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Modern Surgery, 4th edition, by John Chalmers  
Da Costa

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## Modern Surgery - Chapter 28. Diseases and Injuries of the Rectum and Anus

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## XXVIII. DISEASES AND INJURIES OF THE RECTUM AND ANUS.

**Examination of the Anus and Rectum.**—Whenever possible, have the bowels emptied before an examination, by the administration of a cathartic and the use of an enema.

Place the patient on the left side, with the knees drawn up and the pelvis elevated (the left-lateral-prone position of Sims). The anus is carefully inspected, the anal folds being opened during the process. By inspection the surgeon can notice the external opening of a fistula, external piles, protruding internal piles, mixed piles, pruritus, discharge from the rectum, eczema, fissure, tumor, ulcer, condylomata, or abscess.

Next, a digital examination of the rectum is made. The nail of the index-

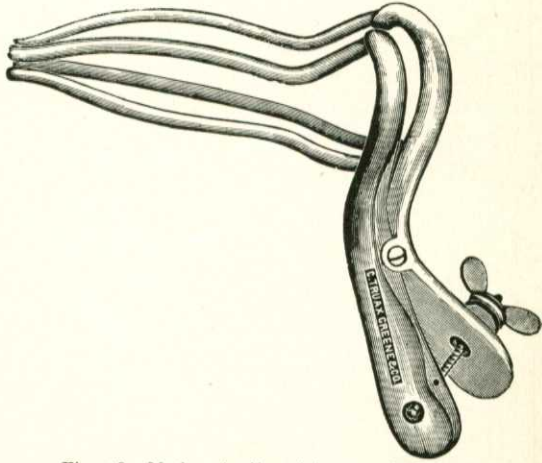


Fig. 478.—Mathews' self-retaining rectal speculum.

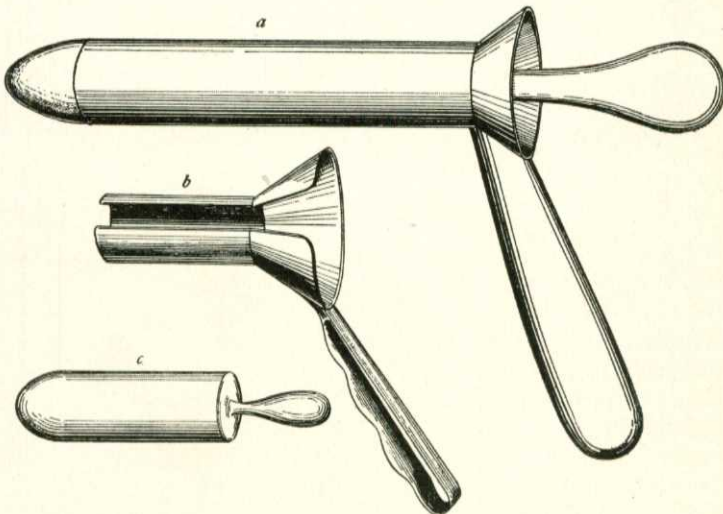


Fig. 479.—Kelly's rectal specula.

finger is filled with soap and the finger is oiled or, better, is covered with a rubber finger which is oiled. The digit is gently inserted through the sphincter, the patient being asked to strain lightly while it is passing. A

digital examination enables the surgeon to detect an ulcer, a polypus, a tumor, a stricture, and to determine certain points regarding the condition of the prostate in the male and the uterus in the female.

Next, in some cases, the rectum must be examined with a speculum. It is not often necessary to give ether. Mathews' speculum (Fig. 478) is very serviceable. Sims's duck-bill speculum is a valuable instrument. The speculum is warmed, oiled, and slowly introduced. It is first directed toward the umbilicus, and when it passes the sphincter its direction is gradually altered until it is toward the promontory of the sacrum. Illumination is obtained by direct sunlight, or by a forehead mirror and an electric light. This examination will extend, confirm, or disprove the findings of the digital

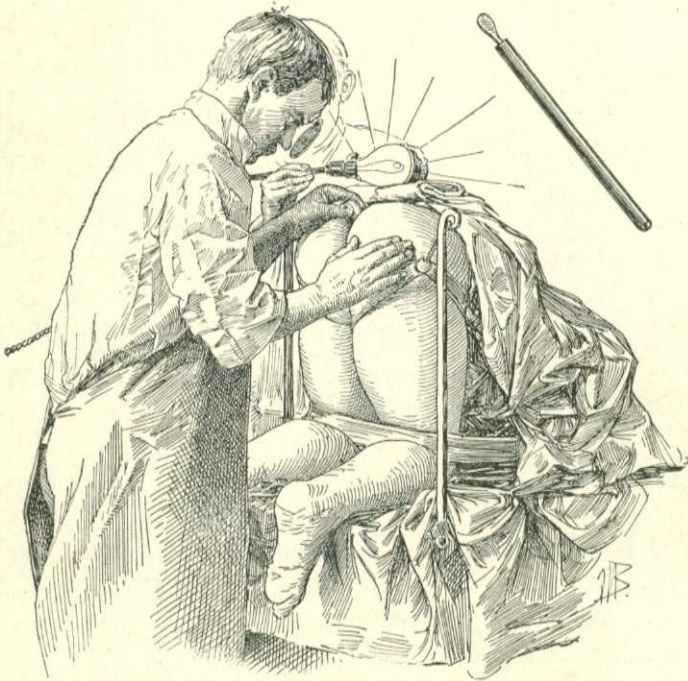


Fig. 480.—Examination of the rectum by reflected light (Kelly).

examination; ulcers, hemorrhoids, and malignant growths can be carefully examined, and the condition of the rectal mucous membrane can be thoroughly investigated.

Marion Sims in 1845 demonstrated the ballooning of the vagina by atmospheric pressure, and in 1870 Van Buren applied this method to the rectum. Kelly in 1895 put forth his straight tubes and described in detail the methods and advantages of examination by them, and the great diagnostic value of ballooning the rectum. Kelly's method of examination is shown in Fig. 480. The tubes are shown in Fig. 479. It is not necessary to give ether. The patient is placed in the knee-chest position (Fig. 480). A tube containing an obturator is well greased with vaselin. "The buttocks are drawn apart, and the blunt end of the obturator is laid on the anus, which is also coated



with vaselin. The direction of the instrument should be first downward and forward, and, when the sphincter is well passed, up under the sacral promontory. The moment the speculum clears the sphincter ani and the obturator is withdrawn, air rushes in audibly and distends the bowel." The bowel being distended with air, the mucous membrane is plainly seen as the tube is slowly withdrawn and the light is reflected into the speculum. The Kelly tube must be used with great care, as harm may be done by it, and the longest tube should only be used in exceptional cases.

I use with the greatest satisfaction Tuttle's pneumatic proctoscope (Fig. 481). Dr. Tuttle describes it as follows ("Diseases of the Anus, Rectum, and Colon," by James P. Tuttle): "This instrument is composed of a large

cylinder (*f*), into one part of the circumference of which is fitted a small metallic tube closed by a flint-glass bulb at its distal end. The electric lamp (*d*) is fitted upon a long metallic stem, and carried through the small cylinder to the end of the instrument as shown in the illustration. The proctoscope is introduced through the anus with the obturator (*a*) in position. As soon as the internal sphincter is passed, this obturator is withdrawn and the bayonet-fitting plug (*b*), which contains either a plain glass window or a lens focused to the length of the instrument to be used, is inserted in the proximal end of the

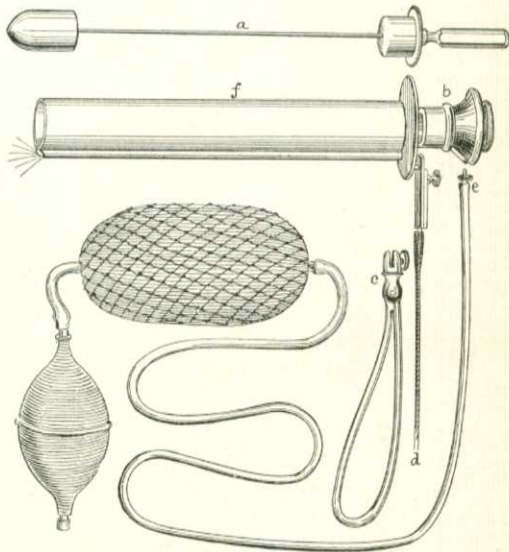


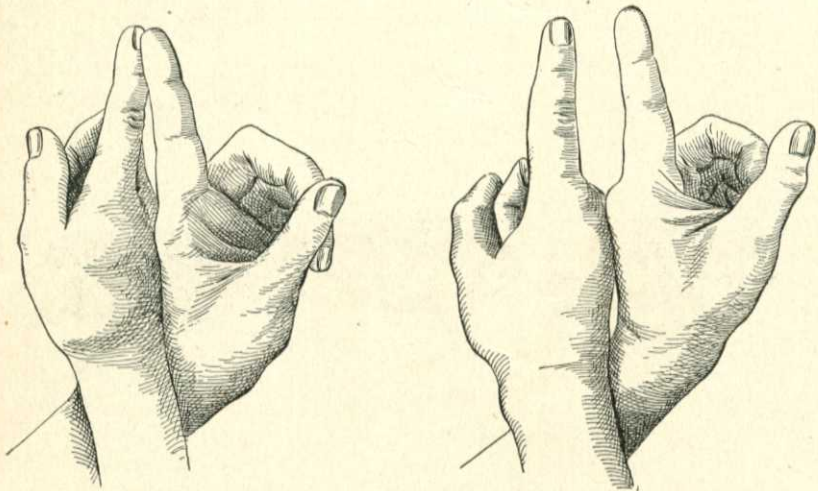
Fig. 481.—Tuttle's pneumatic proctoscope: *a*, Obturator; *b*, plug with glass window closing end of tube; *c*, handle; *d*, cords connecting instrument with battery; *e*, inflating apparatus; *f*, main tube of proctoscope.

instrument. This plug is ground to fit air-tight and thus closes the instrument perfectly. The plug being inserted in the tube, a very slight pressure upon the hand-bulb will cause inflation of the rectal ampulla to such an extent that the whole rectum can be observed and the instrument can be carried up to the promontory of the sacrum without coming in contact with the rectal wall. Further dilatation will show the direction of the canal leading into the sigmoid, and by a little care in manipulating the instrument and keeping the gut well dilated in advance, it can be carried up into this portion of the intestine without the least traumatism of the parts. If any fecal matter obscures the light by being massed or smeared over the glass bulb the plug can be removed, and a pledget of cotton, introduced with a long dressing forceps, will wipe this off so that the plug can be reintroduced and the examination continued with very slight delay or inconvenience. The adjustable handle (*c*) fits on the rim of the instrument and thus converts it into a Kelly tube.

This instrument is operated with an ordinary dry battery of four cells. It is better, however, to have a battery with six cells, as it will not require being recharged so frequently."

If a patient is placed in the knee-chest position and anesthetized, the sphincter can be stretched by the fingers, and the rectum will distend with air and can be easily examined. The fingers are introduced as suggested by Martin (Fig. 482), and the rectum becomes visible when they are separated (Fig. 483).

**Foreign Bodies in the Rectum.**—It is not at all unusual for hard undigested articles taken with the food to lodge in the rectum. They can usually be removed through a speculum by means of forceps. In some cases ether must be given and the sphincter stretched; in others, the sphincter must be divided. Sometimes large bodies are voluntarily inserted and the individual is unable to remove them. Lewis H. Adler ("Am. Med.," July 20,



Figs. 482, 483.—A new and simple method of proctoscopy (Thomas C. Martin).

1901) removed the valve of a steam radiator pipe from the rectum. The small end was one and one-half inches in diameter; the large end was two and one-half inches in diameter. The patient had been in the habit of introducing it frequently and removing it with a hook of galvanized iron wire. Marmaduke Shield ("Lancet," Oct. 12, 1901) reports the case of a man of sixty years of age who forced a gallpot into the rectum. The pot was two and one-half inches in diameter and two and three-fourths inches in height. The patient broke it trying to get it out. Shield incised the rectum from behind and removed the article by means of obstetric forceps.

A remarkable series of similar cases will be found in "Anomalies and Curiosities of Medicine," by Geo. M. Gould and Walter M. Pyle.

**Wounds of the rectum** require free drainage, antiseptic irrigation, and antiseptic dressing. If the peritoneum is opened, laparotomy must be performed, the peritoneal cavity irrigated, the rectal wound sutured, and the abdomen drained.



**Ischiorectal abscesses** are situated in the ischiorectal fossa. They travel in the line of least resistance, which is upward, and more often burst into the bowel than externally. They are caused by cold, by external traumatism, by perforations of the rectum by hard fecal masses, or by the passage of bacteria into the fossa through a fissure, an ulcer, or an ulcerated pile. They may be either acute or tuberculous. In many cases the process is at first tuberculous and mixed infection with pyogenic bacteria takes place.

The **symptoms** are the same as those of abscess anywhere, the swelling, however, being brawny and fluctuation being hard to detect. Pain in the groins is often complained of, and there may be enlarged glands in these regions. They commonly result in fistula, and a patient should be warned of this tendency before operation is performed.

The **treatment** is instant incision, the cut radiating from the anus like the spoke of a wheel. Incision is followed by insertion of a finger, breaking down the necrotic septa of cellular tissue, irrigation and packing with iodoform gauze or the insertion of a drainage-tube. If a fistula is found to open in the rectum, it is operated upon as directed in the article upon Fistula.

**Imperforate Anus.**—There are two forms of this condition. In one form the rectum empties into the bladder, vagina, or urethra. In the other form there is no rectal opening either upon the surface of the body or in the

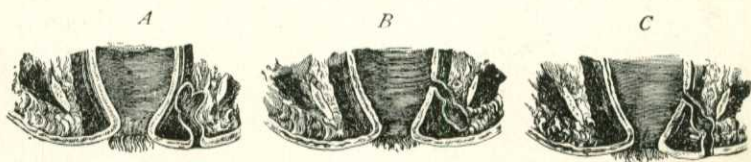


Fig. 484.—Fistula in ano: A, Blind external; B, blind internal; C, complete (Esmarch and Kowalzig).

urinary organs. The diagnosis is usually at once apparent, except in cases where the anus looks normal, when the diagnosis will often not be made until symptoms of obstruction arise.

**Treatment.**—If the rectum bulges when the child cries, open into it with a knife and keep the opening patent by inserting a plug of iodoform gauze. In cases in which the rectum is more deeply seated a catheter is introduced into the bladder, an incision is made from the anus to the coccyx, the rectum is sought for, and when found is sêwed to the anus, and is incised. In some cases Keen and others have performed Kraske's operation, pulling down the rectum to the anal margin, sewing it there, and incising the occluded anus. If the rectum cannot be found or cannot be pulled down, an artificial anus must be made.

**Fistula in ano** is the track of an unhealed abscess. An abscess in the anal region is apt to refuse to heal because of the constant movement of the parts (produced by respiration, coughing, the passage of gas, defecation, etc.). The passage of feces will keep a fistula open. If a tuberculous ulcer perforates, a tuberculous sinus forms, and a tuberculous sinus is also apt to follow a cold abscess of the ischiorectal fossa. Fistula is often associated with phthisis pulmonalis, and is not unusually linked with piles, cancer, or stricture.

There are three varieties of fistula—the blind external (Fig. 484, A), the

blind internal (Fig. 484, B), and the complete (Fig. 484, C). The *external* opening is usually near the anus, but may be far away, and there may be only one pathway or there may be several sinuses. In a healthy individual the external orifice is small and a mass of granulations sprouts from it. In a tuberculous fistula the external orifice is large and irregular, with thin and undermined edges, shows no granulations, extrudes small quantities of sanious pus, and the skin about it is purple and congested. In a fistula following an anal abscess the *internal* opening is just above the anus, between the two sphincters. In fistula following an ischio-rectal abscess the internal opening is usually near the anus, but may in rare cases be above the internal sphincter. A sinus may run up under the mucous membrane from the internal opening. In a *horseshoe fistula* the internal opening is usually upon the posterior wall of the bowel, "and from this a tract leads into the ischio-rectal fossa, not on one side only, but upon both. Therefore we have one opening into the bowel and one through the skin on either side." \* In some cases of horseshoe fistula there is no internal opening; in other cases there are two openings. In an old fistula the track becomes fibrous and cannot collapse. Two or more fistulæ may exist in the same patient. In dealing with a fistula always determine if the condition is stationary or progressive.



Fig. 485.—Operation for fistula in ano (Esmarch and Kowalzig).

The **symptoms** of a complete fistula are the passage of feces and gas through the opening and the flow of a discharge which stains the clothing. In a complete fistula a probe can be carried from the external opening into the bowel. After a time incontinence of feces is apt to come on, repeated attacks of inflammation thickening the rectum and destroying its sensibility. From time to time the opening will block, and new abscesses form. In examining a fistula use Brodie's probe, as its flat handle enables one to locate the direction the bent instrument has taken, and its slender shaft will find its way through a very small channel.

**Treatment.**—In treating a fistula cleanse the parts, as cleanly work, though it will not prevent pus, will limit suppuration. The external parts are washed with soap and water. The rectum, which must be empty, is irrigated with hot saline solution. Corrosive sublimate should not be used in the rectum, because it is irritant, causes a flow of serum, and hence lessens tissue resistance, and is rendered inert as an antiseptic by being converted into sulphid of mercury. Anesthetize the patient. If operating upon a complete fistula, pass a grooved director into the external opening, carry it through the sinus, make it enter the bowel, bring its point out externally, and lift the tissues between the sinus and the surface. Incise the tissues (Fig. 485). Cut the sphincter at a right angle to its fibers, and do not cut it more than once at one operation. Push the finger to the depth of the wound, to determine that the sinus does not ascend above the internal opening. If there are two fistulæ, cut one through, and when one wound has healed, cut the other. In some straight sinuses the tract can be extirpated and the parts sutured, primary union usually resulting. Look for branching sinuses, and if any are found

\* "Diseases of the Rectum, Anus, and Sigmoid Flexure," by Joseph M. Mathews.



slit them open. Examine carefully to see if there is a sinus beneath the mucous membrane of the bowel, and if such a sinus is found slit it up. Curet all sinuses, and if they are very fibrous clip them away with scissors. Cut away diseased skin; irrigate with salt solution; pack with iodoform gauze; and dress with gauze and a T-bandage. In forty-eight hours remove the dressings, spray with peroxid of hydrogen and irrigate with salt solution, dust with iodoform, insert lightly to the depths of the wound a piece of iodoform gauze, and reapply the dressings. Dress the wound thus every day until healing is almost complete. It is unnecessary to confine the bowels beyond forty-eight hours, at which period, if they have not moved, an enema is given. If the dressing at any time becomes stained with feces, re-dress at once. Get the patient out of bed as soon as possible.

If a blind external fistula does not heal, every sinus must be incised, and thickened walls must be cut away or scraped away.

In a blind internal fistula an external incision is made to convert the case into a complete fistula, which is then treated as is directed above.

In horseshoe fistula, more than one operation may be necessary in order to avoid cutting the sphincter muscle twice in one operation, a proceeding which would probably lead to fecal incontinence. One side alone is operated on. Sinuses are opened and scraped, the sphincter is divided, the angles and edges of skin are trimmed away, and the wound is packed. When the wound is healed, or nearly healed, the other side should be operated upon.

If fecal incontinence results from an operation for fistula, remove the scar-tissue and endeavor to suture the separated muscular fibers. Should an operation be undertaken for fistula if phthisis exists? Many of the old masters said *no*. Mathews sums up the modern view: in incipient phthisis operate; in rapidly progressive fistula operate whether cough exists or not; if much cough exists, do not operate unless the fistula is rapidly progressive; in the last stages of phthisis do not operate.

**Pruritus of the anus** is a symptom, and not a disease. It may be due to piles, fissure, seat-worms, eczema, nerve-disturbance, kidney disease, jaundice, constipation, inebriety, the opium-habit, torpid liver, dyspepsia, alcohol, tea-drinking, vesical calculus, tobacco-smoking, urethral stricture, uterine disease, diabetes, ovarian trouble, and mental disorder. The itching is worse at night, and is often of fearful intensity.

**Treatment.**—Remove the cause. Prevent constipation. Several times a day wash the parts with very hot water, dry them, and apply a mixture containing ʒj of camphophenique and ʒij of water (Mathews). Kelsey directs that the parts be cleansed twice a day, and after each cleansing that the following ointment be applied: menthol, ʒj; cerat. simp., ʒij; oil of sweet almonds, fʒj; acid. carbolic., ʒj; pulvis zinc. oxid., ʒij. Mathews commends the following mixture: chloral, ʒj; gum-camphor, ʒss; glycerin and water, each ʒj.\* In this disease a "scarf-skin" forms, which must be made to peel off by the application of iodine, pure carbolic acid, corrosive sublimate (gr. iv to ʒj of cosmolin), calomel (ʒij to ʒj of cosmolin), or camphophenique. In obstinate cases paint the parts, night and morning, with a mixture of 60 gr. of alum, 30 gr. of calomel, and 300 gr. of glycerin; or smear with an ointment composed of ½ part of oleate of cocain, 3 parts of lanolin, 2 parts of

\* "Diseases of the Rectum."



vaselin, and 2 parts of olive oil (Morain). In very severe cases touch with a solution of silver nitrate (1 : 10), employ the Paquelin cautery, or resect the mucous membrane as in Whitehead's operation for hemorrhoids.

**Fissure of the anus** is an irritable ulcer at the anal orifice producing spasm of the sphincter. Pain exists because twigs of nerves are exposed upon the floor of the ulcer. Fissure is caused by constipation or traumatism. The **symptom** is violent, burning pain, sometimes beginning during defecation, but usually at the end of the act, and lasting for some hours. Constipation exists, and often pruritus. Examination discloses a fissure, usually at the posterior margin, running up the bowel one-quarter to one-half an inch. Piles often exist with fissure.

**Treatment.**—The *palliative treatment* is to prevent constipation, to wash out the rectum with cold water, and apply an ointment made by evaporating ʒij of the juice of conium down to ʒij, and adding it to ʒj of lanolin and gr. xij of persulphate of iron. Pure ichthyol may do good. The *operative treatment* is to stretch the sphincter. In order to stretch the sphincter the patient is anesthetized, the surgeon's thumbs are inserted into the rectum, and the parts are stretched until the thumbs touch the ischia. After stretching the sphincter incise the floor of the fissure, scrape it with a curet, and touch it with nitrate of silver stick.

**Hemorrhoids, or Piles.**—There are three varieties of varicose tumors of the rectum, namely: *internal*, which take origin within the external sphincter; *external*, which take origin without the external sphincter; and *mixed* hemorrhoids, which are a combination of the two.

External hemorrhoids are covered with skin. Internal hemorrhoids are covered with mucous membrane. The term external hemorrhoids is not strictly accurate, as hemorrhage does not occur in external piles, and all external piles are not related to the external hemorrhoidal veins. An external pile may involve the veins or the skin.

**External Hemorrhoids.**—External hemorrhoids are classified as thrombotic, varicose, inflammatory, and connective-tissue external hemorrhoids (Tuttle).

**Thrombotic External Hemorrhoids.**—These are external hemorrhoidal veins filled with clot. When an inferior hemorrhoidal vein inflames, the parts are itchy, painful, and swollen, and defecation increases the pain. The blood clots in the inflamed vein and sometimes the vessel ruptures.

*Symptoms and Treatment.*—External piles of this variety are usually, but not always, multiple. Small oval tumors appear beneath the skin or the junction of the skin and mucous membrane. They appear suddenly. The parts itch and pain, defecation increases the pain, and each pile increases rapidly in size. When the vein ruptures, a livid, soft enlargement rapidly forms. External piles of this variety may be absorbed, may become organized into a scar, or may suppurate. These piles do not bleed. In treating external hemorrhoids some surgeons merely use remedies to combat the inflammation. An old plan of treatment is to incise the blood-tumor, turn out the clot, and pack with a bit of iodoform gauze. Mathews freezes the part or injects cocain, catches up the blood-tumor with a volsellum, excises the tumor and the tabs of inflamed skin, dusts the part with iodoform, and dresses it with antiseptic gauze. The bowels should not be allowed to move

for two days. Never inject external piles with carbolic acid; it causes great inflammation, excessive pain, and is not free from danger. If the patient declines operation, order rest, a non-stimulating diet, avoidance of tobacco (Mathews), the use of saline purgatives, injections into the rectum of cold water several times a day, sponging of the anus, frequently with hot water, and the application of hot poultices. As the acute symptoms begin to disappear use lead-water and laudanum; when they have nearly subsided apply zinc ointment. Extract of hamamelis is a valuable application to external piles.

**Varicose External Hemorrhoids.**—These are varicose external hemorrhoidal veins and are visible at the anal margin when the patient strains. They rarely produce pain or discomfort and it is seldom that operation is necessary. The bowels should be moved daily, but not with violent purgatives, and after each movement cold should be applied to the anus, while the patient is recumbent. Tuttle advocates the use at night of an ointment containing ʒij of suprarenal extract and ʒvj of lanolin. The ointment is spread on cotton-wool, which is applied to the anus and held in place by a T-bandage.

**Inflammatory Piles.**—By this term we mean edematous inflammation of the anal folds. The inflammation may be due to a traumatism, the presence of an ulcer or fissure, etc. There are burning, itching, and swelling of the anus, which are greatly increased by defecation. One or more pear-shaped swellings can be seen at the anal margin.

In some cases medical treatment produces cure. This treatment consists, during the first twenty-four hours, in the use of cold and of rest in bed. After this period heat should be employed. Tuttle applies gauze soaked in a 25 per cent. solution of boroglycerid and places a hot-water bag over this. He also recommends the following ointment to be applied two or three times a day:

R.	Morphinæ sulph.,	gr. v-x;
	Ichthyol,	ʒ iv;
	Ung. belladonnæ, }	
	Ung. stramonii, }	āā ʒ j.

Sig.—Apply two or three times a day.

If these means fail, ether is given, the sphincter is stretched, and the tumors are cut away.

**Connective-tissue External Hemorrhoids (Skin Tags).**—They are due to hypertrophy of mucocutaneous tissue at the anal margin. Usually they result from acute inflammatory external piles, sometimes they arise gradually as a result of chronic anal or rectal inflammation or irritation, and they may be due to varicose or thrombotic external piles (Tuttle). They produce no trouble when not inflamed. The treatment, if they cause serious annoyance, is extirpation.

**Internal hemorrhoids** are varicose tumors of the internal hemorrhoidal plexus, and are found internal to the external sphincter, just within the anus, and they prolapse easily. They are not simple varicosities, but new tissue has been formed, and they are in reality vascular tumors. They are covered with mucous membrane. *Capillary* piles are small, sessile, with a surface like a mulberry, and bleed freely. Children are not very liable to develop



piles, excepting the capillary form. *Venous* piles are the most common variety. They extend from just above the anal margin of the rectum for an inch or more. They are purple in color, soft, irregular in outline, and are usually multiple. They bleed when irritated by hard fecal masses, but not so easily as the capillary piles. Each pile is composed of a varicose vein, some fibrous tissue, and a few arterial twigs. *Arterial* piles are very unusual. They are large, smooth, pedunculated, bleed easily and freely, and contain, besides a distended vein, arteries of some size.

Anything producing venous congestion in the rectum—constipation, diseases of the rectum, enlargement of the prostate, pregnancy, tumors of the womb, congestion of the liver, cirrhosis of the liver, certain diseases of the heart and lungs, sedentary occupations, relaxing climate, and stricture of the urethra—will cause hemorrhoids.

*Symptoms and Treatment.*—If there is no bleeding and no protrusion, the piles give no trouble. The first symptom is usually hemorrhage, and rectal examination by the speculum will make clear the condition. After a time, during defecation, the piles protrude, they may reduce themselves when the patient stands up, or it may be necessary to push them in. Pain does not exist in uncomplicated cases, and pain during or after protrusion means “abrasion, fissure, or ulceration” (Mathews).

*Palliative Treatment.*—This will not cure, but it will give great comfort. Some people only suffer at rare times when the liver is congested, and such subjects will not submit to operation. Remove, if possible, the cause (alcohol, irritating foods, want of exercise, etc.); restrict the diet; insist on regular exercise; give a course of Carlsbad salt, and follow this by the stomach use of bichlorid of mercury (gr.  $\frac{1}{4}$  after each meal). Prevent constipation by a nightly dose of extract of cascara. After each bowel movement wash the parts and syringe out the rectum with cold water, and dry outwardly with a soft rag. If the hemorrhoids prolapse, after restoring them and injecting cold water, insert a suppository containing gr. v of the extract of hamamelis, and use another suppository at bedtime. When the piles prolapse and inflame, rub Allingham's ointment on the parts (ʒij each of ext. of conium and ext. of hyoscyamus, ʒj of ext. of belladonna, and ʒj of cosmolin). Mathews uses gr. xij of cocain, ʒj of iodoform, ʒss of ext. of opium, and ʒj of cosmolin. If the piles are protruding and reduction cannot be effected, put the patient to bed, give a hypodermatic injection of morphin, and apply hot poultices. If reduction cannot soon be effected, operation must be resorted to.

*Operative Treatment.*—Give a saline the morning before, and an enema the evening before the operation, and wash out the rectum well the morning of the operation. In treating by *injection of carbolic acid* the tumors are drawn out or the patient strains them out, an injection is given by a hypodermatic syringe into the center of the pile, and as each pile is injected it is pushed into the rectum. But one or two piles are injected at each séance and the operation is not repeated for one week (Geo. W. Gay, in “Boston Med. and Surg. Jour.,” Dec. 5, 1901). The dose for each pile is ℥j or ℥ij of a 10 per cent. solution of pure carbolic acid. The injections relieve the condition, but are rarely absolutely curative, and may produce hemorrhage, phlebitis, pyemia, stricture, and even death (W. T. Bull). The *clamp and cautery* may be used in interno-external piles. The patient is anesthetized and the sphincter is

stretched. The stretching of the sphincter is very important. It gives free access to the parts, prevents subsequent spasm and pain, and lessens the likelihood of venous bleeding after operation. The pile is caught with forceps and drawn outside of the sphincter. Smith's clamp is applied with the ivory surface against the mucous membrane of the bowel, the pile is cut off, and the stump is seared with the Paquelin cautery at a dull-red heat. *Excision* is preferred by Al-lingham. He stretches the sphincter, holds it open with a retractor, catches up the pile, cuts it off, and twists the bleeding vessels. Some prefer to pass a silk or catgut suture, cut off the tumor, and tie the thread (Fig. 486). *Whitehead's operation* is only to be performed in severe cases, when the piles are extremely large and form a protruding circular mass. Only a surgeon who can master violent hemorrhage should venture to perform it. Primary union is rarely secured. When first introduced the operation was viewed with favor, but experience shows that stricture not infrequently arises after its performance; that fecal incontinence occasionally results, and that anal anesthesia with inability to restrain the passage of wind is common. The entire pile-bearing area of mucous membrane is dissected out, and the cut margin of mucous membrane is pulled down and stitched to the surface. The sphincter may

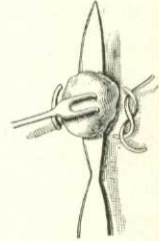


Fig. 486.—Extirpation of hemorrhoids (Esmarch and Kowalzig).

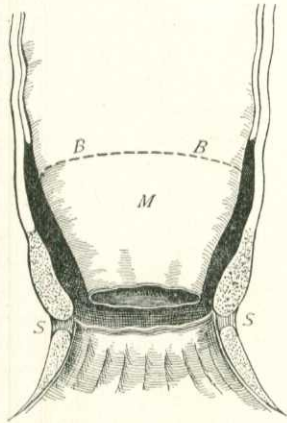


Fig. 487.—S, S, The lower circular incision along Hilton's white line; M, tube of mucous membrane dissected from the sphincter; B, B, dotted line showing the place for the upper circular incision (Edmund Andrews).

be dilated as a preliminary measure (Fig. 487). This operation is sometimes followed by disastrous consequences, especially by fecal incontinence.\*

The *application of the ligature* is the easiest and most generally useful method. In this operation, after anesthetizing, stretch the sphincter and treat each hemorrhoid separately. Catch a pile with a pair of forceps or a volsellum, pull it down, and cut a gutter through the skin-margin if the pile is of the mixed variety; tie the small piles without transfixing, but transfix the large piles; tie with silk (coarse silk for the large piles, finer silk for the small piles); cut off the tumor beyond the thread, and cut the ligatures short. Treat the other piles in the same manner. Irrigate with hot normal salt solution, dust with iodoform, pack a piece of iodoform gauze into the rectum, and apply a gauze pad and a T-bandage. Give some morphin to lock up the bowels, and keep the patient on a light diet for three days, at the end of which time a

saline may be given. Just before the bowels act remove the dressings and give an enema of warm water or of glycerin. After the movement wash out the rectum first with peroxid of hydrogen and next with hot salt solution, dust with iodoform, and apply a gauze pad over the anus. Irrigate daily

\* Andrews, in Mathews' Medical Quarterly, Oct., 1895.



until healing is complete. After the tenth day examine with a speculum to see that the ligatures have come away; if any are found in place, remove them.

**Prolapse of Anus and Rectum.**—If the mucous membrane is prolapsed, the condition is called “*prolapsus ani*”; if the entire thickness of the rectal wall is prolapsed, it is called “*prolapsus recti*.” The commonest form is due to relaxation of the submucous connective tissue permitting the protrusion of a ring of mucous membrane. Prolapse is apt to occur from excessive straining at stool and is commonest in feeble, ill-nourished children. Piles and worms may lead to prolapse. Straining from phimosis, stone in the bladder, or urethral stricture may be causative. Its development is

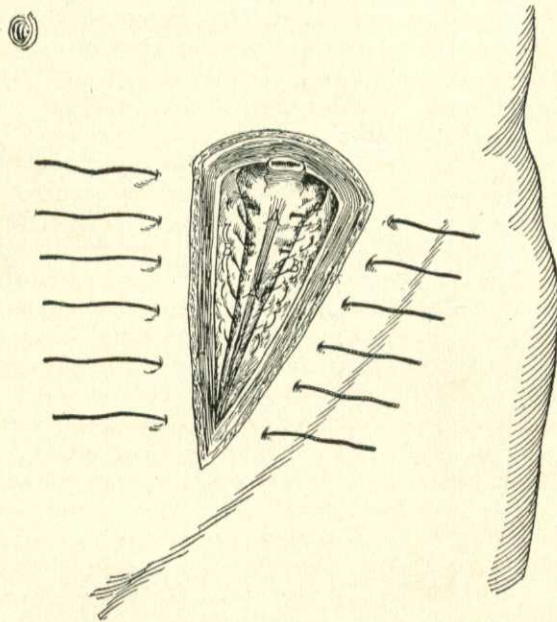


Fig. 488.—Joseph D. Bryant's method of colopexy: *A, A*, Longitudinal band, with sutures passed behind it, including peritoneal and muscular coats of the intestines, drawn forward; *B, B*, parietal peritoneum quilted to sides of the intestine, showing stitches; *C*, old fecal fistula.

favoured by the use of articles of food which cause frequent movements of the bowels. If an individual sits a long time on the seat of the closet or on the chamber, the development of prolapse is favored. Prolapse may be either large or small, but tends to recur again and again, and eventually the mucous membrane inflames, ulcerates, or sloughs. Strangulation of the prolapsed part may occur. The condition is sometimes confused with hemorrhoids, but in prolapse the protruding mass is circular and has a depression in the center, whereas hemorrhoids are distinct masses. Further, hemorrhoids are very rare in children. A polypus is a single tumor with a pedicle.

**Treatment.**—*Palliative* treatment forbids straining at stool and amends an improper diet. Phimosis must be corrected; stone in the bladder must be crushed or removed. If prolapse occurs, the protrusion must be bathed

with cold water and restored. Constipation must be prevented (enemata of water or glycerin may be used), and after each movement several ounces of a solution of white oak bark are injected. If a prolapse is caught firmly, place the patient in the knee-chest position, wash the mass with cold water, grease it with cosmolin, insert a finger into the rectum, and apply taxis around the finger (Mathews). If this fails, cover a finger with a handkerchief and insert the wrapped digit into the rectum; if this proves futile, invert the patient. Severe cases require ether before reduction is attempted. After reduction apply a compress, direct it to be worn except when at stool, and before each act of defecation give an injection of cold water containing an astringent (tannin or fluid ext. hydrastis). A useful treatment in many cases is to paint the prolapse with fuming nitric acid, grease it with olive oil, and restore it. Some cases require excision of the mucous membrane, the divided edge of this membrane being stitched to the skin. In other cases the protrusion is stroked with the cautery and restored. When the surgeon comes to operate for recurring prolapse it will often be found to have modestly withdrawn and he may be obliged to stretch the sphincter to bring it into view. In persistent cases of rectal prolapse open the abdomen and attach the colon to the belly-wall (colopexy or sigmoidopexy, Fig. 488).

**Ulcer of the Rectum.**—Ulcers of the rectum are divided into the simple traumatic, the syphilitic, the tuberculous, the dysenteric, the gonorrhœal, and the malignant. *Simple* ulceration is due to abrasion with fecal masses or a foreign body, the abraded area ulcerating. It may follow an operation for piles and also protracted labor (Allingham), and is apt to be single. The base and edges of a simple ulcer are neither prominent nor hard, and stricture rarely forms. *Syphilitic* ulceration is a tertiary lesion commonest in women. There are numerous small ulcers of the mucous coat or submucous tissue, but little indurated, with sharp-cut edges which are not undermined. These ulcers fuse and constitute one large irregular ulcer; fibrous tissue forms in the wall of the bowel, induration becomes noticeable, and stricture follows. There is profuse discharge, and fistulæ are apt to form. Such ulcers may be surrounded by nodules of a bluish color. In many cases the first condition is stricture due to the formation of masses of fibrous tissue in the rectal walls, and ulceration occurs secondarily (Fournier). In syphilis there may be a breaking down of a huge gummy mass or of multiple gummata. It has been proved by the microscope that tuberculous ulceration may arise in the rectum. *Tuberculous* ulceration presents a conical ulcer with overhanging edges and a pale-red base. There is some mucous discharge, some tenesmus, and a little pain, but a stricture rarely forms. Dysentery, catarrh, neoplasms, and foreign bodies may produce ulceration of the rectum.

**Symptoms.**—There may be merely uneasiness about the rectum, but sometimes there is severe burning pain on defecation. There may be constipation or diarrhea, the patient strains at stool, and the stools may contain blood, mucus, or pus. The history should be carefully inquired into; tuberculosis should be sought for; the question of syphilis should be investigated. A digital examination enables the surgeon to feel the ulcer, and an examination with an ordinary speculum or an electric proctoscope brings it into view.



**Treatment.**—In *simple* ulcer empty the bowel by the administration of a saline cathartic, wash out the rectum with hot water after the saline has acted, introduce a speculum, touch the ulcer with pure carbolic acid or silver nitrate (gr. xl to ʒj), place the patient in bed, restrict him to a liquid diet, and every day inject iodoform and olive oil or insufflate iodoform into the rectum. If this fails, give ether, stretch the sphincter, incise the ulcer through its entire thickness and cauterize with fuming nitric acid, caring for the case subsequently as we would a patient who had had piles ligated. In *tuberculous* ulcer improve the general health, send the patient to a genial climate, or at least into the sunlight and fresh air, prevent constipation, give nutritious food, especially fats, wash out the rectum every day with hot water, and insufflate iodoform or inject iodoform emulsion. Touch the ulcer once a week with silver nitrate (gr. x to ʒj). In *syphilitic* ulcer give antisyphilitic treatment and treat the ulcer locally as is done in tuberculous ulcer. *Dysenteric* ulcer requires injections of hot water, the touching of the ulcer with pure carbolic acid, and insufflations of iodoform.

**Non-cancerous stricture of the rectum** may be congenital or acquired. There are two forms of acquired stricture: first, stricture due to external pressure; second, stricture due to primary narrowing of the rectal wall.\* Stricture due to external pressure is very rarely complete, and may be caused by bands of adhesions or a malignant growth. The second form may be produced by syphilitic tissue, ordinary inflammatory tissue, cicatrices after operations, sloughing, tuberculous, syphilitic, or dysenteric ulceration, rectal gonorrhoea, and traumatism. The usual seat of simple stricture is from one inch to one and a half inches above the anus. The deposit may be limited to the submucous coat or all the coats may be involved. It is very seldom that stricture arises as a result of abrasion from fecal masses or foreign bodies. It may follow an operation for piles if considerable tissue is removed, and is an occasional sequence of Whitehead's operation. Stricture due to dysentery is extremely rare, and no case has ever been reported to the United States Pension Office (Peterson). The existence of stricture as a result of rectal gonorrhoea has not been positively proved. A majority of sufferers from rectal stricture have labored under syphilis, but it is not probable that the lesion is syphilitic in all or even in most of them. The stricture may be due to the formation of fibrous tissue, and ulceration may or may not occur. It may be caused by the contraction and healing of a large ulcer. Some maintain that tuberculous stricture does occur. Mathews dissents from this view and points out that the disposition of tuberculous matter is to break down, and before the rectum can be strictured from tuberculosis it breaks down from ulceration. Peterson † says a large proportion of the victims of rectal stricture die of phthisis, and also that one-third of so-called syphilitic cases are tuberculous. It may begin as an ulcer or as an infiltration of submucous tissue. Although a syphilitic lesion or a tuberculous lesion may cause rectal stricture, in most cases such lesions simply expose the tissues to infection, and a benign rectal stenosis results from the infection. Thence tuberculosis causes stricture indirectly rather than directly.

The **symptoms** of rectal stricture are constipation, pain on defecation,

\* Reuben Peterson, in Jour. Amer. Med. Assoc., Feb. 3, 1900.

† Ibid.

straining at stool, the presence of blood and mucus in the stools, an open anus, and the passage of stools flattened out into ribbons. In some cases there is fluid diarrhea, solid fecal matter being retained above the stricture. The stricture is found by the finger or by the bougie. In syphilitic cases, in tuberculous cases, and in benign cases the fibrous thickening is usually in the submucous coat, and in syphilitic and tuberculous cases the mucous membrane is apt to ulcerate. It is said that complete obstruction may arise. I have seen obstructive symptoms, but never *complete* obstruction in rectal stricture. Distention of the abdomen and colic are very usual.

The **treatment** of non-cancerous stricture is rest, non-stimulating diet, warm-water injections, mild laxatives, and hot hip-baths. Cocain suppositories may be needed. Any existing disease is treated. Bougies are passed every other day. Use a soft-rubber bougie, warmed and oiled, and introduce it gently. If only the method of gradual dilatation is employed, the patient must for the remainder of his life pass a bougie from time to time. For fibrous strictures forcible dilatation (divulsion) by a special instrument is employed or incision is practised. Incision (proctotomy) may be either external or internal. In internal proctotomy one or more incisions are made through the stricture down to healthy tissue, the first cut being in the middle line posteriorly. External proctotomy, which divides the sphincters, is apt to leave incontinence as a legacy. Electrolysis finds some advocates, but on what grounds it is difficult to see. In some cases the rectum should be removed. In incurable cases perform inguinal colostomy.

**Cancer of the rectum** is the cancer of the bowel most often met with. It may be primarily malignant or may arise from an adenoma. The commonest growths are composed of cylindrical cells, and may be soft or scirrhous. In cases secondary to epithelioma of the anus ordinary epithelioma arises.

In most rectal carcinomata the cells present a tubular arrangement surrounded by a more or less plentiful stroma of connective tissue. In soft tumors the connective tissue is scanty, in hard tumors it is plentiful.

It not unusually occurs before the thirty-fifth year, and is seen as early as the twenty-fourth year. The retroperitoneal and inguinal glands are involved late or not at all. Extensive ulceration occurs. If a hard ring encircles the rectum, the lumen of the tube is greatly and progressively diminished. In cases of diffuse infiltration the lumen is not greatly lessened.

**Symptoms.**—The *symptoms* of rectal cancer are like those of non-malignant stricture, except that the pain is greater, the hemorrhage more severe, and constipation is apt to alternate with diarrhea. The finger and the speculum make the diagnosis. In rectal cancer metastasis occurs late. The most favorable cases for operation are those in which the growth is small and movable. Accurately define the extent of the growth and endeavor to make out if it has invaded the cellular tissue outside of the rectum, the prostate, the bladder, the sacrum, the uterus, etc.

**Treatment.**—In every case of cancer of the rectum the following question must be considered: Shall we perform a radical operation in hope of producing cure or at least greatly prolonging life? In what cases should a radical operation be attempted? It is the proper procedure if there are no metastatic deposits, if the patient is in fair general condition and free from serious organic disease, and if the cancerous bowel is movable and



not fixed by dissemination to adjacent structures. As W. Watson Cheyne says ("Brit. Med. Jour.," June 13, 1903), a slight adhesion to the vagina is not a contraindication because this portion of the vagina can be readily removed with the diseased rectum. Some surgeons will not attempt radical operation if they cannot pass a finger through the growth. I do not regard high position as forbidding operation, although, of course, it makes it more dangerous to life and less promising as to cure. Cheyne is of the same opinion.

If a radical operation is determined on, the next question to answer

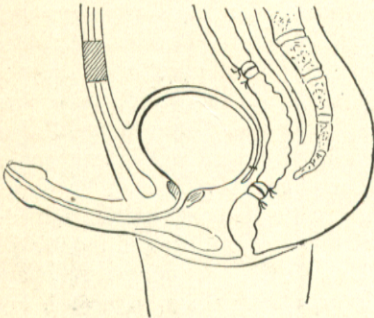


Fig. 489.—Tying off the tumor through an abdominal incision after separating peritoneum from sacrum and bladder (Weir).

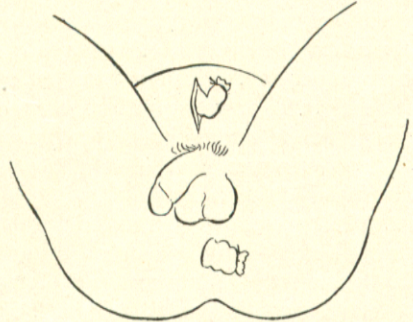


Fig. 490.—Lower end of rectum everted through the anus and the upper end of bowel drawn out of the abdominal cavity (Weir).

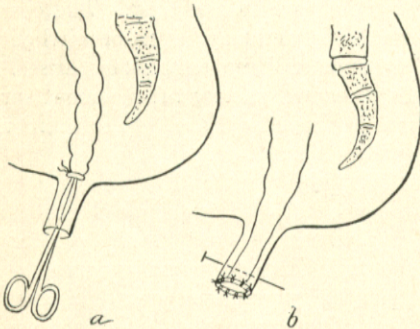


Fig. 491.—*a*, The upper bowel drawn out through the everted lower end of rectum; *b*, the ends of the two portions of the rectum sewn together (Weir).

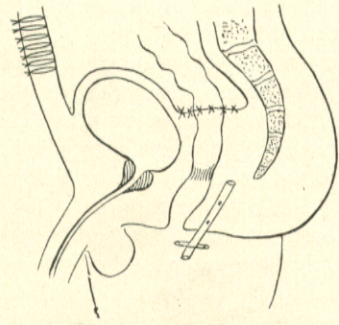


Fig. 492.—The united bowel replaced with posterior drainage and the divided peritoneum so sewn together as to shut off the general peritoneal cavity from the pelvis (Weir).

is, Shall we, or shall we not, do a preliminary colostomy? If the cancer is very low down and is to be removed from the perineum, preliminary colostomy should not be done. If the cancer is high up and we propose to attack it by Weir's method, preliminary colostomy should not be done. If Kraske's operation is to be performed, we believe preliminary colostomy is indicated. It enables us to cleanse the area upon which operation is to be performed, and to keep the wound clean, and it gives us a much better chance of obtaining primary union. In cases in which the sphincter is retained and it is possible to anastomose the divided ends of the rectum together, colostomy is not



necessary; and if an artificial anus has been made in such a case, another operation will be required to close it. As a matter of fact, I have found it always difficult and usually impossible to suture the divided ends of the gut together after Kraske's operation, and I now follow the advice of Keen, and always precede it by a colostomy. If radical operation is rejected (and at least three-fifths of the cases, when first seen by the surgeon, are beyond such aid), palliative treatment is desirable. One plan is to every day introduce a tube through the stricture, wash out the rectum with warm water, and after washing inject emulsion of iodoform (gr. x to ʒj of sweet oil). Injections of chlorid of zinc (gr. j to ʒj of water) lessen the foulness of the discharge. The bowels are opened regularly by laxatives, and if the growth causes obstructive symptoms it is scraped away with a sharp spoon. Opium is given to relieve pain. The advantage of this plan is that the patient does not suffer from the unpleasantness of an artificial anus. Sooner or later, however, the growth gets outside of the bowel, and terrible pain will arise from involvement of the sacral plexus. W. Watson Cheyne ("Brit. Med. Jour.," June 13, 1903) would restrict palliative treatment of this character to cases in which fungating masses grow from one side of the bowel.

If a growth encircles the bowel and produces symptoms of obstruction, colostomy must be performed. This operation gives great comfort to the patient, and allays pain by intercepting the feces before they reach the cancer. I am not convinced that it distinctly retards the

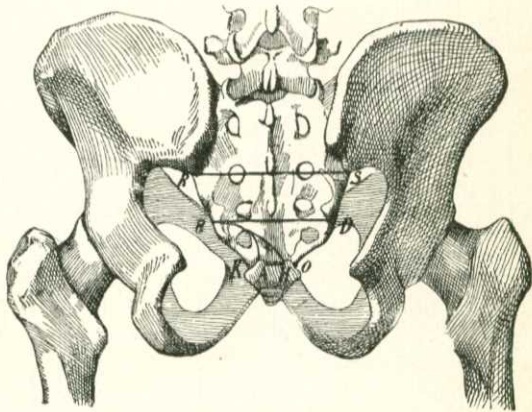


Fig. 493.—Different levels of resection of the sacrum: *K, O*, Kocher's line; *B, V*, Kraske's; *B, H*, Hochenegg's; *B, D*, Bardenheuer's; *R, S*, Rose's (Mass).

growth of the cancer or notably prolongs life. Unfortunately, colostomy does not do away with pain if the sacral plexus is involved. *Operative treatment* includes one of several procedures. Excision of the rectum from below (Cripp's operation) is practised if not more than three inches require removal, if the peritoneum is not invaded, and if the adjacent organs are free from disease. The peritoneum must not be opened in Cripp's operation. After the growth is removed the divided rectum is pulled down and sutured to the skin. Excision of the rectum after excising a portion of the sacrum (Kraske's operation, Fig. 493) is a procedure which permits removal of the entire tube, portions of the colon, and even of adjacent parts. The peritoneum is opened deliberately in this operation, and is subsequently closed with sutures before the gut is opened. The glands from the mesocolon are always removed. The lower end of the upper segment of bowel is fastened in the wound, or, if colostomy has been previously performed, may be closed. In some few cases in which it is not necessary to remove the lower end of the rectum,



the two portions may be anastomosed after resection of a part of the tube. Kraske's operation may be done by an osteoplastic method, the bone not being removed. It is well to precede a Kraske operation two weeks by an inguinal colostomy, which permits of cleansing the lower bowel of feces and lessens the chance of severe wound-infection and delayed healing after the removal of the rectum. A preliminary colostomy may make the operation of extirpation more difficult by fixing the intestine, and thus interfering with the necessary drawing down of the gut (E. H. Taylor). If the growth is extensive and the mesocolon short, it may be best to perform a right inguinal colostomy; but in most cases left inguinal colostomy is preferred (Gerster). The colostomy remains open during the patient's life, except in those rare cases of Kraske's operation in which the continuity of the rectum can be re-established after excision of the growth. In such cases the artificial anus is closed some time after the resection of the rectum.

Robt. F. Weir ("Med. News," July 27, 1901) has been so much impressed with the difficulties and dangers of Kraske's operation in a case of high carcinoma that he now employs it solely in cases in which there is freedom from disease for two inches immediately above the anus and in which the cancer does not extend more than five inches above the anus. In other cases he does the following operation: Open the abdomen above the pubes, separate the peritoneum so that the bowel and "contents of the sacral curve" are liberated behind nearly "to the tip of the coccyx and in front of the edge of the prostate." The tumor is then tied off with tapes (Fig. 489). The portion of the rectum bearing the tumor is removed, the lower end of the bowel is everted through the anus, and the upper end is drawn out of the abdominal incision (Fig. 490). The upper end is then caught with forceps and drawn through the everted lower end of the rectum (Fig. 491, *a*). The ends of the two everted portions (Fig. 491, *b*) are sewn together, the everted bowel is replaced, the divided peritoneum is sutured to shut off the peritoneal cavity, and posterior drainage is inserted (Fig. 492). The mortality of Kraske's operation is from 12 to 15 per cent. Twenty-eight per cent. of Kocher's cases of extirpation of cancer of rectum remain well from 3 to 16 years after operation (W. W. Cheyne, "Brit. Med. Jour.," June 13, 1903).

## XXIX. ANESTHESIA AND ANESTHETICS.

**Anesthesia** is a condition of insensibility or loss of feeling artificially produced. An **anesthetic** is an agent which produces insensibility or loss of feeling. Anesthetics are divided into—(1) *general anesthetics*, as amylen, chloroform, ethylene chlorid, ether, bromid of ethyl, nitrous oxid, and bichlorid of methylene; (2) *local anesthetics*, as alcohol, bisulphid of carbon, chlorid of ethyl, carbolic acid, ether spray, cocain, eucaïn, ice and salt, rhigolene spray, and ethyl chlorid spray.

Anesthesia may be induced by a general anesthetic to abolish the usual pain of labor and of surgical procedures; to produce muscular relaxation in tetanus, herniæ, dislocations, and fractures; and to aid in diagnosing abdominal tumors, joint-diseases, fractures, and malingering.