Support for Yale Cancer Answers comes from AstraZeneca, working side by side with leading scientists to better understand how complex data can be converted into innovative treatments. More information at astrazeneca-us.com.

Welcome to Yale Cancer Answers with your host, Doctor Anees Chagpar. Yale Cancer Answers features the latest information on cancer care by welcoming oncologists and specialists who are on the forefront of the battle to fight cancer. This week it’s a conversation about the use of robotic surgery for colon and rectal cancers with Doctor George Yavorek. Doctor Yavorek is a clinical instructor of surgery specializing in gastro bariatrics at the Yale School of Medicine where Doctor Chagpar is a professor of surgical oncology.

George, maybe we can start off by talking about screening for colon cancer. I understand that guidelines have recently changed in that regard.

Yes, we’ve seen over the last 10 years
that the incidence of colon cancer in younger individuals has increased by about 2% per year over the last five years or so, so the recommendations have changed to start screening at age 45 rather than age 50.

Tell us a little bit more about what that screening entails because there seems to be a potpourri of different screening options for people, and they may be wondering about what screening technique is best for them. There are several options and most people would agree that colonoscopy is the best screening tool because it can also be therapeutic at the same time. If you do find a polyp or a larger lesion, it can be removed or biopsied at the same time. Other options would include fecal occult blood testing. Which is not as specific. There is now DNA testing, Cologuard, which is rather specific for advanced lesions, tumors or large polyps, but when you get to smaller polyps, the sensitivity is not very good, it is good for people who don’t want to go through a colonoscopy, or perhaps because of medical reasons can’t do that.
Other options might include what they call ECT collography, which is essentially a virtual colonoscopy. The sensitivity is roughly equivalent to a colonoscopy. However, if something is found then you have to go through a colonoscopy to have it removed or biopsied. And so it sounds like there’s so many factors that are involved for people to try to parse out. What’s the best technique for them? That’s probably a discussion that they have with their family doctor or gastroenterologist or colorectal surgeon. Someone who does screening and can tailor the screening program to the individual. And so now that the screening guidelines have changed and they’ve recommended starting screening at 45, is that for average risk people or is that for people who may have other predisposing factors? No, that’s for average risk. People with a higher risk actually would start sooner. Typical recommendation for someone with a first degree relative who has had
colon cancer is to start at least 10 years younger than when that cancer was diagnosed. So if the person has a parent who had colon cancer at about age 50, they should start at age 40. Other high risk situations might be someone with Crohn’s disease or inflammatory bowel disease, or someone with a history of Polyposis syndrome that would increase their risk of developing polyps and possibly cancer. So when should those people be screened? I mean, presumably people with Crohn’s disease or other forms of IBD or Polyposis syndrome likely would have already had a colonoscopy, but when would be the bare minimum time that they should actually start getting regular screening for cancer? Well, typically when they first are seen and diagnosed with the problem, whatever their condition might be, they’re likely going to have an initial colonoscopy to evaluate the situation and then future surveillance colonoscopies would be based on that. So typically if someone were diagnosed with Crohn’s and is in their 20s, it’s likely they would have a colonoscopy at that time and then basically go
from there on an individual basis, but typically every five to 10 years. If there were no significant clinical symptoms at the time of colonoscopy. You mentioned that colonoscopy can be both diagnostic and therapeutic, talk a little bit more about the therapeutic options when you are doing a colonoscopy and you find a lesion. First of all, what kind of lesions do we find in the colon? And secondly, how can colonoscopy be therapeutic in that regard? So the whole purpose of screening colonoscopy is to evaluate the person to see if they have developed any polyps which we know are precursors to most of the colon cancers, and most of those polyps can be removed at the time of colonoscopy and therefore never go on to progress to a cancer. We have seen that the incidence of colon cancer has dropped over the last few decades and we attributed that to screening colonoscopies and polypectomy’s that have removed those potential future cases of cancer. So there are several types of polyps and they vary in size. Most of them can be removed.
endoscopically, some when they get larger when they are about 2 centimeters or an inch get more difficult to be removed and should be removed by someone who has advanced endoscopic skills, these have the potential to have malignant transformation what we called dysplasia or possible early invasion and might need more advanced techniques to remove. And presumably some of these lesions may be flat and colonoscopy, even if you can’t remove a polyp, can certainly biopsy potential cancers? Yes, if it is too large to remove safely, then it is generally biopsied and marked with ink as a tattoo and referred for surgery. We think that these polyps should be completely removed again because of their potential to progress to cancer. These lesions being flat are much more difficult to remove, and if they do develop invasion, malignant invasion, they are much more likely to spread faster than a more polypoid lesion. So let’s suppose you’ve done a colonoscopy.
You’ve either found a polyp that you couldn’t remove completely, or you found a lesion that you’ve biopsied, in either of those cases, if cancer was found, that would mean that the patient moves next to surgery. Typically yes. Again, depending on the skill and what you’re feeling of the whole lesion is there are very advanced techniques where endoscopies will take the first layer off inside called endoscopic mucosal resection, which is adequate for very early stage cancers, but in general, most of those would be referred to a surgeon for removal of the whole area and evaluation of the regional lymph nodes. Now, before you do that, are there any kinds of advanced imaging tests that are required or blood tests to help you get an idea of the extent of disease? Well, certainly if you have a diagnosis of invasive cancer rather than something that’s questionable or early stage, you’re going to image them with a CAT scan to evaluate the liver for possible metastatic disease.
It’s been fairly commonplace to also do a CAT scan of the chest to looking for possible spread to the lungs, although that’s much more common in rectal cancer than colon cancer. Blood tests the CEA or carcinoembryonic antigen is not produced by all tumors, but generally if you have a diagnosis of cancer you will check that if it’s elevated it can be used as a marker later to follow the patient to see if there is recurrence, and so presumably if you’ve caught this cancer early because you started screening per the guidelines and now you go and have all of these tests and it doesn’t look like there’s cancer anywhere else, the next step is to remove that part of the colon that’s got the cancer in it and evaluate, as you say, the regional lymph nodes. Now I understand that surgical techniques have improved over the last several decades and this can now be done in a minimally invasive way. Can you talk a little bit about that?
probably in the late 80s. Around 1990 we all started doing gallbladders that way and it reduced the incision size. Made recovery a lot faster, less pain and the patients were much more satisfied and that translated to colon surgery in the early 90s and there were several trials to determine whether or not that minimally invasive surgery was equal to conventional open surgery and a trial in 2004 and follow up of those patients over a long period of time proved that the cancer surgery was the same whether it was done minimally invasive or open, so the oncologic results were the same minimally invasive surgery, whether it be laparoscopic or robotic. It hurts a lot less. The recovery is faster, the patients are more satisfied with it. Bowel function tends to return faster, and as several studies over the years have shown it is oncologically the same as open surgery. One of the benefits though, is for people with more advanced surgery, more advanced cancer is that since they recover faster, they feel better.
They’re much more likely to go on and have chemotherapy if they need it after recovering from big open surgery, sometimes the people have had trouble and they just never get healthy enough to receive chemotherapy.

So it sounds like we’ve moved into an era of minimally invasive surgery for colon cancer, much like we have for Gallbladder surgery. But you mentioned two terms. One is laparoscopic and one is robotic assisted.

Sure, laparoscopy is something that’s been around for a long time, and as I mentioned, the translation to more broad applications began in the early 90s and then into colorectal surgery. But basically what that is, is surgery inside the abdomen, done through several small incisions where you have instruments inserted. It’s very good when you don’t have to make a bigger incision to take a specimen out. In colon surgery, you have to make an incision that’s probably 2 to 3 inches in size to...
get the piece of colon out with the lymph nodes in the tumor so that does have some pain associated with it when you do laparoscopic hernia’s and you only have 3 or 4 little incisions, there’s much less pain. Robotic assisted is attaching the robotic system to those instruments an that allows you much more dexterity, especially in smaller confined location like the pelvis when you’re operating for rectal cancer, your visualization both laparoscopic and robotic assisted is a lot of times, much better than open because you have magnification. You have a light source that’s right down there in his deep dark hole and you have your really dexterous instruments in a small space. And so certainly both laparoscopic and robotic seemed to be an advance over open surgery and allow you to get into small spaces with good visualization that you might not have had before and allow patients to get home sooner. We’re going to talk more about robotic surgery and compare that to laparoscopic surgery and talk about what happens after the colon.
cancer surgery right after we take a short break for a medical minute. Please stay tuned to learn more about robotic surgery for colon and rectal cancers with my guest Doctor George Yavorek. Support for Yale Cancer answers comes from Astrazeneca, providing important treatment options for various types and stages of cancer. More information at astrazeneca-u.com.

This is a medical minute about lung cancer. More than 85% of lung cancer diagnosis are related to smoking and quitting even after decades of use can significantly reduce your risk of developing lung cancer for lung cancer patients. Clinical trials are currently underway to test innovative new treatments. Advances are being made by utilizing targeted therapies and immunotherapies. The BATTLE-2 trial aims to learn if a drug or combination of drugs based on personal biomarkers can help control non small cell lung cancer. More information is available at yalecancercenter.org.

You’re listening to Connecticut Public Radio. Welcome back to Yale Cancer Answers. This is doctor Anees Chagpar and I’m joined tonight by my
We are talking about treating patients with colon cancer with robotic surgery.

Now right before the break we were talking about this whole evolution in minimally invasive surgery that really helps patients with colon cancer get that colon resected with minimal intervention, shorter hospital stays, less pain and so on.

But George, the question that I often have is in terms of those metrics, getting home faster, amount of pain, blood loss, how long the operation is, and cost? How does robotic surgery stack up to laparoscopic surgery which you know we all know has a number of advantages over open surgery. So the big thing I think would be patient satisfaction and patient satisfaction between both laparoscopic and robotic surgery is pretty equal because to them it’s minimally invasive in terms of oncologic outcomes. Again, the same thing they’ve looked at that compared to open and obviously the standard is open surgery, but the oncologic outcomes are the same in terms of all the parameters that we look at.

Some of the other things you
though were the big knock on robotic surgery is cost. And the expense of the equipment. What happens with that? Is it can be actually cost effective because the patients tend to stay in the hospital less time. If you have them on what we call an ERAS, enhanced recovery after surgery protocol, which typically a lot of specialties are using for urology, gynecology, colorectal surgery and that goes from the pre op preparation through the surgery, anesthesia and into the postoperative period. These patients are spending less time in the hospital. They are back to normal faster. They are feeling better and there are actually less complications and problems which cut down on hospital costs. So those are things that can negate the extra expense of the robotic surgery and actually make it cost effective. So let me push back a little. Understandably, ERAS protocols would improve all of those metrics, whether the surgery was open, patients who are on any rest protocol, who have open surgery would do better.
than people who are not. So I can understand how that protocol can reduce the length of stay for patients who are having robotic surgery. But given that robotic surgery and laparoscopic surgery are both minimally invasive, robotic surgery is much more expensive if you have patients who have laparoscopic surgery who are on an ERAS protocol and patients who have robotic surgery who are on an ERAS protocol, are there really any differences in terms of length of stay, length of hospital time, length of surgical procedure, blood loss that are different between the laparoscopic group and the robotic group? That would tend to favor one over the other. So if you look at it across the board just comparing laparoscopic for robotic surgery, typically the outcomes are going to be very similar. They’re going to be about the same. Robotic surgery would be more expensive because of the equipment part of the problem becomes the skill level of the surgeon. Where robotic surgery makes it easier for most surgeons to do more complex operations.
The inexperienced laparoscopic surgeon could probably do about the same things a robotic surgeon does, and most people are well versed in both. I think you’re correct in that across both procedures it’s going to be less expensive for laparoscopic surgeon and the results are pretty much going to be the same. Part of the idea behind the robotic surgery is that it takes more open cases and makes them minimally invasive across the country. At least 50% of the colectomies are still done through a traditional incision, only about 50% are done minimally invasively and of those the vast majority are still done laparoscopically. It’s somewhere between 5 and 10%, done robotically the other 40% are done laparoscopically and the other 50% are still done through an open incision. So the penetration is increasing for robotic surgery, but back to the question, I think that all things given certainly laparoscopic surgery is more cost effective than robotic surgery. So I guess what I’m getting from you is that robotic surgery may be
a good option for some cases where you really don’t think that you would be able to do this laparoscopic but given the dexterity that you can get particularly low down in the pelvis, which would otherwise mandate an open surgery, robotic surgery might have an advantage in that realm over laparoscopic is that right?

Yes, I agree with that. And in complex surgery so not only for colon cancer, but if it’s a complex cancer that may be attached to the bladder of the uterus and even non cancer surgery like complex diverticular disease, I think the robot is an advantage over laparoscopic surgery and the one thing is that conversion rate is lower for robotic surgery.

So if you look at it in that light robotic surgery has an advantage over laparoscopic surgery because the conversion from minimally invasive to open surgery, which adds more to cost and actually increases hospital stay for someone who’s gone through an open incision to begin with, the robot does decrease the chance of conversion and therefore is an
advantage in those situations, so you know with people who have expertise in both laparoscopic and robotic surgery, how do you decide which procedure to offer your patients? Or are you offering all of them one particular route as a first choice? I think it depends on a few things. Depends on the complexity, location of the tumor. If I feel that, especially rectal cancers, down in the pelvis, I really like the robot down there again because of the confined space and the ability to get down there with good visualization. If the person may be someone who I'd like to get in and out of surgery a little bit faster, an older person with a lot of health issues, I may choose to do it laparoscopically, because generally the times for those surgeries are less, so it's an individual basis. I offer all my patients one or the other. And the other question that many of our listeners may have especially thinking about the cost of robotic surgery
is it covered by insurance?

Generally speaking, there’s no cost to the patient that if there is a cost, the hospital ends up absorbing it because they can’t pass that on to the patient. The insurance company doesn’t always reimburse more for a specific procedure, but the hospital has figured out a way to in terms of making things more efficient to make these cost effective. And it sounds like if the patient costs are all equal and oncologic outcomes are all equal, then it sounds like the real cost is to the health care system. And that’s something that health care systems will need to figure out now if during that staging work up needed before the surgery itself, let’s suppose you did find a little metastasis to the liver, can you take that out at the same time as you do the colon surgery with the robot? Yes you can. The paddle biliary surgeons are doing liver resections laproscopically and robotically so you can do that if it’s the right thing to do at that time. Sometimes it’s removed at the same time in the surgery.
Sometimes they get chemotherapy first to see if it progresses or regresses, or new lesions pop up so, but it can be done minimally invasive, yes. And so it sounds like you know, there have been so many great advances on the surgical front once patients go home. You mentioned that one of the advantages of minimally invasive surgeries that they can actually get onto their adjutant systemic therapy, their chemotherapy a little bit quicker there. After some older patients may have difficulty in that post operative period recovering and so delay or potentially dismiss their chemotherapy.

Can you talk a little bit about whether all patients with colon cancer require chemotherapy after surgery, and whether there have been any advances in that regard? So not all patients require chemotherapy. Cancer is staged one through 4. Obviously one being very early in those patients. Generally, surgery alone is curative between 90-95% of the time they do not require chemotherapy, it does not add to their cure rate. Stage two is the big gray zone. That’s a very large stage,
and some of those patients, depending on individual tumor characteristics may benefit from chemotherapy. They may be at a higher risk to develop recurrence, and that’s something that has really progressed over the last 10 years. Our evaluation of individual tumors and what those individual tumor characteristics mean in terms of prognosis.

Stage three, there are lymph nodes involved and those people are all candidates for chemotherapy, which has been shown to have a significant improved survival. And stage four is distant metastases and generally chemotherapies are used there too. Also in more of a palliative manner, and as you kind of mentioned and briefly talked about, in that stage two discussion have there been advances in terms of chemotherapy?

I mean the robotic surgery, getting to minimally invasive surgery really seems to be advantageous in terms of fine tuning surgery to an individual patient and you talked a little bit about how you tailor the surgical management according to patients,
Yes, most people will get a combination of chemotherapy drugs, usually two or three, and generally it’s tapered to their situation, their age, their medical comorbidities, and also the tumor itself. As I mentioned, they do several analysis of the tumor, and there are some studies that can tell you whether or not they will respond to a particular chemotherapeutic agent. And as with a lot of medicine that’s gotten rather involved and complex over the last few years and most people will end up with an oncology consultation and the medical oncologist will tailor their therapy to that. Now the third arm of the stool is always radiation. Do colorectal patients require radiation after surgery as well? So radiation is generally used for rectal cancer, not colon cancer. When it’s out of the pelvis, there’s generally not a role for radiation. It’s when it’s in the fixed confines of the pelvis that radiation is used. It’s not used all the time,
and we do a lot of work up and staging beforehand, and a lot of times radiation is given with chemotherapy before surgery for rectal cancer to shrink the tumor and allow for preservation of these sphincters so you don’t have a permanent ostomy bag.

Georgia Yavorek is a clinical instructor of surgery specializing in gastroenterology at the Yale School of Medicine. If you have questions, the address is canceranswers@yale.edu and past editions of the program are available in audio and written form at yalecancercenter.org.

We hope you’ll join us next week to learn more about the fight against cancer here on Connecticut Public Radio.