

Dr. Daniel Boffa, Minimally Invasive Treatment for Esophageal Cancer June 15, 2008

Welcome to Yale Cancer Center Answers with Dr. Ed Chu and Dr. Ken Miller. I am Bruce Barber. Dr. Chu is Deputy Director and Chief of Medical Oncology at Yale Cancer Center and Dr. Miller is a medical oncologist specializing in pain and palliative care, and he serves as the Director of the Connecticut Challenge Survivorship Clinic. If you would like to join the discussion, you can contact the doctors directly. The address is canceranswers@yale.edu and the phone number is 1-888-234-4YCC. This evening Ken Miller welcomes Dr. Daniel Boffa. Dr. Boffa is an Assistant Professor of Thoracic Surgery at Yale School of Medicine. He joins Ken to talk about the latest information about esophageal cancer and new minimally invasive surgical options.

Miller Esophageal cancer is apparently one of the fastest rising types of cancer in the United States. How common is it and how has that changed over time?

Boffa Over the past 3 decades esophageal cancer has been shown to be increasing in incidence. Whenever a cancer is diagnosed more often, you have to wonder if the cancer is becoming more common, or if we are doing more that enables us to diagnose it. With esophageal cancer I think it is a combination of those factors. More people are undergoing endoscopy for various reflux type symptoms and are having cancers diagnosed, whereas 30 years ago, we were not doing that. There are 2 types of esophageal cancer. One is called squamous and one is called adenocarcinoma. There has been a shift away from squamous carcinoma both in the United States and worldwide and some of that relates to the risk factors for the various histologies of the 2 types of esophageal cancer. For the adenocarcinoma, which is primarily the kind found in the United States, obesity, reflux disease and smoking are risk factors. Over the past three decades obesity has been on the rise in the United States as has reflux disease, and so that could actually be contributing to a true increase in the number of patients that are developing this cancer.

Miller Let me ask you about smoking. With smoking you picture someone inhaling smoke and this would involve the respiratory system. How might that be associated with esophageal cancer which is digestive?

Boffa There are two ways. One is the actual compounds that are toxic that get into the saliva and when you swallow them you actually have some of these activated nitrate compounds that are in the saliva that directly irritate the esophagus. When you breathe these chemicals in, they get into your circulation and cause all kinds of health risks, both cardiovascular and cancer related. Smoking is actually related to a whole meriad of cancers, which the cigarette smoke never itself contacts.

Miller Now alcohol, is that a direct effect irritating the esophagus or is it the same in that it has many aspects?

Boffa That is an interesting question. Alcohol is more commonly associated with the squamous cell carcinoma and it is unclear whether it is direct contact or if it is getting into the circulation. People that drink a lot of alcohol have a lot of other problems going on with them as well. Malnutrition is one of them, and all of the characteristics of patients that are heavy alcohol users also can confound that and themselves be risk factors for cancer.

Miller Now

in terms of reflux, reflux is very common, at least in my own experience of just talking to people about heartburn and reflux symptoms. How does that increase the risk of esophageal cancer and my other question is, who among those people who have reflux particularly needs surveillance? Boffa Reflux is a huge problem in the United States and esophageal cancer by comparison is pretty rare. There are only 16,000 cases of esophageal cancer each year in the United States whereas there are millions of refluxers. The mechanism relates to the irritation of the gastric contents refluxing into the esophagus. One of the common mechanisms for cancer formation is chronic injury leading the cells to undergo changes in response to the injury. Any time a cell responds to an injury, there is a chance that the genetic makeup can change and the cell can lose control over its ability to regulate growth. When the cell cannot control its growth anymore, that is when you get a cancer. Patients that reflux, gastric acid, and even some of the secretions from lower down in the intestinal tract, can make it back up into the esophagus which leads to irritation in the esophageal lining. Over time, that lining can change into something called Barrett esophagus and what Barrett's is is an attempt by the body to protect itself. The lining of the intestine downstream of the stomach is especially designed to be resilient against gastric acid and digestive juices. This area of the esophagus that is exposed to these gastric secretions changes into a lining that looks more like the downstream intestine, which sounds like a good thing. The problem is, once it has made that change its ability to tightly regulate its genetic material is compromised and there is a defined risk of those cells undergoing changes where they lose control over their growth. If we took everybody that has reflux disease, probably 8% to 10% of them would get this Barrett esophagus, and if you took anybody with Barrett esophagus the chance of getting a cancer is actually low. It is about a half percent per year, but it is not zero. I would say that anybody that has got reflux disease should have at least one endoscopy to see if they have Barrett esophagus and if you do have Barrett esophagus, we recommend having an upper endoscopy at least once every three years. Once you have Barrett's, you should be plugged into a Barrett screening program. Miller We had an email from a fellow named Bob who lives in Bristol and he said, "I've been told that I have Barrett esophagus. What is my risk of developing esophageal cancer and is there anything I can do to reduce that risk?" 8:16 into mp3 file [http://www.yalecancercenter.org/podcast/Answers\\_Jun-15-08.mp3](http://www.yalecancercenter.org/podcast/Answers_Jun-15-08.mp3) Boffa That is the million dollar question. Esophageal cancer has a very bad reputation. Unfortunately, a lot of patients that are diagnosed with esophageal cancer are diagnosed at a point where it is very difficult to cure them. The good news about Barrett esophagus is patients that are under surveillance programs actually are diagnosed with early and more curable esophageal cancers. I would say that the chance of Bob getting esophageal cancer is low. I would say half percent per year, but the exciting thing is if Bob was to be diagnosed with esophageal cancer, his chances of being cured are extremely high, which is different from somebody that is diagnosed in a more conventional way. Miller So finding out that you have Barrett's, it is concerning, but it is

also an opportunity to have careful surveillance. Boffa As far as what you can do, given Barrett's, to reduce your chance of getting cancer, is actively being studied right now. The question is, if that lining is what has the chance to give you a cancer, can you get rid of that lining, or can you take antacids or acid suppressive therapy to get rid of that injury? It is not clear whether or not that will reduce your chances of getting cancer, but there are many therapies being used right now to get rid of that lining and they are being studied to see if that in fact translates into a reduction in esophageal cancer. It is a rare thing to happen with Barrett's, so it is going to take awhile before we know that definitively. Miller In terms of techniques if someone has that kind of lining of the Barrett's esophagus, what techniques are there, what is on the cutting edge? Boffa There is just simply destroying this lining. There is radiofrequency ablation and something called a Bardex catheter. The reason this even became a concept to be tested was when we had patients that had Barrett esophagus and we were doing surveillance biopsies on them, we noticed that the areas that we biopsied grew back normal mucosa, or normal lining, so the natural followup to that would be to just get rid of all the Barrett's and see if you get normal lining everywhere. The techniques to get rid of the lining are to physically cut a lining out, but the problem with that is you get a scar that can narrow the esophagus and make it difficult to pass food through. The radiofrequency ablation seems to have early results that are very good. There is something called photodynamic therapy which is being tested, but has the downside of the chemicals used to use photodynamic therapy, which is basically giving the person a chemical that when exposed to light causes the cells to die. The problem with that is you have this throughout your body, so you are limited on how you can be exposed to sunlight for quite some time. Miller We would like to remind our listeners if you have questions, you can e-mail us at [www.canceranswers@yale.edu](mailto:www.canceranswers@yale.edu). We are going to take a short break for 12:09 into mp3 file [http://www.yalecancercenter.org/podcast/Answers\\_Jun-15-08.mp3](http://www.yalecancercenter.org/podcast/Answers_Jun-15-08.mp3) medical minute. Please stay tuned to learn more information about esophageal cancer with Dr. Daniel Boffa from the Yale Cancer Center. Miller Welcome back to Yale Cancer Center Answers. This is Dr. Ken Miller and today I am joined by Dr. Daniel Boffa from the Yale Cancer Center who is an expert on the treatment of esophageal cancer. Let's talk about the patient who has just been diagnosed with early stage esophageal cancer. What are some of the approaches that are available to try to help that person be cured of the disease? Boffa Esophageal cancer, like a lot of cancers, has a tendency to behave in a somewhat predictable pattern. As the tumor grows through the wall of the esophagus, it can spread to the tissues around the esophagus to lymph nodes around the esophagus and leave that area and spread to parts of the body such as your lungs and liver that are remote from your esophagus. So, to treat the patient you want to give your best estimate as to the likelihood that spread has occurred, or will occur, and tailor their therapy to address that. The three modalities, or forms of treatment, that we currently have for esophageal cancer are surgery, chemotherapy and radiation therapy. For a disease that has fifteen thousand patients a year, we

actually have quite a bit of information about how to treat esophageal cancer patients and various treatment plans have been attempted. It appears that a combination of those modalities, or treatment strategies, is the best way to go. For earlier stage patients, surgery is a critical component because the patient's greatest risk of recurrence is at the site where the esophagus is, so removing the esophagus with the tissue around it, is the most important part of that therapy. As the tumor grows through the wall of the esophagus, it is much more likely to spread to the lymph nodes around the esophagus. At that point, surgery with removing the tissue around the15:34into mp3 file [http://www.yalecancercenter.org/podcast/Answers\\_Jun-15-08.mp3](http://www.yalecancercenter.org/podcast/Answers_Jun-15-08.mp3)esophagus is a critical component, but adding radiation and chemotherapy is a way to address microscopic disease.Miller For patients with the earliest stage, when it is really just on the lining, I know that you have tremendous expertise in minimally invasive surgery, what does that mean in regards to esophageal cancer?Boffa Minimally invasive surgery is removing the esophagus and creating the reconstruction using small access incisions, or small incisions, and using a camera to see areas that we normally were able to see by looking through a substantially larger incision. The principle of minimally invasive surgery is first and foremost not to compromise the quality of the operation. When you are talking about cancer, all of the factors associated with surgery such as the pain, the stress of the surgery and the size of the incision are very important things. At the end of the day, you want to be cured of your cancer. We can control all those aspects but getting your cancer out of you in a curative manner is priority one. The good news is minimally invasive techniques actually do a very good job. Instead of making a traditional esophagectomy, which is removing the esophagus as it courses through your chest and as it enters your belly, it involves entering both the chest and the belly for larger tumors and for very, very small tumors just entering the belly and the neck through incisions that range anywhere from 5 to 7.5 inches in length. Using the minimally invasive techniques, the same removal strategy is used and the same reconstruction, meaning your stomach is actually brought through your chest in the bed of the esophagus and sutured together with the very beginning of your esophagus. That is all the same. Instead of having two or three larger incisions you have anywhere from five to ten much smaller incisions, each of which are about half an inch long.Miller It is pretty amazing for a non-surgeon hearing about this, you are working through these tiny little incisions, it sounds like you are now using a scope?Boffa The camera actually magnifies the image because clearly there are areas of the patient that you can see better using the camera that your naked eye cannot see.Miller For a non-surgeon like myself, I still have this image that the hands-on kind of approach may be better, but statistically, when you are looking at your success rates, is it good using this minimally invasive approach?Boffa In the right patient population, you are absolutely right that having a sense of touch is important, surgeons work with their hands, so that is our most sensitive instrument, but as you get more comfortable working through the smaller incisions, your instruments become an extension of your hand and you are able to gain a progressively

greater sense of touch using these instruments that are19:37into mp3 file  
[http://www.yalecancercenter.org/podcast/Answers\\_Jun-15-08.mp3](http://www.yalecancercenter.org/podcast/Answers_Jun-15-08.mp3)connecting  
you to the patient. That being said, there are patients, I would say the past  
three or four esophagectomies I have done in the past couple of months, where  
their tumor was particularly stuck to neighboring tissues that were very fragile  
and in those instances it is critical to be able to feel. Minimally invasive  
surgery is a great technique, but I would only go to a surgeon that is able  
to offer multiple approaches because then you are guaranteed that you are  
having one chosen that is the most appropriate for you.Miller For a minimally  
invasive surgery, what are the recovery, hospital stay and discomforts?Boffa  
All of those factors are about half as long. You spend about half as long in  
the hospital. Your recovery time is about half as much and you use half as  
much pain medicine. When you do an esophagectomy, it is not the size of the  
incision, it is the amount of retraction on the tissues that causes patients to  
be sore and to have discomfort after surgery. By having the smaller incisions  
without the force to retract the tissues, it is a lot less stress to the tissues, a  
lot less inflammation and patients recover more quickly. To that point, an  
esophagectomy is a big surgery anyway you cut it. And to that respect it  
is very important to have esophageal surgery not just by surgeons who do  
esophagectomies with frequency, but at hospitals.Miller You just published  
an important paper comparing surgical outcomes between general surgeons  
and specialized thoracic surgeons. Can you tell us a little bit about it?Boffa  
This was a report from a database that the Society of Thoracic Surgeons  
maintains that looks at the procedures that thoracic surgeons perform. When  
I looked at lung cancer operations, in almost 10,000 patients the outcomes  
were surprisingly good. In fact, they were much better than a similar group  
of patients that were operated on by non-dedicated thoracic surgeons. The  
complications and the chance of not surviving your operation is much, much  
less if a dedicated thoracic surgeon does your operation. This isn't completely  
surprising because people get very good at what they do very often. The  
take home message for that is, have a major surgery done by surgeons and  
centers that are experts in this; esophagectomy in particular. The difference  
between outcomes in centers that do this a lot compared to those that do  
not, is your chance of having a major problem is several fold higher at  
the less experienced centers.Miller I think you are also making the point  
that it is not just the doctors, it is the hospital.Boffa Absolutely, there are  
some excellent non-thoracic surgeons that are practicing23:40into mp3 file  
[http://www.yalecancercenter.org/podcast/Answers\\_Jun-15-08.mp3](http://www.yalecancercenter.org/podcast/Answers_Jun-15-08.mp3)doing lung  
resections and doing esophagectomies, but it is a surgeon that has a lot of  
experience and a surgeon that works at a center that takes care of these patients  
often. We have got a great group of nurses. I always say that what we do in  
the operating room is less than half of the battle, and it is the nurses that take  
ownership for the patients and by hook or by crook they will get the patient  
through their recovery. We have got a great group here and it makes all the  
difference.Miller Let me ask you about those patients that have more locally  
advanced esophageal cancer, where the tumor is larger and has gone outside

of the esophagus. You mentioned a little bit about using chemotherapy and radiation therapy. Can you tell us more about that? Boffa Sure. So, for the patients who have some evidence that the disease has spread, either through the wall of the esophagus or to the lymph nodes around the esophagus, we feel the best way to control that is by giving chemotherapy and radiation first, and then performing an esophagectomy so that the chemotherapy and radiotherapy or the radiation will shrink the tumor and in effect sterilize or get rid of any microscopic cancer cells that might be living in the tissues around the esophagus. Then they perform the esophagectomy and after that, in some patients, we administer additional chemotherapy after the surgery. Miller Essentially you can take a patient where you may not be able to operate and then in a sense make them operable, is that correct? Boffa We think that is true. There is no real data to support that. If you are inoperable, giving you that therapy will make you operable. The data would say that you make surgery easier in some respects and that the chance of cancer coming back is lower. There is a slight cost to that in that in some physicians experience they have reported that there is an increase in complications, but I think that is the minority of reporting physicians. I think that it can be done very safely and with good success. Miller Who is part of the team? If you look at a patient who comes in with a new diagnosis of esophageal cancer, in a center like the Yale Cancer Center, for example, who is involved in seeing the patient and also in making these complex decisions? Boffa With esophageal cancer another key aspect in figuring out where you are going to have your esophageal cancer cared for is you have to be looked after by a team. At Yale we have expert medical oncologists, radiation oncologists, gastroenterologists and radiologists, as well as surgeons, which review every patient as part of a tumor board. That is extremely important. Tied into that, we have a nutritionist, physical therapists and social workers that all are part of this. 27:37 into mp3 file [http://www.yalecancercenter.org/podcast/Answers\\_Jun-15-08.mp3](http://www.yalecancercenter.org/podcast/Answers_Jun-15-08.mp3) team that take these very complicated issues and are able to get patients through this big surgery. Miller It has been exciting to hear about some of the advances, and thank God it sounds like a more curable disease. Boffa Yeah. Absolutely. Miller On behalf of Yale Cancer Center Answers, Dan I want to thank you for joining us. Boffa It is my pleasure. Miller Also on behalf of our program at the Yale Cancer Center, I want to wish each of you a safe and healthy week. If you have questions, comments or would like to subscribe to our Podcast, go to [www.yalecancercenter.org](http://www.yalecancercenter.org) where you will also find transcripts of past broadcasts in written form. Next week, you will learn about gastrointestinal cancers with Dr. Charles Cha.