Fecal Incontinence

Overview

The purpose of this patient education piece is to provide patients and their families with information on the background, causes, and treatments of fecal incontinence. This is intended for a general audience.

What is fecal incontinence?

Fecal incontinence is the impaired ability to control the release of gas and stool at the desired time. Control of gas and stool is key to organizing everyday activities, and most people don't consider how important this is until they have a change or loss of control.

The ability to control gas and stool is a complex function involving multiple organ systems. The colon, rectum, and anus are parts of the digestive system. They form a long, muscular tube called the large intestine (also called the large bowel). The colon is the first 4 to 5 feet of the large intestine; the rectum is the next six inches, and the anus (opening) makes up the final 1-2 inches. See Figure 1.

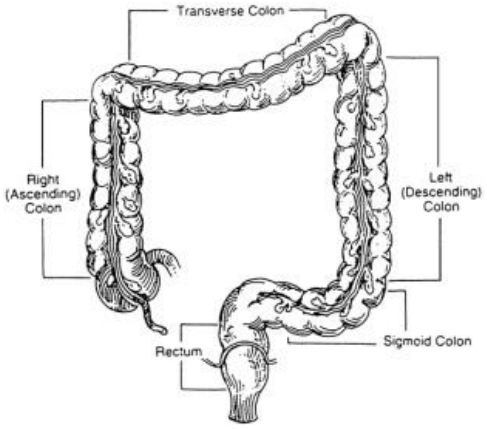

Figure 1. Normal colon and rectum anatomy

Partly digested food enters the colon from the small intestine. The colon removes water and nutrients from the food and turns the rest into solid waste (stool). As stool enters the rectum, the rectum relaxes and acts as a reservoir to hold the stool. Meanwhile, the outer muscle that encircles the anus, the external anal sphincter, squeezes to prevent gas or stool leakage.

While the external anal sphincter squeezes, the inner muscle that encircles the anus, called the internal anal sphincter, relaxes to allow stool to enter the anal canal. When stool enters the anal canal, sensory nerves in the anus identify the difference between gas and stool and determine the consistency of the stool (liquid versus solid). Signals are sent to the brain indicating the need to have a bowel movement. Once a socially appropriate time and place to have a bowel movement is found, the anal sphincter muscles, as well as the muscles of the pelvic floor, relax and the abdominal muscles tighten to expel the stool. See Figure 2 and 3.

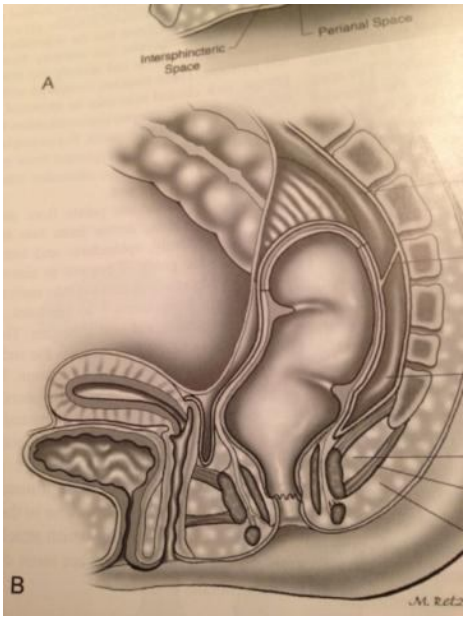

Figure 2. Normal anatomy of anus and rectum, female

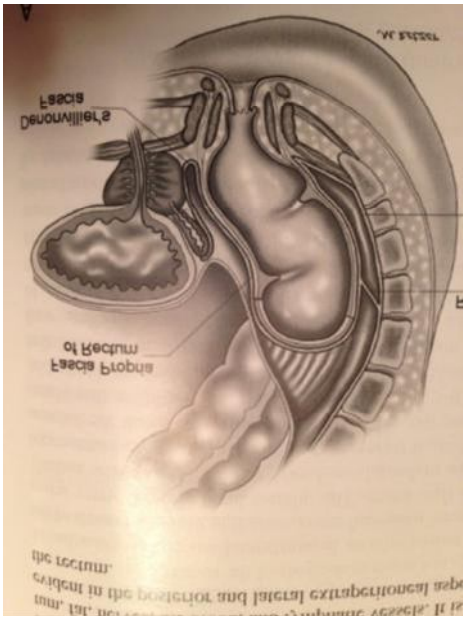

Figure 3. Normal anatomy of anus and rectum, Male

Loose stools, diseases or injuries to the rectum, the anus, or the nerves controlling the anal muscles, as well as other diseases, can all contribute to fecal incontinence. See Figure 4.

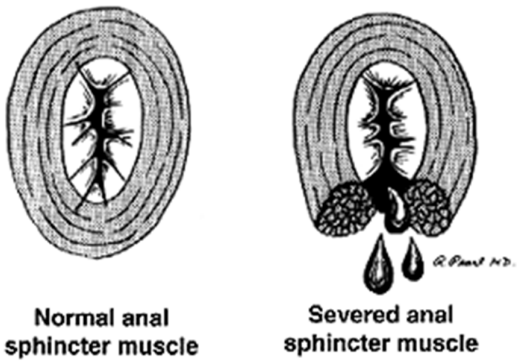

Figure 4. Normal anus and sphincter injury

Fecal incontinence is a major burden to both patients and society. Patients are often significantly embarrassed as a result of accidents or soiling of clothing. Unfortunately, many of these patients suffer in silence as they are afraid even to discuss it with their own family or physician. Patients suffer from the effects incontinence has on their lifestyle in avoidance of certain social activities, changes in employment, and the strain placed on personal relationships. Medical costs, nursing costs, and days lost from work all place a significant burden on society as well.

How common is fecal incontinence?

It is difficult to identify the exact number of people who have fecal incontinence in the general population. One of the difficulties in measuring how many people have fecal incontinence is that patients questioned about incontinence often under-report their symptoms. Studies in the literature vary from 1.5-18% of the general population having fecal incontinence, depending on the population of people studied. In a telephone survey of U.S. households, 2.2% people surveyed had symptoms of fecal incontinence.

Thirty percent of those who reported incontinence were older than age 65. Fecal incontinence is approximately twice as common among women as it is among men. Most importantly, it is a much more common condition than perceived, and patients should not feel alone, nor fear bringing it to the attention of their healthcare provider. Treatment for fecal incontinence can significantly improve a patient's quality of life.

Who is at risk for fecal incontinence?

A risk factor is something that increases a person's chance of getting a disease or problem. There are many risk factors for fecal incontinence, including:

Female gender – fecal incontinence is approximately twice as common among women as men, as injury to the anal sphincter muscle during childbirth is common. This injury may include a tear in the sphincter muscles and/or by injury to the pudendal nerves, which are the nerves that control the anal muscles.
Increasing age – fecal incontinence is more common among older people than in the population in general. The general function of the anus may diminish over time, making incontinence more common among older patients. Additionally, neurologic diseases, which can affect anal function, are more common in older patients
Poor general health – fecal incontinence is very common among nursing home and hospitalized patients and may be due, in part, to a decreased mobility, making it difficult to get to the bathroom.

Prior pregnancy - especially those assisted with vacuum, forceps, or episiotomy (surgical incision), or prolonged labor. Undiagnosed injury to the anal sphincter can occur in up to 35% of women who undergo a vaginal delivery. These injuries are more common with the use of instrumentation such as vacuum assistance and forceps. These types of injuries are often compensated for (overcome) with the use of other pelvic floor muscles by younger women, who then may have problems as they become elderly.
Prior anorectal surgery – patients who have had surgery for an anal fissure (pocket of infection), an anal fistula (abnormal passageway between the bowel and nearby organs or between the bowel and skin), or hemorrhoids are at risk for fecal incontinence, if there was significant injury to the sphincter muscles.
Prior rectal resection – patients who have had part or their entire rectum removed and reconstructed with another portion of the bowel are at risk for fecal incontinence, as the reservoir function of the original rectum is difficult to reproduce with another piece of intestine.
Pelvic radiation – pelvic radiation can injure the nerves that control the anus, and people who have had it are at risk for fecal incontinence.

What are the symptoms of fecal incontinence?

The symptoms of fecal incontinence can range from minor changes in the ability to control gas to complete loss of control of solid stool without warning, and varying symptoms in-between. Some patients may experience symptoms only intermittently, such as on a weekly or monthly basis, where others may experience incontinence daily. Some patients' symptoms may be exacerbated by a change in the consistency of stool. For example, it is not uncommon for patients to report normal control when their stools are solid, but report a loss of control with liquid stool.

Patients may also have alteration in their awareness of the need to have a bowel movement. Many patients report having no sense of the need to have a bowel movement and will then have spontaneous loss of solid or liquid stool. Patients may report a minor loss of liquid stool which only stains undergarments - sometimes referred to as "seepage".

Patients may also report new symptoms of urgency or "near accidents". This occurs when the patient can sense the need to have a bowel movement but cannot"hold it" for a long time without an accident. Patients may say they need to stay close to a bathroom at all times and avoid situations where they don't have easy access to a bathroom.

How is fecal incontinence diagnosed?

Diagnosing fecal incontinence involves taking an adequate medical history from patients and carefully listening to their complaints, as the many causes and symptoms of fecal incontinence are varied. Physicians will often ask questions to clarify the severity of the symptoms. This includes noting the frequency of incontinence to gas, liquid, or solid stool. Physicians will often ask about the ability to sense the need to have a bowel movement. The impact the symptoms are having on the patient's life will also be explored, including the need to wear a pad. Physicians may use a scoring system to quantify the severity of the symptoms.

The history will also include a thorough medical and surgical history. This may include the number and nature of any prior anal or rectal operations, any history of diarrhea, any history of colitis (inflammation of the colon), other pelvic floor complaints such as urinary incontinence or rectal prolapse (when the rectum turns inside out and hangs outside the body), a history of neurologic diseases, medications, and a complete obstetrics history.

Once the history of fecal incontinence is established, a complete physical examination can assist in confirming the cause(s) of the incontinence and assist treatment planning. This may include a visual exam of the anus and surrounding skin, a finger exam of the anus, and anoscopy (visualization of the anal canal with a small scope).

Further testing may be required to confirm the exact cause of the patient's incontinence. One of the most common examinations performed includes an anal ultrasound. During this test, a small ultrasound probe is inserted into the anal canal. The ultrasound machine is able to generate pictures which can demonstrate abnormalities of the anal muscles. This is particularly important if a surgical repair of the muscles is planned.

Another common test is called an anorectal manometry. In this test, a small pressure sensor is inserted into the anus to measure pressures within the anus and rectum. The patient may be asked to squeeze as if holding in a bowel movement or to note sensation within the rectum as small balloon at the tip of the pressure sensor is distended. This provides information on how well your muscles can squeeze, as well as how well your rectum is functioning as a reservoir for stool.

Other tests often included in an evaluation of fecal incontinence include colonoscopy, electromyography with testing of the pudendal nerves, and defecography. Colonoscopy is a visualization of the inside of the colon with a flexible scope. This is done to identify any underlying diseases such as colitis or to rule out any co-existing problems such as polyps or cancer. Electromyography (EMG) and testing of the pudendal nerves is done to assess the nerves that control the anus. This may be done to evaluate any neurologic causes of the incontinence. Defecography is a radiologic examination that uses x-rays to examine the patient during the act of having a bowel movement. This can be done to assess for proper coordination of the pelvic floor muscles as well as other anatomic causes of the incontinence.

How is fecal incontinence treated?

There are a variety of treatments for fecal incontinence. These treatments range from non-invasive treatments and medications to surgical treatments. It is important to note that not all treatments will be appropriate for all patients. Additionally, patients are always at liberty to delay treatment or to do nothing once the treatment options are considered. The risks of doing nothing or delaying treatment are related to the underlying cause of the incontinence. For example, incontinence due to a long standing injury to the anal muscles is not likely to get better without treatment, but there is also not likely much risk in avoiding treatment either. On the other hand, delay in a treatment of an underlying colitis may have serious medical consequences. The specific risks and benefits of each therapy should be discussed with your physician.

Regardless of what type of therapy may be chosen, patients must have realistic expectations regarding the outcomes of treatment. A realistic goal may be to restore the patient to a manageable situation, where they can resume many of the activities they've previously enjoyed, but not necessarily give them perfect continence.

Non-surgical therapy

Therapies that do not include an operation for the treatment of fecal incontinence include dietary changes, medications to bulk the stools, constipating medications, and biofeedback. For milder forms of incontinence, a trial of these non operative therapies is often the first set of treatments used. Dietary changes include avoiding foods that cause diarrhea and increasing intake of foods high in fiber such as whole grains, vegetables, fruits, and nuts. It is often difficult to include a large amount of fiber in our diets, even when "eating

healthy". Fiber acts by holding on to water within the stool and increasing the bulk of the stool. This may improve rectal sensation for the need to have a bowel movement or may decrease episodes of minor seepage. A fiber supplement may be prescribed when a patient isn't able to get an adequate amount of fiber in his or her diet.

Constipating medications such as loperamide (Imodium™) or dephenoxylate with atropine (Lomotil™) may be used to treat patients with diarrhea. It is generally easier for the anus to control solid stool than liquid stool. Therefore, changing the consistency of the stool to solid from liquid may provide some relief of incontinence.

Biofeedback is a form of therapy where visual, auditory, and other forms of sensory information are used to improve a patient's ability to detect the need to have a bowel movement and reinforce the appropriate sphincter muscle response. These sessions are done with specially trained therapists. Patients are taught appropriate exercises to strengthen the anal sphincters and the muscles of the pelvic floor.

Surgical therapy

Surgical therapies for fecal incontinence include injection of biomaterials into the anal canal, radiofrequency treatment of the anal canal, repair of anal muscle injuries, sacral nerve stimulation, artificial bowel sphincter, muscle transposition to reinforce the anal sphincter, and creation of a stoma.

Injection of biomaterials into the anal canal can help bulk up the anal canal and reinforce squeeze mechanism of the anus. The most commonly used materials are silicone or carbon coated microbeads. The procedure is done with local anesthesia or occasionally with some sedation. This therapy is an attractive option since it is minimally invasive without the need for major surgery and can often be done in an office setting.

Delivery of radiofrequency energy to the anal canal has been used for treatment of fecal incontinence. The exact mechanism of how this technique works is not well understood. The procedure is generally done in an operating room with sedation anesthesia and local anesthesia. A probe is used to deliver the energy to the anal canal, which may cause some scarring or tightening of the anal muscles. See Figure 5.

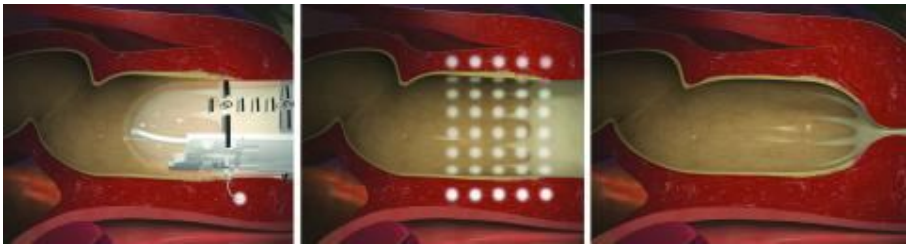

Figure 5 The Secca procedures for fecal incontinence

Direct repair of injured anal sphincter muscles (sphincteroplasty) is a well-established therapy for patients with incontinence due to a sphincter injury, most commonly occurring during childbirth. Repairing the injury can improve the effectiveness of the squeeze of the anal muscles. This type of repair is done in the operating room with the patient under general anesthesia. Patients are usually kept in the hospital overnight. This technique of repair of the anal sphincters has been around for several years and has been well studied. These studies show that initial results are often good, but that patients may have recurrence of their incontinence over extended periods of time. See Figure 6.

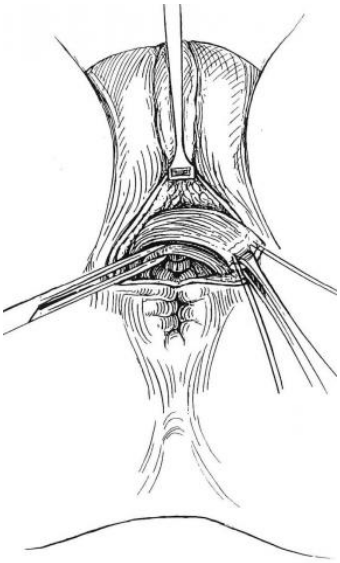

Figure 6. Overlapping sphincteroplasty

Sacral nerve stimulation is a procedure where an electrical lead is placed within the sacrum ("tailbone") to stimulate the nerves that control the anus and surrounding structures. The stimulation is done by a nerve stimulator similar to a heart pacemaker. This procedure is unique in that it is done in a staged manner. First, the leads are placed within the sacrum and the wire is placed to an external stimulator the patient wears for two weeks. Patients keep a diary of bowel habits before and after lead placement. Patients who have had a more than 50% reduction in incontinent episodes during the two weeks will have a permanent nerve stimulator placed. The permanent nerve stimulator sits below the skin within the buttocks. The exact mechanism of how sacral nerve stimulation works is not well understood. Results of this procedure from studies in North America and Europe demonstrate that as many as 80% of patients will have a significant decrease in incontinence episodes with this therapy. See Figure 7.

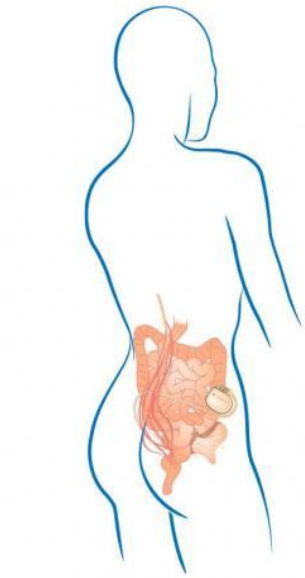

Figure 7. Diagram of Sacral Nerve Stimulation

The artificial bowel sphincter is a procedure where a plastic cuff with a balloon is placed around the anus. The balloon is filled with fluid that is filled via a reservoir. When patients need to have a bowel movement, the reservoir can be can be filled by actively squeezing a pump that sits underneath the skin of the labia or the scrotum. This pumping mechanism deflates the cuff by moving the fluid from the cuff into the reservoir and allows stool to pass through the anus. The artificial bowel sphincter is placed in the operating room under general anesthesia. Care must be taken to avoid infection since this is an artificial device. See Figure 8.

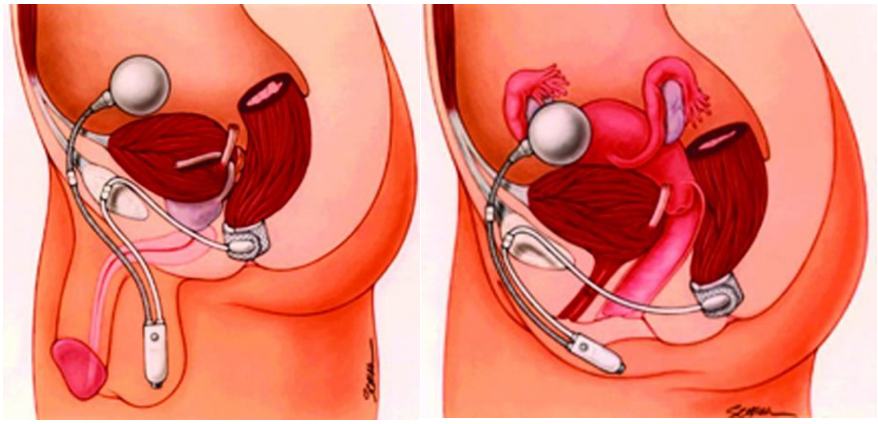

Figure 8. Diagram of artificial bowel sphincter placement in men and women

A gracilis interposition is a technique where a muscle from the leg, the gracilis muscle, is dissected from the leg and pulled up to be placed under the skin around the anal canal. This technique can assist the squeeze mechanism of the anal muscles and improve incontinence. The main risk of this procedure is infection, bleeding, and need for revisions. This technique is not commonly used but remains a viable alternative in selected patients. See Figure 9.

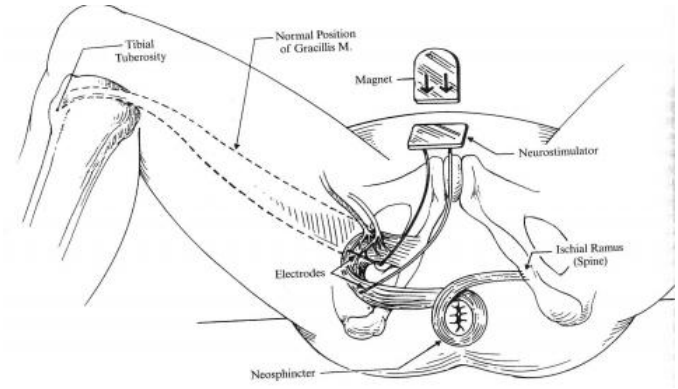

Figure 9. Gracillis Interposition.

Finally, creation of a colostomy may be the most appropriate treatment for some patients who have not had success with other therapies or who are severely debilitated. Creation of a colostomy involves bringing the bowel through the abdominal wall so that it empties its contents into a bag that sits on the abdominal wall. While most patients are initially hesitant to undergo this procedure, the majority are very happy they did it, as it restores the patient to

a manageable, predictable state with regard to their bowel function. This is done in the operating room under general anesthesia. While this cures the incontinence, there are risks to abdominal procedures including risk of infection and bleeding. See Figure 10.

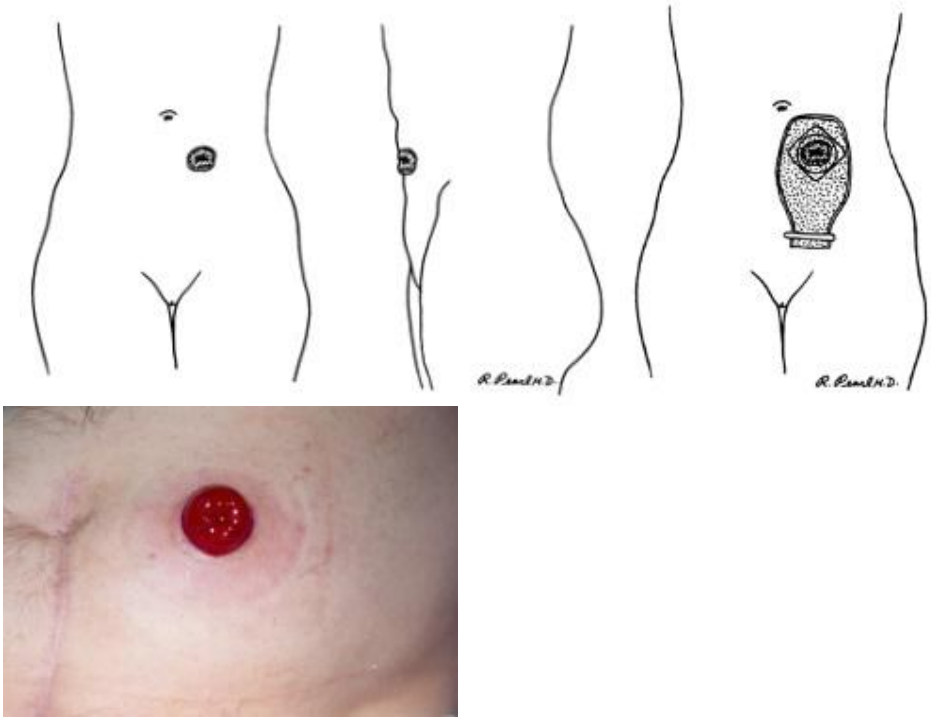

Figure 10. Normal Colostomy

Conclusion

Fecal incontinence can be a debilitating condition, and it has a wide variety of causes and symptoms. The many techniques to treat fecal incontinence include both non-surgical and surgical therapies. A thorough discussion with a physician is needed to evaluate the severity, causes, and possible therapies for each patient.

Questions for your surgeon

- What tests do you plan to do to evaluate my incontinence?
- Compared to other patients, how severe is my incontinence?
- What are some realistic goals to aim for regarding my incontinence?
- What are the non-surgical options for treatment of my incontinence?
- How successful are non-surgical treatments for incontinence, and what are the risks?
- What are the surgical options for treatment of my incontinence?
- How successful are the various surgical treatments, and what are the risks?
- If a particular treatment does not work, are there backup options?
- What can I expect after surgery?
- How will you treat my pain after surgery?
- Are there risks to not treating my incontinence?

What is a colon and rectal surgeon?

Colon and rectal surgeons are experts in the surgical and non-surgical treatment of diseases of the colon, rectum and anus. They have completed advanced surgical training in the treatment of these diseases as well as full general surgical training. Board-certified colon and rectal surgeons complete residencies in general surgery and colon and rectal surgery, and pass intensive examinations conducted by the American Board of Surgery and the American Board of Colon and Rectal Surgery. They are well-versed in the treatment of both benign and malignant diseases of the colon, rectum and anus and are able to perform routine screening examinations and surgically treat conditions if indicated to do so.