

**GASTRIC BYPASS SURGERY
PITT COUNTY MEMORIAL HOSPITAL, GREENVILLE, NORTH CAROLINA
Broadcast November 15, 2005**

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NARRATOR: You are about to see a webcast of a gastric bypass live from Pitt County Memorial Hospital in Greenville, North Carolina. During this minimally invasive procedure, surgeons reduce the size of the stomach by creating a small pouch in the upper stomach and connecting it directly to the middle of the small intestine. The resulting bypass restricts the amount of food a patient can consume, promoting long-term weight loss and producing dramatic results.

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KENNETH MACDONALD MD: First of all, they feel better and have more energy and feel better about themselves. Secondly, they're healthier. If they have hypertension, about 70% of them can come off all medications. If they have diabetes, at least 85% can come off all medications for their diabetes and obviously that improves the subsequent health problems.

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NARRATOR: At any time during the next hour, email your questions by clicking the MDirectAccess button on the screen.

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KENNETH MACDONALD MD: Good afternoon. Welcome to Pitt County Memorial Hospital in Greenville, North Carolina. Today we're going to be doing a live broadcast of a gastric bypass operation. I'm Dr. Kenneth MacDonald, the moderator and host for today's webcast. Dr. William Chapman will be performing today's surgery. If we can go into the operating room, Dr. Chapman, can you introduce the rest of your team to us?

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WILLIAM CHAPMAN MD: I sure can. It's a big team. Today my assistant is Dr. John Pender. He's with Brodie School of Medicine at East Carolina University. Ms. Jenna Logan is our physician's assistant with the bariatric program. She'll be holding the camera. Ms. Jenna McCoy is our scrub tech, who has been with us for many years. Karen Saunders is our circulating nurse. Up at the head of the bed, we have a group of ñologists. Dr. Duncan, our CRNA is Doug Whitfield, and our student nurse anesthetist is Sean Hunter.

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KENNETH MACDONALD MD: That's very good, remembering all those names. To the viewers out there, anytime during today's live webcast, you can email questions to us right here in the operating room by clicking on the button below on your screen. We will try to answer as many of them as we can during the broadcast, but obviously we can't answer all of them. We will try to get back later on, in the next several days, to answer most of them that come in. So any time that you have a question or anything that you would like to ask us, just press that button below on the screen and email us.

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We can talk a little bit about the patient characteristics. Our patient today has a long history of obesity and has failed dietary attempts, as is one of our requirements for gastric bypass surgery. That includes Weight Watchers, TOPS, Physicians Weight Loss, and also prescription diet pills properly prescribed by a physician. Her weight is 260 pounds. Her ideal body weight at her height of 5'2" tall is 134 pounds. When you calculate the body mass index, or BMI, which is a weight versus height determination, it is 43.5. As we'll cover in a little bit with indications for surgery, that meets the weight criteria, at least.

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Comorbidities are health conditions which are made worse, caused by, or associated with obesity. She has diabetes and she's on two oral medications for this. She has shortness of breath with exertion, or exertional

dyspnea, as we call it, and she has swelling of her lower legs. Dr. Chapman, if we could go back in the operating room, if you could just explain to us a little bit of what you're doing. This is at the beginning of the procedure, after the access trocars or tubes are put into the abdomen. There's carbon dioxide in there, helping to separate the organs so that we can see well.

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WILLIAM CHAPMAN MD: Alrighty. Well, we've gotten our ports in and you can see we've got the liver out of the way. There's the big blue liver retractor up here. It helps us keep the liver out of the way. The liver lives right on top of the stomach, so it does get in the way, and in some of the bigger people, they'll have fatty liver of obesity, which can really be a problem as well and is also considered a comorbidity. We'll go ahead and blow up the balloon. We have a balloon catheter in. You'll see it blow up here so we can size our pouch. There it goes right there. Then we'll kind of snug that back up. You can see I made a mark here already, right there. That's a 15 cc balloon, so we'll make the pouch somewhere between 15 and 45 cc, once we staple it all out.

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KENNETH MACDONALD MD: For people that aren't comfortable with the metric system, 30 cc is an ounce, so 15 cc is approximately $\frac{1}{2}$ oz. of volume.

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WILLIAM CHAPMAN MD: Now we're going to go in here and we're going to start to create our pouch. We'll go into the lesser sac. This is right behind the stomach and normally we can get there pretty freely. Sometimes it's not as easy as others, but usually there is a path right through here. Once we get through there, we'll be able to see the back wall of the stomach. You can see it right there. There are some vessels here that we will take care of. Most of the staples that you see today are regular endostaplers made by U.S. Surgical. We'll get in there and this just kind of makes sure that we get hemostasis, so we don't have bleeding.

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KENNETH MACDONALD MD: It's very important, before you start stapling the stomach, that all the access tubes to the stomach through the mouth are removed so that there's no accidental stapling of those structures within the stomach. Another important point why it takes a team to properly do this surgery. We could move now to a couple of questions right at the start that we've received over the internet. One question asks what is your preferred technique? What limb lengths do you use? Do you use bands or sleeve gastrectomy or other operations and, if so, how do you choose between them? This is obviously from a fairly knowledgeable person. We will go over our preferred technique today and I do have a diagram up on the screen, sort of a cartoon diagram of a gastric bypass operation as we and many others perform it. You would have to call this probably the standard. As far as limb lengths go, there is a lot of debate but very little proof in the literature, well documented in studies, that is, on exactly what the optimal limb length is. As you can see on the diagram, the alimentary limb is the length of intestine that the food goes down from the gastric pouch until it meets the biliopancreatic limb and that is the limb of intestine that brings the pancreatic enzymes and the liver bile back into contact with the food material to aid in digestion, but the length of limb from the pouch we usually make 100-150 cm. This is also called a proximal gastric bypass, meaning we do not bypass enough small intestine to cause significant malabsorption of food material. So that is probably the most important limb length. There are many other possibilities, again each bypassing progressively longer segments of bowel. The problem with the greater bypass operations is that you do start fighting the problems of malnutrition and vitamin deficiencies to a greater extent than we generally have with this operation. Okay, Bill, back to the operation. You're forming the proximal pouch now?

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WILLIAM CHAPMAN MD: Yeah, we're making the pouch here and we're trying to keep it as small as possible. There are a few attachments here behind the stomach which we really need to take down, especially if you're thinking about doing aÖthere's various ways to do this operation. We will do an antecolic antegagastic, and there are retrocolic retrogastric. It's just where you bring the limb of the small bowel, so we are right now trying to create a pouch and get a little bit of a handle on this.

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KENNETH MACDONALD MD: It should be noted that when the program at East Carolina University School of Medicine was started by Dr. Fories back in 1979-1980, these techniques weren't available. Of course, we did these operations with a long open incision. The type of staplers which we had to use at that point in time in surgical history were much better than in the past, but not anywhere close to the quality of the staplers that Dr.

Chapman is using. Our program has a long history of research in bariatric surgery and particularly record- and data-keeping. For a long time, there wasn't good data on these operations because the patients were difficult to follow up for a long period of time, so people really didn't have a good idea of the long-term effects of the various operations that have come and gone. I think one of our major contributions here has been in long-term data analysis and trying to find out what actually works in the long-term and what doesn't work. Really, the end result is this operation. There are several others. The previous question sort of addressed some of that. Some people use bands. Some take out a lot of the stomach and leave what is called a gastric sleeve. That is beyond the scope of this webcast for the discussion of all those different operations, but suffice it to say not everybody agrees on what is the best bariatric operation.

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We could go here to some of the indications for bariatric surgery. That's a common question. I'm sure we'll get a couple of questions about that today. Common indications or requirements for bariatric surgery, the patient needs to be 100 pounds over ideal body weight. More commonly today, we use the body mass index that I mentioned earlier in discussing the patient characteristics, where a BMI greater than 40 with not much associated medical conditions is considered a candidate of surgery, and that can go down to even a BMI of 35 if you have serious comorbidity, which often includes diabetes, hypertension, or sleep apnea.

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WILLIAM CHAPMAN MD: Ken, we're getting ready to start the Roux limb here. I just want to identify what we've got here. Here is where the first part of the small bowel starts, the jejunum called the ligament of Treitz. We'll run this now. This is what we call the biliopancreatic limb. It's where the enzymes come.

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KENNETH MACDONALD MD: We'll go back to our diagram here so that can be on the screen. He is measuring the biliopancreatic limb to approximately 50 cm, or a little over 1.5 feet.

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WILLIAM CHAPMAN MD: Again we'll staple across this, make sure that we staple it so that it does not compromise the blood flow to the bowel. You'll see there's always a little bit of bleeding with these, no matter how you do them. These staplers are very good and the body will take care of most of the bleeding. Sometimes we have to stop it with a little bit of heat. That little bit of oozing will stop and it's really inconsequential. The total blood loss in these operations tends to be less than 50 cc, which is a very small amount. I do an extra staple load here, primarily because I go antecolic, antegastric and I want to make sure my limb is very floppy. These staplers have slightly different heights to them so that some are more hemostatic than others. Now this here, what I'm holding onto here, will become the common channel. This will become the alimentary limb, so it's where the food comes and we'll hook this up to the stomach, the pouch, way up top.

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KENNETH MACDONALD MD: How long are you going to make your limb?

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WILLIAM CHAPMAN MD: About 100 cm, 120 cm.

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KENNETH MACDONALD MD: Because her BMI is 42, I believe.

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WILLIAM CHAPMAN MD: 43.5.

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KENNETH MACDONALD MD: Our protocol here is if the BMI is greater than 50, which many people call super-obese, we make the limb 50 cm longer, or 150 cm. That still is not enough small bowel bypass to cause significant nutritional problems, but there is some experimental evidence that it improves long-term weight loss maintenance.

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WILLIAM CHAPMAN MD: This tricky little device here is called an Endostitch device, also made by Tyco Healthcare. It helps to tie knots. You can see there's still that little bit of nuisance oozing from the staple lines, but it should stop. If not, we'll stop it.

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KENNETH MACDONALD MD: Another interesting question I just received: I'm interested in the medical field and was wondering how important the anesthesiologist in this operation. What does he do while the surgery is taking place? The anesthesiologist is critically important in bariatric surgery because many of our patients have very significant pulmonary or lung issues which make the anesthesia quite a specialty and quite a tricky thing on occasion, so the anesthesiologist in any operation, but bariatric surgery for obesity, more than some, is critically important.

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WILLIAM CHAPMAN MD: We're making some holes in the bowel and you may wonder what we're doing. We're getting ready to put these two pieces of bowel together. It's critical that your assistant help with this because these staples don't go in all by themselves. You have to kind of hold the bowel right. It can be tricky and that's why it's important to have an experienced team doing this surgery. If you have an experienced team, the operation usually goes pretty well. It's nice that the other side of the table knows how to stitch and work these staplers as well, because it makes the operation go a lot more smoothly. We have a fellowship training program here and we do use the fellows a lot and we're using Dr. Pender, who came up through the program and has his own patient population he does, but it's nice to have someone on the other side that does know the technique.

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KENNETH MACDONALD MD: This is called the enteroenterostomy or the jejunojejunostomy. Basically it's where the two limbs meet, the alimentary limb bringing food down from the pouch, and the pancreobiliatic limb bringing the secretions from the bypassed stomach and the bile from the liver and the pancreatic enzymes, which are particularly important for fat digestion. There are operations that have names like biliopancreatic diversion, developed by Scopanaro in Genoa, Italy, and the duodenal switch operation. That bypasses the majority of the small intestine and the pancreatic enzymes and bile don't come into contact with the food until approximately 100 cm or so before it reaches the large bowel or the colon. Those operations do result in somewhat more weight loss than this gastric bypass, but at the expense of a lot more nutritional issues.

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Another question we have is what is the maximal weight you will operate on? In our program, because we often see and treat patients that other, less experienced programs will not, we really don't have strict age limits or weight limits. Every patient is considered individually. There are definitely those patients that are too dangerous for this type of surgery and there are individuals that we will elect not to offer an operation, for a number of reasons. Usually it's patient safety or our fears that the risks are not worth the possible benefits of the operation, but I believe we've done up to 850 or close to 900 pounds as our maximal weight, so that becomes quite a difficult patient to do this type of surgery on. In most of those cases, this laparoscopic technology that you're viewing today will not be possible. That operation generally will have to be done by the traditional open technique. Dr. Chapman is closing some holes in the mesentery, which is that yellow fatty tissue that brings blood supply and takes lymphatic drainage from the bowel. Those defects, if not closed, can cause problems with small intestine going through it and becoming obstructed, so it's important, we think, anyway, to close those defects to try to minimize that.

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I just got a question. Is the yellow material all fatty tissue? It is in large part fat and, yes, it is one of the things that makes bariatric surgery more difficult because the more fat around the organs of the body, the more difficult doing these operations is. Unfortunately, all it does is get in the way and bleed.

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Another question we received is how important are vitamin supplements after surgery? We actually have several questions about that. They are important after this operation. We generally give a multivitamin supplement. We generally give iron, particularly in females, because they tend to become more anemic due to menstrual losses.

We give vitamin B12, one pill a day. Some patients will do just fine with a single injection once a month. We give calcium supplements. Although the evidence for that is not great, we do know that the duodenum is important in calcium absorption and we worry about osteoporosis and bone problems later on, so for most people we do give that's a good example of how blood supply can get in the way with fatty tissue, there. Anyway, we give calcium to try to prevent osteoporosis and problems like that in the future, and generally that can be done with 2 extra strength Tums tablets daily. Unless I forgot something with gastric bypass, those are generally the main supplements given: iron, vitamin B12, calcium, and a general multivitamin. If you do do the long limb gastric bypasses or other more malabsorptive operations, like biliopancreatic diversion and duodenal switch, which you will hear about, I think those require a lot more complicated vitamin supplementation and nutritional follow-up.

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WILLIAM CHAPMAN MD: Okay. As luck would have it, we hit every teeny little blood vessel that lives on the mesentery here. It looks like we've got it all stopped and it looks good.

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KENNETH MACDONALD MD: Even though that looks like quite a bit of blood loss, it's really quite minimal when you consider the excellent view and the magnification you get with laparoscopy.

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WILLIAM CHAPMAN MD: Again, I think the blood loss, on average, is around 50 cc, which is about 1/10 of a Coke can's worth of blood loss. It's pretty small. This is a heavily magnified view. We'll run this back. This is our alimentary limb here. You can see here we've got the biliopancreatic limb coming in with the enzymes. It's going to meet up with the food coming down this one. This is what we call the common channel, right here. This actually goes way under and down toward the colon, so we'll just put this back. We'll check all these hookups later on down the road to make sure there's no bleeding, kinking, or anything else, to make sure. We're very careful about checking and double checking all of our anastomoses, which you will see, because we don't want to have a leak. The chance of having a leak at any of these is pretty small. This is where a lot of people differ. It's a matter of taste and preference how you do these, even within our own group. We will decide whether to go ahead antecolic, antegastric. This lady is small enough that she'll do fine. I wouldn't worry that's a little discolored, that loop there. That's going to not stay with us anyway. We're going to get rid of that part, which is why I make the limb longer. This thing here, beeping, is called a harmonic scalpel. It works through ultrasonic energy. Again, there are various ones on the market. We just happen to use U.S. Surgical.

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KENNETH MACDONALD MD: While you're doing that, Bill, we've got some questions about comorbidities. I'm just going to put up on the screen some of the comorbidities that are associated with morbid obesity. It is one of the more important reasons to do these operations, because of these diseases that cause significant health problems and decreased survival and loss of extremities and all sorts of bad problems. Common ones include diabetes, asthma, sleep apnea. Some of the other medical terms there are related to the pulmonary vasculature or the blood supply within the lungs, hypertension, high cholesterol or triglyceride levels are very common, and all this leads to increased incidence of atherosclerotic vascular disease, which can mean higher stroke rates, heart attacks, and problems with leg circulation. There also is increased malignancy. A lot of people don't know, but there definitely is increased incidence of malignancy with obesity, of a number of types. That includes breast, uterine, and colon cancers. As far as improvement in comorbidities, our research at East Carolina University has really, before a lot of other people, shown the improvement in diabetes with weight loss with bariatric surgery. In general, about 85% of our patients will get to come off all medication, whether it's insulin or pills. It does matter how long you've had diabetes whether or not you generally come off medications, so there's a lot of people today that have agreed with us that the earlier you do this surgery, the better your results will be with resolution of diabetes. Patients with hypertension, about 70% will get to come off medication and most of the rest will hopefully get to decrease their medication and have better blood pressure control. Sleep apnea, which is a bad lung condition, really improves almost 100%. All of the other comorbidities, which can include joint problems, hyperlipidemias, reflux disease, infertility, and joint problems, all get better to a variable extent because thin people can have these problems as well, but there is very significant improvement overall.

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Okay, Bill, so you're bringing the alimentary jejunal limb up over atop the colon to line up to the stomach pouch.

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WILLIAM CHAPMAN MD: Right. We've taken down that big fatty tissue that we were in before and Dr. Pender just kind of made it a little easier there. Hopefully when it comes time to put our next stapler in there, to put this valve back together with that little pouch that we made, we're going to go through this little hole here that I'm making. Don't fret that this bowel doesn't look good, because it doesn't because we sacrificed the blood supply to it. We'll get rid of this piece of bowel anyway, so we're not really worried about it. I'm just going to place it under here to let it hide.

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KENNETH MACDONALD MD: I'll tell you, we're getting thousands of questions here. I wish I could answer all of them, but I'm not going to be able to, at least during this broadcast. We've had 2-3 questions on pregnancy after gastric bypass, or I assume after any type of bariatric surgery. That's actually a very pertinent topic. Every bit of research, including our own experience at East Carolina and Pitt County Memorial Hospital, has been that, in general, there's not great problems with pregnancy after these type of operations. We do recommend, though, that during rapid weight loss, which generally occurs for the first two years after surgery, that people not become pregnant. The worry is that nutrients will be deprived of the developing fetus because of the significant weight loss that the patient is undergoing, so it just makes good common sense that you not become pregnant during that time. When it has occurred, however, we have not noted any of the feared neural tube abnormalities or any developmental problems with the babies. A few series have shown perhaps decreased birth weight, but none have shown any increase in developmental defects or anything serious like that.

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Questions about how long the surgery takes, how long the hospitalization is. An operation like this will sometimes take less than 1.5 hours, when it goes well. The patients oftentimes will go home, if the operation is today, Tuesday, they will often go home in 2 days, which would be on Thursday. They will be on a liquid diet and some nutritional supplements for 11 days or two weeks before their diet gets increased. I think we should go back and ask Dr. Chapman what he's doing here because this is a key part of the procedure. What he has there is the proximal gastric pouch, which is, again, the new stomach. It's approximately that one looks approximately 25-30 cc in capacity. An endoscope, which is a tube with a light and a camera in the end, is passed down the esophagus, through the mouth and a snare has just been passed out the wall of the pouch. This is a wire loop which is now going to be pulled back up the esophagus and out through the mouth. That is used to connect to what is called the anvil of the circular stapler. Basically what this stapler does is it has two circular ends and a knife blade in the handle and staples in two layers around a circle. When that instrument is fired, it will cut the tissue in a circular fashion between the two parts of the bowel that you're putting together. I'll put a circular staple row to put them together, thereby forming an anastomosis or a communication between, in this case, the gastric pouch and the small intestine.

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Some questions about complications. It's very important we spend more time discussing complications with patients than many of the benefits of surgery, which most people seem to know quite well. There is a mortality or death rate associated with this operation. If you look at the laparoscopic operation, these are generally often better risk patients, with mortality now as low as 0.3 or 0.4%, perhaps even lower. If you look at higher risk patients, though, those are the ones that are more likely to not live long because of the severity of their obesity and diseases associated with it. That mortality can really go up to 3, 4, 5%, so some patients are much higher risk than others. We generally try to quote an average mortality of 0.5 to 1.5%, just to try to be as accurate as possible, even though in most patients we hope it's lower than that.

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WILLIAM CHAPMAN MD: We've got our anvil in the pouch now. Now Dr. Pender is going to scrub back in. He did the endoscopy for us. See this purple area of bowel? That's all going to be gone. We're going to be using this part of the bowel here to plug up to that pouch, way up here.

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KENNETH MACDONALD MD: Other complications, bleeding, infections, can occur with any operation where you are dealing with intestine, particularly. A particularly worrisome problem, specifically for gastric bypass, is leaking from where this intestine is sewn or stapled to the gastric pouch. That's a dangerous problem. It probably occurs in 3-5%, if you look at all national series, and it definitely is one of the major reasons for mortalities following this operation, as are blood clots to the lung, and lung and heart problems. The reason those are more common to this surgery is that the patients are more prone to have disease in those organ systems. Anyway, these surgeries do an awful lot of good, but everybody that has one done needs to be aware of the possible problems because they're very real.

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Another question: can this surgery be reversed if the person achieves their weight loss goal? That would not be recommended because what would happen is that the patient would then gain back probably higher than the initial weight they were before the operation. In 18 years or so of experience, I have never even had to do that, so that would be an enormously unusual thing, regardless, but no, this operation should be considered permanent. Any operations that you do subsequent to this operation can be quite difficult and riskier than this initial procedure that you're seeing today.

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Another question: at what point do you stop losing weight due to gastric bypass? Our patients lose to their maximum weight loss generally 1-2 years after surgery. Most of it is lost in the first 6 months and then it starts slowing down. Then somewhere between one and two years, the weight loss does plateau off. After that, you have to maintain an exercise program, maintain appropriate food choices, and try to intelligently lose this tool to maintain weight loss over the long-term.

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WILLIAM CHAPMAN MD: Okay, we're getting ready, Ken, to make our anastomosis here and then we'll get rid of that purple area of bowel. This is an end to end type stapler.

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KENNETH MACDONALD MD: I'll tell you, we're in a contest with Dr. Chitwood to see who can get the most questions here. Here's a question: is it mostly women that have this surgery? In actuality, most series are probably 75% female and there's lots of potential explanations for that, but the one that I probably think is most accurate is, as everyone knows, women are more concerned, in general, with their health care and are a little more responsible than us males, on occasion, for their health care. I think that's a big component. Also they tend to have more primary doctors, which often are their gynecologists, who are a very common referral source for this operation.

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Another good question: what happens to that stomach that's been stapled off and no longer has food going through it? In our earlier experience, back in the 1980s, we actually studied what happened to the stomach because we made shorter alimentary limbs. If we used a very long endoscope, we could pass it through the gastric pouch, down that intestinal limb, and actually go backwards up the intestine, back into the bypassed stomach, where we would take biopsies and take pictures of the bypassed stomach. Basically what we found was minimal gastric irritation. We might have found a couple of ulcers over the years, but our biopsies never showed any significant changes to the lining of the stomach that would indicate any problems with tumors or other unusual changes that people early on did worry might happen with gastric bypass. In our experience with over 20 years of doing this operation, we as yet have not seen any long-term problems of significance. So basically that stomach lies there. It secretes certain secretions, acid and some other materials that the stomach lining secretes, so it basically stays quite viable. If you did hook it back up, it would act like a normal stomach again.

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WILLIAM CHAPMAN MD: We're just doing a second layer ofÖa lot of people just do a single layer. We believe that a second layer is key to prevent leaks. We'll go all the way around to try to stitch this, all the way around the backside. It can be challenging at times, depending on how much fat is up here, and that's the beauty of this

instrument that we're using, this Endostitch device, which has made this a lot easier. There are a bunch of other suture assist mechanisms, but I think this is our preference.

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KENNETH MACDONALD MD: It's the most versatile.

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WILLIAM CHAPMAN MD: Yeah, it's very versatile.

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KENNETH MACDONALD MD: Again questions about time in the hospital and time from work. We already mentioned that the average patient, following this laparoscopic operation, can go home on a liquid diet two days after this operation. Obviously if there's any other problems, whether they be with regard to the comorbidities or pre-existing health problems or anything related to the surgery, that time can be longer. The time off from work basically depends on how motivated the patient is to return to work. If it is a physical job that involves perhaps heavy lifting, I would say 3-4 weeks following this laparoscopic operation. If you have the open surgery, we generally recommend six weeks of lifting no heavier than 10 pounds. Other questions related to what type of weight loss can one expect? In general, you can expect to lose 65-75% of your excess weight. If the ideal body weight is defined as 100 pounds and you weigh 200 pounds, then you would have 100 pounds of excess weight, so in general patients with this type of gastric bypass would lose 65-75 of that 100 pounds. It is extremely rare that they reach their ideal weight, which often is really too low. It's very rare that they get malnourished and lose too much weight. That certainly can happen, though, with other types of variations of bariatric surgery.

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There's questions about the preoperative workup. It has become more extensive in recent years because the insurance companies have basically insisted upon it. We've had a lot of newcomers to the field of bariatric surgery in the last several years, largely because of the success of this operation. It did take quite a number of years, I believe, for us to convince people of how successful it was, but now that many newcomers are in the field, insurance companies found that they perhaps had to exert more influence about who got the surgery and who didn't. In some cases, that was merited and in some cases not, but an awful lot of the time patients will have to get a whole battery of diagnostic tests, some of which we think might help and some of which don't. That can include psychological evaluation, nutritional evaluation, x-ray studies, consultations with lung and heart doctors, and in some cases, many other things, but the preop workup can be pretty significant and take some time, but at least most of these studies aren't harmful and it's better to be more knowledgeable about each patient than less knowledgeable, so I can't disagree with a lot of the things that we have to do nowadays to work patients up.

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WILLIAM CHAPMAN MD: We're finishing up the suture line here, the second layer, and then we'll check the hookups and essentially we're done. We'll check very carefully with the scope to make sure, and you'll see that. We've got one more stitch to put in here. Again, this is the importance. I could flip-flop across the table here and suture the other side, but it's important for being able to function, having someone who is able to stitch with these devices and know the technologies. That's the benefit, at least in our program.

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KENNETH MACDONALD MD: Well, that needle didn't do the right thing. A question about laparoscopic versus open procedures for gastric bypass. That's determined by a variety of things. It depends on what past operations have been performed that might cause scar tissue within the abdominal cavity. Weight is certainly an influence. Very heavy patients might require open surgery, rather than laparoscopic, because of technical problems or ability to visualize what you need to see. Some people with big abdominal wall hernias also might need open surgery because they simply can't be fixed well laparoscopically.

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We never did finish the indications and requirements for bariatric surgery. I got to no surgical contraindications, meaning that the surgery doesn't carry undue risk for any number of reasons. Other things, there can be no substance abuse. That can include alcohol or drugs of any kind. That is simply because we know those patients do not do well. There can be no psychologic contraindications. Usually that means untreated depression or other problems that might cause them to not follow instructions and do what they need to do to do well and be safe following the surgery. Diet history is an indication with most insurance companies, but we know that diets tend to fail in 95% or more of patients, so we're not quite sure that it's fair to demand expensive physician diets for 6-12 months when they're doomed to fail in the majority of patients. Nonetheless, that is a requirement oftentimes from insurance. One of our requirements is a patient has to demonstrate some ability to exercise. That is for patient safety because somebody that's really confined to a wheelchair or unable to even walk very far is much more prone to serious complications. Another thing is exercise is crucial to help maintain long-term weight loss. It keeps patients from losing as much muscle mass as they're losing weight rapidly. That, in turn, will help them. As that ratio of muscle to fat becomes more normal, it will hopefully help them keep weight off in the future, as well as maximize what weight they're going to lose. Finally, and this is important, the patient has to be able to understand the surgery, the complications, and the need for them to do the appropriate things and continue lifelong follow-up with us.

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WILLIAM CHAPMAN MD: Okay, so there's our anastomosis. We you see that purple area is gone. There's the end of that bowel that we just transected. Now we're going to run this back to our other hookup site. We'll run this all the way back, that 100-something cm, which is just a little over 1 yard, for those of us not used to metrics. There it is. That looks okay. I don't see any bleeding on the staple line. I want to flip this so that it's oriented properly.

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KENNETH MACDONALD MD: Some questions about what you can expect after this operation, eating behavior and such. For the first several months, perhaps a year after this operation, patients are more limited. They might have trouble with beef. They might have more trouble with baked chicken, say, or breads. The gut is a great adapter, though. We evolved needing the gut to keep us alive and give us nutrition in times of need, say when food wasn't very plentiful, so it is very good at adapting and increasing the amount that it can absorb.

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WILLIAM CHAPMAN MD: Ken, we're getting ready to test the anastomosis here. You can see on the endoscopic view, there is the anastomosis on the endoview, the left upper quadrant there. He's going through. There's no bubbling, which is great. So not a terribly huge pouch. It's pretty small. Looks like she's got a little Schatzki's ring there, in the esophagus. So we've tested pretty heavily, under a fairly high amount of PSI, so that's a lot of pressure. It's like checking one of your bike tires for a leak. To make sure there's no leak in it, you just put it under water and look for the bubbling. If you don't see any bubbling, you're good to go. So we do a 2-layer anastomosis with a staple anastomosis and then the oversew. You can see here, you can get into a lot of danger. There's the spleen right there, the most frequently fractured organ in a car accident, so it's right near where we're working. See this bowel is all viable. The loop is anterior. Some people go posterior. I like anterior myself. We're going to take down that retractor now. There's the retractor up there. We have that held up there by that blue retractor and a special system attached to the bed. You'll see that will actually shrink. Now it's just essentially cleaning up and closing up the little port sites, so that's a pretty straightforward gastric bypass. We'll close these port sites, the bigger ones, under direct visualization.

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KENNETH MACDONALD MD: We have one question about gastric banding or stomach banding. It's more commonly known as the lap band, after the only one that still has FDA approval. That's the Food and Drug Administration in this country. At ECU, we did participate in the late 90s as one of the 6-7 centers that studied the lap band operation. We did it for 2-3 years under carefully controlled conditions. We were not personally very pleased with the results of that surgery. There were a fair number of reoperations for various things. Some of them weren't particularly severe, but nonetheless our reoperation rate was 15-20%, as was every other center in the country, and even larger, or a higher percentage. We found the weight loss was only about 35% of excess

body weight and that was at 1, 2, and 3 years after surgery. It should be said, though, that there are some differences in technique now. There are some series or institutions that report better weight loss, up as high as 65% or so, but that definitely was not our experience and currently our philosophy is that there are perhaps limited indications for that surgery, but it probably isn't the best operation for morbid obesity, in general, or for every patient with morbid obesity. Again, you will find some people who disagree with us, so there are a lot of different opinions in bariatric surgery about a lot of things.

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They're just going to close up these incisions now. We have maybe 5-6 minutes in this broadcast.

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WILLIAM CHAPMAN MD: Ken, my ear bud wasn't working for half of the time. It was partially out of my ear, so I wasn't ignoring you.

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KENNETH MACDONALD MD: Well, why should you be different than normal?

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WILLIAM CHAPMAN MD: That's true.

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KENNETH MACDONALD MD: Very nice procedure. Do you have any wrapping up comments about the operation, Bill?

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WILLIAM CHAPMAN MD: I would say, you know, she's a little on the lighter side for our particular program, but pretty straightforward. We do the same thing regardless of the BMI, except of course I'm sure you mentioned, in some of the larger folks, they're just not candidates for a laparoscopic gastric bypass. We are one of the few institutions around here, at least, that will do some of the bigger folks, but this procedure went like we would expect it to. She will get an x-ray swallow done tomorrow and hopefully start on her diet and go home on Thursday, so I wholly anticipate that she's on the route to a good weight loss and a change in her life.

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KENNETH MACDONALD MD: I'll tell you, we have pages and pages and pages of questions. Again, we will try to answer as many of these as possible after this broadcast and spend some time doing that. There were a lot of duplicate questions which I tried to cover, like those with pregnancy and nutrition. I think we covered a lot of important information that I would hope individuals would take from this broadcast. It's just important to always emphasize that morbid obesity is really either the top 1 or 2 health problems that face this country today. The costs of medical care related to obesity is in the billions and billions of dollars. That includes problems related to diabetes and hypertension, an awful lot of which is caused or exacerbated by obesity, so regardless of any way you look at it, this is a critical health care problem in this country and in many other countries. As for right now, surgery for morbid obesity, and that's a body weight over 100 pounds over ideal or a BMI greater than 35, is most definitely the most successful way to deal with that problem. Again, there is no operation without possible risks and complications, and this is no different. These operations are technically fairly difficult and they take some learning curve, and that's why we have training programs. People spend a whole year trying to become expert at this surgery before they go out and start it on their own. It does take training and experience to keep your complication rate low, where it should be. We were one of the first centers in the country to actually show that patients with diabetes who got this surgery had 4.5 times the death rate of patients who did not get the surgery with diabetes. Since then, there have been many other series that showed that mortality in the long-term improves with this operation, particularly if you have diabetes or hypertension.

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WILLIAM CHAPMAN MD: We're closing up here. You can use staples or you can use glue. I'm sure many of you have gone to the emergency room when you've gotten a laceration. Nowadays the emergency room hardly ever sews you up. They close you up with glue and we use the same technologies here, so it is a cosmetic operation

as well and these incisions will heal up very, very well and you won't have to worry about staple lines or the funny looking caterpillar look that you can get with staples.

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KENNETH MACDONALD MD: Here's a private questions from one of my patients. She's having a little bit of thinning of hair and hair loss, which is very, very common after this surgery for the first six months or so. We don't have any great recommendations for that, but if you call our nursing office, they can perhaps give some suggestions. Some people try to give protein supplements, but I can't say that has any proven value. The good news is that it tends to be temporary and will get better with time. The reason for that is patients that are losing a large amount of weight for some reason manifest that oftentimes in their hair before anyplace else, but if you check their blood tests and other laboratory values, they will be within the normal range, so just rest assured that your hair will return to normal, I hope within the next several months.

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Okay, we have about two minutes left.

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WILLIAM CHAPMAN MD: Which is perfect, so we can just put on our dressings.

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KENNETH MACDONALD MD: We timed this extraordinarily perfect. This entire operation, I believe, took 1 hour and 20 minutes, at most. It went very nicely. We have very much enjoyed bringing this webcast to everybody from Eastern North Carolina, Pitt County Memorial Hospital and East Carolina University. If you desire any more information, you want to make a referral or an appointment, or you have any additional questions, be sure to click the buttons below. Again, we will try to answer questions. If you have referrals, we have people that can hopefully assist you with that. Okay, our time is ending up. Again, we've enjoyed doing this. If you have questions or referrals, let us know. We hope that this was beneficial to everybody that's been able to watch it and we will say good night. Thanks for joining us.

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NARRATOR: This has been a demonstration of a gastric bypass, presented live from Pitt County Memorial Hospital in Greenville, North Carolina. For more information, to make an appointment, or make a referral, click the buttons below.