

Dr. Jason Barnes:

Hey there. Welcome to another episode of ENT in a Nutshell. My name is Jason Barnes, and today we're joined by laryngologist, Dr. Dale Ekbom, and we will be discussing Zenker diverticulum. Dr. Ekbom, thanks so much for being here.

Dr. Dale Ekbom:

Thank you, Jason. Hello, everyone.

Dr. Jason Barnes:

I first wanted to start with presentation. Can you describe the classic patient who walks into your clinic, who has a Zenker diverticulum?

Dr. Dale Ekbom:

Yes, yeah. They all basically have dysphasia and it's more of a solid food dysphagia. It can be liquid as well. Choking on liquids, regurgitating food and regurgitation is one of those classic questions that you'll see with Zenker's. Specifically undigested food, even several hours after eating.

Dr. Dale Ekbom:

They would let you know that, yes, food has come back up, it's undigested food and then you know it's likely a pouch or Zenker's diverticulum. They can have sensation of food sticking as well and occasionally coughing or more throat clearing. Occasionally, pneumonia, but not very often with these, but sometimes you can aspirate some of these contents.

Dr. Jason Barnes:

And who's the type of patient who walks into your clinic with Zenker?

Dr. Dale Ekbom:

Typically, ages sixties to nineties, and more often men than women. But yeah, it's older age population that's coming in and you just don't see it in the young very often.

Dr. Jason Barnes:

And how common is this?

Dr. Dale Ekbom:

It's very rare, Jason. It's anywhere between one and 10,000. Maybe up to one in a thousand, but there's a lot of patients that are probably asymptomatic that we don't know they have it, smaller Zenker's. But the ones we do know it's a wide variation of numbers that are between one in a thousand and one and 10,000 people.

Dr. Jason Barnes:

When you see these folks in clinic, what are some questions that you're asking them to tease out, is this a Zenker or is this something else going on? And what are maybe some more concerning presentations that you see?

Dr. Dale Ekbom:

Specifically, we're asking, again, about regurgitation of food. We're asking some of the same questions I was mentioning before, but you do want to look at weight loss as well. I mean, in terms of concerning symptoms, weight loss, and if they've had aspiration pneumonia. Again, not very common, but if they've had that, then this needs to be someone that is really on the priority list.

Dr. Dale Ekbom:

We see a fair number of patients that come through our doors that have had recurrences as well too, after surgeries. And so, those are those folks are struggling even more as well.

Dr. Jason Barnes:

And once kind of do your HPI, you've asked them about their symptoms and you're honing in on this, you suspect a Zenker, what are you looking for in physical exam with your first visit?

Dr. Dale Ekbom:

Yep, we always do a flexible scope, and we want to take a look at the true vocal fold mobility. If you do one of these open treatment approaches, then there's a higher risk of recurrent laryngeal nerve injury. So you do want to make sure both vocal chords are moving, that there's not already immobility.

Dr. Dale Ekbom:

And then also you're looking for a pooling of secretions, specifically in the vallecula and the pyriform sinus. Often you'll see it on one side more than the other, more in the left pyriform sinus and sometimes you'll see those secretions spilling over onto the true vocal folds. And so, that's the main area you're looking at, pharynx and everything else in that upper digestive tract too.

Dr. Jason Barnes:

And you're not able to actually appreciate the diverticulum on flexible laryngoscopy, correct?

Dr. Dale Ekbom:

That's correct. Yep, you can't see it. You can just see the effects and the pooling effect sometimes.

Dr. Jason Barnes:

And is there anything externally that you can palpate that makes you more suspicious or are there ones that are particularly bad that you can appreciate externally?

Dr. Dale Ekbom:

Yeah, if it's a larger diverticulum, you can push on the neck, more often on the left side than the right, and you can see a little more of the pooling that'll come up possibly, or hear gurgling sounds at times as well.

Dr. Jason Barnes:

And moving on to pathophysiology, we've talked about the presentation and kind of how you first evaluate these patients, but what is a Zenker diverticulum?

Dr. Dale Ekbohm:

Yeah, so it's an outpouching of mucosa, so it's not a true diverticulum. A true diverticulum includes the muscle, right? But this is just the mucosa. So this is a pseudo diverticulum, and it's this herniation of the mucosa that comes out between the cricopharyngeus muscle and just above, at the level of the inferior pharyngeal constrictor. So it's coming out above, and that's one of the key points too, above the cricopharyngeus here, compared to other diverticulum that are out there.

Dr. Jason Barnes:

And can you talk about, in this conversation, we talk about pulsion versus traction diverticulum. What's the difference and where does Zenker fall?

Dr. Dale Ekbohm:

So Zenker's definitely is more of a pulsion diverticulum. You can see what looks like a Zenker's, but it's more of a traction diverticulum sometimes from an ACDF surgery. Anterior Cervical Discectomy Fusion surgery can, in the posterior mucosa, the esophagus or muscle of the esophagus can get kind of stuck on that area and be pulled back, so that's a definition of a traction diverticulum.

Dr. Dale Ekbohm:

But this is more of a pulsion, so it's somehow due to increased luminal pressure. We still don't fully grasp the reason behind it, when thinking about why some people get this and why some people don't and is it truly increased pressure? We think that there is more of a CP muscle, kind of a dis coordination that occurs, that possibly there's an incomplete relaxation of that muscle and allows for more pooching out of that mucosa above. It could be abnormal timing as well, of that CP muscle. Increased resting tone. And there's other theories out there as well.

Dr. Jason Barnes:

And when I've kind of read about, or heard conversations about Zenker diverticulum, it's hard to avoid talking about the other types of diverticula that exists in this area. Can you tell us a little bit about those other diverticula and how they compare both in anatomy and maybe thoughts about treatment approach?

Dr. Dale Ekbohm:

So yeah, this is important as well, because the Killian-Jamieson is another diverticulum that you can see. And that one is more lateral than the Zenker's diverticulum. The Killian-Jamieson is often... And actually it's not coming above the cricopharyngeus, instead it's just below the cricopharyngeus and coming from more a lateral position, so you really have to be careful on the Killian-Jamieson's with the recurrent laryngeal nerve.

Dr. Dale Ekbohm:

In fact, with those, the standard of care would be an open approach to protect that nerve. So you find that Killian- Jamieson, and then you remove it in an open approach. There are some reports of doing it endoscopically, but the standard of care would be open for Killian-Jameson.

Dr. Dale Ekbohm:

And then there's also Laimer diverticulum and that is also below the cricopharyngeus, but that's a little more posterior. It's not lateral. And the Laimer is a true diverticulum, which means it includes the muscle layers. So it's not a false or pseudo diverticulum. It's a true diverticulum. So that's different than the Killian-Jamieson and Zenker's. You can also have lateral, you can have [inaudible 00:08:43] up higher, you can have other diverticulum of the esophagus as well.

Dr. Jason Barnes:

And one of the questions I like to ask is when we're talking to patients about their pathology, how do you counsel patients on why need to get this treated and what happens if you don't treat it?

Dr. Dale Ekbom:

Yeah, that's a good question because some of these are not that symptomatic and other ones really are. And so, just in terms of deciding when would you recommend that treatment, some of these can progress as time goes on other ones don't, and we don't know which ones are going to progress. So what I typically tell patients is, if they are having symptoms, if it's very mild symptoms, they don't have to do anything of course, or if they have no symptoms, they don't have to do anything of course.

Dr. Dale Ekbom:

But if it's moderate or it affects them, or they have to slow down with their eating or they're ever having some dysphasia or regurgitation, it's easier to operate on a 60 year old than it is on an 80 or 90 year old. Or likewise, if they come in age 75 and they're healthy, what are they going to be like when they're age 90, with a slightly larger diverticulum and now more moderate or severe symptoms and are we going to be at a place where we can operate? So I tend to recommend moving forward with these because in our hands, I mean, typically recurrence is pretty low and they tend to do very, very well.

Dr. Jason Barnes:

Is there any risk of malignant transformation in these?

Dr. Dale Ekbom:

Yeah. Yes, thank you, that's another reason to consider operating, because it's about a half a percent, so 0.5%. Some people move it even up to 1%, but I don't think it's that high. It's more of a 0.5% chance of finding a squamous cell carcinoma right there, that could be causing the Zenker's or within the Zenker's. So that's another reason to consider doing surgery.

Dr. Jason Barnes:

And after hearing kind of these symptoms and performing your physical exam, what else do you put on the differential diagnosis for these patients?

Dr. Dale Ekbom:

Yeah, so it's funny because a lot of patients come to see me already with a swallow study, so we know what it is. But if they don't have a swallow study, they come in with dysphasia. Boy, it can be all kinds of different things as you know. When you're asking your history and you hear regurgitation or you hear solid food dysphagia, we think about other narrowings of the esophagus, like esophageal stricture, a CP muscle hypertrophy or just a CP bar being tight without a Zenker's. You can have cancer in there. We ask about any previous trauma to the neck or that area. You can have inflammatory lesions, there's actually

myopathy, there's inclusion body myositis, which is an inflammatory myopathy. It's kind of a progressive muscle disorder with muscle inflammation, weakness, atrophy.

Dr. Dale Ekbohm:

And we see a fair amount of that at our institution. And most of those patients will have CP muscle involvement. So less about a Zenker's, but more of a CP muscle. There can be motility disorders, achalasia, esophageal spasm. You can have other muscle disorders like muscular dystrophy, which causes weakness in muscles or a Myasthenia Gravis. Patients that have had strokes in the past can have dis coordination of the muscle and end up with swallowing difficulties at multiple levels in their swallow, of course, not just at the CP, at multiple levels. And it also can be idiopathic too, so.

Dr. Jason Barnes:

So you see this patient in clinic and say they don't have any imaging or further workup. What is your workup for this patient?

Dr. Dale Ekbohm:

Yeah, so we always want to get a swallow study and this can be a little confusing when it's ordered and it's good for us to remember the different terminology out there for these swallow studies. So let's start with a modified barium swallow study is the same as a video fluoroscopic swallow study. And that assesses everything above the cricopharyngeus and to the level of the cricopharyngeus, is seen with a video fluoroscopic swallow study. That's typically done with a speech language pathologist, and it's very helpful, because they look at all the different levels of swallowing difficulties. The squeeze of the pharynx, the elevation of the larynx with the swallow. Then they can see the CP muscle and so they look at all the different levels, the tongue base retraction and all that happens. And then that's in combination with the radiologist too.

Dr. Dale Ekbohm:

So that's a modified barium swallow or a video fluoroscopic swallow study. Now, a barium swallow is the same as esophagram. And so, that can also show a Zenker's, but that will just show the esophagus. So it shows all the way from the CP muscle and then down to the gastroesophageal junction and sometimes into the stomach. And so that will also show it, but I tend to order a video fluoroscopic swallow study with esophagram, or it's also again called modified barium swallow follow through with barium swallow, because I want to see the whole length of the swallow.

Dr. Dale Ekbohm:

There can be other things, you can have a Zenker's as well as a motility disorder. So you need to look in the esophagus and see if there's a motility disorder. If it's severe, you can have a lot more reflux in that type of patient than you would typically see in others. So that's one of those things you really have to get the whole length of the swallow, a video fluoroscopic swallow, so at the start of the swallow, from the opening of your mouth all the way down to the gastroesophageal junction.

Dr. Jason Barnes:

And is there any role for CT or MRI in these patients?

Dr. Dale Ekbohm:

No. I have not gotten a CT. I guess, unless you see an unusual prominence or push that makes you think, "Boy, that doesn't look like a regular Zenker's." Then it could be a cancer and then I would get a cat scan.

Dr. Jason Barnes:

I've seen that there are some staging systems for Zenker diverticulum. Could you tell us how useful these staging systems are and how you apply them to your clinic?

Dr. Dale Ekbom:

Yeah. There are different stages, so there's, I guess there's three of them. The Lahey, the Morton, van Overbeek is the other. But in clinics, we don't use these almost ever. I mean, what we do is we look at the size of the pouch and I read a lot of literature too and there's some that report on using these stages systems, but not many. So most of us are just looking at the size of the Zenker's and that's the most important thing. And that's kind of what the staging systems are, lists based on the size basically.

Dr. Jason Barnes:

So you've seen this patient in clinic, you're suspicious of a Zenker. You work them up with the modified barium with follow through esophagram. So you've made the diagnosis of Zenker and now it's time to talk about treatment, which I think, is going to be the meat of our discussion. Can you tell us first, what are the treatment options and how do you choose which treatment option to pursue?

Dr. Dale Ekbom:

Sure. So there's a variety of options. I mean, I think all of us have our go-to option that we've gotten good at and we feel confident with, but there's the endoscopic approaches and then there's the open approaches. And I tend to do a lot more endoscopic, which is the transoral through the mouth approach and typically use a rigid laryngoscope and I often use laser. So there's an endoscopic laser diverticulotomy. And that's where you basically laser the division between the pouch and the esophagus, just to open it up all the way down to the base of the pouch until you see the buccopharyngeal fascia. And then you try not to violate that, because then you'll get into the retropharyngeal space fat, which can cause crepitus and other problems. So that's the laser technique. Now there's also a stapler technique.

Dr. Dale Ekbom:

The nice thing about the laser technique too, is the diverticular scope. You can use a smaller diverticular scope on almost everyone, I feel like I can get the rigid approach done if I'm using a laser. Whereas if you do the stapler approach, you need to use a Weerda diverticuloscope, which is a little bit larger diverticuloscope and the flanges of the scope open up at the end to show you the pouch. And that one is the one that you need to use if you're going to staple. And then it's a GIA stapler that's used and you place it over that, and again, that partition between the pouch and the esophagus and you staple down on it. And of course, these staplers, as we know, have about a centimeter and a half or so of no staples at the tip.

Dr. Dale Ekbom:

So that's a problem in my eyes, just because even though these patients, they all seem to do really well, no matter what technique you use, I wonder about recurrence rates and other things when you have left about a centimeter and a half bar. Now, some people will try to pull up on that and then re staple, you can re staple it again and get a lot of it, but you still have that end of the stapler that doesn't have

staples. Another endoscopic approach is the flexible approach too. And that's newer over the last 10 years or so with GI doing a lot of these. And that's, again, using a needle knife, a flexible endoscope through the mouth and then finding where that partition is and just dividing that partition. And it's a moving target a little bit, with that.

Dr. Dale Ekblom:

And then the final approach on this quick overview here of approaches is the open. And that's a nice approach as well, just going through the neck, usually more often the left side than the right. And you place a bougie in the esophagus so you can find that easily and also so that when you find the pouch, you staple the base of it or you cut en sew the base of it, and if you have a bougie in there, then you wouldn't tighten it down too much in that location. That's kind of the overview of the different approaches.

Dr. Jason Barnes:

And going back to the endoscopic approach, I feel like it's difficult from a resident standpoint to fully understand what is being stapled or what is being lasered. Can you speak in a little bit more detail what you're taking down and how it improves the patient's swallowing?

Dr. Dale Ekblom:

Yeah, so you have the pouch and then you have your esophagus. And so when you place your rigid scope into the mouth and you follow it down into the pyriform sinus and then sweep it over and place it more midline, and the posterior flange falls into the pouch in the back and the anterior flange falls into the esophagus. And then you're looking at that partition in between, which includes the cricopharyngeus muscle.

Dr. Dale Ekblom:

And so, what you're lasering through or stapling through the first level is the mucosa. And it's quite thick, surprisingly thick. And then you get into muscle and you're lasering right through muscle of the cricopharyngeus. And then the next area is often some scar and fibrotic change, fibro-fatty change. And you're lasering through that and you're using your suction to continue to see, "Okay, am I down through this and I'm at the base of the pouch where it's going to be a road home." You want to try to allow food to go into that pouch and then straight down to the esophagus. So you don't want any ridge there any longer. So those are kind of the areas that you get down to, until you reach that buccopharyngeal fascia.

Dr. Jason Barnes:

And then for the external approach, how often do you do a CP myotomy with the diverticulectomy?

Dr. Dale Ekblom:

Yes, thank you for bringing that up. You do that every time. You do that every time and so that's super important, otherwise you'll get recurrences, higher chance of recurrences. So you do have to cut through the CP muscle and again, it has some scar and fibrotic change to it as well. And you have to remove the entire CP all the way down until you're seeing the blue hue of the bougie through the tissue, so you want it very thin.

Dr. Jason Barnes:

So we've talked about possible treatment options, including endoscopic and external. The endoscopic is more kind of, in a sense, marsupializing the diverticulum where the external approach is more of a diverticulectomy with CP myotomy. Is that a fair way of saying that?

Dr. Dale Ekbom:

Yes. Yeah, I would say that's a fair way of saying it. I mean, I think, there was one thing that we're trying to do more of, at least me, here at our institution is endoscopically, you can actually remove the sac too. So that's being done, a few centers, but you typically immerse an opening up of the sac so that it flows into the esophagus doing an endoscopic approach versus removing the diverticulum, just like you said, through an open approach.

Dr. Jason Barnes:

And this is a kind of a big discussion, but could you highlight the pros and cons of external versus endoscopic? And then we can also kind of go into how you counsel patients on outcomes, expectations and prognosis for the given treatment approach.

Dr. Dale Ekbom:

So there needs to be more research on all of this, of course, but what has been thought in the past, and there is some data in the past, is that open might be better in terms of decreased recurrence rate and improvement in dysphasia scores. But more recently, there was a systematic review in dysphasia in 2019, a group out of Cincinnati. And they looked at pooled quality of life outcomes at least, opened versus endoscopic laser versus endoscopic stapler. And in that group, there may have been a trend towards open having a slightly better quality of life, but it did not prove that open was superior. So all approaches seem to give quite a significant improvement in swallowing and quality of life scores and patients are very happy with, it seems like, with all of these different options.

Dr. Dale Ekbom:

In terms of some of the cons and thinking about adverse effects and problems afterwards, there's been some studies that have shown decreased recurrence rate when using a CO₂ laser versus endoscopic stapler. Just again, because you can get to the base of that pouch. So that's one thing, in my mind I think about, is how to allow for the least amount of recurrences. And so, I tend to move towards a laser instead of stapler for that reason. But the stapler, some of the pros on that is, some studies have shown decreased length of hospitalization compared to the CO₂ laser. Maybe decreased MPO status because it's all closed. And the crepitus rate is a little less with the stapler than with a laser approach trans orally or a flexible approach as well. So I think those are some of the things I think about when it comes to adverse events.

Dr. Dale Ekbom:

I can speak to another couple systematic reviews I recently read as well and meta analyses on the flexible approach specifically. One was in 2016, systematic review, another is 2018. And one of the difficulties that I have with the flexible approach right now is, we don't have longterm followup, so we don't know the recurrence rates. So I feel like the recurrence rate could be higher in an approach where it's a moving target and you don't go down to the buccopharyngeal fascia. You just typically don't from what I hear about and talking to the GI doctors. And there's more adverse events in terms of bleeding from this one retrospective review. Bleeding was 13% overall and 17% greater than four centimeter

diverticuli. Less bleeding and perforation risk for smaller sizes. And then another, the one in 2016, spoke to the recurrence rate of about 11% with the flexible approach.

Dr. Dale Ekbom:

And then there was another look at adverse events recently in our literature, in the OTO head neck journal, the white journal, and that was a nice meta analysis as well from multiple centers. That one didn't show a difference in adverse events between flexible and rigid approaches, except in bleeding and recurrence. So bleeding with a flexible approach was around 20%. But we might be under reporting bleeding with our rigid approaches too. I mean, we all see bleeding at the time of surgery, but we can control it better. This bleeding is afterwards reported in 20% of flexible versus less than 10% in rigid and a higher recurrence rate was seen in flexible too. So those were some of the pros and cons and thinking about some of the different techniques.

Dr. Jason Barnes:

Could you also speak a little bit to the external approach?

Dr. Dale Ekbom:

Sure. So the external approach is nice. I use this, first of all, when I can't get it done through an endoscopic approach. So for me, in my hands, that's less than 5% of the time, because I almost always can get it done endoscopically. I also sometimes move to an open approach if it is a multiple recurrent patient, or if it is a large Zenker's pouch. So something over five centimeters, then you should think about, "Okay, well, you can do this endoscopically, it's just a long way to divide the pouch."

Dr. Dale Ekbom:

And you think about, if you're dividing five or six centimeters of partition, you're still going to get a lot of improvement for that patient, but there might be a greater chance of recurrence there. You also have affected a significant six centimeters of upper esophagus with that lasering through and creating that dilated area, when maybe you could have just gone to the operating room, opened it up, and then just in a diverticulectomy there, and then preserve the rest of the esophagus around it, of course, with the CP myotomy at the same time.

Dr. Dale Ekbom:

So overall, for larger diverticuli, I think about an open approach. For ones that I can't endoscopic and maybe multiply recurrent, although even those, I often will start with endoscopic.

Dr. Jason Barnes:

And what's the postoperative convalescence like between the open versus the endoscopic approach?

Dr. Dale Ekbom:

Yeah postoperative, I think, overall it's pretty similar. I mean, I usually watch these one night in the hospital and make sure there's no crepitus or any problems and then send them home. We start with clear liquids, I do at least, for the first day. And then I move into three days of a full liquid, which is soup, smoothies, ice cream, that type of thing. And then three days of soft diet and then a regular diet after that. So it's pretty similar, theoretically if you've stapled someone, you can send them home, same day, with the stapler versus laser, I would probably recommend watching them. You could also send them

home, but then they could follow up soon, but you got to check their neck to make sure there's no crepitus for the laser approach.

Dr. Dale Ekbom:

And it's interesting, the flexible endoscopic, I know the GI doctors, most of them will often send their patients home, at least in our institution. And it might be different in other institutions, of course. But they're used to doing more outpatient and then following up over the phone and seeing how patients are doing so it can be done that way too. But I just like to be safe on the laser ones that I do, because there's a certain number of them that have crepitus.

Dr. Dale Ekbom:

I was just going to speak to that just briefly too, the crepitus rates are all over the place. Like what is the chance of crepitus? It's hard to know, but I think we under report it because there's a certain number of people that have just crepitus in the anterior neck that's just kind of just barely there and that can worsen. That might be up to 10% of patients, and if I see someone that has that, then I like to keep them one more day in the hospital and I just make sure it doesn't progress.

Dr. Dale Ekbom:

Now, there are some that have a lot of crepitus, but if it's a lot of crepitus, then you think, well, the hole is a little larger and it might take a little more time to heal so then I need to put in a feeding tube, so I'll put in a feeding tube for those. And maybe that's like two or 3% rate of that. Maybe even 4%, but in the literature it's more like two to three. And so, I think some of them need a feeding tube, but if you have just a small amount of crepitus, I consider it almost like a micro tear, a really small hole that is going to heal really quickly. So I keep them on a clear liquid diet for maybe a few days, to make sure that that air is at least stable or starting to turn, starting to disappear, and then move along with the diet and I don't typically put a feeding tube in those.

Dr. Jason Barnes:

And provided you have a normal postoperative course, no crepitus or anything like that, how do you follow up with these patients after surgery?

Dr. Dale Ekbom:

Yes. So I always like to do a three month followup with a swallow study. I think that really gives us a sense of, have we been able to remove the entire pouch? Is there still a pouch there? And then we talk about their symptoms. We always like to do our quality of life before and after, usually the EAT-10 and the RSI. Once in a while the reflux can be a little worse in these patients too, so you always have to discuss that with patients as well. But yeah, typically a three month follow up and then I like to do a check in. It could be telemedicine even, just a quick phone call or a video call or a quick visit just to see how they're doing in a year.

Dr. Jason Barnes:

Very cool. Well, this has been a great discussion about Zenker. Before I move into our summary, is there anything you'd like to add that we haven't talked about?

Dr. Dale Ekbom:

No, I think that's really good. In just thinking, going through the list of complications and what we discuss with patients, I did not mention infection or mediastinitis. That is a risk as well, so that's something to remember to discuss with patients and I typically put them on antibiotics afterwards as precautionary. So that's the last thing I just had forgot to mention that before.

Dr. Jason Barnes:

Sure thing. Well, thank you so much I really appreciate your time. Anything else you'd like to add?

Dr. Dale Ekbohm:

Nope. I think you summed it up in a nutshell.

Dr. Jason Barnes:

Thanks. Well, I'll move on to the summary now. Zenker diverticulum is a false diverticulum that presents mainly in older patients, men more than women, with symptoms of dysphasia, coughing, glottis, halitosis and other symptoms. This is classically described as a pulsion diverticulum at the level of the cricopharyngeus muscle and work up mainly includes a video swallow study with esophagram, which will radiographically demonstrate the pouch diverticulum.

Dr. Jason Barnes:

Treatment options are primarily surgical and involve endoscopic stapling or laser, and also the external approach with a CP myotomy and diverticulectomy. Overall, patients do quite well with the surgery, with improvement in symptoms. There are some adverse effects like crepitus and some other things, but those are pretty rare. And the choice around surgery is kind of surgeon dependent and can also be dependent on the type of diverticulum.

Dr. Jason Barnes:

Now, I'll move into the question asking portion of our time. As a reminder, I'll ask a question, wait a few seconds, give you some time to think or press pause, and then give the answer. So the first question is, describe the location of Zenker's diverticulum and the two other main types of diverticular that we described today at the level of the cricopharyngeus?

Dr. Jason Barnes:

So Zenker's diverticulum, again, is a pseudo diverticulum that occurs posteriorly between the cricopharyngeus muscle and the inferior pharyngeal constrictor muscle. There's also a Kilian-Jamieson diverticulum that occurs just inferior to the cricopharyngeus and this is more lateral than posterior. And there's also the Laimer diverticulum, which is also inferior to the cricopharyngeus and curves more posteriorly.

Dr. Jason Barnes:

Next question is, how is Zenker's diverticulum diagnosed?

Dr. Jason Barnes:

Zenker's diverticulum is diagnosed using a video swallow study with esophagram, and there are staging systems around this, which are not typically needed to be used. And we usually just measure the length of the pouch and the imaging will just demonstrate an outpouching at the level of the cricopharyngeus.

Dr. Jason Barnes:

And for our last question, describe the surgical options and how one might choose which surgical option to pursue for treatment of a Zenker's diverticulum.

Dr. Jason Barnes:

Again, we had a good conversation about this. There are a few options. There's endoscopic, which can be laser or stapler, as well as flexible. These avoided external scar and are generally very successful. And then there's an external approach, which is a CP myotomy with diverticulectomy. This is also very successful and might be reserved for larger diverticula or recurrent diverticula. But again, this is a nuanced topic and is surgeon dependent. Thanks so much, and we'll see you next time.