The overall course is designed to give you an idea of some of the complex approaches to benign esophageal disorders. We’re not going to cover much in the way of cancer talks on this course, it’s really all about benign esophageal. And we try to choose the more complex things, not just talking about simple lap-Nissen for Type I hiatal hernias, although I’m sure that topic will come up, but we are really going to talk about more complex things. And the first talk this morning is on the challenges of giant paraesophageal hernia.

The – I would say we don’t have a specific number on how many simple hernias will eventually turn into a giant hernia and what the exact transition is from a Type I, II, III or IV. Most of us think that they probably go from Type I to Type III, that is the sliding hiatal hernia start and if you query patients over their history of many years frequently they started off with heartburn, and then as it evolved to a larger it becomes more of a mechanical problem and those are the types we are going to talk about this morning. I’ll talk about a little bit of some of the lessons we learned from open surgery and it wasn’t so green in the open surgery era either, there were many problems with open approaches to giant paraesophageal, most of us are familiar with just a few of the very, very good open series and we forget about probably the vast majority of open procedures that had certainly significant complications. Then we’ll review the laparoscopic series and try to summarize some of the obstacles to a good repair.

In terms of acknowledgements I’d like to thank our faculty here and particularly Katie Nasun has played a bit role in helping me to get this course done and our new course assistant, Lauren Wilson,
is new at this, so please bear with us if there are any glitches in terms of getting through the day. She took over this job really just a few weeks ago, so it’s a tough job to try to get everything together. In terms of disclosures, we thank our, many of our vendors for supporting the course but by way of disclosure here at the university we really are pretty much squeaky clean. I don’t have any disclosures. I don’t own any stock, I am not on any advisory boards, no honorariums other than the occasional talk and that’s been limited to you know maybe 2 or 3 talks a year. And that’s always a CME approved talk that we go to. So that’s our disclosure, and I think you’ll find my entire faculty is the same way. So we feel we can speak with relative unbiased in terms of corporate bias that is. We might be biased towards other techniques that we’ve learned to use over the years, but that’s – we’ll try to explain that.

So here is the normal hiatal anatomy and the – what we really think happens here is there is a stretching if you will of the phrenoesophageal ligament that enlarges and the stomach and the squamocolumnar junction is displaced northward. Now really what causes that? I mean that’s – we could talk all day about that, but nobody really knows. It’s not heavy lifting, we don’t see it particularly in weight lifters or farm workers or heavy machine people. Once it’s repaired heavy lifting can play a major role in ripping a repair out, even a cough or a retching episode in the recovery room can lead to that. So but to get from here into the next series of slides, and I really like this slide because this is what it looks like, I mean literally. This is a tubularized cardia, the G junction is here. The only thing it doesn’t look like, it’s not so obvious where the G junction is because after 20 years of sitting here you are going to see essentially a new angle of HIS so that what
used to be a nice sharp angle down here with that angle of HIS and the G junction just as I showed in that previous slide, this has been displaced upward and it’s done so very slowly over many years. This no longer looks like a normal cardia. This is a tubularized cardia. If you were to say what’s the goal of a Collis gastroplasty which we will talk about later, it’s to create a segment of stomach looking pretty much like this, maybe a little more narrow, a little more uniform but we are trying to lengthen the esophagus with a Collis gastroplasty. Why do we lengthen it? Because this baby right here doesn’t want to go back down here; you pull it down and hold it, and you let it go and it will just slide right back up. Pull it down, hold it, it will slide right back up. And I think the big mistake over the years is thinking that you can just put a couple of sutures in your wrap below the diaphragm and it’s going to stay there. That doesn’t happen, that’s why we have you know a 50% plus recurrence rate for giant paraesophageal hernias, that’s one of the reason, many reasons why that’s true.

So anyway when you see this laparoscopically it’s not going to have these nice diagrams and all the little anatomy pointed out for you, you are going to see essentially a big fat pad overlying the G junction and the question is where is the G junction? And I can assure you that I’m seeing the majority of my redos, not from here, from elsewhere that have wrapped right here, right on the tubularized cardia. And then you have basically a moderate hourglass configuration because you have a wrap here, and this will bulge. That’s one of the downsides of Collis is ultimate dilation. If you don’t Collis it, and this is just a piece of native stomach cardia it will be bulging probably on the first barium swallow. So that once this does bulge and you have a wrap here, food sticks here, that’s not a motile segment. Acid production is quite prevalent and most people don’t separate the vagus
nerve off of this area. I like to pull it off just because it helps me get the fat pad out of the way. And I do think it has some help in a Collis of minimizing acid production because it’s a highly selective vagotomy if you will of the proximal cardia.

So this little area is problematic for us, whether you leave it there and wrap the tubularized cardia intentionally or unintentionally or whether you create a Collis with a staple line, this is an acid producing segment now of your neoesophagus. This is a segment that is essentially a-motile, so it’s problematic for a variety of reasons and the stomach tends to dilate just like after a gastric bypass small pouch dilates, this will dilate over time and gives us many, many problems and I think this is part of the whole complex problem of not just giant hernias but it’s why we’ve seen such a decline in referrals for lap-Nissen. Partly we have very good medicines, but when you talk to patients, look at some of the work that Chris Fernando did looking at the “happiness of patients on chronic PPIs” they are not that happy, they are not perfect but they’ve been steered away from an operation because we don’t understand this anatomy very well.

We can’t duplicate essentially normal anatomy and keep it there. So there are many reasons why we don’t see the, maybe the referrals for the simple sliders very often today, because the GI docs have learned we don’t give them a very good consistent operation. We don’t give them a patient that’s now asymptomatic, off medication and perfectly happy, at least not often enough. Not often enough, and whether ultimately we are going to be doing a better operation or a Thorax is going to be part of it, or whether we just simply narrow it down to just a few very experienced centers doing this, this I
think very misleadingly complex operation. In other words people think they can just do a lap-Nissan after general surgery training or thoracic surgery training and they can, but the results will be predictable. That is they are not going to be symptom free and off all medications likely not in a very high percentage.

So this is a very good picture and I think it tells a lot of the problem. Now as this enlarges that’s where we get into a giant and I really don’t see Type IIs, I don’t know about very many other people but this is what I just showed you in more of a diaphragm picture here, or a diagram picture and then this Type II, I mean it’s rare that I see the phrenoesophageal ligaments intact and a parahiatal hernia, I mean if you see it take the picture and bring it to me please. And I’ll probably tell you why you misinterpreted it. But we just don’t see it very often. And don’t believe me, talk to Grif Pearson, got a few more years experience, probably the father of thoracic surgery if you will, certainly I consider one of the fathers of esophageal surgery. Talk to Ronald Belsey if you could, you can’t now but I did. Talk to David Skinner, you can’t now but I did. Talk to Nassir al Torek, you can still talk to him, I assume you can talk to David Lowe and myself.

But this is not a simple phrenoesophageal ligament intact and a chunk of stomach off to the side. I think it goes from this and ultimately to this, and to this very complicated upsidedown stomach, and whether colon is in their omentum, that’s rarely the issue. Most of the time by the time you put them in steep reverse Trendelenburg and give a tug they omentum and the colon will almost always fall out unless it’s a redo situation. So that’s not – whether it’s a Type IV or not to me is pretty much
irrelevant. It might make me want to operate, someone that says they are asymptomatic and if I see a big bunch of colon in the chest I think you know we are always a little less comfortable sitting on those. But I think this is really what we are operating on is the upsidedown stomach or the large hernia that just becomes symptomatic.

This is a very good picture of a typical barium esophagram. I would encourage you to never see a patient with an esophageal pathology without a barium esophagram. Why? Why would you want to take the word of somebody else’s endoscope? And this, this is a moving target, they are sliders so you might not always get the identical true picture of what you are doing by one simple frame of a barium esophagram, so I’d encourage you to either watch it or work with your radiology group to give you 30 or 40 snapshots of that barium esophagram so you get a really good picture and postop to not do a barium esophagram, well I think it’s ludicrous, absolutely ludicrous. Why? Because look at the results. I’m going to show you the results today of 50% recurrent rate with giant paraesophageal hernia by a group of “experts.” So you tell me you are not getting a barium esophagram as your baseline postop? Why? You don’t think orthopedic surgeons get a picture of their new hip or their bone that’s been set? I mean everybody gets a picture of their results. The only reason why not to is because you don’t want to see it, you don’t want to know what it looks like in the beginning because it’s so -- it can be so bad that you just don’t want to do it. And what else are you going to start with? Talk to Grif Pearson again. You think he ever didn’t get a barium esophagram of a patient?
Now I don’t mean the 88 year old that’s going to aspirate on day one, you’ve got to use common sense, you’ve got to talk to the patient but by and large if they are ready to go home they can get their barium esophagram. If they can’t I think you know there is just some other morbidities going on with their recurrent nerves or their aspiration problems or whatever. So the vast majority it’s a very safe test, get your barium esophagram when you see them in the clinic and get them when you are postop so you have a baseline because the recurrence rate is horrid, it’s horrid and even for patients with smaller hernias we are not doing very well. I mean how many people have a waiting list of simple hiatal hernias who want to get off PPIs? That’s not what we are seeing. We are seeing people who absolutely have no choice, by the time they come to the surgeon they’ve really reached their wit’s end about what to do with their reflux. We are not getting the simple patient who has got a little bit of heartburn. They’ve learned long ago, GI docs learn to stop sending them because we are going to make them worse. We are going to make them worse in one way or the other.

What are the symptoms of giant? I think it clearly does evolve from typical heartburn, and when you see those pictures you can imagine, it’s not going to be the same symptoms between a hernia that looks like this and a hernia that looks like this. This one can have components of both, no doubt. And some will. And some of these hernias do slide and twist at different times and cause different symptoms. When they get twisted and you have 100% upsidedown, I mean you can expect that 30% of patients will be anemic, absolutely, maybe higher if you follow their natural history. And some will bleed significantly. I’ve had a patient that had 40 transfusions over the course of the previous 3 years, came to see us in clinic and said – they came to us for the giant hernia for symptoms. And we
ask about medical history, oh yeah, the bad anemia, nobody knows what’s it from, they think there is something wrong with my bone marrow. I said really? Yeah, I’ve gotten 40 transfusions over the last 3 years, and I’ve been scoped up above and below, they never see a bleeder. Okay. I say well it’s likely, I can’t tell you for sure, but it’s likely when we fix this your transfusion history is going to be over. And sure enough never was transfused again. So clearly some will bleed significantly and on occasion you’ll have one in the ER with a big Dieulafoy or something going on with a visible vessel. Fortunately we don’t see many emergent bleeders that are massive.

But other symptoms, mechanical, vomiting, early satiety, chest pain, shortness of breath, all of the things that go along with this mechanical twisting of the stomach much more common to see this than your typical heartburn. Now pulmonary symptoms we are not showing much here but they are significant. You know subtle aspiration, coughing, hoarseness, all of those things certainly can go along with it but you know even with our patients with smaller hernias we are usually not just operating on a pulmonary symptom but sometimes you are, sometimes you are.

We talked a little bit about this and I put this up primarily to remind me about those that come in with acute gastric volvulus, it’s really an unknown nominator/denominator, we don’t know. I can think today that a lot of giants with access to a minimally invasive center or an experienced esophageal surgeon I think many of them do get repaired electively. And I think even though we may not be doing the perfect job if it’s now a hernia that was upsidedown stomach and now it’s a hernia with a third recurrence but fixated by scar tissue it’s probably not going to twist and die on
them. So I do think that you know giants once they are operated on you can get very symptomatic postop but I don’t see many that are now say coming in with emergency symptoms, so that’s one thing about repair of giants. How many would otherwise present like this? Well the number is unknown. I think that there is clearly some work out of Mass General, David Ratner, you know I always have trouble as surgeons finding reasons not to operate, and if you want to find a paper that wants to kind of talk you out of operating with a giant then pull up David Ratner’s and put it in your clinic and send it to your referring docs, you won’t even have to worry about giants anymore because they won’t come to you, because you’ll be telling them why they don’t need an operation. And that’s to me, that’s insanity. Most of these patients need an operation. There are the occasional patients that you can’t squeeze a symptom out of, I mean even talking to their family occasionally, and I’m shocked when I see that because most of them are actually telling me I want the operation today. You know they want it done right away, you tell them 3 weeks and they are looking at you kind of disappointed, they want to get it done because they are pretty miserable. But I’ve seen it, I’ve seen an occasional patients I can’t squeeze a symptom out of. But most of them I think are symptomatic.

Now how many go on to urgent symptoms? Well you know if you talk to somebody like David Skinner before he passed away, he would tell you about his 1967 study where he had a small number of patients, 24 with a known giant that didn’t get surgery for one reason or another and within a 24 month period by a 1 to 2 year period 6 of them, so 25% of them required urgent surgery for either a massive bleed or incarceration with frank ischemia of the stomach, something urgent brought them
in and got an operation. Now we know from our experience that once we do an urgent operation mortality rate goes up, from that elective half a percent maybe 1 out of a couple hundred, mortality now when we are operating in an urgent situation I think partly it depends on how urgent. If you have a dead stomach it could be easily 50% mortality, maybe higher depending on when they present by the time you see them. If it’s urgent for symptoms and no frank ischemia, no hemorrhagic diathesis I think you the mortality rate probably is a little lower, but still it’s not a half a percent, it’s not near zero. So we’ve learned that.

Now so this is a couple of the studies, and David is probably familiar with this Hill Study, or at least some of the quotes that were made back in this ’67, ’68 era, a few years ago now, it didn’t seem that long ago when I was in high school but it’s quite a ways for most of you, maybe David remembers. But at least I did know these two guys and I actually worked for David Skinner for 2 years and he is really a brilliant guy and quite a, quite a thinker about things like this. And Belsey was quite a thinker and that’s why you had 4 you know Belsey Mark 4, I mean he didn’t just stop at one operation, it was a continuing thing, how can I improve this and how can I make this a better mousetrap.

And so they thought that the complication rate was pretty darn high. Now again they didn’t know the numerator and denominator. But when it did occur emergency repair was needed, the mortality rate clearly goes up. I don’t think anybody would dispute that, the question is how many need that emergency operation and if they are counseled that when they do have that unusually painful episode
that doesn’t go away in an hour or 2 to come to the emergency room you can probably lower this, but I don’t think you’ll ever get it down as low as an elective operation.

So should we repair all giants? I’d rather see you err on this side than the Ratner side, where you repair none. Now is he repairing none? I don’t know, but my friends at Mass General kind of give me that indication, there’s not a lot of repairs being done by David Ratner. And he may, I think he’s bringing some valuable information to the table. You don’t have to rush every 88 year old with a giant off to the OR. I think that deserves a discussion with the family and the referring docs and think about the morbidity and your own skills and the ability to get them through a nice, quick operation with reasonable results. But if you are talking a 50% recurrence rate and a 4 or 5 hour laparoscopic mess in the operating room, you don’t need to be doing that case. You shouldn’t be doing that case, because that patient is not going to do well with that. So this is kind of the numbers that he’s throwing out. I don’t believe that. I think that if you let them all alone there is going to be somewhere between 1 and 24%, and I don't know where the number is. We don’t sit on very many symptomatic giants, we repair them laparoscopically and most, most are symptomatic. They may not have heartburn but they are symptomatic.

Now what are the essential steps to fixing a giant hernia? There is really only one, experienced esophageal surgeon. And if you look at the biggest problematic series of giants that was recently published with a 5 year result I can’t find a sentence in the methods about credentialing, I can’t find a sentence about do you want to be in this clinical trial? Sign up here. How many have you done? I
MANAGEMENT OF BENIGN ESOPHAGEAL DISORDERS IN THE ERA OF MINIMALLY INVASIVE SURGERY: CONQUERING THE CHALLENGES OF PARAESOPHAGEAL HERNIA REPAIR, JAMES D. LUKE\textsc{ti}CH, MD

don’t know. What are your results? I don’t know. There is nothing there, I can’t find it in the paper. When I talked to the authors I get a pretty gray answer. Now we try to avoid that, I’m not saying that we do everything perfect here but I’m telling you that when we did ECOG 2202 for minimally invasive esophagectomy and that abstract has been presented, we spent months working through the 16 centers that participated. Everybody had to have a minimum of 5 done prior to you know coming into the trial. Everybody had to be doing at least a dozen esophagectomies a year, everybody had to have a certain minimum number of VADs cases, a certain minimum number of laparoscopic cases, everybody had to attend our course because there were no other courses. Everybody had to submit a video of their best minimally invasive esophagectomy and reviewed by me and Chris Fernando. So I mean we really did our homework to make sure we had a group of surgeons who knew what the hell they were doing before we put them into a multicenter clinical trial. So to make the presumption that you had a group of experienced surgeons in some of the studies that I’m going to present is you can’t make that presumption. You’ve got to read the paper and see what it says.

Now when you read the big series, what are the big series? Pearson, dominant single surgeon involved in every case or almost every case. Low, dominant single surgeon involved in almost every case or every case. Luketich, dominant single surgeon involved in every case or almost every case until we got to the point of having 2 or 3 out of our 16 surgeons who I would say are capable of doing this operation alone. And most of them here know that and they call one of the 2 or 3 of us who have that experience so they can get to that level of doing these alone. We encourage that, we don’t encourage our more junior surgeons or our 20 year surgeon who doesn’t do it to just jump in
and try to do this operation. So this is it, this is it, there is nothing else. The rest is gravy. And this person knows that. But the problem is how do we bring all of you, if some of you aren’t this person, how do we get you to that level so that you can try to duplicate the results of Grif Pearson or Low or Luketich or someone that’s presented a series that you look like boy I’d like to have some of that in my center. It’s not that easy. But let’s go through some of the steps.

Many important steps, there is no one step, that’s why this Mesh trial, this big randomized trial of Mesh was ultimately the biggest fiasco of the century. I mean I can’t – I mean I think they all know that, was it a good effort to try to show and prove that one step is not the answer? I think it was, although I never saw that in the conclusions. Was it a good exercise to show that you’ve got to think more about experience before a clinical trial rather than at the end of the clinical trial? You know I mean even when we did the VADs, the ACASOG trial for mediastinal lymph node dissection, I mean even when we did – I mean all these trials required videos and a little bit more thinking about proving what the operation is going to be before you jump into the clinical trial. Not what you think it’s going to be or what a textbook says it’s going to be. What’s it really going to be like?

So but the planes that I think are important, the first one is identifying the plane between the hiatal hernia sac and the mediastinal pleura. And you’ll see what I mean by that. But once you get into that plane it’s not about grabbing the stomach and yanking it down and starting to sew cruse, it’s about sneaking into that plane very carefully and if you’ve ever done a kidney transplant and been in that retroperitoneal plane where there is that sort of foamy layer, you are there. If you get to the foamy
layer you are there, if you don’t get to the foamy layer you are not there. You are somewhere else and you are going to damage a vagus, you are going to get into the pleura and getting into the pleura is common, very common if you are doing your homework way up high and getting this thing mobilized. But you’ve got to get into that plane. And I think it’s your first step. Now you might say first step is port placement, first step is a gentle retraction of the fat pad and the stomach so that you can see that plane, because the plane is everted. The phrenoesophageal ligament which is normally sitting right here at the hiatus, it’s everted. You’ve got to pull it down, open it and dissect along that sac. You don’t have to remove the sac from the body, you can if you want but you are going to damage some vagus nerves unnecessarily. But you need to take the sac out of the chest, yes. And what is the sac? Well my best estimate of what the sac is is a dilated, elongated, attenuated phrenoesophageal ligament that used to be a virtual ligament because really it wasn’t there, it’s just between the diaphragm and the esophagus. But over time it everts, it everts and it spreads and thins and opens up into this very, very large sac. So as you pull it down it has 1,000 little tiny fibrils between the attenuated essentially abdominal pleura and then the mediastinal pleura. So you’ve got to get into that plane and once you find that I stay there, I stay there for a long time. I work in that plane for at least ½ hour.

Now while you are in that plane, you can beat up the right cruse, you can beat up the left cruse, you can get into the pericardium, you can grab esophagus and I’ve some of my attendings that seem to think you can grab esophagus. You cannot grab esophagus. Occasionally I take a little tiny piece of fat on it, roll it one way or the other, but you can’t just grab the muscle in the esophagus and pull.
You will get a big myotomy if you are lucky, worse you’ll tear a hole in it or grab the vagus off it. So it’s a very meticulous dissection and bloodless. You don’t want a hematoma in your sac, you really want a bloodless dissection. I always use energy, I don’t use a scissor up there, bing, bang, bang. Yes, you can use a scissor with a little bit of cautery, and occasionally there will be some relatively avascular planes but really you want a bloodless dissection so you can see, first of all, but also a big hematoma in that sac postop is the start of a problem. It’s just not good to leave your sac full of blood.

Mobilizing the crura. Basically stay off of them and respect that lining so that as you pull down the phrenoesophageal, if you just keep pulling you are going to strip the cruse and you are going to have muscle fibers lying there, just like when you open the abdomen, now of course more recently my residents don’t seem to understand the importance of staying in the midline when they are opening the abdomen. Not all of them, but I get a sense that there is not this ownership of staying in the midline. Once you get out of the midline in the abdomen and you expose rectus muscles that’s the beginning of an incisional hernia; that rectus muscle will hold nothing, the muscle will just rip when you put a stitch through and the cruse will hold nothing if you stripped it. If you have a stripped cruse at the end you have no choice but to use mesh. You will get a recurrence, because it won’t hold anything. Or if you have tension between the two crura you haven’t done enough mobility. Sometimes it’s mobilizing it from the liver, sometimes it’s releasing the spleen which can be stuck right on the left cruse, just hanging there. And the spleen doesn’t live there, it lives in the gutter. Take it off gently, if you stay in the plane you won’t – we’ve not taken out a single spleen by doing
this, ever. So take it off and the spleen will fall away and your left cruse becomes very mobile. All of a sudden you are pulling on the cruse and this plane is stuck to the left cruse. First of all there is nowhere to sew, it’s right in your way, and second of all it can be very, very stiff.

The other thing I’ll do for the crura, other than maintain integrity is on occasion for a very large hiatus, one, I will occasionally use mesh, it’s not my first choice and we use it in less than 10% of cases; but I will induce a left-sided pneumo if there isn’t one. Now you all know the sign of a pneumothorax during laparoscopic, it’s a floppy diaphragm. What’s better than a floppy diaphragm when you are sewing it together, and that’s why Grif Pearson never used mesh on the chest side. If you have ever been, if you are chester and you’ve ever been on the chest side of the diaphragm and you are open it’s floppy, you can pull it wherever you want to. I mean it just comes together, that’s why it’s one, somewhat easy to plicate, but even if I am doing a diaphragm plication laparoscopically the first step is induce a left sided pneumo if it’s on the left, absolutely. The whole diaphragm comes down at me I can plicate it wherever I want to. So inducing a pneumo, and I learned it because there were enough cases where we saw a floppy diaphragm and I said boy, this is nice. And people talk about a relaxing incision, but if you induce a pneumo you really won’t need a relaxing incision. Will it ever pull back over there so tight after you take away the pneumo? It’s just really not the way the physiology works.

You know it’s just the negative pressure of the chest pulling it over there, and it’s really not that high, it’s just you know you induce the pneumo you’ll see what I mean. The diaphragm will just flop
right over and you can get a couple extra stitches posteriorly. I like to put no more than 3 posteriorly or I get a very acute angulation of the esophagus which I don’t like. It doesn’t look right, it doesn’t look normal. And I like to establish normal anatomy. So when I see 4 or 5, 6 stitches posteriorly it means I’m going um, um, you know I just don’t see that – how can that be good. It just doesn’t sound good and I think some of those cases were the ones where mesh or pledgets were used and they eroded in the esophagus because now it’s like it was jammed on that crus, where it’s not supposed to be, it really lives on the aorta, right through the crus and there are just a tiny little splint and it comes through. So I put 2 or 3 there to try to reestablish normal anatomy posteriorly and then maybe 1 or 2 anteriorly if you need it.

And when to use mesh? When I can’t get a tension free closure or I have an integrity problem. It’s the same thing for using mesh in the abdomen or on a hernia, or even when you are closing the chest wall. When do you use mesh? Integrity or if the tissues won’t come together. If you cut out a couple of ribs you are not going to get them together, you’ve got to use most of the time mesh unless you are very high. So you need a tension free approximation and good intact crura. If that’s not there, think about doing it better next time. Think about inducing a pneumo on the left, which gives you the most mobility and certainly you’ve got to think about mesh. Is opening going to help you at this point? Well now pledgets, all these things can help, opening well you know it really just depends on your skills laparoscopically and what you think your view will be like open. Once you’ve done all the mediastinal work you can get a very good view of the rest operation open, so if you are stuck and you can’t get this done certain open, no doubt about it. But doing the mediastinal
work open, that is no fun, it’s no fun at all. I would rather do that laparoscopic any day, the short gastrics I’d rather do laparoscopic, but at some point opening is fine. I mean whatever you’ve got to do to get it done.

Now this was an early experience with an open and laparoscopic. This was from really Demister’s group, Hashemi published it, 54 patients underwent repair and it was a sequential kind of laparoscope open, you know either belly/chest and then laparoscopic. So it wasn’t randomized, it wasn’t controlled, it’s just that one institution’s relatively small number of surgeons all really with the senior Demister involved and they said although he wasn’t actually doing the laparoscopic ones, and he just said he you know didn’t really have that experience and he – most of these, the open ones were his, the laparoscopic were the younger guys in the group.

What did they have? 42% recurrence in 17 months. That doesn’t sound too good. What about the open? 15%. Doesn’t sound too good. So you know how good was the open surgery. Compare this to Grif Pearson, which I’m going to show in a minute, 2% and a follow-up of 6 to 20 years. That sounds pretty good, I’d like to have some of that and that’s why Grif Pearson has been here 20 times over the last 20 years, because I want to learn everything I can from him. And that’s why I visit Toronto whenever I can, that’s why he was here probably 5 times in my early experience showing me what he would do and giving me his advice because he was as far as I could see the most experienced guy in the world with the best track record. So I didn’t like these results, I looked at this. I liked the report because it was an honest report and it was honest about their open. Now the
details of these recurrences weren’t so clear, and how many exactly needed operation. This was the early follow-up on some of these, the laparoscopic ones especially so we can only presume that this got worse.

And also you know the good thing is that they were doing barium swallows for most of the patients, not all. And your clinic has to be a barium swallow clinic. If you go in here and you are just going to talk to the patient you are going to pick-up the bad recurrences because they are going to tell you about their symptoms. But a lot of this is beginning with asymptomatic recurrences, so if you really want to understand your repair and understand the natural history of your repair, you’ve got to get barium swallows. I mean do they have to have one every single visit? I mean well otherwise I might as well be talking to them on the phone because I can’t see in there. I can’t see what’s going on. So I like the barium swallow, and you can see that this is prevalence of recurrent hernia in 41 patients that had annual video-esophagrams, most of them out of this series, 40 out of 54, for a minimum of 3 years and boom, boom, boom there is the recurrence rate. And now we have more data from the Mesh series that we’ll talk about that says this is actually the tip of the iceberg for many of our laparoscopic experts in the world.

So essential steps to repair, again, mobilizing the esophagus is that mediastinal plane that I’m going to show you. I think the vagus nerves, we haven’t said much about that, I think they must be left intact. Cutting the vagus nerves to gain length I really don’t like it. I mean if you’ve seen patients in your clinic that have had bilateral vagotomies, you’ll know what I’m talking about. I mean they are
dumping, they are bloating, they are not happy, they are not happy. So you are trading off the symptoms of a tension repair or a early recurrence of a type I hernia for a bilateral vagotomy. To me that’s not a very good tradeoff, and this is from a group that said there was no short esophagus for 20 years. Now where they were and how they didn’t know Grif Pearson or Ronald Belsey or some of the people I don’t know, I don’t understand it because these were some pretty smart people, there is no doubt about that, some pretty smart people. So how they couldn’t believe that there might be some tension on that esophagus playing a role in these recurrences I don’t know. But I only know what I learned from people like Skinner and Belsey and others who – and Grif Pearson who, who told me and taught me and showed me. And if you look and open your eyes you are going to see it. So save the vagus nerve at all costs.

You want a 2 to 3 segment of intraabdominal esophagus that’s tension free if you can’t achieve this, some people might say Collis, I would say more mediastinal mobilization. If it can’t be achieved some people might say Collis, I’d say more mediastinal mobilization. And I continue to say that now so that my Collis rate has gone from 63% 15 years ago to probably we’re closer to 10 or 15% now. There will be some that you can’t get the G junction, I mean I’ve been up to the trachea and I can’t get any more length, and we do go up to the trachea. We go above the vein every time. So what do you do then? I think once you’ve done everything you can do to get the length and you don’t have it, you can do the Collis and we can talk about how we do the Collis. Collis is a staple line along the stomach right on the Boogie to try to create a little length. We talked a little bit about that earlier.
I think there is a role for Pexy, especially in the older patients. And I’d like to hear what Dr. Low has to say a little later about this, but I don’t think everybody needs a wrap. I do think that a Pexy in and of itself is dangerous, I think that people start talking about Pexy and that’s usually people that don’t know what they are doing, GI doc thinking he’s going to peg a patient and make them better. You know for all of you that have operated giants and pulled it down and let it go you know what it does, it jumps right back up there. And to think that one or two stitches down by a peg site is going to keep this stomach out of the chest, it’s not. You are going to have this long stretched out stomach attached maybe if you are lucky stays attached to the peg set, if you are not so lucky it pulls off and you get a leak and I’ve seen that numerous times in referrals to here. So but if you’ve done your sac dissection and you are really right about at the G junction but you just don’t have the length, would I ever wrap the cardia, no, I don’t like doing that. I don’t like to wrap the cardia. I would either Collis, but if it’s an older patient whose dominant symptoms were mechanical, which probably frankly most are, and my crural repair is done, I might Pexy 4 or 5 stitches along that cardia towards the fundus along the diaphragm. And you know we are looking at those results. We’ve done that probably in 30 or 40 patients over the last 5 years when we are stuck with that situation.

I’m hesitant to publish until we have a little more data and I’m hesitant, so hesitant to put out there Pexy works for giants because I know what’s going to happen. I know what’s going to happen, we are going to have everybody grabbing the stomach, yanking it out and putting a couple of stitches in, and that will not work, that is not what I’m advocating. I’m advocating do the whole operation as if you were going to do a standard Nissen or standard Nissen Collis and when you are stuck and you
can’t do the Nissen safely think about a Pexy as an adjunct to your operation knowing you’ll probably have to treat with PPIs because you haven’t done anything to really stop reflux other than reduce the hernia and they may be okay with that. You certainly put their scrambled columnar G junction valve very close to where it’s supposed to be if not right where it’s supposed to be. You’ve closed the cruse, you’ve done the dissection so it’s something to think about. But in general we like to get it down and do a Nissen.

I’ve gotten away from aggressive 3 stitch Nissens into 2, and even more recently I’m doing something that you know it’s not really a toupee but it’s not really a Nissen. In other words if I think this older patients has got a fair amount of dysmotility, a little bit of bloat, and I really don’t want to deal with a dilated stomach postop I might bring that stomach pretty close together and suture it to the esophagus but not quite at the midline, at probably at 300, 320. Rod has been talking about this for years with this curly fry concept of kind of not bringing the two wraps together but sort of overlapping them a little bit, giving a clamshell approach. Of course people talk about toupees and duras and all that stuff for years. But you know and I think there is something to that and we’ll hear what Dr. Low does also. But I think a 360 wrap may, is certainly not necessary in every patient. It may be the ideal operation if you could do it all and everything looks perfect, but sometimes you’ve got to do what you’ve got to do.

So what are the controversies? I think we’ve covered really a lot of these so I’m going to try to move on. This is some of the better open series that were published years ago with these types of low
recurrence rates you know. How many of them are out there that can boast this kind of low operative recurrence rate? Not many. And how many have the follow-up that I can give you firsthand sort of knowledge of somebody that I’ve talked to and respected for many years like a Grif Pearson, and Ellis may have been the same type of person. I just didn’t know him, so I can’t give you that kind of follow-up. But I can tell you about Don Amaziac who was Grif Pearson’s Fellow at the time, this is all Grif Pearson’s work. So this is probably the most outstanding approach to giant para but there were problems. You know all these patients had Collises and certainly there was some dysphagia, was some dilated Collis segments, I mean that happens; but to see the recurrence of the hernia, no. But sometimes you can make a patient so symptomatic from the operation that you know that’s not good either. You know so that if you do have significant dysphagia or this kind of weird dyspepsia where they have some tubularized cardia above the wrap, there is acid coming from that. It’s small volume, but it’s there; and when it’s above the wrap and it’s in an immotile segment what does it do? It kind of sits there, so you get these kind of weird symptoms of just kind of something’s here, not like I had before. I’m not short of breath, I don’t have this, but something is going on. And most of the patients I think probably need a PPI, whether it’s at night or day or twice a day, you know I try to avoid twice a day PPIs for a lot of reasons but I think sometimes you are going to be stuck with that.

This is the holy grail, you know, Grif Pearson. I think it’s hard to know this man without having a great respect for him and you know he just that’s all he cared about was his patients and making sure that he knew what was going on inside of that patient’s body. When he did the repair he would put a couple clips on the crura and then he’d identify a location on the G junction where he’d put another
clip on the esophagogastric junction. So he could compare his series of clips so that even when you get the barium swallow a lot of times even Katie and I will be arguing is there a little hernia, is there not a little hernia? You know it gets a little confusing. And then you are looking for the side and the diaphragms are like this, and there is a tendency if you are the surgeon to say oh it’s probably okay, maybe it’s the angle. And you can’t always tell, you can’t always tell when there is a small hernia recurrence. Not from a simple barium swallow. You can certainly tell when there is a significant one, but you know with Grif’s approach using these little silver clips that he called them he had a pretty good idea when he had even a subtle recurrence. So I like that, and his reoperation rate was very, very low, one leak out of the whole series and you know it’s just hard to even talk about another series that compares to this.

Now we have one, and that’s why you know Dr. Low was invited here today is to tell us his approach. It’s a little different than ours but I think a lot of principles are absolutely the same. First of all this, this, this, the Low factor. I mean that’s what it takes to get there, the Pearson factor, the Luketich factor or someone that has worked in a center with a Belsey or a Pearson or a Skinner or somebody like that so that you gain that perspective of what you need to do to try to get to this result. And I don’t think, I don’t think we’re to Grif Pearson’s results yet, I think we are getting there. I think our results are pretty good. I don’t think they are as good as they could be and now that we are opening the operation up to more people in the group are we destined to reinvent the wheel? I hope not. I hope that you know people will be thoughtful and try to accomplish what I learned from Grif Pearson what he learned from Skinner or from Belsey and others, you know there is just a lot of
thought here. And so when you look at a series like Low’s and say okay you know this is a very similar to 72 of our patients, single surgeon performed all operations. I’m sure he had different assistants along the way but you know his fingerprints were there every time, antireflux, very consistent approach, no Collises. Now I know how he gets away without Collises and it’s a – that’s why he’s here to talk about that, and that’s kind of our thought about how we Pexy some patients today versus say your standard Nissen on every single patient.

And this Hill repair is one of those things that I look at as when I was doing the Collis with the EEA, I couldn’t teach very many people to do it. And that’s why I think Hill is not out there with all the other Nissens and that’s probably why Belsey never really took off the way Nissen did because a Nissen conceptually even though it’s an IB wrapping on a tubularized cardia, and it might be – there may be many problems with a Nissen, everybody knows you pull the stomach around and you sew the stump to the esophagus preferably. But I don’t think – I’m not sure anybody in this room could draw me the Hill other than Dr. Low. I don’t want to test anybody. I think I’d get close but I don’t know about anybody else. I’ve never done them. But I think we could all draw what we think a Collis is, and most of us could probably draw – I mean a Nissen or a Nissen Collis, conceptually it’s pretty simple. But I don’t think I could take everybody through my EEA approach to a Collis, and that’s why I started doing a wedge kit. Sometimes you’ve just got to do what you can teach, what people can take on with you and maybe Dr. Low will tell us how many of his trainees are out there with a big series of Hills. I don’t see them in the literature, it doesn’t mean they are not being done. It’s just that I think it’s a tough operation to conceptualize and to do.
But the results I think are outstanding, 0 mortality rate, I think a very reasonable length of stay and an operative time and you know the results were, were pretty darn good. The outcome, I think once you get out to 2 or 3 years you are starting to talk about intermediate outcome, you are still not at long term but you know these 6 month reports are very misleading, so I think you’ve got to really hold onto your data for a minimum of 2 years and then start to report it. But you know in the laparoscopic era we weren’t really pushed to get data out and of course we were anxious to get it out, but anyway there were some recurrences, no reoperations at this time of this report, I don’t know about now. Some persistent symptoms and I think that that’s part of the game. You are trying to make these patients better, you are trying to give them a quality of life they can live with, you are trying to take away a dangerous, life threatening situation into a manageable kind of nuisance, which is you know sometimes a type I hernia or sometimes recurrences of their bloating or their gas or whatever else you’ve given them because of your operation, but at least they are not dying of a giant hernia. And many of them are really quite pleased with the results of this, and we’ve shown that here and I’ll go over that series.

So I’ll let Dr. Low explain his series a little more but I wanted to put that up there because the reason why we invited him today is to talk about his series, and there is very few out there with those kind of results. This was kind of Grif Pearson’s approach for the open operation, but it, it’s very similar. I mean basically you know you look at this kind of approach and he, he just ran a stapler along here and created a new angle of HIS. So the old G junction is here and here is the new one, and
presumably the diaphragm is going to be somewhere along here. So created a new angle of HIS, and whether he wrapped it with a Belsey or did a Nissen or I think some you can get away with a Collis, I mean a Pexy or possibly a Hill.

Mayo Clinic, another you know early experience with laparoscopy and my hats off to Claud, you know this is not a very good series and he recognized that but wanted to publish it, 30 day mortality rate, 5%. Right away I mean Dr. Low had 0 in 72 patients, okay, so Grif Pearson had 0, 94 patients. We had I think 1 in our first 200, so you know the death rate I mean certainly should be pretty darn low, low, low single digits. The recurrence rate in short term follow-up 13%, I don’t know what to make of that because the recurrence rate in short term follow-up in many series has been in the teens and then later 20, 40, 60%. But I think one, this was a similar experience elsewhere in the first 50 cases of someone new. I think if you had a track record for good open giant repair this might be different if you had a single surgeon you know like a Grif Pearson doing his for you know 30 or 40 years and then if he had taken on thoracoscopic skills and not compromised, I will not compromise this operation. I will figure out how to do it the way I did it open, every single principle is respected, I don’t think you would see this.

I think this is from compromising. I think when you can’t do what you want to do but you are doing what you have to do because you are so frustrated at the time of the surgery, you beat up the cruse, the stomach won’t stay down, the mediastinum is a bloody mess and you say I just want to get the hell out of here. I’ve got to do something, I’m going to wrap something around something and close
something and go home because I’ve tried, I can’t get it done. And that’s it. And so I think that’s what happened and but I respect Claud, he is a good open surgeon and I think he’s a good laparoscopic surgeon. I think this was his very early experience, I have no idea what it is today, they have published their recent results. I haven’t seen them. So you know whether it’s better or worse or the same, I don’t know.

Now this to me was a start of a very good idea because there’s probably 4 or 5, maybe 6 variables with giant hernia repair. There’s not 1, it’s not 1, it’s not like give me a 3 stitch Nissen and they’ll all do fine. It’s not you know close the cruse with mesh and they’ll all do fine. It’s not everybody gets a Collis and they’ll all do fine. It’s not everybody gets a Hill and they’ll all do fine. Most of it is give me a good esophageal surgeon and I’ve got a shot, don’t give me 16 people that don’t tell me, I don’t mean tell me that I’m pretty good at this, I mean show me your published work. Show me your barium esophagram pre and postop, at 6 months, a year and 5 years. Show me something that tells me that you are worthy of being in this trial. And I couldn’t find it. I couldn’t find the credentials required to get into this trial. It seemed like all you had to do was say I want in the trial, and that’s what happened.

So they randomized giant paras and I found not a great definition of a giant para in this paper. We’ve tried to define ours and say you know a number, greater than 50% of the stomach in the chest on barium esophagram as outlined with clinometry by a radiologist so that you know that you can either do that retrospectively or prospectively. Now when you have the whole stomach up there that’s
pretty easy, but many of us know that a lot of the giants aren’t 100%, might be 60, 30, 50. Where do you draw the line and say it’s a big type I or a giant? Big type Is can be just as tricky because they maybe have a lot of components of giant. So I don’t know exactly what they started with from the giants except they said they were big hernias. I don’t know exactly if it started with their surgery experience because they did not say. I can tell you that at 6 months they had a radiographic recurrence defined as a hernia greater than 2 cm in the mesh arm 9%, in the non-mesh arm 24%. So the study was stopped and said okay, we cannot go on ethically because the difference is so hot that we must mesh everybody.

Now I had a different conclusion to this study. I said stop the study and no one in this study should operate any more on these patients until I find a subset that’s capable of doing better than 9% recurrence at 6 months, because something is not right with 9% at 6 months. You shouldn’t be that high. And I don’t – we have recurrences in our group, we do and we have you know a 4% operative recurrence rate, but a higher radiographic recurrent rate. So we are not perfect but this wasn’t good, and it only got worse, which I thought it would. So their conclusion that mesh mush be the other conclusion, recurrence rate concerning in either arm, surgery experience not stated, results did not depend on a single variable, period, except maybe if you wanted to say surgery experience, because he’s going to consider all these variables if he’s an experienced esophageal surgeon. Now this was presented to the American Surgical, probably don’t get a more prestigious meeting.
Now the follow-up, so things got worse. Now we are at a median follow-up at 58 months, 60 of 72 patients had a barium swallow, pretty reasonable, 34 in the mesh arm, 26 – or primary repair 34 in mesh, and 26 had the swallows; recurrent hernia 59% in the primary group, 54% in the mesh group. Now we are not seeing pictures of all those recurrences. And it’s very helpful to see a picture because a small type I hernia after a giant 5 years out, I mean most of them really don’t need surgery. I mean they may need a PPI, they may need some dietary counseling but they are really not going to need surgery in the vast majority. And the symptoms between the groups weren’t any different.

So the conclusion, laparoscopic repair resulted in improvement of symptoms. Well, you know, we didn’t really see that here in the results that I showed. I think that there were some improvements when you look at the paper, but it’s hard to really you know congratulate yourself if you have a 59% recurrence in any arm for any operation. I don’t care if you were fixing you know a knee or a fracture, or you know your wisdom tooth, or you know a cap on your tooth, if things are falling off in 59% or recurring in 59% it just can’t be good. So the benefits of mesh decrease at long term follow-up, more than 5 years, I’d say there is no benefit of mesh unless you need it. When do you need it? Tension, integrity, the same anywhere in the body, tension, integrity; and if you have both well then you are going to really have a problem because you know you’ve got to have potentially a real problem getting your mesh and you know mesh on the abdominal wall is a heck of a lot easier to put two pieces of mesh and sew them together, or one piece all the way around. I mean with the cruse you know where do you sew it? And figuring out the mesh and how to do that we can talk more about that later in some of the other talks.
So this is Grif Pearson again just to contrast that you know, 91% good results, 2 operations required and this is with barium swallows in everybody over a 20 year period. So we are just, you know just a different, whole different theory.

This is after we do the mediastinal work, so for my first step I’m looking at this, this kind of picture. I want to reach up inside and gently evert the sac. It’s not so easy sometimes. One, you are reaching up where your instrument doesn’t want to go, you’ve got a straight instrument and you know it kind of angles up. But if you play around with the angles of your instruments many times you can pull down on it. If you yank on this you are likely to get cirrhosal tears or worse. I think sometimes this is where I put an extra 5 port in down low to help hold the stomach still while these two guys, my left hand and my assistant’s right hand are working to set me up so that I can see this fat pad everted, lift up a little bit, sneak into that plane and we’ll show that in a minute.

Once you get that done, you should be looking at something like this, a nice crura intact and we’ll see that a little better later. This is where the fat pad went. That’s where the edge of the fat pad was. Now how do you know that this is your esophagus if this whole, the fat pad started here. Where do you wrap? I mean you know I don’t know, and people say – and I came here you know close to 20 years ago taking fat pads off because that’s what Skinner taught me and that’s what Dr. Belsey taught me and that’s what – and I didn’t get the opportunity to operate with Dr. Belsey but he was good friends with Skinner and Altorque, so I heard him talk many times. And Altorque, everybody I
know that was an experienced esophageal surgeon said take the fat pad off so you can see what you are wrapping. And also when you have a big fat pad here if you are going to wrap around that how do you assess the tightness of your wrap? I mean it’s big, 70% of our patients are obese, not morbidly but obese. And men, you know their fat is all right in the mid-abdomen, it’s just really a very difficult operation at times. And so I’d take the fat pad off.

So I’ll go back up to this video clip, this is what I wanted to show Dr. Low as well was just this, this view. So we are kind of talking about first steps, and this is what you are looking at. So I go to the next kind of view and see if this will play okay, otherwise I’ve got to switch over. So the trick is how do you get this sort of everted a little bit. And there is my fat pad, a little bit of it, and I’ve everted and this is a little bit of the mediastinal pleura kind of being turned inside out, because the lining of the crus when you follow it up it kind of becomes this sac and the mediastinal pleura so you are working in this mediastinum. This is the key to be in here. And I might put another 5 port in to hold this down so my person that’s assisting can get in there. That’s where you want to be in, this is here, this is the whole thing. We’ve done a little work already but there is that foamy layer. If you find this foamy layer you are on the right track. And now I can see the vagus, I’ve had people come to me at this course and say you know I do these and I’ve never seen the vagus. I say exactly, exactly the problem, you know. You don’t see what’s right in front of your eyes. And so you know either don’t do it or start looking because you’ve got to see it.
Here is aorta. And you’ve got to see that, this gutter, look at this and look at the cruse, they are pretty darn good. Look at the integrity there. Here a little bit of tearing on the cruse but really the overall integrity is extremely good and I can tell you this can go to really a bad problem in a hurry if you get the lining off it just starts to shred and there’s nothing left to sew. But look at this aorta, all the way up. I mean the sac is not out of the body but it’s out of the chest and that foamy layer, you need to stay in here for 45 minutes, that’s what I do. I just say in there, go from not all in one motion, it’s a little bit at 12:00 o’clock, a little bit at 3:00 o’clock, rotate over, then go retro, then go left cruse, then go right cruse. It’s a rolling motion, continuing to open. But I don’t jump say to the gastrohepatic and open and just start working on the right cruse. I don’t go to my left, my short gastric first because I’ll be taking them down by the antrum. And I come in, so some of my Fellows who were well meaning, wanted to do something. I come in the whole stomach is like mobilized from the antrum all the way up, like we are doing esophagectomy or worse, they’ve gotten on the stomach and now my stomach is potentially compromised for later use as a tube. But that doesn’t happen very often but the point is it’s so easy to take the short gastric, people can carry right on, take some short gastric, fun, easy, you do it, you work for an hour taking all these short gastrics and you haven’t really done any of the operation.

So this is what you need to see, at some point you’ve got to get in there and get that down. Once you have that I think you are 90% there, 90% there if you save the cruse and you’ve done this work. Okay, so then you are looking at something like this and fat pad is off, you are mobilized, your cruse are intact and you say is my esophagus in the abdomen? And is this okay for a wrap to be here? If I
straighten this and pull it down, this would look a little bit like esophagus because it would be tubularized cardia, I’d be pulling it down. But this is my true angle of HIS and I don’t like it too much because I feel if I pull this down harder and wrap it my wrap will be in the chest on postop day one, at least partially. So I’ll have the beginning of a recurrent hernia, and I don’t like it. I don’t like an intrathoracic Nissen, that’s not what I’m setting out to do. And I think it looks something like this in a cartoon form.

So what would we do? Previously, I mean well we take the fat pad off and I’ll have time to show all that, we’ll show that tomorrow. And you know what do you do if you encounter the short esophagus? Keep working, gain length, look for it, have a plan and I think there are ways to deal with a relatively short esophagus. I think the Hill is actually a way to deal with a relatively short esophagus. I think a Pexy along the left crus is a way to deal with a short Collis, I mean a short esophagus. I think the Collis is a way to deal with a short esophagus. There are many ways to deal with it, but the first one is good mobilization. And if you do that, I think you know Grif would tell me that you should Collis everybody and there is something to be said for that. But I think that it’s probably not necessary. I think if you get really good at this it’s probably less than 20%. I don’t know the exact number. If our Pexy work pans out and we are getting away with that in terms of symptoms and quality of life, I think that Pexy in these, especially the older patients, maybe the one on steroids, maybe a lot of things where you simply don’t want to have a staple line along the esophagogastric junction for whatever reason. You know it may be an option.
So we used to use EEA, it looked simple, bang, bang, nice drawing you know, you see your little, pop it in, and you dig a hole out and then walk up with a stapler and there you go. And that’s a very nice Collis. And you see it right on the Bougie, sucked right against it, boy you just can’t do any better than that. This can still be a problem, it could potentially leak and this could dilate, there is still acid producing material in there. So it does have some problems. It’s not very motile, it doesn’t have any esophagus motor fibers there, so there are still problems but it is a very nice looking Collis if you can reproduce it. But we couldn’t, my Fellows were leaving and calling me either with a leak or they just were intimidated by it. You know because there are so many things you have to have teed up to pass that needle posterior to anterior and you know I loved it, I think it’s a good way but I gave it up.

So now we will come in, staple at an angle and the newer endo-GIA with the intense reticulation just makes it a little easier. So you can articulate at very sharp angles and come right up this, and you really don’t need a big strip. This is making it look even simpler than it is. It’s not this simple but it’s not horrible, it can be done. So you staple it, and I actually do it from the right side. I am operating on the right side so I just figure how to do things on the right side. And then come on right on up and it should look something like that when you are doing, and we’ll maybe show one tomorrow if we have a need for a Collis.

Now what contributes to failure to recognize a short esophagus I think one, don’t take the fat pad off and you won’t see it, so you don’t have to worry about it; failure to recognize a tubularized cardia
under that fat or just as I showed you that early type I, that’s what they look like, caudal tension, sometimes people put a Penrose drain in the stomach and they have somebody and they have somebody else holding it down for them while they are doing their work. Well that’s fine, but when you let it go sooner or later I mean I’ve let it go and watched it go from 3 cm intraabdominal to 2, to 1, it just kind of mmm, you know what’s to go back up there. And that’s that axial shortening of the esophagus. Caudal migration with a Boogie, I don’t see much of that but I think there is some of that, I’ve seen some of that. Cephalad migration of the diaphragm, we have some of that, we are pushing the diaphragm up, so where it’s all going to settle out when you are done I don’t know. I think mostly it’s failure of the surgeon to have experience with a laparoscopic method to lengthen or to deal with that problem of a G junction that’s relatively not in the abdomen tension free where you want it. So you’ve got to have a plan what to do in that setting. But I believe that there is a short esophagus and I don’t think you are ever getting this 10 cm down here tension free. It ain’t happening.

So now this one, we see some like this where it’s sort of this kind of accordion twisted, I think – I prove every day that some of the giants come right down with good mobilization, good mobilization. You are going to get a lot of them down, where you’ve got to get good at the mobilization, you’ve got to be willing to change angles of your mobilizing so you don’t beat up the cruse. This is what I see a lot of recurrences, a lot of them. And this, this is a slipped Nissen, I don’t think it ever was in the right place. How do sutures pull out of here and reestablish themselves here? I don’t – some kind of magic I guess, I don’t know. I can’t imagine, if I sewed it here how did it slip down to here?
Now if you do sew the stomach together can it slide along? Nobody does that. We all go stomach to esophagus, stomach, tie it down. And a lot of people use a pledget or we’re really trying to create ischemia there, we want it to scar together. And so this doesn’t slide, this is put in the wrong place by people getting lost during an operation and this looks like esophagus with fat pad on it, it really does. It fools me every day, I mean I’ve got to look very carefully for it.

Minnesota, Mike Maddaus, good open surgeon, good friend of mine. Came down, watched us do laparoscopic work. He was doing his own thoracoscopy, had very little laparoscopic training in his general surgery days. Why? Because he’s as old as I am, so we didn’t get much of that, we got a little bit of gallbladder work towards the end of our training. That was it. So it was all on the job training. So he comes down and watches me, goes back, I actually have some great ideas. So you know he’s a smart guy, gives me some ideas too. So I learn from people if I keep my ears open. And I learn from my Fellows sometimes believe it or not, sometimes on what not to do, but I learn. Complications, one leak, on pneumonia, one death, mean GERD score was outstanding, barium swallow in virtually everybody 90% and no short term operations, one small recurrence. But this is very early and since then I’m sure he has a few recurrences but nevertheless outstanding data for his first 61. How do you compare this to the early Mayo Clinic? How do you compare this to the early Demister experience? I don’t know. He worked with Grif Pearson for his entire Fellowship and maintained a relationship with him, so he worked with a true guru. I think that is the key, that you work with a guru or a disciple of a guru and Pearson has many, many disciples in the United States, the Canadian influence is very heavy in the United States because that’s where the experience was
back then. But that is about as good an early laparoscopic experience as I’ve ever seen published, and our first hundred was close to that good, not quite that good but close to that good. We had 2 recurrences in the first hundred in our early, early series. And now we talk about a 4% rate of operative recurrence at 7 years.

So now these are just some of the finer details of the wrap and all that and we don’t have time to get into much of this. But these are some of the pre and postops of some of the cases you are going to see tomorrow. This is probably about 40, 50% of stomach in the chest and there is a good view, and again diaphragm is right about here, and you see it nice. So we get a barium swallow, and again this is the misleading part of a single shot of a barium swallow. This is you know we look at multiple shots. Here is a good example of a Collis, and we couldn’t get this guy, which is a true squamal ________, this is little Schatzki. And you see actually Schatzki is very common to see a little dimple there. And this is our Collis line. Now that’s great but that is a pretty long Collis line and will this dilate in the next 5 to 10 years? I don’t know, but it really looks great postop, it almost looks like esophagus and you know the downside is you’ve got a little Schatzki ring so you probably have a little motility problems, you’ve got a little resistance here and now you’ve got an immotile segment of stomach neoesophagus. So I think you can expect some problems from a case like this because it is a compromised operation. Collis is not what you want, you want tension free intraabdominal esophagus, you can’t always get it.
So here is our series that Katie helped put together and this was I was involved in the vast majority of these cases either as surgeon or assistant and we were doing a lot of Collises early on, we did a few with some mesh and almost all got a fundoplication, mostly floppiness and so today we are erring on that not quite touching the Nissen in the middle and length of stay was pretty good, and we were, you know we were very pleased with these results. There were a few leaks from the Collises, most of that was early on with the stapler trying to teach everybody that EEA. Now that we’ve gone to the wedge you essentially don’t see too many leaks if any. Mortality rate again out of 662 patients 1.7% and this is all comers. We have quite a numerous patients into their 80s. Symptomatic improvement was good, 89% were satisfied, 90% reported good GERD scores and we used – completed – the surgeon doesn’t do this interview, this is done by we hire separate associates that do this work. So we have no idea about what they are talking to patients about. Median follow-up 25 month, because you get a lot of surgeons you know. No, they are good, they are doing pretty good. You are good. How are they doing? They are good. You know and then you actually talk to them and they are not so good. So we really get our hands away from that, we want to have an honest broker sort of type approach. And 3.2% of patients underwent reop in subsequent follow-up.

Now here is even longer term results, this was a subset of that group that had 77 month follow-up and again pretty good, pretty good. Not as good as that 90%, but you know 86% good to excellent, fair in a few and then poor in 9%. Quality of life, these scores are absolutely compared to age adjusted norm was good. Reoperation in 7 patients, 4% and 154 of those 180 or so had a barium swallow and radiographic recurrence in 15% which was mostly small type Is. But a type I may need
surgery, it really depends on their symptoms now. Can you manage them medically? It’s not the size of the hernia that tells me oh we’ve got to operate. I mean certainly if on postop day 1 my whole stomach is in the chest we are not—you know something went wrong. Something tore, they retched, whatever, we’re going right in to fix it. But a simple type I we would try medical treatment. So quality of life, again GERD HRQOL pretty good.

So what are some of the conclusions? No single step is the key step, many important steps. I think the early one is that plane, get into that foamy plane. If you don’t get there it’s never happening. I don’t care what you do, you are not there, you don’t have the training, you don’t have the experience, you’ve got to go watch some, you’ve got to do something but you need to get in that plane. You’ve got to save the cruse, you can’t beat up the cruse. They’ve got to be intact at the end. Tension free, how do you get them together? If you can’t you’ve got to use mesh, but most of the time you can. Mobilize the esophagus, maintain vagal nerve, yes, important. I think it is. Cut them, no, I don’t cut them. If you can’t get this keep mobilizing the mediastinum. Antireflux, my standard has always been a 2 stitch floppy Nissen, I’m moving towards a little less of that in the older population because of you know my little lady syndrome with lots of gas and dysphagia and stuff that I like to avoid. So I think occasionally all of the principles I just talked about still apply in doing a Pexy. And I think that I’m anxious to hear Dr. Low’s talk but I think that’s a similar concept, maybe a little different approach. If these principles are followed meticulously using the open or laparoscopic approach I think good long term results can be achieved.
So I think this is some restated things, but overall a pretty good experience here. I’d like to see this 12 to 14% radiographic experience down to single digit, and I would like to see the reoperate down to low single digit at long term follow-up. So I think we have some work to do. All of the better series, all of them had a single dominant role of a surgeon that was experienced and most of them trained with someone else that had you know very significant experience whether it was Belsey here or Pearson or Skinner and really we are going to hear from – I don’t want to speak for Dr. Low, let him tell us where he thinks he got most of his experience.

Giant hernia in the setting of redo surgery, obesity, very poor motility, there may be reasons why you don’t want to do a Nissen or a simple hernia repair. You need to do the hernia repair, you can’t do a roux-y to a stomach that’s in the chest, period, or you will have a gastric jejunal anastomosis in the chest. It will be there and it will be symptomatic. But occasionally a giant we do everything we just said and then we cut the stomach and do a roux-y. Now why? Because of these things that might influence us, previous bilateral vagal nerve injury with dumping is the dominant part of the problem. Morbid obesity, diabetic, you’ve got a patient that’s a BMI of 44, what are you doing doing a Nissen only on a patient like that? I mean it doesn’t make any sense. If you don’t know how to do a roux-y, first of all finish your hernia and open and do it if you have to do it, or partner with a colleague. Once you put the stomach down there for them they can do it, they can help you do the roux-y because they do hundreds of them a year in most centers. So this is a very reasonable approach for some patients, and in Western Pennsylvania we have a significant obesity problem so we have to consider roux-y and also with very bad motility or redo surgery.
Failure to recognize short esophagus certainly contributes to recurrences or at least having a way to manage it. The integrity of the crura we talked about, tension, all talked about and other factors including size of hernia, etc, but the main one being operative experience and if you are doing laparoscopic of course you need that or open, whatever your approach is. So thank you and just have a couple of little questions I’d like to ask but you know what I’m going to save this for the discussion period and we’ll turn the talk over. Thank you.