

FISSURE-IN-ANO

Thousand Oaks Proctology

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Dr. Rosenfeld has been in private practice since 1998 and spent 7 years at Cedars Sinai Medical Center. He was an active professor in the colorectal surgery fellowship program. Dr. Rosenfeld is now practicing in Thousand Oaks California. He is board certified in colon and rectal surgery

Dr. Rosenfeld finished his fellowship at USC in colon and rectal surgery in 1998. Dr. Rosenfeld is an expert in colonoscopy and proctology and has published a chapter on laparoscopic colectomy [Modern Management of Cancer of the Rectum: Chapter 9 : Laparoscopic Resections for Large Bowel Malignancy, Springer-Verlag Publications, London].

Dr. Rosenfeld specializes in colonoscopy and proctology including:

- Colonoscopy - Diagnostic and Surgical
- Hemorrhoid Disease
 - Burning
 - Itching
 - Bleeding
 - Pain
 - Lump in the rump
- Painless office hemorrhoid treatment
 - Sclerotherapy
 - Rubber band ligation
- Anal fissures and fistulas
- Perirectal abscess
- Pilonidal cyst and abscess
- Anal cancer and pre-malignant diseases of the anus
- HIV and AIDS associated anorectal diseases
- Hidradenitis

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DR. DAVID ROSENFELD



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FISSURE PHYSIOLOGY:

A fissure is a tear of the skin at the edge of the anus. It is very similar to a split lip. Think about the last time you tried to bite into a sandwich that was too big. After you opened your mouth as wide as you could, the side of your lip split open. At that moment you knew you cut your lip and immediately pursed your lips and put the back of your hand to your mouth to hold pressure. When you looked at your hand you noticed a little blood. Over time you stopped pursing your lips and relaxed your mouth. An anal fissure is exactly the same thing. The skin around the anus splits causing a sharp or burning pain and bleeding. The blood can be seen on the toilet paper or it can drip into the bowl. Due to the increased vascularity of the anus the bleeding can be impressive but almost always stops after a few minutes. Fissures can be acute (new) or chronic (persistent). An acute fissure has an 80% chance of healing. When a fissure lasts over 6 weeks it is considered chronic and has less than a 60% chance of healing. Chronic fissures are usually associated with a tag at the outside edge of the anus (sentinel pile) and a tag inside the anus (hypertrophied anal papillae). When the examining physician sees the tags and visible internal sphincter muscle, this indicates the fissure is chronic and has less of a chance of healing. Many patients feel that the swollen tag which is tender

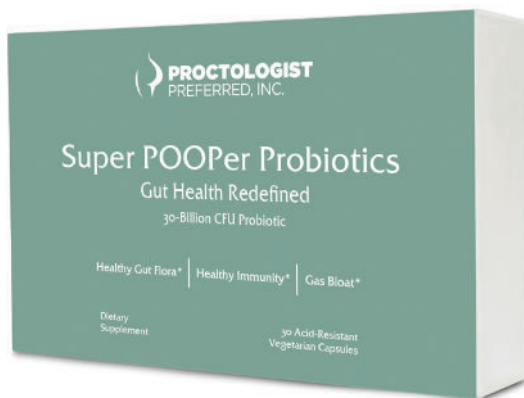
FISSURE DEVELOPMENT:

The pathophysiology of the anus is very complicated but I will try to explain it as best as I can. Like the mouth, the anus is surrounded by skin and muscle. The anal muscles are called sphincters. There are 2 types of anal muscles; the external and the internal anal sphincters. The external sphincter is the one that you have control over. It is primarily in a state of relaxation. When you feel the urge to fart while you happen to be on a crowded elevator it is this muscle that you squeeze as hard as you can to prevent the embarrassment that will reign over you if you let the gas out! On the other hand, you have no control of the internal anal sphincter which is in a state of contraction at all times (unless you are trying to have a bowel movement). The internal anal sphincter squeezes tight at all times in order to prevent stool from leaking out of the anus. Obviously this is an important function!

Usually after a constipated bowel movement or a bout of diarrhea, the skin can split causing pain and bleeding. The pain reflexively causes the internal and the external sphincters to contract (squeeze) very tight. You will eventually relax the external sphincter as you have control over this muscle complex. Unfortunately, the internal sphincters don't know how to relax and remain very tight. It is this hyperactive squeezing that makes the pain relentless and makes it difficult for the cut to heal. The internal anal sphincter spasm causes increased pressure and tension which is the cause of the persistent pain (see graph 1) and prevents the fissure from healing (see graph 2). Remember, the internal anal sphincter does not know how to relax and therefore continuously squeezes the cut causing more pain. Interestingly some patients will complain that the pain starts 20 minutes after the bowel movement and not during the bowel movement.

This is because the only time the internal anal sphincter relaxes is during a bowel movement (the body is smart, when sitting on the toilet it knows the sphincter needs to relax to get the stool out). After all of the stool passes through the anus, the internal sphincter begins to squeeze the cut causing the pain to resume. In order for tissue to heal it needs blood flow. There is a decreased flow of blood in areas of increased pressure and tension. It is for this reason that it is harder to heal a fissure. This scenario becomes a vicious cycle. Pain causes contraction of the muscles which causes more pain. More pain causes more spasm which decreases the blood flow. The wound healing decreases which in turn causes the fissure to reopen causing pain, contraction and so on.

Along with the internal sphincter muscle spasm, hemorrhoid engorgement further increases anal pressure and tension. As the sphincter muscles squeeze, the blood within the muscle is pumped into the nearby veins. The veins within the anus are large venous cushions called hemorrhoids. All humans have at least 3 internal hemorrhoids. As the blood is pumped into them they engorge and become bigger. The anus is a confined space so as the hemorrhoids increase in size they fill the space which increases pressure and tension. Think about a room with 4 walls a floor and a ceiling. This is a confined space as it does not expand. If you were to stand in the middle of a room with 3 gigantic water balloons filling with water you would feel the increasing pressure and tension as the balloons filled this space. This is the same effect as the engorgement of the hemorrhoids which adds more pressure and tension which decreases blood flow which lessens the ability of the fissure to heal. Treating a fissure involves treating the increased pressure and tension within the anus.



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FISSURE HEALING:

How does a fissure heal? The best way is to get the internal sphincter to relax enough to allow the fissure to heal but not enough to have issues with incontinence. Treatments

TREATMENT OF ANAL FISSURE

NON-SURGICAL TREATMENT

• Sitz Baths

- A sitz bath is a warm to hot tub of water. Use a bathtub or purchase a sitz tub. After a bowel movement quickly get into the warm/hot tub of water (not so hot as to scold yourself). The warm/hot water helps to relax the anal muscles. I recommend sitz baths after each bowel movement for up to 2 weeks. This treatment is very effective when you are in the water. Unfortunately, once the sitz bath is over the symptoms may return. This is excellent treatment of the pain after having a bowel movement, however; you can't do this during the day when you are out running errands or at work. The other forms of therapy will need to be used in conjunction with the sitz baths (see Nitroglycerine 0.2% ointment, Diltiazem 2% ointment, Nifedipine 0.2% ointment and Rectice (0.4% NTG) below).

If the pain with defecation is extremely severe, I recommend having the bowel movement in the sitz tub. Yes I want you to defecate in a tub of warm to hot water. Just put the sitz tub filled with warm to hot water on the toilet seat and sit in the tub when you have to have a bowel movement. After you finish, turn it over into the toilet, flush and wash out the sitz tub so you can use it again. Sitting in the hot water while having a bowel movement keeps your muscles relaxed. This trick can decrease pain with and after defecation by up to 80% or more.



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- **Hemorrhoid Treatments (sclerotherapy)**

- Treating the enlarged hemorrhoids causes them to shrink which decreases the anal pressure. This will help to heal the fissure. At the first visit most patients are in too much pain to have an evaluation so I wait until the fissure heals and then, if the hemorrhoids are enlarged, suggest sclerotherapy to shrink them.

- **Dietary Measures**

- **Fiber** - A complex carbohydrate which we do not digest. When in the colon it binds with water, like a sponge, creating larger, softer, stool (perfect poop). Contrary to logical thinking, a larger bowel movement is more advantageous than a smaller or looser bowel movement for patients with an anal fissure. Large, softer, stools act like physical therapy to the anus by stretching and relaxing the sphincter muscles. This allows for both improved circulation along with healing the wound in a relaxed, stretched manner. Think about physical therapy for a shoulder surgery. Physical therapy is aimed at softening the scar tissue so the shoulder doesn't get stiff. If the shoulder heals without increased range of motion, it becomes stiff and easy to re-injure. The same is true of an anal cut. If a patient has persistent small thin bowel movements the cut heals in a contracted manner. When the patient has a larger bowel movement the skin will re-tear in the same spot. If the bowel movements are consistently large and soft, including during the healing phase, the anus will heal with more range of motion decreasing the chance of a recurrence. Large, soft, stools also require little pressure to pass. The less one has to bear down to have a bowel movement the less spasm occurs and less blood is engorged into the hemorrhoids. When the hemorrhoids enlarge they increase anal pressure which also decreases blood flow.



Personally the bulking agent I recommend the most is PERFECT P.O.O.P.® which is raw psyllium formulated for me to taste better and go down smooth. No sugar, sugar substitutes, flavorings, colorants additives or preservatives. I take this every morning. When shaken (not stirred) with about 4-5 oz of juice or milk alternative it goes down smoothly and comes out long, solid, soft and clean. Other health benefits of psyllium include improving colorectal/anorectal health, lowering cholesterol, weight control, blood sugar control and improved immunity. One teaspoon of psyllium fiber adds 5 grams of fiber. It is important to drink enough water during the day in order for the fiber to work. Eating fiber without enough water can lead to constipation. It is recommended to eat 30-35 grams of fiber per day. The average daily American diet contains only 10-15 grams of fiber! It is also wise to eat foods lower in fat and cholesterol.

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- **Water** - Water is very important as it is soaked up by the fiber making the stools bulky and soft. Water also is a natural lubricant and is extremely important for good bowel regularity. Think of the colon as a 6 foot water slide. Remember the days of sitting on a dry slide at the pool? You were stuck at the top because both the slide and the skin were dry and sticky. Pour one bucket of water on the slide and down we went. This is what happens in the colon if we are dehydrated. Water is removed from the colon to replenish our cells. This makes the stool and lining of the colon dry and sticky so it becomes hard to pass the stool. Drinking extra water bulks the stool and lubricates the colon making the stool slide through the colon smoothly and easily. Passing the large volume of stool is a breeze when we eat a lot of fiber and drink a lot of water. Caffeine and liquor are diuretics which increase urination causing dehydration. The colon's function is to reabsorb more water during times of dehydration. When this happens the stool becomes harder. Therefore, coffee, teas, caffeinated sodas and liquor do not count as water. My advice to patients to improve their water intake is to drink only water with each meal. This will add 3 glasses of water a day. At least four 8 ounce glasses are necessary per day. Eating vegetables also adds water to the diet as vegetables are composed of water as well. As we get older and lose muscle mass it is important to drink even more water. Muscle holds water and as we lose muscle mass we can't use our muscle stores to recoup the water as the stores are too small. Therefore seniors are usually more dehydrated and must drink more water on a regular basis to keep hydrated.
- **Probiotics and Prebiotics** – Most Americans can benefit from probiotics. Firstly, probiotics improve our immunity (proven in the literature). Secondly, most Americans have bacterial dysbiosis or imbalance with more bad than good bacteria. Probiotics are good bacteria which are needed for normal intestinal health and for normal bowel movements. Start taking probiotics either with over the counter pills or yogurt. Prebiotics are the food that feed the bacteria. Inulin and Fructooligosaccharides are prebiotics. When the good bacteria eat food (prebiotics) they produce amino acids which fuel the colonocytes (colon cells) allowing them to proliferate and re-establish continuity of the lining of the colon. The amino acids also mildly acidify the stool which prevents the bad bacteria from growing as they do not like an acidic environment. This keeps harmony between the good and bad bacteria. This is beneficial for colorectal and anorectal health.
- **Micronized Diosmin** – Diosmin is an antioxidant and the active ingredient in immature (green) orange peels. In prospective randomized trials in humans and animals, Diosmin increased venous and lymphatic vascular tone which improved symptoms of both varicose veins and hemorrhoids. Diosmin binds to inflammatory proteins (Prostaglandins, Leukotrienes and Thromboxanes) reversing their function of causing inflammation, swelling and chronic venous insufficiency (CVI). Reduction of CVI allows for better blood flow through the hemorrhoids which further decreases their size. Diosmin also increases the concentration of localized Epinephrine which increases contraction of the muscle around the hemorrhoid which helps to shrink its size. Because Diosmin is a bioflavonoid or plant metabolite and not a medicine it is safe to use on a daily basis. Micronized means broken down into smaller particles. Micronizing the Diosmin improves its bioavailability (makes it easier to absorb from the GI tract).

Patients with anal fissures typically have enlarged hemorrhoids due to the increased anal pressure from the sphincter spasm. Increasing anal pressure engorges the hemorrhoid veins with blood. As the hemorrhoids become larger, anal pressure increases while circulation to the fissure decreases, impeding wound healing. The theory is that adding micronized Diosmin help to shrink hemorrhoid size, lowering anal pressure and increasing blood flow to the fissure helping it to heal.



- **R.H.O.I.D. – AID®** is my private label which is developed and manufactured with the exact ingredient combination and same physical parameters of the ingredients found in Daflon, the pill used in the prospective randomized trials. Children, pregnant or lactating women and individuals using blood thinners should consult their healthcare practitioner prior to use. If you are using Diosmin make sure it is micronized to less than 4 microns. Diosmin tablets have a combination of Diosmin 90% and Hesperidin 10%. There are other micronized Diosmin products which are knock offs and use a Diosmin Salt which only micronizes the Diosmin to 50 Microns (10 times the size of the Diosmin in R.H.O.I.D. – AID®). It can help to reduce fissure symptoms by lowering anal pressure.
- In studies it takes about 4 days for Micronized Diosmin to decrease the size of hemorrhoids. For itching, in my experience, it takes 4-6 months for the itching to resolve when using micronized Diosmin.

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- **Stool Softeners**

- If your stool is still hard after using fiber and water an over the counter stool softener such as Colace is recommended. Colace contains surfactant which softens the stool. Hard stools are hard to pass and re-injure the fissure.

- **Nitroglycerine 0.2% Ointment**

- Nitroglycerine (NTG) gets broken down into Nitric Oxide which relaxes the anal sphincter. This leads to lower anal pressure and increased circulation to help heal the fissure. It will take two weeks to feel 50% better. Apply the Nitroglycerine 0.2% outside the anus. It gets absorbed into the tissue and relaxes the internal sphincter. No you do not have to put it inside the anus. A specialized, compounding pharmacy makes NTG 0.2%. Nitroglycerine 0.2% ointment will give 6-8 hours of muscle relaxation. By using it three times a day you will get 18-24 hours of therapy. One side affect of Nitroglycerine 0.2% is a headache. Most of the time it resolves in 1-2 days. If the headache persists you will need to discontinue the Nitroglycerine 0.2% and use Diltiazem 2.0%. If you have a history of headaches or Migraines you should not use Nitroglycerine 0.2% or discuss this with your doctor. Since Nitroglycerine can lower blood pressure you are not allowed to used Viagra, Cialis or other male enhancing formulas if you are using Nitroglycerine as the 2 different medications work together to lower your blood pressure which can cause loss of consciousness which is dangerous and definitely defeats the purpose of taking male enhancing drugs.

- **Diltiazem 2% Ointment**

- Diltiazem is another ointment which also relaxes the internal sphincter muscle by blocking Calcium channels of the muscle. Apply outside the anus three times a day. It is the brand I prescribe most as it does not cause a headache. It will take two weeks to feel 50% better. In studies comparing Diltiazem 2% with Nitroglycerine 0.2%, Diltiazem was just as effective in curing fissures. Diltiazem has the same blood pressure lowering effects as Nitroglycerine 0.2% and cannot be used with Viagra, Cialis or other male enhancing drugs.

- **Nifedipine 0.2% Ointment**

- Nifedipine (Nif) is another ointment which also relaxes the internal sphincter muscle by blocking Calcium from entering into the muscle cells causing them to relax. Use outside the anus three times a day. It will take two weeks to feel 50% better. Nif has the same blood pressure lowering effects as Nitroglycerine 0.2% and cannot be used with Viagra, Cialis or other male enhancing drugs.

- **Rectiv (0.4% NTG)**

- Rectiv is Nitroglycerine 0.4% which is twice as strong as NTG 0.2%. It has been used with good results in patients with chronic anal fissures (fissures present for more than 6 weeks). It will take two weeks to feel 50% better. Like NTG 0.2% it can cause headaches as a side effect. Since Nitroglycerine can lower blood pressure you are not allowed to used Viagra, Cialis or other male enhancing drugs if you are using Nitroglycerine as the 2 different medications work together to lower your blood pressure which can cause you to pass out.

- **Antibiotics**

- Infrequently a fissure may become infected and in these cases antibiotics can be helpful to treat the infection and decrease the amount of pain from the fissure. Other than these instances antibiotics are not helpful in curing a fissure.

- **Botulinum Toxin (Botox) injections**

- Botox is a poison made from bacteria *Clostridium Botulinum*. Its main action in the body is to cause a temporary paralysis of muscle. When injected into the internal sphincter muscle it causes relaxation of the muscle. Botulinum Toxin injections are usually reserved for patients with chronic fissures. There are reports of good success with this treatment; however, recurrences can occur over time. Studies also report a transient incontinence to gas in 6-12% of patients. Due to the superiority of surgery for chronic fissures, I do not perform Botulinum Toxin injections to treat anal fissures.

- **Topical Silver Nitrate Therapy**

- Silver Nitrate is a chemical that causes cauterization or a chemical burning. When applied to a fissure it can help the area heal by “resetting” the scar tissue. By burning the non-healing fissure tissue, new scar tissue will form allowing the fissure to heal. This method is not permanent as the internal sphincter muscle can still spasm causing the fissure to form again. After silver nitrate applications patients experience a burning pain for 1-10 minutes at the minimum and up to a day at the maximum. There is a small chance that the fissure pain may worsen leading to surgery (see Surgical treatment below). When all other conservative methods fail to heal the surgery I discuss silver nitrate therapy as a last ditch effort to avoid surgery. If silver nitrate fails to heal the fissure or makes the fissure worse, surgery will be necessary.

SURGICAL TREATMENT

- **Fissurectomy with partial lateral internal sphincterotomy (partially cutting the internal sphincter muscle)**

- This surgery involves burning the fissure to promote healing along with cutting a small portion of the internal sphincter muscle. Cutting a portion of the internal sphincter muscle ensures that this portion of the muscle will never contract again. This permanent muscle relaxation is what helps to heal the fissure indefinitely. This surgery is very effective in curing the fissure. It is performed as an outpatient.

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- **Adjacent Tissue Transfer Flap**

- This surgery involves cutting a portion of the skin around the fissure and using it to cover the fissure opening. The tissue is cut in a way that keeps its blood supply and then it is moved into the anus to cover the fissure. No muscle is cut in this surgery. This surgery is used for:
 - Patients with severe anal scarring which causes the opening to get very small.
 - Patients who already have minor incontinence issues or have a higher risk of incontinence than the average patient.
 - Patients with Crohn's disease with a chronic fissure
 - Patients with chronic diarrhea and an anal fissure

- **THE BENEFITS OF SURGERY:**

- 95%-98% cure rate per the literature

- **THE RISKS OF SURGERY:**

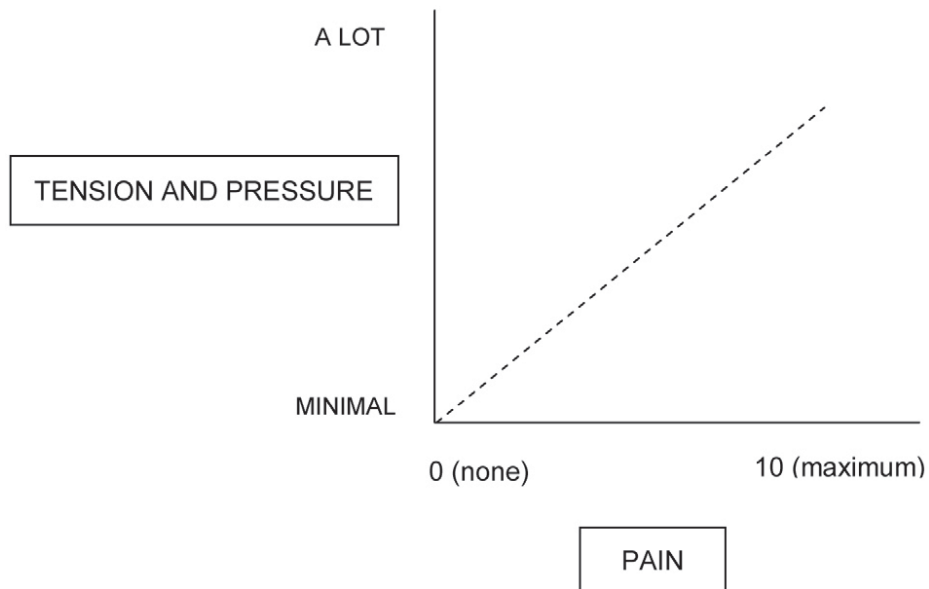
- Incontinence to gas or liquid stool (0 - 20% in the literature).
the risks are about 5-10%.
- Severe Bleeding 1-2%
- Infection or abscess 1-2%
- Fistula formation 1-2%
- Anesthesia complications (rare)
 - Stroke
 - Clots in the legs
 - Heart attack
 - Pulmonary embolism
 - Death

CONCLUSION

A fissure is a small cut of the anal skin usually from constipation or diarrhea. A fissure is difficult to heal due to the anal sphincter spasm which lowers circulation impeding wound healing. The majority of fissures will heal without surgery. Therapy includes adding PERFECT P.O.O.P. RAW Vegan psyllium to bulk the stool making it easier to pass along with stretching the anus. The stretching acts like physical therapy to help the fissure heal. Warm baths help to lower sphincter pressure which can alleviate the pain when in the tub. Also, special sphincter relaxing ointments such as Diltiazem 2%, Nitroglycerin 0.2%, Nifedipine 0.2% and Rectice (NTG 0.4%) are very beneficial in the healing process. Fissure symptoms, when diagnosed properly, are not life threatening. Other diseases, which produce the same symptoms, can be more serious. Therefore, if you have a painful anal lump, rectal bleeding, or other anorectal issue, it is important to call your doctor or a proctologist for a consultation. You should not suffer unnecessarily with continuous anal pain.

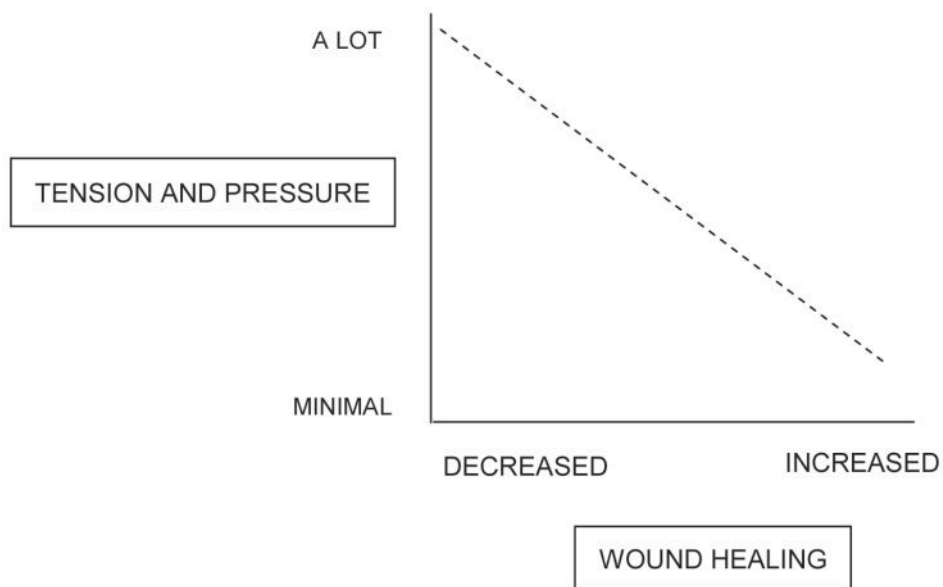
It is my opinion that patients with rectal bleeding, even if diagnosed with a fissure should have a colonoscopy (once the fissure heals). Colon cancer rates are rising at alarming rates in younger patients and bleeding is an indication for a colonoscopy. It is a discussion I have with all of my patients at the time of their visit. The risk of cancer is small, but the risk of having polyps, which can lead to cancer, is not small. By finding and removing polyps colon cancer is prevented.

GRAPH 1



The relationship between pain, tension and pressure

GRAPH 2



The relationship between wound healing, tension and pressure