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Hemorrhoids and their treatment

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HEMORRHOIDS AND THEIR TREATMENT

by

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INTRODUCTION

It is becoming increasingly important for physicians to know the relative values of the surgical removal and the chemical and electrical treatments of hemorrhoids. The value placed upon the different techniques will depend upon whether the appraiser is a general surgeon or a specialist in diseases of the rectum.

The position of the specialist in rectal diseases cannot be better stated than by quoting from the chairman's address, given by Curtice Rosser before the section on Gastro-Enterology and Proctology at the Milwaukee session of the A.M.A., in June, 1933. (38) He said, "Proctology, a field long practically abandoned by the general profession to the itinerant and irregular, has been in recent years in a large measure reclaimed to orthodox medicine through increasing realization of its import in the general scheme, by the evolution of undergraduate instruction in anorectal disorders, and from a demand on the part of general practitioners that disorders so wide spread in their clientele have the benefit of careful and scientific consideration."

"Certain very definite responsibilities arose from the novel renaissance as an orthodox specialty of a hitherto neglected phase of medicine. Accurate diagnosis became essential. From the general surgeon has been

appropriated a rational operative technique which he himself refused to apply to this one field."

"Proctologic surgery has thus rightly concerned itself with the ceremonies associated with the art of surgery, but its future progress will be indexed by its solution of questions connected with the science as well as the craft of Proctology's domain."

Aside from the necessity of adapting the method to the patients needs, there are several other reasons for the various methods of taking care of hemorrhoids. The following reasons have been cited:

(1) For years, irregular practitioners have been advertized in the newspapers and elsewhere that they treat rectal diseases without pain, without surgery and without loss of time. They stress the "pain following surgery", and are able to convince some people that they are right.

(2) In some people surgery is contra-indicated.

(3) Individual physicians use the method with which they obtain the best results.

(4) The inability of some physicians to do surgery forces them to resort to various medical treatments.

(5) The patient may have a preference as to the type of treatment employed.

HISTORY

Discharge of blood from the various openings of the body is, according to Sudhoff, among the earliest observations of the discriminating physician. Whether or not hemorrhoidal affections are mentioned in the Old Testament is not quite certain but in the Talmud we find a sedentary mode of life mentioned among the causes of hemorrhoids. (9)

In the writings of Hippocrates a special treatise of nine chapters is devoted to hemorrhoids. Hippocrates already speaks of healing the affection, first by cauterizing with a hot iron, further by excision, and finally by drying up or by caustics. Symptomatically hemorrhoids are described as grapes with their berries turned upwards. Prognostically they were considered benign and even useful, especially in nephritis. It was also considered a good omen if suppressed hemorrhoids appeared. (9)

The clinical picture of hemorrhoids is described just as extensively by Celsus who lived at the time of Emperor Tiberius (42 B.C.-37 A.D.). He considers hemorrhoids a means of purification, and maintains that they should not be suppressed lest the unsound matters in the body be carried to the cardiac region and to the viscera. The treatment prescribed consists in hip

baths, regulating mode of life, care of soft stools. Just as Hippocrates, Celsus tries to obliterate the hemorrhoidal nodes by applying caustics or puncturing with needles. (9)

In Galenic writings hemorrhoids are considered an important means of eliminating the unsound juices from the body. Treatment consists in venaesection and cupping. As in certain abdominal affections bleedings from the hemorrhoidal veins often give some relief, hemorrhoids were designated as gold-veins,

The physician Savonarola (ancestor of the Franciscan monk Savonarola) leaves it undecided whether or not hemorrhoids are something natural or pathologic, but Bartholinus Montagnana (died 1460A.D.), professor in Padua, maintains the hemorrhoids have a physiological function in the body, and that they carry the melancholic blood from the spleen. From the clinical histories of Montagnana it is understood that he was unable to differentiate between syphilitic anal affections (condylomata), and true hemorrhoids. (9)

Most likely the British king Stephan (de Blois) died in 1154 from hemorrhoidas bleedings complicated by peritonitis. Further Don Jaun d' Austria died at Namur in the field, from hemorrhage four hours after the excision of large hemorrhoidal nodes.

The grave melancholic destemper Martin Luther was suffering from (1483-1546) an affection that befell him in the forty-fifth year of life, beginning 1528, is to the greatest part explained by so called blind hemorrhoids. Luther expresses himself drastically and clearly on this matter in a letter to Justus Jonas as follows: "My affection was such that upon bowel movement the swollen tip of the anus protruded in the size of a walnut. On it was a small itching swelling of the size of a small hemp seed. The troubles were more intense when the stools were soft. Whenever clotted blood was discharged, I was much comforted, and relieved, yea, the act of evacuation was a pleasant sensation. The more clots were passed, the more pleasure I had, so much so that this pleasant feeling induced me to pass bowels several times a day. On pressing with my finger I had an exceedingly pleasant sensation and blood began to flow. This is why I thought that the bloody stools should not be stopped or diminished. This affection is called the golden vein (*vena aurea*) and golden it is indeed. For they say that with this cruor all the un-sound substances are removed from the body, as if this were the *porta sterquillinii* (heap of dung) for all evils and that people with such an affection have a long life, as if here in this part were enclosed the entire pharmacy and all the *doctores medicinae*." (9)

Amulets for the affection were common for example, "the middle limb of the front foot of a toad, or the entire dried toad worn on the neck or under the axilla as a means to stop bleeding from the golden vein!" Among other sympathetic means of folklore a prescription is found to have the affected parts licked by a young dog, a custom still in use in the middle of the eighteenth century. (9)

Jan de Waal (1604-1649) was the first to define hemorrhoids as "varices venarum ani." Morgagni (1682-1771) describes hemorrhoidal phlebectasia without differentiating internal and external hemorrhoids. In the text book of Johann Charles Stark, well known as the physician of Schiller, particular significance is attributed to the golden vein, especially to the blind or suppressed golden veins. Symptoms of the latter were supposed to be pain in the back on long standing, or bending, often a shooting pain. Lehnhardt, a physician from Quedlinburg, presumably a quack, recommends the following ointment: "Extract from fleeseed and of pips of quinces, as well as from the roots of violet, the mucilage with rose-water, filter it, and add the yolk of an egg. Nothing is of more use to the sufferers of the blind golden vein than this nice salve, if the external parts be rubbed with it very often." (9)

Morgagni thought the upright position to be of some influence upon the origin of hemorrhoids, as they are not found in animals; he also maintained that the lack of valves might be another cause, and that disorders in the portal region and hereditary predisposition might be of some significance. (9)

Stahl inaugurated a new "Science of Hemorrhoids". The first symptom of this new formed clinical picture was the hemorrhoidal craving consisting of itching, burning and stinging in the anus. A kind of "hemorrhoidal pulse", and an "epidemic hemorrhoidal fever", also belonged to the symptom complex, under the cover of which many neurasthenics were hid. At least one went so far as to regarding all the disease processes at the anus as hemorrhoids, or at least finding some relation to hemorrhoids, and thus practically all affections were considered sequelae of suppressed hemorrhoids. (9)

Many a diagnosis was no doubt wrong at that time. Not before the nineteenth century the proctometer of John Hawship (London 1829) was made known, and later on the sigmoidoscope and the rectoscope of Leiter and Strauss. Dupuytren gives a ridiculous description of a hemorrhoidian as follows: "The person walks about in the streets with pain, with his fingers at the buttocks, or sitting down on a stone, in order to press back the swelling, or rubbing his gack at a wall. But all this

gives him but very little relief, he is debilitated by the hemorrhages, anemic, his is prone to become melancholic, and mentally infirm, eventually a scirrhus affection at the anus develops, and death ensues."

Dupuytren was, as it seems, not much in favor with the cauteriser, because he thought the working of it something terrible to the attendants, and he writes, "I saw my pupils shocked at the sight of the iron and the smoke arising from the anus." "Imagine", says Bell, "how this might impress the friends of the patient that are not accustomed to such a spectacle as the students are." According to these words one might think that Dupuytren rejected the method, but no, he encouraged his pupils.

At the beginning of the nineteenth century up to the fifties, the development of humeral pathology led to the view that hemorrhoids are but a symptom of a general affection, and that the so called hemorrhoidal malady is produced by a hemorrhoidal toxin. Consequently a causative treatment was dreaded lest the noxious substance be carried to the more important organs. Suppressed hemorrhoids were spoken of, even hemorrhoidal metastases, and symptoms such as dizziness, tinnitus, dullness of the head were attributed to this condition. (9)

Stieglitz (1832) emphasizes the constitutional and hereditary nature of hemorrhoids: "Hemorrhoids may develop independently of any troubles in the portal system or in the abdomen and without any plethora abdomin-

alis, and the existence of such constitutional hemorrhoids points to some unsound condition in the organism, manifest especially in the blood." (9)

This conception marks a turning point in the history of the problem, but it has been only a few years ago that one arrived at the modern views on the pathogenesis of hemorrhoids and consequently to a rational mode of treatment.

The physico-constitutional basis in the pathogenesis of hemorrhoids was complemented by bacterial and bacterio-chemical researches. Ebstein (9) says, "Physical factors naturally predispose for toxin absorption and the subsequent penetration of bacteria through the mucus membrane which under normal conditions are the separation wall between the sterile tissues and the intestinal lumen filled with bacteria. Even the normal symbiotic bacteria are abundant enough in toxins as to bring about the local inflammatory hemorrhoids and hemorrhoidal attacks."

This new conception of the pathogenesises of hemorrhoids was the starting point of the latest causative therapy i.e. the application of chemical substances derived from coli bacilli. This product called Postorian has been extensively tried out in Germany with unsatisfactory results. (20)

As to the geographical distribution of hemorrhoids, August Hirsch (1883) maintained that they are equally frequent in all countries. Hemorrhoids are particularly

frequent among the better classes, less frequent among people of a sober and active life. But constitutional factors and predisposition also play a role. (9)

SURGICAL ANATOMY

Hemorrhoids refers to the varicose swellings of the lower rectum and anus.

The rectum is the dilated portion of the distal colon which communicates with the exterior through the anal canal. In the adult, viewed from the lateral aspect, the rectum presents two distinct and constant flexures, the sacral with its concavity ventral, and the perineal with its concavity dorsal. They indicate the direction to be followed in instrumental or digital examination.

Although capable of marked variation in diameter the rectum proper, below the third sacral vertebra, maintains its position as a fixed organ. This fixation is accomplished by the peritoneum which holds it to the posterior pelvic wall, by the blood vessels and their fascia, and by the recto-vesicle folds. The rectum has no mesentery and no serous coat on its posterior surface. From the front of the rectum the peritoneum is reflected onto the bladder in the male, forming the recto-vesical pouch; in the female onto the upper part of the posterior wall of the vagina and uterus, forming the recto-vaginal pouch or Culdesac of Douglas. The distance from the bottom of these pockets to the anus is of great practical importance in surgery, as the peritoneum may be accidentally opened in an opera-

tion on the anterior wall of the rectum. With bladder and rectum empty, the recto-vesical pouch is about one inch above the base of the prostate or three inches above the anus. In women, the level of the sac is one-half to one inch nearer the anus.

Like the rest of the colon, the rectum is composed of four coats, from within outward--the serous or peritoneal, the muscular, the submucous and the mucous. The muscular coat is composed of an outer longitudinal layer and an inner circular layer. The longitudinal layer is a prolongation of the three teniae of the colon. The circular fibers are aggregated at certain levels, notably where they double inward to enter into the formation of the rectal valves, and below to form the internal sphincter.

The submucous coat is a network of areolar connective tissue and elastic fibers, much thicker than elsewhere in the intestinal canal, in which ramifies the hemorrhoidal venous plexus. Consequently the mucosa has a comparatively wide range of mobility over the muscularis.

The mucosa is composed of a connective tissue framework, intestinal glands and an epithelial layer. The latter is a single layer of columnar cells throughout the rectum proper, but below is modified into the stratified type.

The anal canal is the slit like passage of communication through the pelvic diaphragm, connecting the rectum with the exterior. It begins at the level of the levator ani muscle and extends downwards and backwards about one and one-half inches to open on the surface as the anal orifice. In repose, the walls of the canal are maintained in lateral apposition by the levator ani muscles above and the external sphincter below.

A strong muscular wall surrounds the anal canal, from above downwards, composed of the levatores ani and the internal and external sphincters. Anteriorly it is also in relation, in the male, with the base of the urogenital diaphragm, the bulb of the urethra, the apex of the prostate and the perineal body; in the female, with the wedge-shaped perineal body, composed of muscular and fatty tissue, laterally the sphincter muscles and anal fascia separate it from the ischio-rectal fossa. Posteriorly it is in relationship with the ano-coccygeal body, composed of muscular and connective tissue.

The two extrinsic muscles requiring special consideration are the levator ani and the external sphincter. On each side of the pelvis the levator ani arises in front from the pelvic surface of the pubic bone just lateral to the symphysis, laterally from the pelvic

fascia at the white line of its junction with the obturator fascia, and behind from the inner surface of the spine of the ischium. From this extensive origin the muscle fibers from each side pass backward, medially and slightly downward to join in the midline investing the pelvic organs which lie in the mid-point at that level.

The external sphincter ani is a true sphincter and, in surgery of the rectum a most important muscle. Its fibers are voluntary and complete continence of feces rests on its integrity. It arises from the dorsal surface of the tip of the coccyx and adjacent fascia, passes downward, its fibers separating to embrace the lower half of the anal canal, and reuniting in front of it, pass forward to insertion in the perineal body.

The anal valves or crypts of Morgagni are thin semilunar folds of mucosa projecting upward and inward, placed transversely between the bases of the adjacent rectal columns. They thus form an irregular line known as the pectinate line, which marks the site of union of the proctodeum and hind gut of the fetus.

The anal mucosa is smooth and glossy, sparsely set with glands, has a poor blood supply but is rich in sensory nerve terminals. Its surface is covered with stratified squamous epithelium. (47)

In consideration of the problem of hemorrhoids from the anatomical standpoint we are concerned in the main with the veins of the rectum and anal canal. These correspond with the arteries of this region and they are six in number viz., the superior hemorrhoidal, two middle and two inferior hemorrhoidal and the middle sacral. They are arranged mainly in two large plexuses which communicate freely with each other. The internal or superior hemorrhoidal plexus, situated in the submucosa, collects the blood chiefly from the mucosa of the rectum proper and, through the inferior mesenteric and splenic, transmits it to the portal. The middle and inferior hemorrhoidal veins and the middle sacral collect the blood chiefly from the muscularis of the rectum and anal canal, from the perirectal tissues, the levator ani, part of the base of the bladder, prostate, seminal vesicles, and in women the vagina, and empty into the general circulation through the hypogastric, tributaries of the inferior vena cava. There is a rather free anastomoses on the rectal wall between the superior and middle hemorrhoidal veins and the middle sacral, constituting the external hemorrhoidal plexus. The veins of this plexus have valves which tend to become incompetent in adults, as has been demonstrated by injecting them through the inferior mesenteric. Thus, communication, partially guarded by valves, exists between the systemic and portal circulations. (21)

The internal hemorrhoidal plexus begins in numerous small lenticular venous channels, each about the size of a grain of wheat, in the submucosa just above the pectinate line where they surround the rectum at varying levels. Below they communicate with the radicles of the external hemorrhoidal vein over the external sphincter through the small "anal" veins which can be traced beneath the muco-cutaneous lining of the anal canal. This forms a second point of connection between the portal and systemic circulations. Above, one or more twigs from each venous pool or ampullary expansion anastomose to form an intricate plexus, surrounding the rectum. Larger branches proceed upwards from this plexus till from six to ten trunks of considerable size are formed which, with their corresponding arteries, pierce the muscularis about midway of the rectum and unite on its surface to form the superior hemorrhoidal vein.

The lenticular venous channels above described are located principally in the columns of Morgagni and on engorgement project as internal hemorrhoids. It is because of this arrangement that internal piles develop in different quadrants of the rectum.

The inferior hemorrhoidal vein arises from a venous network beneath the skin on the outer surface of the external sphincter ani and through the internal pudic drains into the general circulation. Many branches

from the lower part of the internal hemorrhoidal plexus perforate the external sphincter to join this network as do the veins collecting the blood from the muscular tunic and lower half of the membrane lining the anal canal. The clot formation in the connective tissue resulting from rupture of one or more of the venules of this network, constitutes the thrombotic variety of external hemorrhoids. (21)

DEFINITION AND ETIOLOGY

Hemorrhoids are varicosities of the anal or rectal blood vessels or blood clots beneath the mucus membrane or muco-cutaneous tissues of these parts. There may be no hemorrhage or if it occur it may be periodic in some cases and constant in others. The tumors may be wholly within the rectum or wholly outside or both inside and out. One patient may suffer pain and difficulty in defecation and another suffer no inconvenience at all. The clinical picture is very variable. (8)

The word "Hemorrhoid", comes from the Greek, *aima*, meaning blood and *pew*, "I flow", meaning, to flow with blood, but this is not always a true definition because frequently hemorrhoids exist without bleeding. (47)

The word "pile", comes from the Latin word "pila", signifying a ball or swelling. The two words are used synonymously in this writing. (47) This affliction seems to have been always with man as our earliest sacred literature refers to it under the name of "Emerods". (Deuteronomy Chapter 28, verse 27--Samuel, Chapters 5 and 6) (8).

There has been no definite theory accepted as to the cause of any but the thrombotic variety and in the centuries during which this disease has been recognized many fantastic and grotesque ideas have been propounded.

A review of the blood supply of the parts is essential to a clear understanding of the etiology of hemorrhoids and it is significant that the hemorrhoidal vessels, like all other tributaries of the portal have no or only rudimentary valves. (20)

The causes of hemorrhoids are both predisposing and exciting.

PREDISPOSING CAUSES

Hemorrhoids are a result of some previous condition which acts differently in each patient. Circumstances and surroundings not only influence the production of piles but are also factors in our choice of treatment, which sometimes may be operative or again must be more conservative.

(a)Age: Hemorrhoids may be found at any age of life. They are uncommon in children, but several authorities have reported cases. Trunk, quoted by Tuttle, reported thirty-nine children under fifteen years of age, of whom five were under one year old. Young adult and middle life is the most frequent age because such factors as environment, habits and constitutional peculiarity are most active then. In advanced life the absorption of the perirectal fatty tissues, the relaxed muscular tone, constipation and sclerotic changes in the liver and blood vessels contribute to produce hemorrhoids, but we also find hemorrhoids frequently in nervous,

anemic individuals because of nerve and muscle exhaustion which causes circulatory relaxation and dilatation. For this reason melancholic, choleric, sallow individuals who suffer from liver diseases are prone to hemorrhoids. At the menopause a sort of vicarious menstruation may issue from the rectal vessels. (21)

(b) Pelvic congestion or engorgement of any character is a primary factor in the production of hemorrhoidal disease and may be either physiological or pathological. Anything which interferes with the portal vein emptying freely into the liver must produce damming back in the whole system. Obviously this condition occurs after each meal and during the continuance of the digestive process. (8)

(c) Heredity: The effect of heredity as a causation of hemorrhoids is undecided. Certain physical characteristics undoubtedly predispose the individual; and the family environment, habits of life, and business pursuits must render certain persons more vulnerable. (8)

(d) Race: Race affects ones liability to piles chiefly as it governs his mode of life. Van Buren says that hemorrhoids were unknown among the North American Indians, although recent observations do not confirm this. (8)

EXCITING CAUSES

Hemorrhoidal disease is an affliction peculiar to the human family. The erect carriage of man during

approximately sixteen out of the twenty-four hours of the day, distends the venous systems of the pelvic bowel, and during this time the weight of the columns of blood must be supported in varying degrees by the terminal venous plexuses, and in consequence these vessels are overloaded during the greater part of each day. (8)

The looseness of the mucus membrane and the abundance of the cellular tissue beneath it facilitate engorgement of the vessels and congestion of the tissues. This condition is further augmented by any and all pathological changes. (47)

Constipation and straining at the stool are always important exciting factors. The fecal mass as it is propelled through the rectum forces the blood back in the veins in the opposite direction to the normal current. Distention is further produced by straining until varicosities arise together with the multiplication of capillaries and hyperplasia of the connective tissues. Once this change occurs every constipated defecation or movement accompanied with straining will further irritate and congest the tissues until hemorrhoids appear. Later these thin walled vessels rupture and hemorrhage. Bleeding hemorrhoids result from this back pressure rather than from traumatism of fecal masses. (8)

The habitual use of purgative medicines is one of the most common causes especially such as expend their force on the colon and rectum. Venous congestion results from local irritation, from the excessive peristalsis and the straining at the stool. This overstimulation of the bowel is naturally followed by a period of relaxation and recuperation and thus the after effect of the cathartic is to encourage and establish the very condition for which relief is sought, and its use, once begun, rapidly becomes more and more necessary. (8)

Diet is a factor in the production of hemorrhoids. Excesses of the table in general, but particularly certain articles of food, irritate the mucous membrane, excite peristalsis and spasm of the sphincters and thus bring on hemorrhoidal attacks. Among such are spices, condiments, highly seasoned sauces, radishes, and pickles. Alcoholic liquors, by congesting the portal circulation, and tea by its constipating effect, may bring on hemorrhoids. In preparing a dietary for any patient it is well to remember that hemorrhoids may be induced by excessive amounts of carbohydrates, or such foods as leave too much residue, because such a diet produces a large hard stool. (21)

Thrombotic hemorrhoids always result from muscular straining such as lifting or carrying heavy weights,

bicycling, or stricture of the intestine or urethra, displacement of the uterus, stone in the urinary bladder and other pelvic diseases sometimes act to cause straining at stool or urination. (8)

Proctitis either alone or associated with other local disease, causes rectal tenesmus and inflammation. Rectal stricture induces straining in the effort to force the feces through the partially obstructed lumen of the bowel. The fibrous deposit in the walls also impedes the venous circulation past the stenosis and thus hemorrhoids are developed as a complication of the stricture. The piles are the patients chief complaint, although the underlying disease is by much the more important pathology. (8)

Prolonged sitting or straining at the stool is an important factor in causing hemorrhoids, as is also sitting on a rubber ring, because in this position the buttocks are spread apart and their support to the anus is lost, thus favoring relaxation and over-filling of the veins. (8)

In women a hemorrhagic flux sometimes replaces menstruation, and in atheromatous or apoplectic subjects this periodic loss of blood lowers the arterial tension and relieves the danger of rupture of the cerebral vessels. (47)

In such cases the prudent surgeon declines to remove the individuals safety valve. Hemorrhoids frequent-

ly accompany cirrhosis of the liver and here we must never operate because either the wound will not heal, other hemorrhoids will appear higher up, or dropsy and a rapid break down will ensue. The hemorrhoidal veins communicate freely with the portal and general venous system and all diseases of the liver, heart, kidneys and lungs have an important bearing on the etiology and treatment of hemorrhoids. (47)

Hemorrhoids may appear with chronic diseases of the spinal cord, i.e. paraplegia and locomotor ataxia. Interference with the cord reflexes which govern normal peristalsis results in constipation and paralytic relaxation of the rectal structures and in the development of piles; therefore, the physical condition of the patient is important, likewise his habits and the condition of his piles must be considered before you begin treatment, because some are relieved by very simple procedures, others require surgical operations and still others are incurable and must not operated upon at all. (8)

CLASSIFICATION

Hemorrhoids are divided into two great types by the position of their origin, internal or external to the sphincter ani, though several varieties of each type are recognized. It is important that the two types be differentiated because, although their etiology and mode of development may seem to be closely related their anatomical character, clinical course, and treatment are radically different. (39)

An external hemorrhoid is one that originates in the subcutaneous vein, near the anal margin, is a branch of the inferior hemorrhoidal plexus, and is therefore outside of the sphincter. As it develops it may be partially covered with mucous membrane but the hemorrhoid does not belong within the rectum and cannot be retained above the external sphincter. (5)

An internal hemorrhoid originates in the submucous vessel within the rectum, and by its development and enlargement may be caught and pulled down by the sphincter until it protrudes externally. It can be replaced above the sphincter, although it may not remain so placed. After the hemorrhoid has been exposed for a considerable time the mucous membrane dries and resembles skin to such a degree that the tumor may be mistaken for an external hemorrhoid. (5)

This differentiation of the varieties of hemorrhoids is not simply one of position relative to the sphincter, but a different blood system is also involved. An external hemorrhoid is a varicosed inferior hemorrhoidal vein and belongs to the general venous system; an internal hemorrhoid is a varicosity of the middle or superior hemorrhoidal vein and is a part of the portal system; but the free anastomosis which exists shows how little one system may be affected without involving the other. (47)

Some writers describe the third variety designated as externo-internal, interno-external or mixed hemorrhoids. This is but a combination of the two first mentioned types and the physical characteristics and symptoms may resemble either type or both. The treatment of this type will be considered with that of internal hemorrhoids. (5)

DIFFERENTIAL DIAGNOSIS

The chief symptoms of hemorrhoids are, (1)hemorrhage, (2)prolapsus, (3)pains during and after defecation. When the last symptom, pains after defecation, is the predominant feature, it suggests the presence of fissure, (31). If the statements regarding these three symptoms are vague and uncertain, or if there are other symptoms--as discharge and itching, or peculiar features about the form and consistency of the stools, one ought to pay particular attention to other possibilities, of which the most frequent are fissure, anal spasm, fistula, abscess, condyloma, ulcerative proctitis, cancer of the rectum or syphilis. (21).

Puritis ani may be a most distressing symptom. It is not infrequent in hemorrhoids, but more often it is a sign of coexisting sphincteric proctitis. (4)

This group of patients, who will usually state themselves that they are suffering from hemorrhoids, and perhaps have the symptoms of hemorrhoids--without having this lesion--plays an important role in the daily proctological practice. The hemorrhoidal lesion is so common that often it is regarded more as an inconvenience than an illness, and the physician may then prescribe to the patients own diagnosis and prescribe some anal remedy. The diagnosis of fissure or fistula is not altogether easy in every case. Most frequently the fissure is

localized to the posterior commissure; but fissure as well as fistula may be so inconspicuous or so well concealed in the folds of the anus that it takes a very careful inspection and a very good light to find them. (31)

Now and then there are patients who suffer from anal spasm without any fissure and without hemorrhoids.

Whether such spasm may originally have been produced by a fissure that has healed later on, or whether there really exists an anal spasm sui generis is a question that it is very difficult to decide. (47)

Above all however, one should have his attention focused on the possibility of carcinoma recti being present, but it cannot be emphasized too strongly that if the examination is limited to proctoscopy alone, one may very readily overlook the presence of cancer, which in its most frequent, non-villous, form may be concealed in the wall of the rectum, covered by perfectly natural looking mucosa. Additional examination by digital exploration is absolutely indispensable. As a rule cancer of the rectum is made out more regularly by palpation than by inspection. The reverse may possibly be the case occasionally, but both of these examinational methods are necessary, as they supplement each other. (31)

Syphilis of the rectum may produce ulcerations or gummata. Gummata are usually easily distinguished from hemorrhoids by digital examination. Condyloma acuminata

present a characteristic appearance which makes diagnosis simple. A possible error is in mistaking them for a fungating epithelioma. Absence of induration at the base or ulceration of the surface distinguishes them from epithelioma. (31)

Partial prolapse of the rectum may be confused with hemorrhoids. The mucus membrane is either normal in appearance or bright red. The prolapsing tissue can be traced directly to the muco-cutaneous junction. When the entire circumference of the rectum descends the appearance is characteristic and diagnostic. When just a segment of mucosa descends, the folds of the mucosa radiates from the lumen as a center toward the circumference, while in complete prolapse the course of the radiations is circularly around the bowel. (47)

INJECTION TREATMENT

Morgan of Dublin in 1869 was the first to use a solution of persulphate of iron in the injection treatment of hemorrhoids. This method of injection therapy, as reported by Anderson, (1) has been used in the treatment of nevi since 1836.

Mitchell of Clinton Illinois in 1871, conceived the idea of treating hemorrhoids by the hypodermic injection of a mixture of carbolic acid and olive oil. It was a secret method and the right to practice it, together with the formula, could be bought by anyone. It thus came about that blacksmiths, drug clerks, farmers, and quacks obtained knowledge of this method and they began to recklessly and indiscriminately inject every anorectal condition that fell into their hands. It was not long till traveling mountebanks began injecting carcinoma and polypi, thereby "curing", the country side of piles. The method fell into disrepute, and regular practitioners condemned the procedure. All this took place about sixty years ago. (29)

In 1925 E.H. Terrell (42) of Richmond Va. presented to the American Proctologic Society his paper on the "Treatment of Hemorrhoids by Injection." He began his work in 1913 and he had treated over 3,000 cases by 1925. In his paper he made the logical observation that although the condemnation of the results was justifiable, the

fault lay with the people who used the method rather than with the method itself. He further observed that it was truly remarkable that the method survived at all under those circumstances; *all of which is good evidence that there is something of value in it.

Up to 1913, although a variety of chemicals was used, carbolic acid in various strengths and combinations was the solution of choice. As a matter of fact it is still extensively used in this country and abroad. In 1923 Morley (33) published a book on hemorrhoids, in which mention of this method was made. In 1913 Terrell (42) introduced the use of urea and quinine, 5 to 10% solution.

Kantor (25) says a surgeon should try to avoid riding a hobby and that this is especially true in the treatment of hemorrhoids. The injection method is very useful in cases where surgery is contra-indicated, such as in diabetes, tuberculosis, the very aged, during pregnancy and in children with prolapse.

Hays (13) says that in the earlier years of his work he thought that hemorrhoids could be eradicated as well with injections as with surgery and at the time he charged a set fee for the injection treatment. However he soon found that he was making a bad bargain, because many of the patients came back and he would have to give them another course of treatment without charge.

If possible, internal hemorrhoids alone should be selected for injection, preferably the uncomplicated types which do not prolapse badly, states Gorsch. (15) If bad fissures, inflamed anal papillae, anal crypts, polyps and fistulas are present, they are best treated with surgery. The injection method is contra-indicated in presence of severe proctitis, such as occurs in gonococcal or ulcerative colitis. A proctoscopic examination should always be made to eliminate the possibility of malignant growth. (15)

Rosser, (39) says that injection should be reserved for the first stage internal hemorrhoid, the only symptom of which is painless rectal bleeding. In second stage hemorrhoids, which are accompanied by self-replacing protrusion, he administers treatment only after explaining to the patient the great likelihood of recurrence, and in the third stage hemorrhoids, where the protrusion must be replaced manually and complications are frequent he uses operative methods exclusively.

Everyone agrees that injection into external piles is a very unsatisfactory procedure and is usually followed by sloughing.

Many solutions are used for the injection treatment. By far the most popular are five per cent quinine and urea hydrochloride, five percent phenol in oil, and phenol in glycerine and water, in varying strengths to twenty percent. Other preparations are known, but those named

are almost universally accepted and used. Many of the advocates of the phenol in oil preparation claim that it causes the least discomfort to the patient.

The object of the injection treatment of hemorrhoids is to set up an inflammatory reaction within the hemorrhoidal mass, thereby causing an obliteration of its vessels by thrombosis followed by fibrosis. The injection can be made either into the substance of the pile tumor, or just above the hemorrhoid and immediately underneath the mucosa, that is, submucously. In either event the injection is not made into the blood vessels but into the tissues surrounding them. (12)

The prime requisite is a proper diagnosis. Treatment of any anorectal condition should never be attempted without a proctoscopic examination, besides the usual inspection and digital exploration. The patients occupation, temperment, habits and general physical status must be taken into consideration. (34)

Morley(33) and Anderson (1), in England, and Terrell (43), Hirschman (21), Yeomans (47), Fansler (10) (12) and other exponents of the injection method in this country, all agree that external hemorrhoids should never be injected. The injection method is applicable only to uncomplicated internal hemorrhoids. If the condition is complicated by fistula, fissure, polypi, hypertrophied anal papillae, cryptitis, anal or rectal tumors it is

useless to treat the hemorrhoids by injection, for these conditions require surgery and the hemorrhoids can be removed at the same time. Thrombosed, ulcerated, strangulated and gangrenous or fibrotic cases demand surgery; injection therapy is contra-indicated. (29)

Anesthesia is not employed. A cathartic or enema is not given before each treatment, for it has been found that their action usually takes place when manipulation of the anorectal region is begun. (32)

The hemorrhoid is exposed with the aid of an anoscope. The injection is made either into the upper pole or immediately above the hemorrhoid. The injection is made slowly and enough solution is used to distend the hemorrhoid moderately, without blanching. If the injection is properly done there is no immediate pain. Marino (2) says it is well to insert the finger into the rectum and with gentle massage of the injected area spread the liquid immediately after the injection.

If the patient is attending to duties which require much activity, only one hemorrhoid is injected at a sitting, otherwise two or more may be injected.

The interval between injections is usually one week, but in cases where the hemorrhoids are not very large, two injections per week may be given. One injection may cause a pile to disappear, but at times a second injection is necessary. Before a pile is re-injected it should be

determined by digital examination that no induration is present. The induration must subside before the second injection is given. (29) (12) (2a)

From six to eight treatments may be necessary before the hemorrhoidal masses disappear, which means that it takes from three to eight weeks to complete a course of treatments. A chart is kept to record the site and date of each injection and the quantity, strength and kind of solution. A circle, the circumference of which is divided into four equal parts, suffices for this purpose. (2a)

In the earlier days when stronger solutions were used, sloughing not infrequently occurred. But now with the proper technique this is a relatively rare complication. Stricture can follow cicatrization as a result of slough, or through tumefaction of indiscriminate injection of oil. (29)

Marino (29) estimates that recurrences occur in about two to five years in about fifteen percent of the cases. Kilbourne(26) agrees with this figure. On the other hand Fansler (13) says, "I know from my own experience of eighteen years with the injection method, that it will be found that fully 50% of all cases of hemorrhoids cannot be completely cured without operation." It must be borne in mind, however, that inasmuch as the treatment is painless, gives symptomatic relief, and does not detain patients from their duties, they feel kindly

toward the treatment and will return for another course
if necessary, without condemning the method. (29)

PREOPERATIVE TREATMENT AND ANESTHESIA

Since it is the general opinion that all hemorrhoids can be satisfactorily treated with surgery, and that some types can only be treated successfully with surgery, every effort should be put forward to combat the suffering and discomfort incident to hemorrhoidectomy. During the operation the operator has recourse to two big classes of anesthesia, namely, the general anesthesia and the regional anesthesia.

Graves (16) believes that regional anesthesia offers a method of anesthesia adequate for any rectal surgery, and that general anesthesia with its disagreeable sequelae should not be necessary in rectal surgery. Best (2a) says that rectal anesthesia is not satisfactory because it doesn't give good sphincter relaxation, and that local infiltration distorts the field, so he prefers the block type of anesthesia. Williams (46) maintains that local infiltration is entirely satisfactory.

When considering regional anesthesia for removal of hemorrhoids, you have two routes for selection. The sacral block or the so called caudal anesthesia and the ano-rectal field block. Caudal or sacral anesthesia is accomplished by passing the needle through the sacral hiatus and depositing the anesthetic in the sacral canal. From 1/2 to 2% novocaine (16) is used and about 30-50 c.c. is injected. Anesthesia sets in satisfactorily in seven

to fifteen minutes.

The ano-rectal field block is performed by introducing the novocaine around the lower segment of the rectum, catching the nerves outside and away from the bowel. The injections are made in four points about an inch away from the anus. A total of 50-80c.c. are injected. Graves likes a 1/2 to 7/10 % solution of novocaine. (16). Williams (46) prefers a 2% solution. Two or three drops of adrenaline are added to each 10c.c. just before injecting. (16)

It is desirable that the bowels should be cleared for two or three days prior to operation if possible. Burghard and Kanavel (5) say give castor oil the day before operation and a warm water enema the morning of operation. Fansler (13) does not agree but advocates an enema the night before operation, but none the day of operation. Hirschman is in accordance with Fansler. (22) At any rate care must be taken that the enema has been evacuated before operation.

SURGICAL CONSIDERATIONS

The ligature method, with its numerous modifications appears to be the operation of choice. (4)(11)(13)(17)(22)(28). The clamp and cautery operation originated by Cusack of Dublin in 1846, is now practically obsolete among proctologists. (6) The Whitehead operation is so universally condemned that it will not be considered in this treatise.

THE LIGATURE METHOD

Various modifications of the ligature operation were devised to take care of certain situations. Hirschman (22) describes a bloodless operation which is applicable in poor risks. He prefers local anesthesia and inserts a ligature carrier with number two catgut through the base of the hemorrhoid. This is tied but the hemorrhoids are not removed until several weeks later. L.A. Buie (4) describes a hemorrhoidectomy of the amputative type. He prefers sacral block anesthesia and uses the method in the excessively large hemorrhoids with perianal redundancy or prolapse. It is rather a complicated procedure and requires the amputation of considerable tissue and extensive suturing. Fansler (11) described an operation before the American Proctologic Society in Philadelphia in 1931, which is becoming increasingly popular in this country. (17) It is described as an anatomical method of hemorrhoidectomy, and is adaptable to all types

of internal hemorrhoids, excepting the excessively large ones with considerable redundant perianal skin. Pennington (37) has described a so called "open operation", which is very similar to the anatomical method of Fansler. To carry out the anatomical method a Fansler operative speculum and a long needle holder are required. Block anesthesia, either sacral or spinal is employed. Either the Sims or the ventral position may be assumed. A plain catgut suture is passed through the base of the hemorrhoid and tied. Dissection is begun at the lower most point, usually well outside the anus, and carried up to within a quarter inch of the suture. The hemorrhoid then is excised and other veins are destroyed by lifting up the margins of the mucosa and snipping the veins with a sharp pointed scissors. If additional bleeding vessels are encountered they are ligated. This procedure is continued around the rectum, the speculum taking care of approximately one quadrant. After the internal work is finished and the speculum is removed, the external hemorrhoidal veins are destroyed and the perianal skin trimmed.

There are two important advantages in this method:

- (1) there is no distortion of tissue as results when hemorrhoids are dragged out of the rectum with forceps;
- (2) the danger of an embolus is minimized because a ligature is placed before any surgery is done. When the operation is completed, a gauze wick saturated with 1%

nupercaine ointment is placed in the anal canal and lower rectum, and a tight dressing is applied with adhesive plaster. These are removed in twenty-four hours.

CLAMP AND SUTURE METHOD

All writers agree this operation is indicated in only uncomplicated piles of moderate severity. In severe cases there is too much risk of contraction of the anal canal. This operation has its advocates especially abroad. (5) Burghard and Kanavel (5) have found that the continuous suture is not always sufficient to control the hemorrhage, thus necessitating a reopening of the wound in order to secure the bleeding points.

The operation is accomplished as follows. After dilatation of the anus the pile is seized in a long thin clamp in the long axis of the bowel. A curved needle armed with a long catgut suture, is passed through the fold of mucus membrane just above the forceps and tied; this should include the main vessels running into the pile, which is then cut off beyond the clamp. The needle and suture is now carried over the clamp, and through the two thicknesses of the mucous membrane below it, thereby sewing up the clamp with the included stump by means of a continuous suture. The clamp is now removed, the suture pulled tight and tied towards the anal margin. (27)

THE CLAMP AND CAUTERY METHOD

In the absence of external hemorrhoids this method has been used much in the past. No more than two or three moderate size hemorrhoids should be removed by this method.(5) Most authors are adverse to this method and maintain that either the ligature method, injection or electrocoagulation are much more satisfactory methods of eradicating hemorrhoids. Several deaths from hemorrhage are known to have occurred following this operation. (5)

In this operation each hemorrhoid is drawn down by means of a forceps and a clamp is applied to its base in the long axis of the bowel. After the clamp has been screwed up tightly the pile is cut off with a pair of curved scissors, leaving a good stump, to which the flat surface of a Paquelin's cautery at a dull red heat is thoroughly applied. The clamp is then slightly opened to see if any blood escapes, in which case the clamp is again tightened and the cautery applied until bleeding has ceased. (5)

In this method recovery is more speedy than after the ligature operation and usually there is less pain.(5)

The disadvantages are the liability of hemorrhage and where external piles exist it is not suitable for their removal owing to the pain caused by a burn of the skin in this region. They will require excision with the probable application of several sutures to bleeding points.

Therefore, if ligatures have to be used at all, the whole operation is best carried out by the suture method. (5)

In a review of 62,910 cases treated by both injection and surgery Kilbourne (26) found the following data:

	36,648 operative		26,262 injections
Mortality	11	:	0
Hemorrhage	0.573%	:	0.279%
Stricture	0.22%	:	0.02%
Recurrences	0.5%	:	15%

HIGH FREQUENCY CURRENT

At a meeting of the American Proctologic Society in 1934, a symposium was presented on physio-therapy in rectal diseases. The speakers agreed that negative galvanism is a safe electrical treatment for use in internal hemorrhoids, but that it has a very great disadvantage in requiring so much time. (6) Diathermy is quicker but must be used cautiously as suggested by Wheeler. (44)

The electrical treatment of hemorrhoids by negative galvanism produces a chemical reaction in the tissues and, therefore, is similar to the injection method in effect. The electric current releases hydrogen gas under the mucosa, which produces a plastic exudate, fastening the loose rectal mucosa to the muscularis. This is what happens when we inject either quinine and urea hydrochloride or phenol solutions. (6)

In the effort to learn of the experiences of men who have been using the high frequency current Bierman, (3) sent out a questionnaire and recieved twenty five relatively complete replies.

The essential facts to be noted in the questionnaire are as follows: the twenty-five doctors have been using the method during an interval of time covering six months to ten years and that they have operated on a total number of 3,284 patients. The operation is usually performed in

the office. The patient goes out of the office directly after the operation or may remain for a couple of hours. The operation is in nearly every instance performed under local anesthesia. As to the types of hemorrhoids destroyed by this method, practically all types were mentioned, external, internal, complicated and uncomplicated. Exception is taken to its use in very large gangrenous hemorrhoids.

The question of pain after defecation elicited the answer that it was slight or moderate, as a rule. When there is pain it lasts from three to ten days, usually five. The application of some ointment to the region which mechanically lubricates it helps greatly in allaying the pain. To relieve the pain after defecation hot Sitz baths are made use of.

With reference to bleeding, the operative field is completely dry. After the operation there is a sero-sanguinous discharge lasting several days.

High and low voltage machines are used in about equal proportion. There does not appear to be any great difference in the action of these two types of machines.

Four distinct variations of the application of the high frequency current are available in the destruction of hemorrhoids. Usually the character of the redundant tissue is used to determine which one or combination of these methods is to be used. If there be but a small

varicose area the Oudin type of current is used, until a complete dehydration of the area occurs. This method is called electro-dessication. The destructive action of this current is not as intense as in electrocoagulation.
(45)

Fulguration consists in the showering of sparks from the tip of a pointed electrode held a short distance away from the tissue. The action of this procedure is a superficial carbonization. It is but little employed.
(45)

The electric cutting current does not have sufficient coagulating power to seal the severed vein ends. It must therefore only be employed after the base of the hemorrhoid about to be removed, has been coagulated. (45)

The procedure most generally employed is that of electrocoagulation. This current is a bi-terminal one with the same hookup as that utilized in the usual medical diathermy, except that the current concentration is much greater so as to produce an actually destructive action. There are two methods of application: one is the use of a large dispersing electrode placed upon the skin in any part of the body, while the active pointed electrode rests on the area to be destroyed. The other technique is the use of a device consisting essentially of two active electrodes held in a clamp so as to permit of their synchronous application on either side of the

hemorrhoidal tissue. Histologic examination of tissue destroyed by means of electrocoagulation shows hyalinization with complete loss of cellular outline. (45)(30) Best (2a) is of opinion that all high frequency methods are unsatisfactory.

The electrosurgical clamp is the preferable one in every instance where it is possible to apply it because the destroyed area is more definitely delimited. The coagulation occurs only in the area lying between the jaws of the clamp. This obviates the error of destroying too much or too little tissue. (7)

The action of the diathermy current differs markedly from that of the actual cautery in that the heat is produced within the tissues, due to the resistance which they offer to the passage of electric current, while with the cautery, the heat is applied from an external source. (45).

From these observations it is reasonable to conclude that the high frequency current is well adapted for the treatment of hemorrhoids.

POST-OPERATIVE TREATMENT

Surgery properly done is completed entirely in plain sight, therefore there should be no post-operative bleeding, but it is ever a possibility and must be watched for. (2a). The rectal tube wrapped in gauze and inserted into the rectum following hemorrhoidectomy is now declared obsolete and unsatisfactory by nearly all writers. Bierman refers to it as an instrument of torture. (3). Vaseline or butesine picrate ointment is applied to the wound, or it may be left dry and a dressing is applied with adhesive straps.

Patients are usually given a hypo of a sixth grain of morphine when they are returned to their room, and frequently this is the only morphine needed. (37) Hullsiek (23) likes to apply a hot water bottle to the anus and put the patient in the so called pelvis high position of Montague. In this position the head pillow is removed, a hard pillow is inserted under the hips, and one is inserted under the partially flexed knees. Thus the rectal area is no longer in a position where it is congested by gravity, nor can the pelvic viscera exert pressure on the anus and rectum.

The diet the first day is liquid or soft as the patient wishes. Jamieson (24) gives his patients a tablespoonful of liquid petrolatum in the morning and afternoon of the first post-operative day. The second day soft diet

may be given and the third day light diet. Each morning the dressing is removed, the external wound cleansed and swabbed with an antiseptic solution of some sort, and a cotton applicator with a bit of vaseline is gently passed through the sphincter. (23) Best (2a) likes to instill a 1% nupercaine in oil solution in the rectum to ease the pain. One of the most gratifying procedures in the post-operative care of hemorrhoid patients is the Sitz bath. (2)(23)(24)(21)(47) It may be started as early as the third day, and can be given for ten to fifteen minutes twice a day at a temperature of 110° Fahrenheit. The heat relaxes the spastic sphincter, promotes peripheral dilatation and thus reduces pelvic congestion. Usually the patients will derive more comfort from the use of the Sitz bath than from any other one thing. (23) After the bowels begin moving it should be used after each movement. (23)

On the third or fourth day (2a) (23) (24) the finger is inserted into the anus very carefully, and very well lubricated. This separates any small adhesions and prepares the way for the first bowel movement. Hullsiek (23) says that the night of the fourth post-operative day, if the bowels have not moved a mild cathartic may be given such as compound of licorice, and the next morning six ounces of warm olive oil through a soft rubber catheter. Best (2a) likes a nupercaine in oil solution. Hertzler

(19) uses an anesthesia called diothane at the time of operation which keeps the patient relatively free of pain for four days post-operatively.

Usually by the sixth or seventh day the patient is ready to go home. (2a)(13) (17)(37)

During the first week out of the hospital the patient should be seen in the office every other day, the wound cleansed, inspected, and digital examination and dilatation made. The following week the patient should have two or three dilatations and then the patient should come to the office once a week until complete healing has occurred. In this way the progress of shrinking of any small tags can be watched, and tendency to infection, stricture or fistula formation guarded against.
(2a)

If any external tags remain after the third week they are removed in the office, since after this length of time no appreciable shrinkage takes place. (23)

RECURRENCES AND PROPHYLAXIS

Recurrences may follow any non-surgical method of treating hemorrhoids and may occasionally follow a hemorrhoidectomy where the veins have not been completely destroyed. In a survey of over 62,000 cases Kilbourne, (26) found that recurrence occurred in 15% of the cases treated by injection and in 0.5% of the operative cases.

Since the cathartic habit is frequently considered to be the cause of hemorrhoids, or at least is thought to aggravate the varicose condition, it follows that cathartics must be eliminated and normal colon function restored. As bran and psyllium are contra-indicated (2a) in colon and rectal disorders, probably the best preventative of constipation is mineral oil or preparations of agar-agar, without cathartic added. It has been shown that occasionally even plain mineral oil does harm, (35) and therefore it should be used with discretion. The return of constipation after the hemorrhoids have been eradicated (no matter by what method) sometimes proves extremely troublesome. After medical treatment recurrences may follow, and after surgery annoying breaks in the scar tissue may occur, resulting in pain and bleeding.(18)

CONCLUSIONS

Hemorrhoids are a very common ailment found chiefly during the active period of life and in those leading a sedentary mode of life.

Their cause lies chiefly in the peculiar anatomy of the anorectal region and the venous drainage of this region.

The injection treatment of hemorrhoids has a definite place in the therapeutics of uncomplicated internal hemorrhoids and in those patients in which surgery is contra-indicated. It should be born in mind that recurrences are very apt to occur following the injection treatment and that the treatment must necessarily cover a period of weeks. Arguments advanced in favor of the injection treatment of hemorrhoids are as follows: injection of solutions cannot introduce infection because they are powerful bactericidal solutions, injections avoid rectal stricture because they are made underneath the mucosa without stripping off or burning or puckering the mucosa, injection treatment avoids all the post operative pain that follows many operative procedures, it avoids hospitalization, it involves the patient in one-fourth the expense of an operation, it does not interfere with the patients regular occupation, if recurrences do occur it is a simple matter to give a few more injections.

Surgery is indicated in all cases of external hemorrhoids and in complicated internal hemorrhoids. The ligation method is the most satisfactory method of removing piles surgically. Stricture and hemorrhage is much more apt to occur following surgery than injections. Arguments put forth in favor of surgery are as follows: operative methods are performed under aseptic conditions and allow a perfect control of the amount of tissue removed, surgery allows the removal or drainage of other diseased conditions which commonly occur with hemorrhoids (notably infected crypts), it allows the removal of venous dilations under the skin border which later cause thrombotic piles, operations do not cause sloughs, oily tumors; operation is immediate and avoids many treatments lasting sometimes for weeks or months; operative results are permanent whereas favorable results from injection treatment are frequently followed by recurrence of the hemorrhoids.

What has been said above about the injection treatment of hemorrhoids also applies to the treatment using the high frequency current. The amount of tissue destroyed by the high frequency current is difficult to determine and thus is not quite as satisfactory as the injection treatment.

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