m happy that there’s more to come, because no question our industry partners are, indeed, giving us better and more unique instruments all the time.

I think we do have to have some responsibility in terms of cost containment with some of the newer devices. So the advantage of this one is it doesn’t require any expensive devices except, as I mentioned earlier, that I think it’s nice to have the flexible tip scope. The principles of surgical technique are followed like they are with any other operation that we do, and remember that the surgical evolution is a journey and it’s fun to be onboard.

There’s a lot of confusion still, I mean what is, you know, the right terminology to use? Is it LESS? Is it NOTES? Is it SILS? Is it E-NOTES? Is it NOTUS? How big an incision do you need to make before it becomes open surgery? When is a needlescopic port not a port? It is a long way from less to more. The role in surgery, I think, does remain undefined, and remember that all things good were once new but all things new are not necessarily good. And instrument development will be key and will have an impact on all aspects of what we do in terms of how we make surgery less invasive for our patients. Thanks.

Well thank you, Mike. We’re about out of time. I’d like to thank you for joining us. What I hoped for was an informative webcast, and we got one, I think. Thanks Ethicon Endo-Surgery for sponsoring this important series on webcasts for surgeons. If you missed any of this program or would like to view it again, the webcast will be available on demand shortly on the ORLIVE.COM website. For Dr. Michael Stamos, I’m Dr. James Fleshman, have a good night. Goodbye from California.