Treatment of hemorrhoids

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TREATMENT OF HEMORRHHOIDS

by

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Presented to the faculty of the University of Nebraska in partial fulfillment of the requirements for the degree of Doctor of Medicine.

From the Medical College
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# TREATMENT OF HEMORRHOIDS

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INTRODUCTION

The affection hemorrhoids is a very common condition. More cases apparently are seen now than in previous years probably due to two factors.

(1) The fact that the general public are not so timid about going to the doctor with this condition as they were in previous years.

(2) The fact that the mode of living has changed much from what it was a number of years ago.

As Cooke says, "Piles are a universal possession, manifesting certain aristocratic preferences, it may be, but peculiar to no class of people and in no sense a respecter of persons. Rich and poor, male and female, active and sedentary, are alike subject to them. And so common is the malady in one form or another that the individual who lives through middle age without making its personal acquaintance, may well esteem himself an especially favored mortal."

The affection is a very painful condition which if properly treated an almost miraculous relief results and the patient is usually extremely grateful to his doctor.

If one is to become a general practitioner or a surgeon he will be confronted with the care of this ailment.

It is because of these facts that I have chosen this subject so as to better acquaint myself with the various forms of treatment and the indications for each, hoping to derive some practical knowledge.
HISTORY

The early history of this disease constitutes one of the most interesting chapters of medical literature. Introduced to us under the name of "emerods" by Moses and the prophet Samuel away back in the remoteness of sacred antiquity, its position among human ailments is both conspicuous and unique. In Egypt these were "pile-doctors" before Joseph was sold in bondage. "The Lord will smite thee with the botch Egypt, and with the emerods" (Deut. XXVII, 27) is the threat of Moses against an impatient and rebellious people. Three centuries later the disease appears for the first time as an actual condition under the strange guise of a plague or curse visited upon the Philistines for having taken the ark of the covenant. A quotation concerning this is found in (I Samuel, V.9) "And he smote the men of the city, both small and great, and they had emerods in their secret parts." In order to rid themselves of their affection, we are told, the Philistines were instructed by their priests and diviners to return the ark to the children of Israel, sending with it a trespass offering golden images of their "emerods." One will find entertainment, if not instruction, in reading I Samuel, V & VI.

The subsequent seven or eight centuries were a blank so far as concerns the history of the disease and not until the advent of Hippocrates do we find it assuming a definite place.
in nosology. From this time on practically every medical author among the ancients wrote upon the subject; and, following the teachings of their illustrious master, the same fantastic views and grotesque theories gravely stated mark the writings of all.

For many centuries the very nature of the disease was wholly misunderstood. The father of medicine himself regarded hemorrhoids as "a defluxion of pituitous matter to the veins of the anus" whereby was evacuated the black bile or melancholic humor, thus assigning to them an important office in the regulation of the vital functions. Most of the ancient writers subscribed to this view.

Hippocrates however spoke of healing the affection first by cauterizing with hot iron, further by excision, and finally by drying up or by caustics. The rectal speculum was used in these early times and suppositories were given.

Celsus considered hemorrhoids a means of purification and felt that they should not be suppressed less the unsound matters of the body be carried to heart, viscera etc. He distinguished the external and internal types and prescribed treatment such as hip-baths regular living, care of soft stools. We find Celsus also treated many cases as Hippocrates, by caustics or puncturing with needles.

An extensive number of prescriptions were first edited by a military physician, Scribonius Largus. They contained things such as: Juice of worm-wood, liquid alum, louse-wort, vitriol, honey, copper and furnace slag.
Galen considered hemorrhoids as an important means of eliminating unsound juices from the body. He interpreted them as passive hemorrhage instead of active. His treatment consisted largely of vena section and cupping.

Montagnana (died 1460) maintained that hemorrhoids had a physiological function in the body and that they carried melancholic blood from the spleen.

Ryff (1541) was the first to refer to the veins around the rectum as the "golden veins". He was referring however to the normal vessels but later this term became common for a hemorrhoidal condition because of the fact that bleeding from these veins sometimes relieved abdominal troubles.

In the mediaeval ages the Greek term of hemorrhoids was almost lost since the monks were imperfect in both Greek and Latin. From the Greek word they formed misnomers, such as emorides, einorides, enoroyde, ammorroides by which they understood all kinds of anal tumors.

Jan De Waal (1604-1649) was the first to define hemorrhoids as "varices venarum ani."

Morgagni (1682-1771) did not differentiate between external and internal hemorrhoids but he spoke of the golden vein, especially the suppressed golden vein. He treated hemorrhoidal inclination by cold washings. He thought the upright position had some influence upon the origin of hemorrhoids as they were not found in animals and he also maintained that lack of valves might be another factor, and that disorders in the portal region
might be of some significance. About this time practically all affections were considered sequelae to suppressed hemorrhoids.

Not until the 19th century was the practometer made known and shortly after this the sigmodiascope and rectoscope. These made possible a better study and treatment of the condition. From the beginning of the 19th century up to the fifties the development of humoral pathology led to the view that hemorrhoids were but a symptom of a general affection and that the so-called hemorrhoidal malady was produced by a hemorrhoidal toxin. Thus they feared treatment less the toxin be spread to other organs.

Stieglitz emphasized the constitutional and hereditary nature of hemorrhoids. He stated that they might develop independently of troubles in the portal system or in the abdomen and that their existence pointed to some unsound condition in the organism, especially in the blood.

This conception marked the turning point in the history of the problem.

The interrelation between menstruation and hemorrhoids was advanced many times. About 1880 Hirsch brought out that hemorrhoids were equally frequent in all countries, that they were more common among the better classes, and that constitutional factors and predisposition played a role.

Injection treatment was first used by Mr. Morgan of Dublin in 1869. The solution he used was iron persulphate. In 1874 Wm. Colles, another Dublin Surgeon, injected a case of piles using iron perchloride.
In 1871 carbolic acid was first introduced by Mitchell of Clinton, Ill. This method was for a long time kept secret and sold to many unqualified people who were known as traveling pile doctors. Professor E. Andrews discovered the secret from one of the "quacks" and carried out an extensive investigation of the whole subject. Mitchell used 1 part carbolic acid to 2 parts of olive oil. Most of the quacks used strong solutions ranging from 27 to 95 percent.

Once the secret was out many medical men gave the method a trial and in some twenty years three definite schools of opinion were established on the subject. The first school headed by such authorities as Allingham senior, Mathews, and the Andrews, considered the method unsafe and dangerous. The second school, the chief exponents of which were Agnew, Shuford, Adler, and the Martins, believed in injecting strong solutions of carbolic acid ranging from 20 to 95 per cent. They aimed at removing the piles by sloughing them off. The third school believed in using weak solutions of carbolic acid that is from 5 to 20 per cent, injecting small quantities, and aiming at producing mild irritative changes with ultimate fibrosis and shrinking of the tumors. This school had for its advocates Hoyt, Yount, Wright and others. For the past forty years the strong school has been dying out while the weak is becoming more established.

As to surgical treatment cauterization with the hot iron was the ordinary method in Germany about 1870, where Von Langenbeck used the iron as described by Hippocrates.
Trendelenburg emphasized the use of winged clamps for protracting the nodes and protecting the surroundings against burns. This rendered the method more safe.

In 1846 Cusack of Dublin devised clamp and cautery operation. H. Lee introduced it into London and H. Smith brought it prominently before the medical profession of England.

In 1882 Whitehead introduced an operation consisting of total excision of hemorrhoid area, namely: The removal of the lower one inch to one and one-half inches of the lower mucous membrane of the rectum. This was a much talked of operation for a few years but is now nearly obsolete.
ANATOMY

It is necessary for one who intends to treat hemorrhoids to have a working knowledge of the anatomy of the anus, anal canal, and lower part of the rectum. I prefer to describe these parts in order from above downward.

The rectum usually measures five or six inches in length. Its diameter is smallest above and greatest below, near the anal canal, there is a special enlargement known as the ampulla recti (rectal ampulla). When empty the rectum measures a little over an inch in diameter but in extreme distension it may be as much as three inches in width. Its general direction is downwards but this varies at its two extremities, being downwards and backwards above and downwards and strongly forwards below.

When viewed from the front the rectum is seen to be folded from side to side in zigzag fashion, the folding being only slightly marked when rectum is empty, but becoming more distinct with distension. This folding is maintained by the arrangement of longitudinal muscle fibers, the majority of which are accumulated in the form of two wide bands, one on the front, the other on the back of the bowel. These bands are shorter than the other coats of the rectum thus giving rise to the sacculations to the sides of the tube. The foldings greatly increase the capacity of the rectum without unduly dilating the tube.

The greater portion of the rectum, two inches in front
and about four or five inches behind, lies below and behind
the pelvic peritoneum. This allows for expansion without
interference of a partial peritoneal coat. This reflexion
of the peritoneum off the rectum forms the recto-vesical
pouch which is of practical importance in connection with
operations in this region. The bottom of this pouch varies
as to its distance from the anus sometimes reaching down to
within an inch of the anus while in some cases it may be
found to be four inches from the anus. It is as a rule
higher in the well developed muscular or fatty subjects.

The anal canal begins where the rectum proper termin­
ates, namely, at the level of the levatores ani muscles,
opposite the inferior part of the prostate below, and ends
at the anus. It is a narrow slit-like passage, its anterior­
posterior diameter when closed varies between one half to
three fourths inch, its length being from one to one and one
half inches. Its direction is downwards and posteriorly,
often forming an angle of 45 degrees with the horizontal, al­
though it is usually somewhat nearer to the vertical. The
canal is tightly closed by the application of its lateral walls
to each other. It is closely surrounded by both external and
internal sphincters, and above by the borders of the levatores
ani, these muscles forming the muscular cylinder around it. On
each side is the ischio-rectal fossa with its contained fat
which allows for distension of the canal during the passage of
faeces. Posteriorly is placed a mass of mixed connective and
muscular tissue, known as the ano-coccygeal body, which intervenes between it and the coccyx. Finally, anteriorly, it lies close behind the bulb of the urethra and the base of the urogenital diaphragm in the male, while in the female it is separated from the vagina by the wedge-shaped mass of fatty and muscular tissue known as the "perineal body."

Structure of the Rectum and Anal Canal: The wall of the rectum is made up of four coats; The outer coat formed in part by peritoneum, and in lower part where peritoneum is absent, of connective tissue which can be dissected off in several layers. In this connective tissue the hemorrhoidal vessels run until they pierce the wall of the tube. In it also, at the back and sides of the rectum, are found embedded lymph glands. The tunica muscularis is much thicker than the previous coat. It is composed of two stout layers of unstriped muscle—an outer longitudinal and an inner circular like that of the intestine generally. These longitudinal fibres are accumulated chiefly on the front and back of the tube where they form two broad bands; at the sides they are reduced to a thin layer, deepest fibres of which are folded in and take part in the formation of the rectal valves. Where the rectum pierces the floor of the pelvis, the outer layer of longitudinal fibres is united to the deeper portion of the levator ani. Below the longitudinal fibres pass between the external and internal sphincter muscles or through the latter to join the skin around the anus.
The circular fibres form, along the whole length of the tube, a continuous layer, which is doubled inwards to assist in the formation of each rectal valve, and is thickened below to form the internal sphincter of the anus. This muscle surrounds the canal for about an inch and terminates at its junction with the skin.

The third layer, tela submucosa is composed of loose areolar tissue, which allows of a free movement of a mucous layer on the muscular coat, and which admits, under certain abnormal conditions, of a prolapse of the mucous membrane through the anal orifice. The hemorrhoidal plexus of veins is contained in this layer.

The fourth layer, tunica mucosa, is a loose layer and is quite red as a result of its great vascularity. It also contains lymph nodes and intestinal glands.

The term annulus hemorrhoidalis is applied to the segment inclosed by the sphincter externus muscle. It extends from the region of the rectal sinuses to the anal orifice, and in its wall is found the large venous plexus termed the plexus hemorrhoidalis.

Projecting into the cavity of the rectum are crescent shelf-like folds called Elicae Transversales Recti. These are composed of an infolding of the mucous, submucous, and greater part of the circular muscular coats, and their form is preserved by the relative shortness of the anterior and posterior bands of the longitudinal muscular fibres. In a
majority of cases three are present, but there may be four, five or more.

The mucous membrane of the lower portion of the anal canal presents a number of permanent of vertical folds, separated by grooves and known as the columnae rectales (columns of Morgagni). They are usually one third to one half inch in length and one eighth to one fourth inch in width, and they extend to within one half or two thirds inch of the anal aperture. They are formed by infoldings of the mucous membrane, containing in their interior some bundles of longitudinal muscle and also, as a rule, an artery and a vein.

In the grooves which separate these columns are little folds which project inwards and upwards, and behind each is found a little pocket like sinus (sinus rectalis).

The anus is from one to one and three fourths inches in length and maybe dilated to a circumference of four to six inches. The skin around the margin of the anus possess hair follicles and glands and forms a zone, termed the cutaneous zone.

Within this zone is a second one, zona intermedia, not sharply marked off, but separated by the ano-cutaneous line, which is taken to be the line beyond which hairs occur.

The third zone, the zona columnaris, corresponds to the region of the rectal columns. It is clearly marked off from the intermediate zone by a line which is abrupt, and follows the level of the anal valves, and crosses the bases of the
columns between the valves. This sinous line is the "ano-
cutaneous line" of Hermann or the "white line" of Hilton.

The rectum and anal canal receive their blood supply from
three chief sources, namely, the three hemorrhoidal arteries
and a less important middle sacral artery.

The superior hemorrhoidal artery, the principal artery of
the rectum, is the prolongation of the inferior mesenteric. At
first it descends in the root of the pelvis mesocolon until
the rectum is reached. Here it divides into two chief branch-
es which run downwards and forwards around the sides of the
rectum—the right, usually the larger, lying more posteriorly,
the left more anteriorly, and the two, as it were, embracing
the bowel between them. From these two arteries come off
secondary branches (about five to eight in all), which pierce
the muscular coat about the middle of the rectum, and then
descend in the submucosa as a series of longitudinally running
"terminal branches" as far as the anal valves, above the level
of which one is usually found beneath each of the rectal col-
umns. These terminal branches give off numerous twigs in their
course, which form a hemorrhoidal plexus in the submucosa by
anastomosing with one another, and also with branches of the
middle, and, in the inferior part of the bowel, of the inferior
hemorrhoidal artery.

The middle hemorrhoidal arteries, two in number—one on
each side—are usually branches of the hypogastric or of the
internal pudendal; they run on the wall of the inferior part
of the rectum, and each breaks up into four or five small branches, some of which supply the muscular wall of the inferior part of the rectum, whilst the others pierce the muscular coat near the superior end of the anal canal, and join in the submucosa with the plexus formed by the superior hemorrhoidal artery already described.

The inferior hemorrhoidal arteries, generally two or three in number on each side, arise at variable levels from the internal pudendal. They are distributed to the levatores ani and the sphincters. Other branches pierce the sphincters and break up in the submucosa into a close network which supplies the inferior part of the anal canal, and communicates above with the plexus formed by the superior and middle hemorrhoidal arteries. The inferior hemorrhoidal artery is distributed chiefly on the posterior, and the middle hemorrhoidal chiefly on the anterior aspect of the lower part of the bowel.

The superior and middle hemorrhoidal arteries anastomose freely in the hemorrhoidal plexus of the submucosa, and also by a few large branches on the exterior of the bowel; some perforating branches of the middle sacral and inferior hemorrhoidal arteries also join the plexus in the submucous layer at the lower part of the rectum. In addition, small branches of these several arteries unite with one another in the muscular coat. It should be remarked that the superior hemorrhoidal artery supplies both the muscular and mucous coats in the superior part
of the rectum, but the muscular coats in the inferior part are supplied by the middle and inferior hemorrhoidal vessels only.

Veins of the Rectum and Anus: These form two chief plexuses of large vessels devoid of valves, namely, the internal hemorrhoidal plexus situated in the submucous coat, and the external hemorrhoidal plexus in the outer coat. The internal hemorrhoidal plexus takes origin near the margin of the anus in a number of small (anal) veins, which are radially disposed beneath the skin of the anus, and communicate below with the rootlets of the inferior hemorrhoidal vein over the external sphincter. These anal veins, traced upwards, join together, and are joined by others from the surrounding parts to form larger and often tortuous vessels, which ascend in the columnae rectales, where they frequently present ampullary enlargements, varying in size up to that of a small pea, which are said to be the starting-points of hemorrhoids. Passing upwards, the veins are known as the "terminal veins"; they communicate freely with one another, forming the plexus, and unite into still larger vessels, which pierce the muscular coat about the middle of the rectum, and join to form the superior hemorrhoidal vein. From the inferior part of the internal hemorrhoidal plexus numerous vessels pass through the external sphincter to join a venous network on the outer surface of that muscle, from which the inferior hemorrhoidal veins arise. This network, as pointed out above, also communicates with the internal hemorrhoidal plexus, through the anal veins
which descend from the latter beneath the skin of the anal canal, to the exterior of the sphincter. The various veins which pass out through the walls of the rectum unite freely on its exterior to form a rich venous plexus (external hemorrhoidal plexus), through which the three hemorrhoidal vessels are brought into free communication with one another. Passing off from this plexus, the superior hemorrhoidal joins the left colic vein and forms with it the inferior mesenteric vein, which opens into the splenic; the middle hemorrhoidal joins the hypogastric, from which the blood passes through the common iliac to the vena cava inferior; and the inferior hemorrhoidal joins the internal pudendal, a tributary of the hypogastric vein. Thus, on the rectum, a free anastomosis is established between the veins of the portal and systemic circulations. This and the fact that these veins do not contain valves explains the frequency of both external and internal hemorrhoids.
ETIOLOGY

In this affection a correct idea of the blood-supply of the parts involved is absolutely essential to a clear understanding of its etiology. This has been discussed under anatomy. The causes of hemorrhoids are divided into two classes, predisposing and exciting.

Predisposing Causes—Since hemorrhoids is a malady peculiar to the human family, it is evident that the upright carriage of man may be considered as an important predisposing cause. With respect to this portion of the body the average man maintains the erect attitude for approximately two-thirds of the twenty-four hours, and during this time the weight of the superimposed columns of blood is necessarily supported to a greater or less degree by the venous plexuses at the distal extremity of the bowel. In consequence during the larger portion of each day, these vessels are normally distended and the parts in a condition at least approaching congestion. The looseness of the mucous membrane, and the abundance of the cellular tissue in which the blood vessels of the region ramify, are also items of practical bearing in this connection. Thus it is apparent that the great underlying cause of hemorrhoids is to be found in the erect posture of man and the anatomic structure and conformation of the parts.

However brought about, (a) congestion must be recognized as the primary or basal factor in the production of this
disease. This state, in addition to the purely anatomic points already noted as favoring it, may arise as the expression of physiologic as well as pathologic causes. Anything that prevents the portal vein from emptying itself into the liver must result in damming back the column of blood into each of its several radicles, thus producing engorgement and congestion of their distal extremities. No other organ is so frequently subject to this condition. Indeed, it may be properly regarded a normal condition at certain regularly recurring intervals; for after every meal and during the continuance of the digestive process the contents of the portal vein and its tributaries are enormously increased, and both the liver and spleen are temporarily in a state of physiologic congestion.

(b) Heredity—It is impossible to accurately estimate the influence of heredity in the causation of a disease as widely prevalent as hemorrhoids. But viewing the question in the abstract, it would be strange indeed if an affection as common as this were not frequently observed in succeeding generations of the same family, especially when the business pursuits, habits of life and general environments of father and son are so apt to remain identical. In regard to this truth it would seem that heredity does play a part.

(c) Race—Of itself, aside from the mode of life which distinguishes it, race probably plays no part in the matter of susceptibility to the disease. It was for a long time
thought that the affection was unknown among the North American Indians. But more recent observations failed to bear out this claim.

(d) Climate and Season--Proportionately the smallest number of cases are found in mild or temperate climates. Equable temperature, with no necessity for marked alteration in diet, dress, and mode of living, accounts for this fact. In torrid climates a general relaxation of the system prevails, together with a tendency to diarrheal affections and to certain special diseases involving derangement of the liver. In very cold regions, on the other hand, the diet is apt to be of a concentrated character, thus favoring constipation, and the bulk of the clothing required and the inconvenience and discomfort of removing it in cold weather cause the act of defecation to be postponed or unduly hastened, thus also leading to constipation and straining.

With reference to season, the ancients believed that the disease was much more prevalent in the spring of the year when a north wind blew. Thus the change of the weather leading to variations in dress, diet and habit probably plays a greater part than climate and season.

(e) Diet and Habit--Those who frequently indulge in the excesses of the table are especially prone to hemorrhoids. This applies both to the kind and quantity of the viands consumed. Overeating, particularly of rich and highly seasoned foods, and the use of alcoholic beverages, alike conduce to hepatic engorgement, constipation, intestinal toxemia, etc. In cer-
tain individuals indulgence in special articles of diet, e.g., shellfish, has been observed to provoke acute "attacks of piles" as often as partaken of. In such cases the diet is properly classed as an exciting cause.

Likewise those of sedentary habit and indolent disposition are peculiarly susceptible to the disease. The several functions of alimentation require a certain amount of bodily exercise for their healthy performance, and the act of defecation cannot be neglected with impunity.

(f) Age—Hemorrhoids may be considered as distinctively an affection of the middle period of life. Few cases are encountered before puberty and they are equally rare in those of advanced years. Middle age, then, may be regarded as a predisposing cause in the sense that both extremes of life are comparatively exempt.

(g) Sex—Considerable diversity of opinion has always existed as to the relative frequency with which hemorrhoids occur in the two sexes. There are plausible and cogent reasons why each sex should be more susceptible than the other. Thus, the predisposing factors of pregnancy, parturition and the climacteric, style of dress, inactive life, etc., in women are offset by the greater prevalence of intemperance in eating and drinking, excessive venery, violent muscular exertion, and the straining incident to urethral, prostatic, and vesical disease in men. Until in recent years the disease was encountered more often among males than females and many writers still
find this to be true. This fact may be explained on the basis that the native modesty of woman and her familiarity with hemorrhage from a neighboring organ lead her to bear in silence what would impel the average man to seek medical advice without delay. Recent writers who have examined all patients entering hospital, thoroughly find that instances in men and women are about equal.

(h)Avocation—Either too little or too vigorous physical exercise may predispose to hemorrhoids. Bookkeepers, bank clerks, and others who spend the greater portion of their time sitting or standing in the erect posture, with insufficient out-of-door life and bodily activity, are prone to the disease. The same is true of the wealthy classes, in which natural indolence and lack of incentive are apt to conspire to a sedentary manner of existence.

On the other hand, those who follow occupations which require heavy lifting and prolonged muscular exertion of any kind are frequently the subjects of hemorrhoids, particularly the external variety. Railway operatives who are much on their feet, subject to the constant jarring of the trains, and whose habits are necessarily irregular, are said to be especially liable to develop this as well as other rectal ailments.

Exciting Causes—A number of the factors mentioned under the several headings of predisposing causes oftentimes may be more properly classed as exciting causes.
(a) Constipation—Many authors think this stands first in importance among the exciting causes. The passage of costive stools always requires strong muscular effort and takes place in a direction opposite to the return blood current. The sequence is largely a mechanical one. The fecal mass fills the lumen of the rectum, compressing the vessel walls so as to obstruct the circulation, and as it descends in defecation forces the contents of the veins before it with sufficient violence to cause extreme dilatation of their subjacent portions, sometimes even rupture. The natural result is a varicose condition with multiplication of the capillaries and increase of the connective tissue about the distal extremity of the movable rectum, as the irritation is from time to time repeated. When such a process is once started, the voidance of every costive stool necessarily further irritates the swollen and congested tissues, and the formation of the pile tumors is the ultimate and logical outcome.

Thrombotic external hemorrhoids are also often the direct result of the passage of costive stools, the great straining causing the rupture of a small vessel at the anal verge, with the immediate appearance of a circumscribed swelling, due to clotting of the escaped blood.

(b) Straining at Stool—From any cause may result in hemorrhoids. Some recent writers feel that diarrhea plays a greater part than constipation. In either case straining probably is the predominate factor. Straining crowds the intestines
into the pelvis and compresses the rectum against the posterior bony wall. As a result of this pressure vessels of the rectum are greatly distended and, if it is long continued or often repeated, a varicose condition naturally follows.

(c) Diseases of Other Organs—Congestion produced and maintained by diseases of other organs is also an important etiologic factor. Interference with the rectal circulation by the pressure of abdominal and pelvic neoplasms often seems to be directly responsible for the development of the disease. Cirrhosis of the liver and valvular lesions of the heart operate to the same end through obstruction of the portal circulation. Chronic lesions of the spinal cord often lead to hemorrhoids. Paraplegia and the late stages of posterior sclerosis are the special conditions in which hemorrhoids are most likely to be encountered.

(d) Purgatives and Other Drugs—The habitual use of purgative medicines is one of the most noteworthy of the exciting causes. The agents of this class uniformly act as irritants to the intestinal mucosa, certain of them seeming to expend their chief effect upon the colon and rectum. Congestion results both from the local irritation and from the violent peristalsis and straining excited. Furthermore, as is well recognized, their after-effect is uniformly to encourage and establish the very condition for which relief was sought, thus leading to chronic constipation.

Certain other kinds of drugs are also capable of acting
as exciting cause. Most notable of these are the several agents classed as emmenagogues, e.g., ergot, cantharides, and oil of savin, all of which cause marked congestion of the pelvic vessels and more or less active peristalsis. Happily their use is comparatively rare.

(e) Pregnancy and Parturition—It is probable that few women pass through the pregnant state without suffering to a greater or less extent from hemorrhoids. Ready explanation of this is to be found in the mechanical obstruction of the pelvic circulation incident to the condition. Most women patients are able to trace the beginning of their trouble very definitely to the ordeal of maternity.

(f) Tight Lacing—The list of exciting causes would not be complete without reference to tight lacing. Displacement of the viscera and interference with the circulation are the obvious means by which the evil is produced.

Kantor feels that constipation has little if any bearing on hemorrhoids. In studying his records he found that 54 per cent of 656 hemorrhoid-positive cases were constipated. However even further investigation revealed the fact that almost the same proportion, 52 per cent, of 329 hemorrhoid-negative cases were constipated. An analysis of 500 patients suffering from colitis, a condition associated with diarrhea, showed an incidence of hemorrhoids in 29 per cent of cases, whereas only 28 per cent of a group of 500 constipated patients showed hemorrhoids.
He found that 38 per cent of patients with cathartic habit had hemorrhoids. Thus he is of the opinion that it is the abuse of cathartics and for that matter, of enemas and irrigations as well, that constituted the most important cause of hemorrhoids.

Hiller \(^{19}\) thinks sitting and slumping postures are an etiological factor. These postures flatten the lumbosacral angle and steepen the grade of ascent for blood in the internal plexus. Spasm of the anal sphincters is another factor and is seen in many clinical cases. This interferes with the escape of blood from below.

Among the many other causes of hemorrhoids,—some altogether fanciful, others with a more or less apparent show of reason,—which have been described and emphasized in the literature of the subject, may be mentioned spasmodic constriction of the sphincter, excessive venery, and emotional excitement.

Without further enumeration or discussion of etiological factors it may be observed in this connection that cases are often met with in which it is absolutely impossible to trace the disease to any definite cause or causes.
DEFINITION AND CLASSIFICATION

The term hemorrhoids is derived from the Greek word "κυμφροος" meaning flowing with blood. It was originally used by the Greeks to denote a hemorrhage from the veins of the rectal portion of the large intestine. The word pile is from the Greek, πίλος (Latin pila) meaning a ball or globe. The two words are now used synonymous, and applied to tumors within the lower rectum and which are covered with mucosa and may or may not bleed; again, they are also employed to designate vascular or integumentary tumors located at the anal margin. Therefore as is evident, it is impossible to give a satisfactory definition of either term, because the tumors may differ so widely in their locations, characteristics, and structure. The following however applies in most cases:

Hemorrhoids (piles) are varicose tumors involving the veins and capillaries of the mucosa and submucosa of the lower rectum, characterized by a tendency to bleed and protrude.

Since no one method of treatment is suitable for all types of hemorrhoids a classification is necessary. This perhaps is best shown by a simple schematic arrangement in the form of an outline as:
HEMORRHOIDS

\[
\begin{align*}
\text{external} & \quad \text{clinical - a. simple dilatation of veins surrounding anal orifice.} \\
& \quad \text{pathological - a. Thrombosed.} \\
& \quad \text{b. Ruptured.} \\
& \quad \text{c. Connective Tissue.} \\
& \quad \text{d. Inflamed.} \\
\text{internal} & \quad \text{clinical - a. Strangulated.} \\
& \quad \text{b. Thrombosed.} \\
& \quad \text{pathological - a. Gangrenous.} \\
& \quad \text{b. Inflamed.} \\
\text{externo-internal (combined)} & \quad \text{1st. according to degree of protrusion} \\
& \quad \text{2nd. irreducible.} \\
& \quad \text{3rd. irreducible.}
\end{align*}
\]

but from the standpoint of treatment the simple classification of external, internal, and externo-internal is sufficient as the treatment used depends on whether the hemorrhoid is external or internal to the external sphincter ani muscle.
EXTERNAL HEMORRHOIDS

This condition exists when the veins beneath the skin around the anal margins become involved by infection. Phlebitis and distortion lead to varicosities, causing redundancy of the skin and consequent deformity. A variety of complications may ensue as mentioned in previous outline. These hemorrhoids first appear as small tumors beneath the skin.

Thrombosis may occur, in which case the tumor increased rapidly in size usually reaching full size in several hours although it may do so immediately. At the end of this time the veins are distended and no doubt the pressure produced keeps the tumor from becoming larger. This occurs usually when some unusual strain is brought to bear upon the tissues in rectal outlet. If the tumor is small the condition may subside without attention. Or, a long period of convalescence may be necessary. Moisture around anus and exposure to trauma may result in excoriations of skin over clot followed by a break of skin and thus admission of infection. Often with this rupture the clot is expelled and though there is frequently much hemorrhage, with a little anal hygiene, complete healing usually takes place.

Edema is often another complication either of redundancy of tissues with prolapse, constriction, and interference with circulation, or of excessive infection and inflammatory reaction. The infection may enter through excoriations or through anal crypts. The inflammation may proceed to development of
complications such as ulceration, sloughing, and strangulation. This type of hemorrhoid is accompanied by much pain. Where much edema is present internal hemorrhoids are usually found also. The usual picture being that of bulging and inflamed margins covered with skin and projecting internal hemorrhoids covered by mucous membrane, and usually ulceration shows through anal orifice.

Varicose veins occurring beneath the skin around the anal orifice may be invisible when patient is relaxed and show up only when straining. All hemorrhoidal disorders are less noticeable when person is relaxed or in repose. These varicosities which appear only on straining are similar to varicose veins of the legs requiring pressure to cause accumulation of blood to the part. There is usually no pain associated with this type of hemorrhoid, the only discomfort being that of a feeling of fullness and distention following and during defecation.

The so-called skin-tab usually is a result of fibrosis following some acute inflammatory or thrombotic hemorrhoidal condition, and the deformity is of the external anal margins only. Such skin-tabs are made up of cutaneous tissue, with a stroma of connective tissue. It has been thought that they may be indicative of syphilis, particularly when associated with strictures and ulcerations of the rectum.
INTERNAL HEMORRHOID

Hemorrhoids of this type are varicose tributaries of the middle and superior hemorrhoidal veins, situated in the lowest 3 to 4 cm. of the rectum, with the pectinate line as its lowest limit. They are entirely within the rectum and are covered only by mucous membrane.

The internal hemorrhoidal plexus which is the site of hemorrhoid formation consists of two groups of veins into which the circulation diverges from the white line of Hilton. The inferior group passes between the anal sphincters to form the inferior hemorrhoidal veins. Dilatation of this group leads to the formation of external hemorrhoids, previously discussed. The superior group passes upward in the submucosa and pierces the muscular wall about four inches above the musculo-cutaneous junction. These vessels after receiving branches from the external plexus form the superior hemorrhoidal vein which (which was mentioned in anatomy), courses upward on the posterior surface of rectum and terminates in the inferior mesenteric vein. Thus it is seen that the veins of the internal hemorrhoid plexus pass through two openings surrounded by muscle tissue, namely, the space between the internal and external sphincters below, and the hiatuses in the rectal wall above. The normal tonus of these muscles substitutes for the lack of valves in the superior and inferior hemorrhoidal veins. Reflux is thus prevented from the superior hemorrhoidal vein into the internal plexus under normal conditions.
When internal hemorrhoids are present, however, the circulation in the internal plexus is reversed. This fact may be readily demonstrated if one withdraws the anal speculum to the level of the white line of Hilton. Compression of the inferior route of escape in this manner will cause the internal hemorrhoids to enlarge progressively. This reversal of circulation results from either of two factors; (a) compression of the veins at the points where they pierce the rectal wall, or (b) dilatation of these vascular hiatuses, allowing reflux into the internal hemorrhoidal plexus.

Postal congestion may be a factor in producing this reflux but perhaps greater factors are sedentary habits and loss of tone of the rectal wall.

Examination may reveal hugh masses protruding from the anus but if they have mucous membrane covering only they are still classed as internal hemorrhoids. The masses cannot always be retained within the rectum due to their excessive varicosity or to the relaxation of the rectal mucous membrane. This may be considered a prolapse, but if the varicosities exist, even though a part of the redundant rectal mucous membrane may be exposed, they are still essentially protruding or prolapsed internal hemorrhoids.

The usual type of internal hemorrhoids is composed of varicosities which are made up of little venous lakes connecting the arterial and venous circulation or of the veins themselves. Some authors say they are disposed to form tumors at
three points in circumference of the rectum; one on the left and two on the right, while others say this is true only in a general way, because there are usually smaller groups of prominences situated between these three main accumulations. Frequently there is a group of varicose veins beneath the mucous membrane of the rectum which are so diffusely placed that they can't be divided into groups at all but form projections on all sides.

Some authors use the terms "protruding" and "prolapsing" in subdividing internal hemorrhoids. The latter term applies to those which protrude excessively, and which usually require manual replacement. The former term applies to those which project with straining, usually at stool, and which slip back into the rectum on their own accord after straining has ceased.

Internal hemorrhoids may become thrombosed and in this case they differ from external thrombosed hemorrhoids only in their situation, and in the amount of pain they produce. The absence of discomfort from thrombotic internal hemorrhoids is due to the fact that the region involved is not supplied by nerves which have to do with pain sense. There is usually no change in color of the tissue over the tumor. This type of hemorrhoid usually has a group of varicose veins associated, and consists largely of extravasation of blood clots in the vessels beneath the mucous membranes.
Paliative Treatment:-

The most important task of paliative treatment is the restoration of normal colon function. This is equally essential whether the patient suffers from constipation or diarrhea. The restoration of normal colon function implies the spontaneous production of one formed stool approximately once a day. The first step is the withdrawal of irritating cathartics and of the usual forms of local treatment with enemas and irrigations. A small injection of oil may be used nightly for a time in the treatment of rectal constipation. For this purpose a rubber hand syringe with a hard rubber tip is the best.

In general patients do best on a bland diet with or without the addition of some substance such as agar or psyllium seeds, or barium sulphate to furnish bulk with undue irritation. Butter, cream and olive oil are particularly useful in thin people, whereas mineral oil or oil agar is better for the obese.

In the treatment of the local condition from a conservative standpoint perhaps the first requirement is the proper toilet of the anus. Cleanliness and gentleness are essential. The patient should be advised to move the bowels at home so as to have facilities for proper care. After movement the anal region should be washed with some non-irritating soap & warm water, using absorbent cotton for the cleansing. The parts should be wiped gently or patted dry with cotton, not with paper, and finally powdered with talcum.
If hemorrhoids tend to prolapse it is imperative to replace them immediately after each extrusion. To do this the patient should have a finger cot and some lubricating jelly. By taking this simple precaution early, much trouble can be avoided. Should this prove impractical with the patient up and about he should be put to bed. At bedtime a tannic acid suppository should be inserted or a salve containing this drug applied to the anal region.

If there is much pain and edema, bed rest in the latero-prone position is indicated. The application to the anus of cold compresses soaked in witch hazel often suffices for relief. In more severe cases a suppository of anesthesin, 5 grains should be inserted before defecation and one of bismuth with or without adrenalin after each bowel movement and at bed time.

Two essential steps in the palliative treatment are (1) to reduce inflammation of the hemorrhoids, and (2) to return the tumors above the sphincter muscle as soon as possible.

In inflamed hemorrhoids the following simple ointment is effective.

\[
\text{Rx} \quad \text{Morphine Sulphatis} \quad 52 \\
\text{Hydrargyi chloridi mit} \quad 78 \\
\text{Vaselini} \quad 30
\]

M. Sig: Apply freely in and about the rectum.
It is essential to bathe the parts freely with hot water before each application to remove the discharge, etc.

Various suppositories may be used. Morphine, Opium, Belladonna, Hyoscyamus, Eucaine, and Cocaine, alone or in combination with some astringent or antiseptic are the remedies which have been most frequently used in the form of suppositories.

In treating thrombotic hemorrhoid ointments and suppositories are useless palliative measures, but hot sitz baths and wet compresses of lead and opium wash, magnesium sulphate or boric acid solution may result in resolution of small clots. But because of the prolonged treatment necessary and the uncertain outcome, palliative measures are a poor substitute for a minor operation which give prompt relief.

Applying tincture of iodine, the skin over the tumor is infiltrated with 2 per cent novocaine, then with sharp, slender, curved scissors, an ellipse of skin is excised by a single cut, extending from the outer to the inner margin of the thrombus. Usually the clot falls out at once, but if not, with the scissors the surrounding connective tissue is loosened till clot is free. Then applying pressure to site with a sterile compress for a few minutes controls all bleeding. A small compress is then retained firmly in place by a strip of adhesive tape 15 inches long and 1 inch wide, running from the inner side of the thigh, close to the anus and upward over the buttock to the loin. This operation is simple and painless.
except for slight burning for one hour or two after the anesthetic wears off. The dressing is removed after 24 hours and the wound is sponged with hot water and a little cotton after each stool.

If the tissues are infiltrated with numerous small clots it is best to remove the entire mass and treat the site of removal as an open wound.
Before treating a case of hemorrhoids by either injection or surgical methods certain essential facts must be determined by examination.

1. Are the piles internal or external?—This distinction is easy to make and very important as regards treatment.

2. What is the clinical condition of the piles?—If the examination with the finger and a proctoscope give a diagnosis of internal piles, their exact condition must be determined, particularly whether they are soft or indurated, reducible or irreducible, clean or septic.

3. Is there any other rectal lesion?—There may be some other minor rectal trouble, the treatment of which must be considered in conjunction with that of piles. Fissure-in-ano is perhaps the commonest and certainly the most important complication. This should be healed before starting treatment of piles.

4. The general condition of the patient must be noted, and in particular, the condition of the heart, liver and abdomen. An enlarged prostate in men or pelvic tumors in women have to be noted and carefully considered in relation to the rectal trouble.
Injection Treatment:-

It is universally agreed that the uncomplicated internal hemorrhoids are the only ones suitable for injection.

The advantages of this treatment are:

1. It can be done in the office.
2. It is practically painless and does not require anesthesia.
3. No disability or loss of time from work.
4. Is less expense.
5. With selection of cases and good technique the results are good.

One must have suitable instruments in which to expose the hemorrhoids and suitable light in which to see them, and a syringe and needle suitable for injecting. Any tubular anoscope may be used. A long needle is better in that it won't obstruct vision when injecting.

Many solutions have been used for injection and most of them have contained as the destructive agent phenol, usually in combination with salicylic acid, sodium borate, tincture of thuja, extract of Hamamelis, zinc chloride, or fluid extract of ergot. These ingredients are usually incorporated in glycerine, olive oil, cottonseed oil, mineral oil, or distilled water. The percentage of phenol in the solution is usually small, although many use 10 to 20 per cent and occasionally a 90 per cent solution has been reported used.

The solutions in common use today are two: Phenol in oil and a quinine and urea hydrochloride aqueous solution. The English physicians and the more radical Americans employ phenol in 5 to 20 per cent solution. The majority of the Americans
who are conservative in the use of the injection method are following Terrell's method. In 1913 Terrell began using quinine urea hydrochloride. He discovered its usefulness by accident. An elderly patient with piles was having much pain. He did not wish to operate him and decided to inject some quinine urea to relieve his pain. Upon examination some time later he discovered the condition much improved. Out of this incident rose the use of quinine and urea hydrochloride for injection. A point in favor of this treatment is the fact that few have reported any ill effects from it.

Those who advocate the injection of solutions depend on a certain technique, whereby they are able to produce destructive changes in the tissues which do not produce total dissolution of the hemorrhoidal tumor. This results in development of a fibrous mass of tissue which replaces the varicosities.

However, if, as is usually the case, reliance is placed on the fact that the injected solution produces a necrotic change which results in a sloughing away of the vessels and surrounding tissues, it would seem that such a slough might progress beyond control and that a surgical procedure which would limit the amount of tissue destroyed, should be preferred.

Rankin feels that the action of quinine and urea hydrochloride is different from and more desirable than that of solutions which depend on phenol for curative effect.
Leukocytic infiltration occurs within a few minutes after the solution has been injected into the tissues, and within a few hours lymphocytes appear around the venous spaces beneath the submucous stroma. After eight to ten hours the area microscopically appears as one of sub acute inflammatory process with lymphocytic infiltration. This inflammation subsides gradually and fibrosis begins and in two or three weeks and indurated ridge remains which has replaced the hemorrhoid.

However Dukes in studying microscopically the changes provoked in the tissues by injection of phenol solution in 10 patients, found that an aseptic inflammation was initiated characterized by a dilatation of the vessels, emigration of leukocytes, and transudation of lymph. By these means the alien liquid was diluted and removed, therefore the inflammation quickly subsiding. The changes observed were an effort of the tissues to repair an injury. He concluded that the curative effect was not due to any specific action of the chemical substances but to the secondary changes, in particular the intravascular clotting and subsequent fibrosis.

This would lead us to believe that it makes little difference, as far as the chemical process is involved, whether phenol or quinine and urea hydrochloride is used for injection.
Technique of Injection:

The purpose of the injection is not complete dissolution of the tissues, with sloughing away of the veins and structures around them, but to create a mass of fibrous tissue which will prevent admission of blood into the veins and venous spaces. The solution, therefore, is injected into the tissues about the veins instead of directly into them. After the needle is introduced the plunger is drawn back to make sure it is not in a vein.

The amount of solution required varies with the hemorrhoid to be injected. These are three essential points to be remembered: (1) Injection—that is too superficial will produce a slough, (2) Injection which is too deep will fail of therapeutic effect, and (3) it is desirable that a smooth even distension be produced by the solution being equally distributed.

This right distension determines the amount of solution needed. In some cases 1 cc. is enough while in other 2 cc. may not be enough. Only by experience can one be sure when the proper amount has been injected.

If a quadrant instead of a hemorrhoid is to be the site of injection, the point of the needle is inserted through its center and is forced in among the varicosities to the center of the tumor. It should be extended upward to the highest point of redundance and then injection started while gradually pulling out the needle. In this way a ridge is formed which
later forms a fibrous mass that ties down the mucosa to firm-
er tissue beneath.

If a single hemorrhoid is to be injected the needle
should be inserted into the center of the tumor until suffi-
cient depth is reached to make sure tissues are infiltrated
in all directions. The point of the needle may be moved
about in order to get equal distribution of the solution.

If injection treatment is to be carried on in the office
a diet should be prescribed so as to avoid constipation dur-
ing the period of treatment, and if necessary some laxative
should be given so patient will have daily bowel movement with-
out undue straining. The size of the hemorrhoids are increas-
ed by injection for a time, thus straining might force hemorr-
hood out through anus, which might result in strangulation and
necrosis. The patient should be instructed to take a small
warm enema each day following defecation. If 60 to 90 cc. of
Hamamelis water is injected each day after defecation, the
probability of infection is small.

Injection may be made daily till all hemorrhoids are treat-
ed but if the same one is to be injected again sufficient time
should elapse for fibrosis to form from the first injection.

Many patients who require hemorrhoid treatment will be
found to suffer from extreme constipation and many will have
an anal constricture. In these cases it is best to hospitalize
the patient and administer an anesthetic so as to correct the
deformity at same time injection is made. In this procedure
the anus is well dilated and all the hemorrhoids may be seen. The field is prepared with a good antiseptic solution. When the hemorrhoids are large it is better to make injection of each hemorrhoid, when small the injection may be made in each quadrant. The valuable feature of this type of treatment is that all hemorrhoids may be injected at once.

With this form of treatment the method of inserting the needle is the same as previously described. Some men apply a swab of phenol to the spot where the needle was inserted to guard against infection. Others don't use it on the grounds that it might cause a break in the tissue at this point and an ulcer develop. In using quinine and urea hydrochloride one must remember that patient may be sensitive to the solution and too much must not be injected. Rankin has injected as much as 12 cc. of a 5 percent solution without ill effects.

Post operative treatment in these hospital cases must be carried out carefully. The daily enema is prescribed, and Hamamelis water is injected into the rectum each day following defecation for ten days to two weeks. Necrosis on the surface of the hemorrhoids must be watched for and if it appears antiseptics such as metaphen 1 to 1,000, dichloramine -T, and other medicaments may be used. In most cases by these means necrosis can be controlled.

Teachnor33 in reviewing literature for past 20 years on injection treatment finds many authorities quite enthusiastic about the injection treatment.
Boas, considered by many to be the foremost authority in Germany thinks the treatment indicated in cases of uncomplicated internal hemorrhoids in persons suffering from diabetis, nephritis, senility, and either primary or secondary anemia.

English proctologists in general are enthusiastic over the careful use of the injection treatment. In fact, it has been the method of choice in England for many years. In England the solution almost always used is a carbolic-glycerine mixture in a strength of 30 per cent. The quinine urea-hypochloride has never been used much there chiefly because of the good results with the other.

Mr. Morely writes he has treated hundreds of cases in past 30 years by this method and reports 80 per cent cure.

In our own country Terrell (as before mentioned) advocates the use of 5 and 10 per cent of urea and quinine solutions.

Collier F. Martin has used the carbolic-glycerine treatment for many years and reports good success.

Gant says simple internal hemorrhoids will disappear like magic under the injection method. He puts 50 per cent of hemorrhoids in this class.

Teachnor has employed the injection method for a number of years with good success. The solution he recommends is pure carbolic acid, 10 per cent, in oil of sweet almond, 90 per cent. This will not cause an ulceration if properly injected. The number of injections varies and in a few cases he has had to repeat with one or two injections after two or three years but
with little inconvenience to the patient.

His technique is as follows: first he is sure there is no air bubbles in the syringe. To expose the piles he uses ordinary anoscope introduced in the usual way. Patient is asked to strain gently and piles will fall into anoscope and come into view and instrument is slightly withdrawn to point where he desires to make his first injection. The parts are swabbed with a 1 per cent solution of mercurochrome. All traces of fecal material are in this way removed and any surplus fluid is then mopped out with a dry swab. A good light is essential.

It is never wise to inject more than two piles at one time. The largest should always be injected first. In a majority of cases it is the one in the right anterior anal quadrant, and the one in which the prolapse comes most readily.

Hemorrhoids should never be injected while prolapsed. Always reduce them before the injection is made. Swelling occurs quickly after injection and is certain to complicate reduction.

He introduces the needle into the most prominent part of the tumor and pushes it in the long axis of the anal canal to the superior pole of the pile.

The solution is injected slowly. The needle is not withdrawn at once but left in position for two to three minutes. By this time blanching usually occurs and needle is withdrawn.
The quantity of 10 per cent solution injected into each pile is from 3 to 5 ggrts. sometimes less never more.

If the 10 per cent solution is used he usually makes two injections a week if 20 per cent is used make injections once a week. The patients are allowed to go about their work.

Gorsch prefers the use of phenol 5 per cent in almond oil for injection because a five needle may be used and the solution appears to be more completely absorbed due to the thinness of the almond oil. He thinks the solution should be limited to 5 cc. and gentle massage employed directly after the injection. The injection is made submucous and if this doesn't atrophy the hemorrhoid later a quinine and urea solution is used or a stronger solution of phenol, but not till the mucosa has a normal appearance.

The term Shufords Solution spoken of in many text books is a 25 per cent solution of phenol.

By employing the combined technique of a high and low injection better and more permanent results will be obtained. Less sclerosis will eventuate the anal canal and less complications will thus be found.

His after care is much the same as that previously described.

Sacks is an advocate of the 5 per cent phenol in almond oil for injection but thinks it most important that the solution be prepared correctly. Several writers have
observed influenza-like symptoms after phenol injections. Sacks has traced the factor responsible for this. He says this is analogous to protein shock and by boiling the vegetable oil for one hour and filtering these symptoms will not occur. The phenol is added after the boiling.

Hiller uses the injection of a 5 per cent phenol in cotton seed oil beneath the mucous membrane of the bowel well above the hemorrhoid. He has studied this 5 per cent phenol solution and finds it to be self sterilizing and finds it a safe method of treating properly selected cases of internal hemorrhoids.

Fansler uses both the quinine-urea hydrochloride and phenol 20 per cent for injections. He uses 5 per cent phenol in olive oil when sub-mucous injection is made. He uses the sub-mucous injection where the hemorrhoids are not very vascular and especially where they are associated with some prolapse of the rectal mucosa. The intestinal type of injection is used for the very vascular hemorrhoids. He warns that too much solution injected is the most common cause of complications.

Smith is a strong advocate of the 5 per cent quinine and urea hydrochloride solution for injection of internal hemorrhoids. He places the patient in the left lateral Sims position. The injection is made directly into the hemorrhoidal mass using a speculum for exposure. A long needle is used. The dose varies from one half to one and one half cc. The small dose
being given to individuals with high blood pressure or tuberculosis whose tissues do not react well to the injection of the drug and to pregnant women so there can be no bad effects from the quinine. At times he gets a slough and when he does he discontinues treatment until slough has entirely healed. The number of injections, in his cases, to effect a cure average about 15. He emphasizes the importance of strict asepsis.

McNamara$^{23}$ injects some aseptic solution into the rectum after injection. He usually uses S.T. 37. He feels this is a good safeguard against infection.

Dr. Aaron$^{12}$ has a quadrant technique. He divides anal region into four equal parts by imaginary line along the ano-coccygeal raphe and a transverse line through the ischia, at right angles to this line. He injects the quadrant which contains the bleeding hemorrhoid first. A quadrant is injected each week and the solution used is quinine and urea-hydrochloride 5 per cent.

Goldman and L. Segal$^{14}$ had obtained equally good results with 6 per cent phenol in olive oil and quinine and urea-hydrochloride 5 per cent solution. They have found it a good procedure to dilate the lower rectum and anus at the end of treatment.

When skin tabs are present they should always be removed before or after the pile is treated by injection.

Brooke$^{4}$ prefers to remove them before.
Complications:-

Certain complications may occur with the injection method. The following are the most frequent:

**Pain** - Anything more than slight pain of a transitory character usually means that some acute inflammation was present at time of injection, that the solution has been injected into the anal or external hemorrhoid, or that a slough has occurred. If an anal or external hemorrhoid has been injected the pain will be severe and last from 5 to 10 days.

**Slough** - This may be superficial, deep, painless or painful. Often it is superficial and painless and the patient is not aware that a slough has occurred. It becomes manifest four or five days after injection. Infection of a serious nature is rare due to the fact that the reaction of the injection has caused a good leukocytic wall to be present about the base of the slough. A slough is usually caused by one of three things: the two superficial injection of the solution, the injection of too much solution, or the injection of a hemorrhoid which is still indurated from the last injection.

**Hemorrhage** - is almost always secondary to a slough. Although many sloughs occur without hemorrhage, it is possible for a vessel to be opened up, causing severe and alarming hemorrhage. Usually the patient is not aware of what is occurring. The blood backs up in the rectum and colon till the patient feels a desire for an evacuation. He then will pass a whole
basin of blood. It is possible for the hemoglobin to drop fifty or more points from a hemorrhage of this kind. When this condition of hemorrhage exists an anoscope should be put in at once and a stitch or ligature put around the bleeding point.

Abscess - An abscess may occur following injection which may be wholly within the rectum or appear as an ordinary perirectal abscess. This complication is rare and usually is the result of a slough following too deep injection. Liver abscess has been reported. It is metastatic of course from the infection in the infected area. This complication has been used as an argument against injection but probably is no more liable to occur following injection than following operation.

Rectovaginal Fistula - This is rare. It usually occurs where the solution has been injected too deeply or in too large quantities in cases where the rectovaginal septum has been thinned out from child birth.

Solution Reactions. - Some patients have an idiosyn­crasy to quinine and may give all the symptoms of quinine poisoning. Likewise toxic symptoms due to phenol may occasionally occur.

Structures - These are of two types. The first follows extensive sloughs and is caused by cicatrization of the healing process. Stricture has been reported due to the use of a large amount of oil solution where the globules of oil become encapsulated in areas of scar tissue.
Rosser concludes that the unabsorbed oil was responsible for strictures and granuloma causing obstruction in injection cases.
SURGERY

Pre-Operative Treatment:

Yeoman\textsuperscript{37} believes in giving one ounce of castor oil 24 hours before operation and giving enemas till the water returns clear, 6 hours before the fixed time for operation. The parts should not be shaved but cleaned good with soap and water. One half hour before operation \(\frac{1}{4}\) gr. of morphine and one-one hundred and fifty of atropine is given. This is to calm the patient and arrest peristalsis and to lessen pain after operation.

Hullsiek\textsuperscript{20} does not believe in giving a laxative before operation on the grounds that it renders an extremely active area which we wish to be at rest. He gives light diet the day before operation and a sedative is given to insure a good nights sleep no breakfast is given the next morning and one half hour before operation one fourth gr. of morphine is given but no atropine, feeling that the latter causes an uncomfortable dryness in the throat of the patient.

In many cases now that he is using sacral anesthesia he gives no morphine either. Perhaps one of the best skin antiseptics to use is acriflavine over the area. However many use iodine or acetone - mercurochrome.
Anesthetic Used:—

This varies with different authors some using general, some spinal, some sacral and some local.

I think perhaps the sacral anesthetic if properly given is preferred. It apparently gives better relaxation of the sphincter muscles than either of the other three methods. One half to three per cent novocain may be used. Hullsiek uses 40 cc. of a 2 per cent solution with adrenalin. Yeoman injects one ounce of a one per cent solution into the sacral canal and injecting the lower four pairs of sacral nerves. He feels that this anesthetic is ideal for all operations about the anus and rectum.

Ether is the preferable anesthetic, when, for any reason, general narcosis is selected.

For local infiltration anesthesia a one half per cent novocain solution is adequate.

The patient is placed in the lateral position. The anus and surrounding skin painted with tincture iodine and the patient draped. To be effective the novocain must be deposited entirely around the lower two inches of the rectal wall. This requires about two ounces of solution. A ten cc. syringe and needle 2 inches in length are used. A skin wheal is raised in mid line one inch back of anus. Through this the needle is advanced and the tissues of the posterior half of the canal are infiltrated to a depth of two inches. The infiltration is made very near the rectal wall. In like manner the anterior tissues
are injected by a similar procedure through a single puncture in the raphe. The operation may begin as soon as the infiltration is completed.

Williams uses this technique with good results and is a strong advocate of it.

Hirschman sometimes uses caudal anesthesia. Using a 2 per cent solution of novocain in Ringers solution, he injects anywhere from 25 to 40 cc. depending on the size and weight of the patient. He prefers the single injection into the caudal canal. Locating the point of puncture by pressing with the index finger over the triangle formed between the two sacral cornua, this point feeling like a nuckle on pressure. The sacral hiatus is found two or three inches above the tip of the coccyx in the average individual. Using a 20 gauge flexible needle he plunges this into the sacral canal and first drawing back on plunger to determine that he isn't in a blood vessel he injects solution. This gives complete relaxation of the sphincter, levators, and in fact the whole rectum and perineum up to the level of the sigmoid.
The Ligature Operation:

The patient is placed in either the Sims or lithotomy position after proper anesthesia, two fingers are placed in the rectum and anus is gently dilated. In any case it should not be divulsed. After dilating anus Pennington clamps are placed on the anal margin over each hemorrhoid or any large smooth hemostate may be used.

Then injecting a small amount of novicain in each mass will help prolapse them and make them more definite. Each hemorrhoid is then caught with a large flat ended clamp. With a round needle and number 2 plain catgut, a suture is passed under the vessels at the apex of the hemorrhoid and these are ligated. The redundant skin and veins over the hemorrhoid is dissected loose and the pedicle is again tied with the suture that was placed around the apex, and the hemorrhoid is excised. If the sphincter is rather tight or a fissure is present, the fissure is excised and the sphincter is cut in the right or left quadrant, in the area from which the hemorrhoid was removed. This incision should be brought out in the skin to promote drainage.

It may some times be necessary where there is marked contracture of the sphincter to do a deep proctotomy, making the incision directly posterior.

This is much better than divulsion of sphincter because it can be repaired if incontinence takes place.

If sacral or spinal anesthesia has been used the
operator must be careful not to remove too much tissue.

In some cases which are very bad and no line of demarcation between the hemorrhoids can be seen it may be better to clamp in several places and tie about each mass and not do any cutting. Often tying off only three places is sufficient.

Two precautions are necessary in performing a ligature operation. One is to place the ligatures at slightly different levels to avoid tendency of stricture and the other is to leave strips of mucosa between adjacent hemorrhoids, connecting the anal skin with the rectal mucosa. Failure of this caused prolonged ulceration and delayed healing.
Clamp and Suture:-

In doing this operation either local, general or sacral anesthesia may be used. The usual pre-operative preparation is essential. The patient is put on the operating table in the lithotomy position and a large bivalve rectal speculum is inserted gently into the rectum. The sphincters are now slowly and gradually dilated. In cases where there is tendency towards a tight sphincter this procedure is of therapeutic value and is also conductive to post-operative comfort.

After dilatation some anesthetic is painted over the anus and surrounding skin (Secor uses 3 per cent tincture of iodine).

Now the most dependent part of the tumor mass is grasped with hemostat and some traction applied, then picking up the loose mucosa higher up in rectum with another hemostat will facilitate the placing of a fenestrated clamp.

The tumor is clamped with the clamp in long axis of the bowel and the tissue distal to the clamp is cut away and it is then ready for stitching.

The stitching should be done from above downward in the anal canal. In most cases the speculum may be taken out before stitching is begun and a small tug on the clamp will bring the area to be stitched into view.

The stitching should be carefully done. Short, slightly curved, round pointed needles are used and number 2 iodized catgut 20 inches long used.

The first needle should enter the fenestra of the clamp
near its tip, piercing mucosa and submucosa at the base of
the tumor held within the clamp.

After this first stitch place a needle on each end of
the suture dividing the length on either side. Now using
both needles a cobblers stitch is made through the fenestrum
of the clamp to the distal point of the tumor base. The
clamp is now removed and the suture tied firmly. Hemostasis
should be complete.

Although this appears as though a scar mass might be
left at site, Secor says it has never been his experience to
have one occur. The scar left is very slight and as it is
in the long axis of the bowel, no symptoms of any sort ever
develop.

This special fenestrated clamp seals the vessels and pre­
vents them carrying infection from the suture line to the port­
al or general circulation which was one of the complications of
this type of operation in the past.

If the tumor is partly external, the skin may be clamped
in clamp as the mucous membrane is but care must be taken not
to clamp it too hard or too much skin included in clamp. The
skin is sutured as the mucous membrane. Excellent results are
thus secured.
Clamp and Cautery:

For this operation the lithotomy position is preferable, the legs being held in stirrups and the hips well over the end of the table. Each hemorrhoid is grasped with Allis forceps. It is important to grasp each pile before beginning operation, for otherwise searching for them may cause the eschar formed by the cautery to break and bleeding ensue. All the forceps except the one attached to the most dependent pile, are supported by an assistant. Then with a second forceps, the pile being treated, is grasped near its inner pole, bringing the tumor under control of the surgeon. If no redundant skin is present, the tissues at the mucocutaneous line are divided with scissors and the pile raised up. A V-shaped section of skin is dissected up to the outer pole of the pile and the base of the pile is then snipped the distance of 1 centimeter only. Now the hemorrhoid clamp is applied tightly to the base of the pile and always in the long axis of the gut. The heel of the clamp should be toward the lumen of the gut to place greatest pressure on the vessels which supply the mass. The thumb screw is now set. No skin should be closed between the jaws of the clamp. Severe pain follows cauterization of skin. A split compress, wet in saline is placed beneath the clamp to protect the underlying tissues. The pile is cut off and the stump is charred slowly by an electric cautery, heated to a dull, red heat. The clamp is released slowly to detect any bleeding points. Should there
be any bleeding the vessels are caught and cauterized or tied with fine catgut. Each pile in turn is treated in the same manner. After operation sterile vaseline is injected into the rectum and dressing applied as in the clamp and ligature operation.

In summarizing the more common errors of technique are:

1. Failure to divide the redundant skin before applying the clamp. If left this will become edematous and cause marked suffering and persist as a skin tag.

2. Failure to dissect up redundant anal skin and apply the clamp in the groove thus formed or including skin in the clamp.

3. Failure to fix clamp with thumb screw before cutting away the pile. It is liable to slip during cauterization and bleed.

4. Cutting the pedicule too short, it should be cut close to but not flush with the clamp, in the case of small piles not cut at all, and simply charred, not burned away.

5. Applying the clamp the transverse instead of the long axis of the gut, thus favoring stricture.

6. Removing too much healthy mucous membrane with the pile. Longitional strips of membrane should be left between each adjacent stump to prevent over-contraction.
Crushing Operation:—

This operation has been used some. An Allingham's crusher may be used. It is a suitable operation for anemic and debilitated persons, as very little blood is lost.

The pile is drawn through the opening of the crusher and the bar screwed tightly shut, the base of the pile being compressed in the long axis of the bowel. The pile is then cut off with scissors beyond the clamp, which is left on for about three minutes. Care must be taken not to remove too much tissue with the hemorrhoids unless contraction will occur, and if more than two piles are treated there is danger of reopening the crushed stumps already operated upon, and causing hemorrhage.

Kanavel thinks possibly somewhat less pain follows this operation than clamp and cautery and healing is slightly more rapid.
Electrosurgical Treatment:

This method of hemorrhoidectomy has been used considerable in recent years by some surgeons. It is by no means ideal but has given some good results.

Bierman in an effort to learn the experiences of the various men with this operation sent out a questionnaire. The essential facts to be noted were: that 25 doctors replied that they had been using method for period of six months to 10 years, and that a total number of 3,384 patients had been operated by this method. The operation was performed in the office by 23 of the 25 doctors. The operation in nearly every instance was performed under local anesthesia. Those used were novocaine, procaine, butyn and quinine and urea hydrochloride. Practically all types of hemorrhoids were mentioned as being operated upon. Some preferring one type, some another.

The complete unanimity of opinion was that the results were good.

In regard to pain after defecation, in most cases it was slight or moderate, occasionally none at all, and occasionally severe. When there was pain it lasted from three to ten days, usually five.

With this operation there is practically no bleeding.

Some use high voltage machines and some low voltage. It apparently makes little difference which is used.

Bierman prefers the electrosurgical hemorrhoidal clamp
with the low voltage machines.

Four distinct variations of the application of the high frequency current are available in the destruction of hemorrhoids.

If there be but a small varicose area, perhaps the Oudin type of current is better. It is used until a complete dehydration of the area occurs. This current may be intensified by grounding, by placing large metal electrode under patient and connecting to radiator or pipe, etc. This method is called electodesiccation. The destructive action of this current is not as intense as in electrocoagulation.

Fulguration consists of the showering of sparks from the tip of a pointed electrode held a short distance from the tissue. The action of this current is a superficial carbonization and is therefore little employed.

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 pile to be removed has been coagulated.

The procedure most generally employed is that of electrocoagulation. This current is a bi-terminal one with the same hook-up as that utilized in diathermy, except that the strength of current is much greater so as to produce destructive action. There are two methods of application: one is the use of a large dispersing electrode placed upon the body anywhere, while the active pointed electrode rests
upon area to be destroyed. The other technique is the use of a devise consisting essentially of two active electrodes held in a clamp so as they may be applied one on either side of the hemorrhoid. This is the preferable method in every case 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. The area destroyed can thus easily be controlled.

The clamp used here does not compress the tissues tightly together, as is done by clamp and cautery method, but it insures a broad base which lessens the possibility of the tissues tearing apart and secondary hemorrhage resulting.

After the base has been coagulated the hemorrhoidal mass above it may be removed with scissors, scalpel, or the electric cutting current.

Mmein never considers using the older scalpel method any more but used the electric current entirely for operative hemorrhoids. He gives a local anesthesia then some gauze is rolled into a pear shaped mass and inserted into the anus beyond the pile bearing area. Traction is then made on this. This has the effect of evertng the pile bearing area. A needle bent to form a small arc of a large inch is used as the electrode. Each pile is punctured at the distal end and the electrode is inserted for a distance of about one half inch. Coagulation current is then turned on until the area of coagulation appears at the entrance. About the
same time the hemorrhoid proceeds to "boil". The electrode is removed with the current still on. In cases of thrombosed piles his technique is somewhat different. The ordinary straight needle is used. The pile is opened with a cutting current and the clot removed by sponging. A ball electrode is then used and the interior of pile is thoroughly sprayed with the coagulating current. No morphine suppositories are used. No sutures are inserted into the wound. The wound is dressed with a pyramidal dressing. The time occupied for each pile is about ten seconds.

With this method there is practically no post-operative edema, and subsequent pain in most cases is absent. The patients get up on the fifth day and are discharged on the seventh. The amount of hemorrhage in this type of operation is one half teaspoonful of blood or less. A month afterward the site of operation shows practically no evidence of scar to the naked eye.

Apparently electrosurgery is a favorite and successful procedure with some men.
Post Operative Care:

Good pre-operative treatment and care has much to do with lessening the post-operative discomfort.

To minimize post-operative pain following anorectal disease two general principles are essential: First, cleanliness, altho absolute asepis is impossible, is very important. This is helped by the few particulars of the pre-operative care which have previously discussed. Post-operative pain is due more to low grade infection than to tissue removed. Hot sitz baths are excellent or hot packs are good for relieving post-operative pain.

Second, is the preparation of the rectum for expulsion of first contents post-operative. If one or two ounces of sterile vaseline are injected into the rectum with a metal syringe after operation post operative pain is greatly relieved. This serves as a soft dressing and protection and prevents dry crust formation. At the time of the first bowel evacuation the entire rectal wall and anal canal are coated with vaseline acting as a lubricant and protective dressing to the raw surfaces.

To further relieve pain of first bowel evacuation, on the morning of third day six to eight ounces of cottonseed oil may be injected. If good results do not follow within an hour, then an injection of a pint of normal saline is a good policy.

Best feels that the giving of drugs to tie up the bowels
is unnecessary. The bowels, due to reflex mechanism, do not want to empty after a rectal operation.

The administration of mineral oil, plain or with agar, is begun on the evening of the second post-operative day and is continued thru convalescence.

For local reduction of pain a 1 per cent nupercaine ointment applied to the anus is good. Hot moist packs or dry heat may also give comfort at times. Usually some morphine or codeine is necessary during the first two days.

Liquid diet without milk should be provided the first two post-operative days, soft diet the third day and on the fifth day patient may go on normal diet.
CONCLUSIONS

In summarizing we may conclude that a large number of cases seen in general office practice will be hemorrhoidal cases.

When seen the etiology should be sought for and treated as well as the condition itself.

Surgery is the only type of treatment which will assure permanent relief in external hemorrhoids.

Uncomplicated internal hemorrhoids are the only type suitable to injection treatment. Either phenol in oil or quinine and urea hydrochloride solutions may be used successfully for this.

Complicated internal hemorrhoids should be treated by surgical methods.

Hemorrhoids are amenable to treatment and with proper technique and careful study of the type of treatment indicated little discomfort results.

Good post-operative treatment is very essential in the lessening of the amount of discomfort in hemorrhoid cases.

Recurrences are few if the etiology is sought for and treated.
Case 1.

Mr. Blank, age fifty-four, married, carpenter, referred in December, 1924, with a history of protruding hemorrhoids after bowel movement for the last three or four years. About three weeks prior to the examination he had three protruding masses which he could not replace after an attack of diarrhea. He was treated by palliative methods until the protruding parts could be returned. During this time he suffered severe pain. At the time of examination, he had a foul breath and coated tongue. Three internal hemorrhoids which were made to protrude without difficulty, but which returned spontaneously, were present. Proctoscopic examination disclosed two or three smaller internal hemorrhoids. The three large tumors were treated while protruding and were immediately replaced into the rectum. He experienced some discomfort, but the parts did not protrude after treatment. He did not remain in bed, and was allowed to continue his normal habits. The first treatment was given in his home. Six days after the first treatment, he had a second, followed at two six-day intervals with two more, all tumors being injected at each of the last three treatments. The man continued to follow his occupation after the second treatment, and has had no recurrence of his previous condition.

Comment:— This case was selected to show the more common type of hemorrhoidal condition seen in one's office.
Case 2.

Mrs. Blank, age twenty-eight, small physique, weight 90 pounds, mother of three children.

This patient came in with a history of occasional attacks of protruding hemorrhoids which began during her first pregnancy. From time to time, she had some bleeding, but never suffered much pain. Examination in November, 1921, disclosed one internal hemorrhoid, second degree, and three internal hemorrhoids of the first degree, with a relaxed sphincter ani muscle.

She was given five treatments, varying from four to ten days apart; all tumors were injected at each sitting. The hemorrhoids were injected through the sphincteroscope— injection made in the upper margin of the tumors. She was never confined to bed. She experienced some discomfort which required aspirin and codein after the first and third treatments. So far as known, she has had no further trouble. This patient was very amenable to treatment and continued her visits to the office for examination and treatment until she was dismissed.

Comment:— This case was selected to show the relationship of pregnancy to hemorrhoids and the necessity of thorough cooperation on the part of the patient.
Case 3.

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Doctor Blank, age thirty-six, married, called at the office during the latter part of June, 1922.

This patient complained of a small, protruding, bleeding hemorrhoid after each bowel movement for the last five or six days. He stated that he had never had any previous rectal symptoms. He was well developed, robust, and always had good health except a case of typhoid at the age of sixteen.

On examination, one internal hemorrhoid, second degree, which could be made to protrude by straining down as in bowel movement, which was easily reduced, was found. Injection was made in the upper end of the hemorrhoid while it protruded. The pile immediately returned into the lower part of the rectum. The patient was allowed to go about his business. He complained that he experienced some discomfort in the afternoon, but did not warrant taking anything for relief. He had regular bowel movements, continued his regular habits, and did not report for further examination or treatment. He was seen from time to time since, and there has been no recurrence.

Comment:— This case is an acute internal hemorrhoidal condition, second degree, and was selected to show the results obtained from a minimum number of treatments when the treatment is instigated early.
Case 4.

Doctor Blank called at the office in July, 1924, complaining of protruding, bleeding hemorrhoids after each bowel movement from time to time for the past two years. He had a history of "repeated attacks of piles" for the past five or six years; at times severe enough to prevent him from working from three to four days during each attack. He was tall, anemic, underweight, general relaxed muscular condition; complained of insomnia and nervousness; inclined to become irritated on the slightest provocation. Examination revealed two internal hemorrhoids, second degree; three internal hemorrhoids of the first degree. All tumors were injected in the afternoon and he left that night on the eight o'clock train for his home. He was not seen again until two years later when he stated that he had a complete relief of symptoms since the first treatment up until three months ago, when he had another "attack of piles" following drastic purgative. He has had some bleeding and a slight protruding mass, occasionally after bowel movement, since that time. Examination at this time showed one internal hemorrhoid, second degree, which could be made to protrude by straining down but would return spontaneously, and two small internal hemorrhoids of the first degree. He was treated in the afternoon and was advised to go to the hotel and stay until the next morning. He went to the hotel and remained about three hours. Having no discomfort, he arose and went to the theater that
night, leaving for his home the next morning. He had no dis-
comfort following this treatment, and returned to his work.
When seen one year later, he stated he was entirely free from
symptoms and apparently cured; being so firm in his convictions
he did not deem it necessary to have further examination, but
said if further trouble developed he would return. Incident-
ally he has gained in weight, sleeps well, and petty annoy-
ances do not bother him as before the first treatment.

Comment:-- This case is one of protruding, bleeding hemorr-
haps, second degree, and was selected to show the impor-
tance of keeping the patient under observation until sufficient
treatments had been given to prevent recurrences.
Case 5.

A.J. 26 a white man, aged 46, seen, April 30, 1932 complained chiefly hemorrhoids. His family and past history presented nothing of importance except for history of mild alcoholism during past few weeks. The patient was well developed, rather obese and somewhat under the influence of alcohol. Examination of chest and abdomen presented no abnormalities. Rectal examination showed a large cluster of protruding externo-internal hemorrhoids with mild associated proctitis.

May 4, after 4 days of rest in bed and palliative treatment the patient was prepared for operation. Usual pre-operative morphine was given and under low spinal anesthesia the hemorrhoidal masses were resected and the wounds closed loosely with chronic catgut.

During the first 12 hours after operation morphine was used freely for pain and on one occasion morphine with 3 cc. of 25 per cent magnesium sulphate was given. All these injections were given in deltoid of right arm. Ten hours after operation rather severe pain was noticed in right arm at site of injections and temperature rose to 103 F. On the morning of the first day after operation the pain had increased in severity, temperature was 104 F, and pulse rate was 140 and of good volume. There was tenderness and some induration in the arm, but no crepitation. At 2 PM the same day the patient
showed evidence of severe shock, the pulse was extremely rapid and barely palpable, temperature 104.4, and arm showed wide spread crepitation. Immediately the arm and shoulder were incised and there was an escape of foul smelling gas and small amount of serosanguineous fluid. The muscles of the arm and shoulder were discolored and elevated from the bone. Tubes were placed in the wound and 100 units of concentrated perfringers antitoxin was given intravenously. Smears and cultures showed presence of B.Welchi in large numbers.

Despite supportive treatment and the giving of more antitoxin the patient died fifty six hours after operation, death occurring from an overwhelming toxemia.

Comment:- This was selected to show the possibilities of post-operative infection following surgical treatment.
Case 6.

Mrs. Blank, came into the hospital complaining of a dragging sensation in rectal region for the past six years. This feeling was relieved by lubricating ointments to rectal canal. Patient had some arthritis in wrist joints and left knee. These manifestations had been more or less fleeting often requiring hot tub baths to relieve.

Rectal examination revealed small tabs covered with skin protruding from the margin of anal orifice. These were not tender to manipulation, but were moderately injected. Sphincter was rather spastic. Walls were not tender, introduction of digit being only slightly uncomfortable.

Patient was given usual pre-operative care and hemorrhoids were removed by the clamp and suture method. Following operation hot packs were applied every four hours and morphine grains one fourth was given six hours following operation. After first day post-operative, patient was given sitz baths. at any time there was sign of pain. On 4th day in preparation for first bowel movement a one ounce of 2 per cent Butyn was instilled in anal canal, and in 30 minutes followed with a normal saline enema. Patient made an uneventful recovery with very slight amount of post-operative pain and thus far has had no recurrence of symptoms.

Comment:— This case was selected to show the importance of good post-operative care in the lessening of pain.
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