



*Hosts*

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## The Use of Endoscopy in Esophageal Cancer

**Guest Expert:**

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*Associate Professor of Digestive Diseases,  
Associate Director of Endoscopy and Director  
of the Yale Advanced Endoscopy Fellowship*

**Yale Cancer Center Answers**

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*Welcome to Yale Cancer Center Answers with doctors Francine Foss and Lynn Wilson. Dr. Foss is a Professor of Medical Oncology and Dermatology, specializing in the treatment of lymphomas. Dr. Wilson is a Professor of Therapeutic Radiology and an expert in the use of radiation to treat lung cancers and cutaneous lymphomas. If you would like to join the conversation, you can contact the doctors directly. The address is [canceranswers@yale.edu](mailto:canceranswers@yale.edu) and the phone number is 1-888-234-4YCC. This week, Lynn welcomes Dr. Harry Aslanian. Dr. Aslanian is Associate Professor of Digestive Diseases, Associate Director of Endoscopy and Director of the Yale Advanced Endoscopy Fellowship. Here is Lynn Wilson.*

Wilson Let us start off by having you tell us a little bit about what pancreatic cancer is?

Aslanian Pancreatic cancer is a cancer that develops within the cells of the pancreas, and the most common form is called adenocarcinoma, adeno meaning gland, so the glands of the pancreas forming a cancer. There are some other less common types of pancreatic cancer. The two main jobs of the pancreas are to make insulin, the endocrine function, and to make digestive juices that help us digest our food, and there is a ductal system that carries those juices to the duodenum below the stomach. That is called the exocrine portion of the gland. So, the adenocarcinoma arises from those exocrine cells, and rarely we also see tumors arising from the endocrine cells that can occasionally produce various types of hormones in excess, and those can occasionally be indications of the underlying tumor.

Wilson Tell us a little bit about your background and different types of cancers that you see. Tell us how you started, how did you get interested in this?

Aslanian I was always fascinated by topics related to the intestinal tract and really enjoyed the aspect of endoscopy, which gives us a very immediate visual representation of disease processes. It is a really fascinating field that in a relatively noninvasive manner gives us a lot of immediate information visually and requires a fair bit of training and allows us to work with our hands to get that information. For less common, or sometimes called advanced endoscopic procedures, that usually requires some additional training, and we actually have a fourth year advanced endoscopy program here at Yale where we train individuals who have completed their gastroenterology training to learn advanced procedures.

Wilson In terms of your training, you did internal medicine training first and then gastroenterology training after that. Did you then specialize after your standard GI or gastroenterology fellowship was completed?

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- Aslanian Yes, I was the first advanced endoscopy fellow at Yale, which is an additional year dedicated to learning procedures related to the bile duct and pancreas and I have been able to continue that program and we have trained about ten fellows since I completed the program.
- Wilson That is fantastic. What is your specific focus within the field, or do you do all sorts of endoscopic procedures? Is it so subspecialized that there is just a certain type that you have expertise in?
- Aslanian I focus on things related to endoscopic ultrasound, which is a combination of endoscopy and ultrasound. There is a small ultrasound tip that is placed on the probe of an endoscope, and that allows us to do an ultrasound from inside the body. So, from the stomach or areas below the stomach or from the colon, we can see the structures around that, and then can access those areas under ultrasound guidance with a small needle that can allow us to get samples of cells and look for precancerous changes, and more and more we are looking for ways to provide therapies to drain things like post-inflammatory cysts called pseudocysts of the pancreas or to perhaps treat pancreatic cancer as well.
- Wilson You have mentioned a little bit about the types of cells which lead to pancreatic cancer. When someone develops pancreatic cancer, what sort of symptoms do they have or what sort of things would they feel or complain of?
- Aslanian The bile duct drains bile from the liver, and on the way to the intestine, it runs through the front or head portion of the pancreas. So, if there is a mass in the head of the pancreas, it can compress the bile duct, not allowing it to drain into the intestinal tract, and that can cause jaundice or yellowness. Tumors in the pancreas can also frequently cause abdominal pain, and often pain that may radiate to the back. In many cases, there unfortunately are not many symptoms until the cancer is rather advanced. There has been a lot of interest in ways that we can identify pancreatic cancer early. When it is very small, it can be resected. There is a lot of extra functional capacity of the pancreas. So, a portion of the pancreas can be removed, and with persevered function. So, if we can identify lesions when they are contained fully within the pancreas, in rare cases surgery can be curative.
- Wilson How common is pancreatic cancer?
- Aslanian It is a lesser common cancer compared to colon or lung cancer; however, it is one of the more frequent causes of mortality because unfortunately most people who develop pancreatic cancer succumb from the disease process.
- Wilson I see, and what are some of the risk factors which might lead to pancreatic cancer?

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- Aslanian The two main risk factors are smoking and chronic pancreatitis. There are also rare forms of hereditary pancreatic cancer and also a very high incidence of pancreatic cancer with hereditary forms of chronic pancreatitis and other gastrointestinal cancer syndromes such as HNPCC, which is sometimes known as Lynch syndrome where you can develop cancers throughout the intestinal tract and also in other cancer predisposing genetic factors such as BRCA2 mutations. We try to get a complete family history whenever we see a patient for any type of screening including colon cancer screening with colonoscopy to try to see if someone might be at risk for other cancers.
- Wilson You mentioned pancreatitis as a risk factor. What are some of the causes of pancreatitis, or is that something that can sometimes happen and you are never quite able to figure out what is causing it?
- Aslanian There are two types of pancreatitis. Acute pancreatitis is a dramatic acute onset of inflammation in the pancreas that causes release of those digestive enzymes outside of where they normally belong, and you get a lot of inflammation that can spread to other areas of the body, usually severe pain that requires hospitalization. The two most common causes of that are alcohol and gallstones, which can travel out of the gallbladder and block the pancreas. Chronic pancreatitis is a predisposing factor to pancreatic cancer. Just like other areas in the body, when you have chronic inflammation that causes stress on the cells that can then lead them to develop mutations or abnormalities in the process of repairing themselves. So, some of the most common causes of chronic pancreatitis are chronic alcohol use. Smoking is also a factor. There are some rare genetic causes of chronic pancreatitis. Sometimes, ductal injury or trauma to the pancreas can also lead to chronic pancreatitis.
- Wilson When someone has chronic pancreatitis, are they aware usually that something is wrong or is it possible for them to feel pretty good?
- Aslanian It is variable. In the more extreme cases, the inflammation of the pancreas can lead to decrease functionality in the formation of scar tissue, and that can cause abdominal pain, weight loss, or diarrhea. In milder cases, the disease may progress without any significant symptoms, and many of those cases are idiopathic or unexplained. In about a third of the cases of chronic pancreatitis, we do not quite understand the underlying cause.
- Wilson In what age groups are most people diagnosed with prostate cancer, and has that changed it all?
- Aslanian Most patients develop pancreatic cancer in their fifth or sixth decade of life and it increases as they get older. The rate of development of pancreatic cancer has largely been fairly stable except we are seeing more cases in younger patients at an increased rate for unclear reasons. So, in patients 40 years of age or younger, the rate of cancer appears to be increasing.

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- Wilson Tell our listeners a little bit about how the diagnosis of pancreatic cancer is made.
- Aslanian The most common imaging of the pancreas is performed with cross-sectional imaging such as a CAT scan of the abdomen or MRI of the abdomen. Transabdominal ultrasound, where the transducer is placed on the outside of the abdominal wall often has trouble seeing the pancreas because the colon overlies the pancreas, and often the air in the intestinal tract will block the sound waves and distort the image. CAT scan remains the most commonly used modality to image the pancreas, and cancers will typically show up as a small spot, which they can usually tell is a solid lesion of the pancreas. They may see signs of dilation indicating blockage of the pancreas duct or the bile duct.
- Wilson So, when we get that cross-sectional imaging, or a CT scan, is that enough for a physician or a team of doctors to make the diagnosis or do we need to do some sort of invasive procedure and actually sample that abnormality?
- Aslanian The radiologist usually can give us a fair degree of certainty of their suspicion of an underlying tumor; however, the findings are not highly specific or certain that that is the underlying problem. We want to differentiate a solid tumor of the pancreas like we talked about, adenocarcinoma, and the neuroendocrine tumors from other entities which would include localized inflammation, localized scarring, what we call focal chronic pancreatitis. There is also an entity called autoimmune pancreatitis where the body inflames the pancreas' tissues that can mimic pancreatic cancer, and very frequently we will identify cystic lesions of the pancreas. These are fluid-filled sacs that are seen in perhaps 3% to 10% of the population, and as the imaging has gotten better and better, we are identifying cysts of the pancreas more and more frequently. Cysts of the pancreas may be very benign. There are some cysts that have no cancer potential and then cysts that we group into a mucinous category, have a small risk of progressing perhaps 5% to 10% over 10 years or longer. So, it is important that we can identify or distinguish between a solid lesion of the pancreas, inflammation, if it is a cystic lesion, and then what type of cyst is it. Is it a cyst that has cancer potential, or a very benign cyst? As good as imaging is, the most accurate way to do this is to get a sample of the cells within that lesion of the pancreas, and the most accurate and safest way to do that is to use endoscopic ultrasound-guided fine needle aspiration. So, like we talked about earlier, there is an ultrasound probe on the tip of the endoscope, and the pancreas lives right behind the stomach, so, by placing the scope through the mouth down the esophagus and in the stomach, we are only a few inches away from the pancreas, and we can get very detailed imaging of the pancreas, and guide a very small needle through the scope and then through the wall of the stomach and sample lesions down to a few millimeters in size within the pancreas.

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Aslanian We are going to take a short break for a medical minute. Please stay tuned to learn more information about pancreatic cancer with Dr. Harry Aslanian.

*Medical  
Minute*

*The American Cancer Society estimates that last year there were over 65,000 new cases of melanoma in this country. And over 1,000 patients are diagnosed annually in Connecticut alone. While melanoma accounts for only about 4% of skin cancer cases, it causes the most skin cancer deaths. Early detection is the key. When detected early, melanoma is easily treated and highly curable and new treatment options and surgical techniques are giving melanoma survivors more hope than they have ever had before. Clinical trials are currently under way at Yale Cancer Center, Connecticut's federally designated Comprehensive Cancer Center, to test innovative new treatments for melanoma. The Specialized Programs of Research Excellence and Skin Cancer Grant at Yale, also known as the SPORE grant, will help establish national guidelines on modifying behavior and on prevention as well as identification of new drug targets. This has been a medical minute brought to you as a public service by Yale Cancer Center. More information is available at [yalecancercenter.org](http://yalecancercenter.org). You are listening to the WNPR Health Forum on the Connecticut Public Broadcasting Network.*

Wilson Welcome back to Yale Cancer Center Answers. This is Dr. Lynn Wilson, and I am joined today by my guest, Dr. Harry Aslanian, and we have been discussing pancreatic cancer and other issues relating to the Yale Endoscopy Program. Harry, let's pick up where we left off in the first part of the show. We were talking about using endoscopic ultrasound to make a diagnosis of pancreatic cancer, or perhaps evaluate some sort of pancreatic lesion, which is abnormal and found on a CAT scan, for example. Once you do the procedure and procure or obtain the material, what happens at that point? Are these biopsies sent to a pathology laboratory? Is it something that you look at yourself right there? What do you do with material from cysts?

Aslanian We are very fortunate to have a group of expert pancreas cytologists here at Yale including Dr. David Chhieng and their teams, and they have committed themselves to coming in person as we do these biopsies of the pancreas, and they can immediately stain the cells and evaluate them on site within minutes of having done the sample. As we take samples of the pancreas, we are able to evaluate them with the cytologists and factor in what we are learning, and then add that into putting, sort of, a puzzle together. We talk to the patient ahead of time. We look at all the prior imaging and their symptoms and we start to piece together an explanation, do we suspect this is inflammation, like we talked about pancreatitis, another inflammatory process, or do we suspect that there is an underlying cancer. As we get more information with the endoscopic views and the ultrasound views, we keep putting the puzzle together so that ultimately everything can fit together as much as possible. More than 80% of the time, we are able to get an immediate diagnosis of

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cancer of the pancreas right at the time we do the biopsy and are able to share those results immediately with the patient and the referring doctors.

- Wilson And if further material needs to be processed or if you actually have a biopsy as opposed to fluid from a cyst, even after their initial evaluation, is that then sent to laboratory for additional tests and sort of final interpretation?
- Aslanian Yes, whenever possible we try to collect additional material that can be conglomerated in what they call a cellblock where they put all the cells together and then can do special stains or analysis on those cells, and if there is still question of the underlying diagnosis, they can get a fingerprint of those cells with special stains to help determine what type of process might be going on. Another reason why we find it helpful to do biopsies of the solid tumors of the pancreas is occasionally tumors can travel from other areas and deposit themselves in the pancreas. We see this sometimes with kidney cancers and rarely with other type of cancers including lymphoma. That is a rare process but we have quite a different treatment if we identify something like lymphoma within the pancreas.
- Wilson Tell us more about the program itself, the Yale Interventional Endoscopy Program. You are one of the leaders of that program. Are there other physicians involved? Tell us a little bit about the makeup of the team and what a patient would encounter if they come at 8 o'clock in the morning for a procedure, say.
- Aslanian The director is Dr. Priya Jamidar, and Dr. Uzma Siddiqui is another expert in endoscopic procedures, and we also have an outstanding nurse practitioner, Hillary Drumm, and an expert at scheduling and arranging the procedures, Natasha Williams, and we base our practice in Smilow Hospital. Our procedure center is on the fourth floor and we have a state-of-the-art procedure center, which is still essentially brand-new and we were fortunate to have an opportunity to participate in the design of this endoscopy center, and it is state-of-the-art for these advanced endoscopic procedures, and we have been able to share our experience with other gastroenterologists where twice a year we demonstrate advanced endoscopic procedures and we just completed our thirteenth live advanced endoscopy demonstration, and we see patients on the eighth floor of the Smilow building and we have really enjoyed centering our practice in the Smilow building, and I think patients have really found it to be very welcoming.
- Wilson If I was a patient and I had my consultation with you on the eighth floor and you scheduled my procedure and I come in for that procedure, what is generally involved? Obviously, there is a procedure suite or a procedure room, are patients anesthetized or do you do local anesthesia, what happens with the patient to prepare them for the procedure?

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Aslanian As many patients are aware, for procedures done through the colon, it requires a bowel preparation to clean out the colon, but more commonly, especially for pancreas and bile duct procedures, there is no special bowel preparation required, the patient does not eat or drink after midnight the night before the procedure, and they have to come in with someone who can give them a ride home. They get checked in and we have a private space within the Smilow Endoscopy Center where they will get interviewed by one of the nurses there, and an IV is placed in the arm and we are pretty much ready to go from there. We do all of our procedures with anesthesiologists to administer propofol, which is an IV sedative which gives an excellent level of sedation during the procedure, and then it wears off quite quickly once the infusion is stopped. We have had excellent results with this and the anesthesiologists are very skilled at getting excellent results of safety and comfort for these procedures. Then from the intake area, we just go down the hall to one of the procedure areas, and then the patient returns near the intake area to a recovery area, and the most advanced procedures take roughly 45 minutes to a half hour, and then the recovery period relative to the sedation is usually about 45 minutes to an hour. Patients are usually quite awake within 10 to 15 minutes after the procedure and we are able to discuss the results, and we just advise them to limit strenuous activity, and not drive given the sedation they had; however, most patients are able to eat regularly after the procedures and generally feel quite well.

Wilson That is fantastic! We talked a little bit about what endoscopic ultrasound can be used for in terms of making a diagnosis of an abnormal finding on a CAT scan, for example, but is it also involved in staging or evaluation of the extent of pancreatic cancer or other cancers in the abdomen or chest for that matter?

Aslanian Yes, it has played a very important role in what we call local staging of gastrointestinal cancers. One of the first processes in staging is to look for distant disease. We want to exclude the presence of spread to areas such as the liver and lymph nodes and occasionally the lungs. For sort of a general screening of the body in all areas, a CAT scan is often performed and occasionally in combination with a PET scan, but once we exclude the presence of distant spread of the cancer to get the most accurate local staging, meaning the area right around the cancer, endoscopic ultrasound continues to play an important role as we are able to get the most detailed images of the pancreas where it is located. For pancreas cancer, there are a lot of important large blood vessels that surround the pancreas called the mesenteric vessels. So, we want to evaluate the relationship of the tumor to those blood vessels. If the vessels are significantly surrounded by the tumor, it can be very difficult to remove it without injuring those blood vessels. In those cases, they often seek to shrink down the tumor and then see if it can be removed following that. We also look for lymph nodes around the tumor and also can see lymph nodes in the chest from the esophagus as we pass the scope through the mouth. So, those are important parts of staging. We can see parts of the liver very well from the stomach and we can also see the left adrenal glands. We evaluate all these areas first, excluding the most advanced sites that would indicate a more advanced site of disease,

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and then we focus in on that local staging to measure the size of the tumor and determine the relationship to any blood vessels.

Wilson Tell us a little bit about the use of endoscopy for complications of cancer or even therapeutic complications.

Aslanian We talked about how pancreatic cancer might present with jaundice by blocking the bile duct. So, those cancers are located in the head of the pancreas. In order to relieve jaundice, we can place a scope at the opening of the bile duct where it drains into the intestinal tract called the ampulla, and under a combination of x-ray and endoscopy viewing, we can place a small flexible wire across the blocked area of the bile duct and then we can place a stent, which is either a plastic or soft mesh tube over that wire and create a new channel that the bile can flow through. Over a course of a few days, the jaundice will be relieved and the bile will flow into the intestinal tract, and many patients will notice that if they do develop jaundice, that is obstructive or due to a blockage, that their stools become very light-colored and their urine becomes very dark, as typically the bile is actually what gives our stool its brownish coloration. When it cannot pass out into the intestinal tract, it will get absorbed into the skin giving it that yellow color, and then it is excreted in the urine instead of the stool.

Wilson I see. What about screening? Is this is a tool that we would use for screening, and if so, who might be eligible for that?

Aslanian That is an area that is continually under progress. I just want to mention two other areas that we can assist patients with pancreatic cancers, the pancreas lives right next to the duodenum, the small bowel below the stomach, and sometimes a tumor will obstruct the passage of food contents below the stomach, and those stents, or larger tubes, can also be placed into the small intestine to allow food to drain out of the stomach. One of the best established therapeutic areas for pancreatic cancer and endoscopic ultrasound is in treating the pain related to pancreatic cancer, we are able to identify the nerves around the celiac artery called the celiac plexus, and we can bathe those nerves in a solution that decreases the pain transmission. There is ongoing investigation into areas where we could inject substances that can directly shrink the pancreatic cancer by placing a needle similar to what we would use for the biopsy and then inject through that needle, different substances that would treat the cancer directly.

*Dr. Harry Aslanian is Associate Professor of Digestive Diseases, Associate Director of Endoscopy, and Director of Yale Advanced Endoscopy Fellowship. If you have questions or would like to add your comments, visit [yalecancercenter.org](http://yalecancercenter.org), where you can also get the podcast and find written transcripts of past programs. You are listening to the WNPR Health Forum on the Connecticut Public Broadcasting Network.*