A practical treatise on the diseases of the rectum / by Alfred Cooper.

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A PRACTICAL TREATISE

ON THE

DISEASES OF THE RECTUM.

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DISEASES OF THE RECTUM

BY

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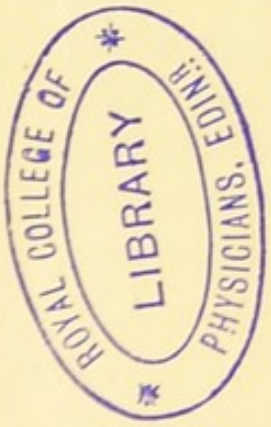

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PREFACE.

The object I have sought to attain in the preparation of this work is to present a concise and thoroughly practical treatise on the diseases of the rectum. My opportunities for the investigation and treatment of these diseases have been ample, both in private practice and at St. Mark's Hospital, with which Institution I have been connected for upwards of twenty years. I have, however, omitted, as tending to expand too far the size of this book, all clinical records, and for the same reason, all unnecessary details have been avoided in describing pathological appearances.

I wish to express my thanks, for much kind assistance, to my friends Dr. W. E. Steavenson and Mr. Swinford Edwards. The former has contributed the chapter on the Uses of Electricity in Rectal Surgery, while my colleague Mr. Edwards has revised the proofs and made several valuable suggestions. I trust that this little volume may be found to assist practitioners in diagnosing and treating a class of diseases often met with in practice, but not always properly attended to.

ALFRED COOPER.

9 Henrietta Street, Cavendish Square.

May, 1887.

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DISEASES OF THE RECTUM.

CHAPTER I.

General Symptoms of Diseases of the Rectum and Methods of Examining the Bowel.

Symptoms of Rectal Diseases—Pain, its varieties and significance—In fissure, hæmorrhoids, ulceration and morbid growths—Protrusion from the anus—In prolapsus, internal hæmorrhoids, polypi, etc.—Constipation as a symptom—Diarrhœa and various discharges from the bowels—Condition of fæces—Blood in the stools—Pus, mucus, etc.—Examination of the anus and rectum—The external parts—The interior of the rectum—An enema as a preliminary—Examination with the finger—Detection of polypi, foreign bodies, impacted fæces, fistula, hæmorrhoids, ulceration, contraction, etc.—Strictures beyond the reach of the finger—Malignant disease—The use of the speculum—The introduction of the hand into the rectum.

By way of introduction, and before describing the various affections met with in the rectum, it seems advisable first to enumerate the symptoms which generally arise, and secondly, to point out the extent to which their presence and character serve as a guide to the diagnosis. Abnormal sensations, pain of various kinds, protrusion from the anus, constipation, diarrhœa, discharges of blood, pus, mucus and other matters are the most common symptoms of rectal diseases, and when any of these are present, a careful examination of the part should always be

made. The concluding portion of this chapter will contain a description of the manner in which such an examination is best accomplished.

In a normal condition of the part and except during defæcation, no sensations are experienced in the rectum, which serves only as a canal for the passage of the fæces from the colon to the anus. During the periods between the evacuations, this portion of the bowel is normally devoid of fæces, which do not pass beyond the lower end of the sigmoid flexure. When defæcation takes place, the peristaltic movements of the colon are communicated to the rectum, in which definite sensations are experienced. These, however, cease soon after evacuation of the fæces, to recur only when excited in a similar manner.

1. In most morbid conditions of this part of the bowel, the sensory nerves are more or less violently affected, and hence alterations of sensation, varying from slight discomfort to intense pain, are among the most common symptoms. Many varieties of pain are experienced, and in examining a patient complaining of this symptom, it is well to inquire as to what relation the pain bears to the act of defæcation, *viz.*, whether it be spontaneous or be excited by the act in question, and in the latter case, whether it precede, accompany or follow expulsion, whether it be prolonged and continuous, or of brief duration and intermittent. According to the answers given to these questions, some idea may be formed of the nature of the ailment.

Pain is a symptom of fissure, of hæmorrhoids, of ulceration, and of various morbid growths within the rectum. In fissure the pain is peculiarly severe, and

out of all proportion to the size of the lesion. It comes on just at the beginning of defæcation, and is most intense during the act and for some time afterwards. It is described as of a hot, smarting, tearing character, very severe, and radiating towards the coccyx. If, as is sometimes the case, both skin and mucous membrane be involved in the fissure, the pain is always greater than when only one of these structures is affected. When a patient complains of pain in the terms just described, it is almost certain that there is fissure.

Pain due to hæmorrhoids varies greatly according to the condition of the parts. When uninflamed, piles, especially if external, cause at most a sense of fulness or uneasiness. With a slight degree of inflammation, there is a sensation of heat and pain in the part, much aggravated by pressure and during defæcation. The sensation of fulness and swelling about the rectum will also be increased, and a desire to strain is frequently superadded. Internal hæmorrhoids likewise cause a sensation of fulness in the rectum, as if a foreign body were present. When they become extruded beyond the sphincter, inflammation is apt to be set up, and the pain rapidly becomes very severe.

In ulceration of the rectum, the pain varies according to the situation and stage of the lesion. If low down and involving the integument, the pain is always more severe than when the upper portions of the bowel are affected. In the latter case there is often discomfort rather than pain. The symptoms are aggravated during defæcation.

In malignant disease there is every possible variety of pain as a symptom. At first there may be simply uneasiness, and this increases as time goes on. The first attacks of severe pain are wont to occur after exercise, and when hard fæces are discharged. When ulceration sets in, the pain becomes much aggravated, especially during attacks of diarrhœa. There is a constant sensation of fulness in the bowel. The pain is of a burning smarting character, and often extends to the coccyx and sacrum, and shoots into the groins and down the thighs. As in other rectal diseases, when the cancerous deposit is situated near the anus, the pain is always greater than when it is higher up in the bowel. In some cases of cancer of the rectum, pain is but little complained of throughout the whole course of the disease.

In connection with the inquiries with regard to the character of the pain, the patient should be asked whether anything protrudes from the anus at the time of defæcation or upon exertion, and if so, whether it goes back spontaneously or has to be replaced, and also whether bleeding occurs at the same time. A protrusion under such circumstances might be due to prolapsus, to internal hæmorrhoids, to polypi, or to villous growths. In prolapse, the whole circumference is involved, while the size of the protrusion varies; the tumour is soft and smooth; unless ulceration be present, the protrusion is unattended by severe pain or loss of blood. In protrusion of internal hæmorrhoids, there is pain and one or more tumours; and the symptoms are liable to become much increased as a result of strangu-

lation by the sphincter. The protrusion may be accompanied by hæmorrhage, often profuse and going on for some time. In old-standing cases, the hæmorrhoids are apt to come down, not only as a result of defæcation, but after the least exertion, and to remain outside until replaced by the fingers. In earlier stages the protrusion is wont to occur only on defæcation, and replacement is spontaneous as soon as the straining efforts cease. Protrusion of polypi is also liable to take place after defæcation, the extent of the protrusion depending mainly upon the length of the pedicle. They are generally retracted spontaneously, but strangulation and gangrene of a protruded polypus has been known to occur. Villous tumours are very rare; they are soft, are wont to protrude during defæcation, and more or less blood and large quantities of sticky mucus are apt to be discharged.

2. The second symptom, more or less commonly met with in diseases of the rectum, is constipation. There is, of course, nothing characteristic about this symptom, as it may depend simply upon sluggish peristaltic action and a variety of other causes. When occurring in connection with diseases of the rectum, it may be due to stricture and malignant disease. Constipation also occurs in fissure, owing to the way in which the patient restrains the action of the bowels, because of the pain which defæcation causes. It is also a symptom of impaction of fæces and of compression of the rectum by a displaced uterus, by tumours of the prostate, etc. Constipation is frequently associated with hæmorrhoids, of which it is a potent cause.

Constipation is often one of the earliest symptoms of simple stricture of the rectum, being due to the mechanical impediment. It varies with the extent to which the calibre of the bowel is occluded, and it sometimes alternates with diarrhœa. It is associated with straining during defæcation, and in stricture this symptom gradually increases as the condition becomes more marked. In malignant disease there is generally some amount of constipation in the early stage, but sooner or later this gives place to diarrhœa. Complete obstruction sometimes results from the occlusion of the canal, and occurs early in some cases.

3. Diarrhœa and discharges from the bowels form a group of symptoms met with in many diseases of the rectum, and in all suspected cases it is very important that the excreta should be carefully examined. Besides alterations in the shape and consistence of the fæces, various abnormal matters, such as blood, pus, mucous secretions and elements of tissue, can frequently be detected in the stools. The odour of the motions is characteristic in some diseases, *e.g.*, in cancer of the rectum.

Diarrhœa is a symptom of ulceration of the rectum, whether dysenteric, tubercular, or syphilitic in its origin. Besides fæces, the matters voided consist of muco-purulent matter mixed with blood, the discharges often resembling coffee-grounds. The diarrhœa is apt to be specially troublesome after rising from bed and after any kind of exertion and exposure to cold. The discharge often consists merely of sanious mucus. When stricture exists, the

diarrhœa follows constipation and afterwards alternates therewith. The calls to stool are wont to become very numerous, the matters discharged being scanty and fluid in character. The same symptoms invariably attend malignant disease of the bowel, and the diarrhœa is often associated with accumulation of fæces above the seat of the lesion. Mucoid and purulent matters are also discharged in varying quantities, they are often dark-coloured, and pure blood and fragments of *débris* are frequently discoverable. The discharge has a peculiarly offensive odour.

Polypus of the rectum does not cause diarrhœa, but there is often more or less hæmorrhage from the bowel at short intervals. Villous tumour likewise causes hæmorrhage, and in addition, the discharge of a thin viscid fluid, sometimes in considerable quantities, has been noticed as a symptom of this disease.

The fæces undergo alterations in shape whenever the calibre of the bowel is much reduced, as in stricture, especially if the lesion be situated low down. They sometimes resemble pipe-stems, sometimes they are grooved and sometimes flattened and ribbon-like. When the fæces are soft, these differences in form may be due to spasmodic contraction of the sphincter; they are therefore not necessarily indicative of organic disease; moreover, in cases of stricture high up in the rectum, the fæces, if soft, may accumulate between the lesion and the sphincter, and when discharged may be of comparatively normal size and form. Enlargement of the prostate

also influences the shape of the fæces, and has been known to cause total obstruction of the bowel. Fæcal incontinence occurs in some cases of cancer of the rectum, and is often present in cases of old-standing prolapsus.

In diseases of the rectum, blood is not unfrequently passed; it may be voided pure and unchanged, or mingled with fæculent matters, or disposed in streaks on the surface of hard fæces. Mucoid discharges, more or less deeply coloured with blood, are very common. A discharge of blood is a common symptom of internal hæmorrhoids; the amount voided varies in different cases. The hæmorrhage in these cases is usually excited by straining at stool; sometimes only a few drops escape; sometimes there is a continuous dripping, lasting for an hour or more. The blood is usually venous, but in some cases it is bright-coloured, and comes from one or more small arteries. The hæmorrhage in these cases is often accompanied by protrusion of the hæmorrhoids. The discharge consists of pure blood, unmixed with pus or *débris* of tissue.

Hæmorrhage from the rectum is not a necessary symptom of prolapsus, but it is likely to occur if, as sometimes happens, the prolapsed part be ulcerated.

In fissure of the anus, the bleeding, if any, is comparatively insignificant; it will occur after defæcation. In ulceration, the amount of blood lost varies greatly in different cases, and the discharge seldom consists of pure blood, but muco-purulent matter is mixed with it, and in many cases the blood only tinges the fluid discharge and the fæces. When the

latter are solid, it may appear in streaks upon them. In severe rapidly spreading syphilitic ulceration, the hæmorrhage is often considerable. When stricture exists, the blood is often retained for some time within the bowel, and is altered in colour. In such cases the discharges resemble coffee-grounds. In the early stages of stricture of the rectum, small quantities of grumous matter are often passed from time to time.

In malignant disease of the rectum, hæmorrhage almost invariably takes place during the progress of the case. In the early stage it depends upon congestion, but when ulceration occurs the bleeding is due to erosion of vessels, venous or arterial or both. It often accompanies defæcation, but is liable to occur independently of that act: sometimes, at one period of the case, the fæces are streaked with blood. It is often very profuse, and not unfrequently causes a fatal termination. At first it is usually attributed to piles.

Hæmorrhage is also a symptom of polypi and of villous growths, and is sometimes very profuse. The bleeding generally accompanies defæcation and continues for some time afterwards, but it may occur at other times.

As a matter of course, hæmorrhage from the rectum may be caused by wounds and by the presence of foreign bodies.

It must not be forgotten that, in some cases, the stomach is the source of blood found in the stools; for example, the blood in gastric ulcer is sometimes not got rid of by vomiting, but passes downwards

through the intestine; such discharges are commonly of a blackish-red or brown colour. The symptoms referable to the stomach will usually suffice to determine the diagnosis.

Pus is found in the motions, and is sometimes passed in small quantities, almost pure and unmixed, in cases of ulceration of the rectum, and as the result of the bursting of abscesses into this part of the bowel. It is more often mixed with blood and mucus. In cases of chronic rectal inflammation, and sometimes in internal piles and cases of prolapsus, the discharge from the bowel is mainly of a mucoid character. Sometimes the fæces are coated or streaked with mucus. In villous growths, as already mentioned, there is often copious discharge of viscid mucus.

Tissue-elements and *débris* occur in the stools in ulcerative affections of the rectum, and notably in malignant disease. If any little masses can be detected, they should be examined under the microscope.

Having thus considered the general symptoms of diseases of the rectum and their diagnostic import, it remains to describe the various methods of examining the bowel in cases in which any one or more of these symptoms are stated to exist. Such an examination is all-important as regards diagnosis, prognosis and treatment. The majority of patients suffering from rectal disorders attribute their trouble to "piles," and if this diagnosis be accepted and acted upon, the result cannot be otherwise than unsatisfactory. Mis-

takes must be made, treatment will necessarily fail to relieve, and valuable time will probably be lost.

Examination of the rectum and anus is made by the eye (assisted in some cases by a speculum), and by the finger and bougies. The external parts should first be examined, and for this purpose the patient should be placed on either side on a couch, the buttocks close to the edge and the knees drawn up towards the abdomen. This is, on the whole, the most convenient position. On separating the buttocks the orifice of the anus will come into view and should be carefully examined. The radiating folds should be separated with the fingers, and cracks, excoriations, and fissures should be looked for. External hæmorrhoids will also be noticed. By passing the finger round the anus and making pressure, any induration that exists will be detected; this may be due to abscess or fistula. If the parts are covered with discharge, this should be wiped away and its source traced, whether from the external opening of a fistula, etc. Eruptions of any kind, eczematous, syphilitic or otherwise, must also be noticed.

The next step is to examine the interior of the rectum, and as a preliminary measure it is desirable to administer an enema of warm water. When this has come away the examination should be resumed, and any protrusion that has taken place should be minutely inspected. This may be due to prolapsus, internal hæmorrhoids or polypus, and these are without difficulty distinguishable from each other. A prolapsus means a descent of the whole circumference of the bowel, and in slight cases consists only

of mucous membrane; in severe ones, it may include all the coats of the bowel, not excepting the peritoneum. The lumen of the intestine is seen in the centre; the tumour is soft and uniformly smooth, and is destitute of a pedicle. Internal hæmorrhoids are more or less tense, rounded and lobulated, or like a bunch of grapes. A polypus, whether hard or soft, is pedunculated.

The forefinger well anointed with ointment, and the nail cut short, should next be introduced gently into the bowel, and the first thing to be noticed is the state of the sphincter as regards contractility. In young subjects the muscle forcibly resists the introduction of the finger. In elderly people it is often much relaxed, and the orifice of the anus is sometimes patulous, especially in old-standing cases of prolapsus and internal hæmorrhoids. In cases of fissure there is generally firm contraction of the sphincter, and the introduction of the finger causes severe pain. It must not be forgotten that two or more rectal affections not unfrequently co-exist. Thus it is common to find polypus complicating a fissure, of which indeed it is the cause. Malignant disease may co-exist with fistula and hæmorrhoids, etc. While ascertaining the presence of one affection, the surgeon should take care not to overlook any complicating disorders.

The finger passed carefully into the rectum will detect polypi, foreign bodies, impacted fæces, internal fistulous openings and fistulous tracks, hæmorrhoids, ulceration and diminution of the calibre of the bowel. About four inches of the rectum can be

thus examined, and by placing the patient in the erect position and making him strain down, another inch can be brought within reach. As a matter of course the examination should be made with the utmost gentleness. Polypi are somewhat easily detected, as the pedicle is usually within reach. Foreign bodies likewise, in this portion of the bowel, can be readily examined with the finger. Internal hæmorrhoids, when not protruded, are difficult to detect by the finger, though an experienced one may discover a fulness and a redundancy of mucous membrane. If the patient strains down after the enema has come away, some portions of any existing internal hæmorrhoids will usually protrude, and their exposure will be facilitated by separating the margins of the anus with the tips of the fingers. Thus brought into view internal piles will appear as smooth reddish or purplish tumours, bright and polished-looking; they vary in size, some being as large as a walnut. It not unfrequently happens that a rim of mucous membrane is prolapsed at the same time.

Internal fistulous openings are in most cases within an inch of the anal orifice, but a sinus may run up the bowel for two or three inches further, and will feel like a hard cord. In external and complete fistulæ, the external opening will be found not far from the anal orifice; it is sometimes in the centre of a little elevated nodule. A probe should be passed into it before the finger is introduced into the rectum. Special directions for examining the bowel in cases of fistula will be given in the chapter devoted to that subject.

Ulceration of the rectum can generally be detected with the finger. There is an absence of the uniform soft velvety feeling, and there are sometimes irregular depressions, with indurated margins; in these places the mucous membrane is not freely movable over the subjacent parts. Ulceration can sometimes be felt to extend completely round the bowel. When, as often happens, the parts are very sensitive, an anæsthetic should be administered before the examination.

For the detection of stricture of the rectum, examination by the finger is of the greatest importance. The stricture is generally within reach, *i.e.*, within four inches of the anus. The obstruction may be such as to allow the finger to pass, or may entirely block up the bowel. Sometimes the contraction is sudden, sometimes it is gradual, so that the contracted portion is conical in shape. It often happens that only the tip of the finger can be introduced into the stricture. When the lesion is situated higher up in the bowel, beyond the reach of the finger, the diagnosis is much more difficult. A small hollow bougie should be carefully introduced, and if an obstruction be met with, a little water should be injected. The onward passage of the bougie is apt to be checked, either by the promontory of the sacrum, or by a fold of mucous membrane; in the latter case the water will remove the obstruction. The greatest gentleness is necessary, in order to avoid injuring the bowel. Further details of the methods of examining the rectum in cases of suspected stricture beyond the reach of the finger, will be given in a subsequent chapter.

In cases of malignant disease of the rectum, the lesion is most often within reach of the finger. In the earliest stages some amount of induration will be felt, perhaps two inches from the anus, while the mucous membrane below is quite normal. There may be a single nodule or several nodules, or a more or less diffused induration and thickening, with irregularity of the surface. When ulceration has taken place, the finger will detect the hard raised edges surrounding one or more firm depressions. As the deposit increases in volume, the calibre of the bowel will be more or less blocked up; distinct hard tumours will be felt in some cases and softer fungous masses, bleeding freely when touched, in others. In a third class of cases, the deposit takes place pretty uniformly round the bowel, and a puckered annular stricture is thus produced.

In cylindrical epithelioma soft masses are sometimes felt which may be mistaken for villous tumour. The latter, however, though soft, is somewhat resistant and not friable; its presence does not affect the general health, except by causing anæmia, and the tumour discharges blood and a quantity of viscid colourless fluid; such a growth moreover may exist for some years. Malignant tumours are often friable, bleed freely when portions are detached, increase rapidly and always cause great disturbance of the general health, and yield a discharge consisting of blood and *débris*. Blood is apt to flow during the examination. Enlargement of the inguinal glands will occasionally be detected, and in some cases a fungous mass protrudes from the anus.

In the large majority of rectal diseases, digital examination is sufficient for purposes of diagnosis, but for some cases the use of the speculum is a desirable adjunct. Rectal specula are made in a variety of forms. The one most generally useful consists of a metallic tube, open at both ends and slightly tapering. The wall of the tube is fenestrated, *i.e.*, deficient along its whole length. For introduction the apex of the instrument is applied to the anus, the fingers of the other hand being used to open the orifice. It is directed at first backwards and then directly upwards, and for convenience of introduction, it is furnished with a plug which is withdrawn when the speculum is *in situ*. By its means the interior of the rectum can be examined for three or four inches; ulceration, internal fistulous openings, and fissures, can be thus detected. Other forms of specula are furnished with blades or plates, which can be separated to the requisite extent by means of a screw apparatus. Anæsthesia is generally desirable when the introduction of the speculum is requisite, and the examination will be materially facilitated by a previous dilatation of the sphincter.

In order to bring as much as possible of the rectum into view, it is sometimes desirable to place the patient in the prone position, with pillows under the pelvis, in a good light and on a table of sufficient height. The intestines gravitate towards the diaphragm, and when the sphincter is thoroughly dilated and the margins of the anal orifice held asunder by means of retractors, a good view is obtained of the interior of the rectum.

For the detection of lesions situated high up in the bowel and to make a complete examination, especially in cases of obstruction, it is sometimes advantageous to introduce the hand into the rectum. In practising this manipulation (which is more easily accomplished in the female than in the male subject) a very small hand and the utmost care are absolutely necessary. Chloroform should be administered and the sphincters well dilated as a preliminary. The fingers, well covered with ointment, are held so as to form a cone which is gradually introduced through the anus. The difficulty is to get the broad part of the hand through the ring of the internal sphincter. Unless great care be taken laceration of the bowel is apt to occur, and the attempt has in a few cases been followed by fatal consequences.

CHAPTER II.

Congenital Malformations of the Anus and Rectum.

Rarity of Congenital Malformations—Varieties—Atresia Ani—Atresia Recti—Atresia Ani et Recti—Permanence of the fœtal condition—Cloacæ—Symptoms and Course—Treatment—Prognosis with regard to success of operations.

These malformations are of very rare occurrence, but statistics as to their frequency show considerable variations. According to one authority one case of imperforate anus occurs in 600 children, while others give only one case in every 10,000 births.

The ordinary malformations of this part of the bowel are as follows:—

1. **Atresia ani,** or imperforate anus. The rectum ends in a *cul-de-sac* just above the spot where the anal orifice should be. In place of the latter, the integument is continuous from behind forward and from side to side, presenting in some cases a slight circular depression in the region of the anus. The skin is more or less firm or even hard, and the sphincters are generally well-developed.

2. **Atresia of the rectum.**—In this condition the anal orifice is more or less perfectly formed, but the upper part of the rectum ends in a *cul-de-sac*, so that a varying depth of tissue intervenes between its termination and the base of the depression in which

the anus is situated. In some cases the occlusion is due to adhesion of the mucous membrane of the rectum, closing up the bowel.

3. **Atresia of the anus and rectum.**—This malformation consists of a combination of the two conditions just described. The colon terminates in a *cul-de-sac*, while externally all traces of an anal orifice are wanting.

4. **Permanence of the fœtal condition,** or the formation of abnormal cloacæ. In male children the rectum sometimes opens into the base of the bladder, and in some cases into the urethra; in female infants the bowel has been found to open into the vagina.

The *symptoms* of these malformations are generally of a very decided character. If the passage be completely occluded, nothing is voided, the abdomen becomes distended, vomiting sets in and the child dies in a few days. When the bowel opens into the bladder, cystitis will be set up by the entrance of meconium and a fatal result follows, occlusion of the bowel soon becoming complete. The opening into the urethra likewise causes fatal results. In female children, with the rectum opening into the vagina, life may be prolonged for an indefinite time. In all these malformations, the part should be very carefully examined. In those cases in which the anal orifice is present, the obstruction is generally within reach of the finger, and the examination may be aided by the use of a probe, or by injecting a little water.

Treatment.—This, of course, must depend on the nature and degree of the malformation. The easiest cases to deal with are those in which the anal orifice

is present and the finger or a probe can be introduced for a short distance in the normal direction, until a prominent bulging is reached consisting of mucous membrane alone. It is sufficient in these cases to make a small incision with a knife and gently to dilate the opening with the finger.

When there is no trace of an anus, the surgeon's task is more difficult. An incision should be made in the mesial line from before backwards, dividing the layers of tissue as they are exposed; not cutting too freely in front where a fold of peritoneum may be met with, but carrying the incision more deeply towards the coccyx. If the blind end of the bowel is reached and incised, meconium will escape, and the child will so far be relieved, but the opening is liable to contract and to become useless. To avoid this result, it is desirable to draw down the blind end of the bowel and after incising it sufficiently, to fasten the edges, by means of sutures, to the borders of the wound in the integument. For the performance of the operation, the child should be placed on its back, with its thighs separated and drawn up by an assistant. The surgeon makes his incision in the middle line of the perineum from just in front of its centre to the point of the coccyx, and the parts are carefully divided till the tense bag containing meconium is reached. This should then be detached from its connections with a blunt knife, and by pressing on the abdomen, it will project into the external wound, to the extremities of which it should be fastened by means of two sutures and then opened. After the meconium has been allowed to flow away, the part

should be thoroughly cleansed with warm water. The edges of the mucous membrane are then to be drawn down, and fastened carefully to the margins of the incision in the integument by means of fine sutures.

Much difficulty will necessarily arise if the *cul-de-sac* of the rectum be at some distance from the perineum. Manipulation of the parts is by no means easy, and neighbouring organs are liable to be injured. Under these circumstances the question will arise whether it is better to continue the search for the blind extremity of the bowel, or to make an artificial anus either in the groin or in the left lumbar region. As a matter of course, the restoration of the normal opening is for all reasons the most desirable result, and it is worth while to run considerable risk for its attainment.

If it be determined to persevere with the operation, the external incision should be carried backwards as far as the coccyx, and, in order to get more room, the excision of this bone has been recommended. The same result may, however, be achieved by prolonging the incision backwards on each side of the bone. The edges of the wound thus made are held apart with hooks, while the surgeon, using a blunt knife, searches for the *cul-de-sac* of the bowel, which will be covered by the levator ani muscle. If a projecting portion be discovered, it should be carefully incised on a curved director. The bowel always takes the course of the sacrum, and the *cul-de-sac* is likely to be found near the upper part of this bone, which serves as a guide in the exploration. When

the bowel is discovered it should be detached as far as possible from the parts around. It is generally situated within two inches of the surface. It is better not to attempt to attach the edges of the opening in the bowel to the integument.

If no bulging portion of bowel can be discovered, even after waiting for some time, the question of further interference will have to be determined. The formation of an artificial anus, either in the groin or in the lumbar region, will afford the only hope of saving life, and in infants the left groin is the more suitable place for making the opening. The operation is performed as follows: an incision an inch-and-a-half in length is made above the middle of Poupart's ligament, and half-an-inch distant therefrom. The layers of skin, muscles, fascia, and peritoneum, are carefully divided until the intestine is reached. When this is visible, a curved needle, armed with silk, is passed through the skin into the bowel and then brought out through these parts so as to form a loop. Two such loops are required on each side, and the bowel is then opened with a pair of scissors.

The *prognosis* in these cases of malformation varies chiefly according to the depth at which the blind end of the bowel is situated. Of those hitherto discussed, the condition termed atresia recti is generally the most favourable, as there is often no great depth of tissue between the two *cul-de-sacs*. In all cases in which the continuity of the tube has been established by operation, during the healing process and for some time afterwards, the use of a bougie is neces-

sary in order to prevent contraction of the calibre of the bowel.

Other favourable cases are those in which the rectum ends in the lower part of the posterior wall of the vagina. The child is placed in the lithotomy position, and a curved director is passed from the vagina through the abnormal opening, so that its point can be felt in the perineum. An incision is then made upon it. The opening in the recto-vaginal septum, if small, may close spontaneously, but if it fail to do so, the ordinary operation of paring the edges and uniting them by sutures must be performed. If the original opening be large, its closure should be attempted after the incision has been made in the perineum.

CHAPTER III.

HÆMORRHOIDS.

Hæmorrhoids, frequency of—Nature and definition—External and internal—Pathology and causes—Influence of mechanical pressure and direct irritation—Constipation and its effects—Influence of habits of life—General appearance and structure of hæmorrhoids—External hæmorrhoids—Condition of, how affected—Structure of internal hæmorrhoids—Capillary hæmorrhoids—Symptoms of external hæmorrhoids—Symptoms of internal hæmorrhoids — Hæmorrhage—Protrusion — An attack of Piles—Diagnosis of external and internal hæmorrhoids—Treatment of external hæmorrhoids—Aperients—Local applications—Attention to diet, etc.—Treatment of internal hæmorrhoids—General and local remedies—Treatment if inflamed or strangulated—Conditions which render an operation necessary—Previous treatment—Method of applying ligature — After-treatment — Complications and sequelæ—Hæmorrhage—Reasons for preferring ligature—Other methods—Nitric acid—Injection of Caustics—Clamp and scissors—Screw-crusher—Use of cocaine.

HÆMORRHOIDS or piles constitute the best known, though not the most common affection of the rectum, at least in hospital practice. It must not be forgotten that patients suffering from any form of pain and discomfort in the lowest part of the bowel, almost invariably jump to the conclusion that their troubles are due to piles. The necessity of a proper examination, when medical aid is sought, would seem too obvious to need insisting upon, were it not for

the fact that the patient's diagnosis is often accepted, and the treatment, in not a few cases, correspondingly misdirected.

A hæmorrhoid may be defined as a varicose enlargement or swelling in one or both of the following parts:—*(a)* the submucous tissue of the lower part of the rectum; *(b)* the subcutaneous tissue of the anus. According to their place of origin hæmorrhoids are broadly classified as (1) external and (2) internal; the former originate and remain outside the external sphincter, while the latter are formed within the bowel. There is, however, a third and a very numerous class, comprising hæmorrhoids which are partly external and partly internal, being covered by mucous membrane above and skin below. In addition to this, piles formed within the bowel often protrude externally in a subsequent stage.

Pathology and causes.—The rectum is freely supplied with veins which form a complex interlacement termed the hæmorrhoidal plexus. Some of these discharge their blood into the internal iliac veins, and thus into the inferior cava; the remainder join the inferior mesenteric vein and their contents are conveyed to the liver. These veins, like the other veins of the portal system, are destitute of valves. The frequent occurrence of varicose enlargements in the hæmorrhoidal plexus is due to various causes. Venous congestion is of course the starting-point, and this to a great extent results from *mechanical pressure* which impedes the escape of blood. *Direct irritation*, however, plays an important part in the development of hæmorrhoidal congestion, and these

two causes frequently co-exist. It is desirable to discuss them somewhat minutely.

Mechanical pressure on the abdominal veins may be caused by accumulation of fæces, by enlargements and displacements of organs and by morbid growths. The passage of solid fæces from the colon into the rectum necessarily compresses the columns of blood and causes temporary congestion of the rectal veins, and this condition tends to become permanent when the fæces are long retained. Hence constipation is a potent cause of piles. Next in frequency comes the gravid condition of the uterus, while various morbid growths, *e.g.*, of the liver, spleen, ovary, prostate, etc., are less common, but by no means rare causes of piles. These all act by impeding the escape of blood from the hæmorrhoidal plexus. Muscular exertion of various kinds, and especially those efforts which are attended with forcible contraction of the diaphragm and abdominal muscles, are decided aids to the development of piles. Their effect is to impede the venous current through the levator ani and sphincter muscles. Thus, there is a second reason why constipation should cause piles. Difficult micturition, due to obstruction in the urethra or bladder, acts in a similar manner. Impeded circulation of blood through the liver, as, for example, in oft-repeated congestion of the portal system and in cirrhosis, must be included in the category of mechanical causes of piles. Congestion of the liver is almost always associated with hæmorrhoids. Obstructive disorders of the heart and diseases of the lungs accompanied by destruction of capillary vessels

play a similar, though a subordinate part. To these mechanical causes must be added the influence of gravity which materially affects the circulation in the rectal veins. The mucous membrane of this part of the bowel is very distensible and the loose submucous tissue affords but little support to the veins. The second division of the causes of hæmorrhoids comprises those which act by irritating the mucous membrane. Chief among these are the accumulation of fæces, the frequent use of drastic purgatives, exposure to cold and damp, sexual excesses, immoderate eating, etc. All these tend to set up a catarrhal condition of the rectum with venous dilatation as a consequence. Habitual constipation, with accumulation of fæces, acts in a three-fold manner; the veins of the rectum are subjected to undue pressure, the mucous membrane is irritated by the hardened fæces, and excessive straining is necessary for their expulsion.

Hæmorrhoids are somewhat more common in men than in women, and the majority of the sufferers are of middle age. No period of life is, however, exempt. The well-to-do classes furnish the largest contingent of patients, and sedentary habits are a predisposing cause. At St. Mark's Hospital, cobblers and tailors are the most frequent sufferers. On the other hand, piles are apt to be developed in persons who are obliged to stand for many hours daily.

Speaking generally it may be stated that constipation is the most potent cause of piles and tends greatly to aggravate their condition. In some patients, however, looseness of the bowels is the

prevailing condition, and in these cases obstructed circulation through the liver is generally the cause of the hæmorrhoids.

General appearance and structure of hæmorrhoids.—Hæmorrhoids, whether external or internal, vary much in the appearances they present, and are subject to many changes; but whatever forms they may assume, all varieties of piles are developed in a similar manner, and are identical in structure in the early stage. External piles first appear as small, more or less oval growths at the verge of the anus. They are bluish or bluish-white in colour according to their degree of turgescence and the relative proportions of skin and mucous membrane involved. When swollen, but not too painful to be handled, pressure between the finger and thumb causes the swelling to diminish, but the little tumours again become tense when the pressure is taken off. When examined after death even severe forms of hæmorrhoids are much less prominent than during life. The swollen condition is due to venous congestion, and is generally reduced by any measures which tend to diminish the quantity of blood in the intestinal veins. Thus, free purgation often makes a great difference in the appearance of hæmorrhoids, causing them to become soft and collapsed, while constipation is attended by opposite results.

After external hæmorrhoids have existed for some time, there are often signs of irritation about the anus and perineum, such as slight cutaneous inflammation, watery or mucous secretions, eczematous eruptions, cracks and excoriations. As a result of

the irritation, the connective tissue becomes increased and indurated, and the skin is thicker and more adherent to the tissues beneath it. As time goes on, pendulous flaps are apt to form; these consist of redundant skin, and are sometimes mistaken for piles. Some of them may contain a vein which at some time or other has been troublesome.

On section, external hæmorrhoids are found to be composed of enlarged veins and fibro-cellular substance, in varying relative proportions in different cases. They present, especially in their early stages, a truly cavernous structure, composed of irregularly shaped spaces which are filled with blood and communicate freely with the hæmorrhoidal veins, their inner surface being continuous with the lining membrane of the vessels. These cells are supported by more or less connective tissue. They are probably formed in the first place from the veins which distend and break through into each other as a result of destructive pressure on the intervening tissue (Wilks). They are not cut off from the venous system, "as under favourable circumstances injection from the veins can be effected."

The condition of external hæmorrhoids is much affected by a variety of circumstances. Various forms of irritation cause them to become swollen, tense, very painful and dusky blue in colour. Blood is then found to be extravasated into the connective tissue and the veins contain clots of varying consistence. The term "thrombotic" has been applied to this form of pile. Inflammation is a further development of such a condition, and the above appearances

are then much more marked. Suppuration of a thrombus sometimes occurs in external piles, but it much more often happens that the inflammation subsides, the effused blood is absorbed and the parts regain their previous condition. The piles are then represented by cutaneous nodules or enlarged folds at the verge of the anus, giving rise to little or no inconvenience until congestion or inflammation is again induced by some one or other of the exciting causes already specified.

The structure of internal hæmorrhoids is very like that of the external forms, but the vascular element is more marked and abundant, and the tumours are softer and covered by mucous membrane instead of skin. Not only veins, but, in many cases, small arteries have a share in their formation. They vary in size; some being very small, perhaps as large as a pea; others reaching the size of a walnut. Sometimes a single pile exists, but more often there are several such tumours; they usually have a broadish base, but sometimes, and especially in long-standing cases, in which protrusion is common, the growths become pedunculated. Their colour varies, being red when the arterial element predominates, and dark purple when the blood is mostly venous in character. The surface is often found to be eroded and bleeding. Internal piles are, as already stated, formed within the bowel, but they often protrude externally as time goes on. They then appear as roundish tumours, occupying the aperture of the anus and dark purple in colour. When this condition persists, the mucous membrane

becomes dry, indurated and thickened, and semi-cutaneous in appearance. In the growth and development of internal piles there are three stages which are especially important as regards the treatment. In the first of these the piles protrude when the bowels act and are afterwards spontaneously retracted. In the second the protruded piles remain outside the anus until replaced. In the third even slight exertion of any kind causes protrusion and manual replacement is requisite.

There is a second form of internal hæmorrhoid in which the dilatation involves the superficial vessels in a circumscribed patch. These have been termed "capillary hæmorrhoids," as they are composed of capillary vessels and connective tissue. Such a patch is sometimes found alone, and sometimes it constitutes a portion of the surface of a large venous hæmorrhoid. In a third form the tumour contains not only dilated veins, but one or more arteries of considerable calibre.

Symptoms of external hæmorrhoids.—External hæmorrhoids cause various degrees of trouble or suffering to the patient according to their condition. There may be a little uneasiness, due perhaps to increase of moisture in the part or to eczematous eruption. The hæmorrhoids appear simply as small pendulous flaps of skin, or as soft dark-blue tumours close to the anal orifice. As a result of irritation or inflammation, external hæmorrhoids are much altered in appearance and become excessively painful. The little tumours are prominent and very tender when touched. There is a sense of dis-

comfort and heat in the perineum and sometimes œdema is present. All the symptoms are aggravated when the bowels are moved. When the upper portion of the pile is covered by mucous membrane, the symptoms produced by irritation are still more severe. The swelling is dark blue in colour, firm and exquisitely tender when touched, and there is more or less œdema around the anus. The irritation extends to the sphincter and levator ani muscles, and their spasmodic contraction increases the local symptoms to which signs of constitutional disturbance are often superadded. In such cases feverishness, headache and general malaise are frequently observed. The bowels are usually constipated; straining efforts at stool greatly increase the pain. In some patients these symptoms are easily excited by even slight excess in either alcoholic stimulants or animal food, and subside under opposite conditions of diet and the use of a brisk purgative. When excoriations or fissures co-exist with piles the pain is always more intense, and the swelling more marked.

Symptoms of internal hæmorrhoids.—Internal piles are more serious than the external form of the complaint, and are apt to cause far greater trouble to the patient, though they sometimes remain comparatively quiescent. The two forms frequently co-exist. The peculiar feature of internal piles is their tendency to bleed; in many cases hæmorrhage from the bowel during or after defæcation is the first symptom which attracts the patient's attention. The bleeding results from laceration of the mucous membrane during straining, the membrane itself having

become stretched by the pressure of the dilated veins. But before hæmorrhage occurs, internal piles often cause various uncomfortable sensations in the rectum and about the anus. The patients complain of fulness, weight and throbbing in the rectum, of a frequent desire to strain, of spasmodic contraction of the sphincter, or of sensations of itching and burning; these symptoms being aggravated by constipation and relieved by free action of the bowels. Sometimes there is mucous discharge and tenesmus, indicative of catarrh of the rectum.

Hæmorrhage as a symptom of internal piles varies greatly as regards the quantity and the character of the blood lost. Sometimes there is a mere oozing; in other cases the hæmorrhage is profuse, amounting to half a pint or more. In the capillary hæmorrhoid, the blood is mostly arterial in character; when larger arteries are implicated, the blood escapes in jets; in the more common form, the hæmorrhage takes place from eroded veins. The bleeding generally occurs when the bowels are moved, but in some cases even when the patient moves about. Recurrence of the hæmorrhage at more or less regular intervals, is not uncommon. At first the local symptoms are relieved by the hæmorrhage, and the patient feels more comfortable in every way; but, as the loss of blood becomes more frequent, the ordinary signs of anæmia begin to show themselves, and when the hæmorrhage is allowed to continue unchecked, the results soon become very marked. In extreme cases life is sometimes imperilled by the hæmorrhage.

The protrusion, which constitutes a marked stage in

the development of internal piles, is a frequent cause of suffering to the patient and is often accompanied by hæmorrhage. As a general rule protrusion first occurs during straining efforts at defæcation, after which the piles disappear within the bowel. As time goes on, however, protrusion becomes more and more frequent as the mucous membrane loses its elasticity, and the sphincter offers less resistance, and under these circumstances the patient has to employ the fingers to effect replacement. In the absence of remedial measures, the condition of the parts becomes worse. The hæmorrhoids increase in size and number and protrude not only during defæcation, but on making slight exertion and during coughing, etc. Hæmorrhage is less frequent and abundant than in the two previous stages, but the protrusion causes much distress and sometimes acute pain, radiating to the sacral region and thighs. This almost permanent state of protrusion constitutes the third stage in the course of internal hæmorrhoids.

When the hæmorrhoids remain protruded for any length of time, they are apt to become strangulated owing to spasm of the sphincter. The patient then finds it impossible to replace the tumours, which increase in size and become tense and exquisitely painful. Constitutional symptoms, such as high fever and vomiting, often set in, and retention of urine is not unfrequent. If replacement be not effected, gangrene or sloughing will most probably occur.

What is termed "an attack of the piles," that is, when the local symptoms become marked, is generally the result of irritation and inflammation, and the

chief importance of hæmorrhoids arises from their liability to these various accidents, *viz.*, bleeding, protrusion and inflammation.

Diagnosis.—External piles are easily diagnosed, provided that a proper examination be made. When the hæmorrhoid is in a quiescent state, on separating the buttocks it will appear either as an enlarged flap of integument containing one or more enlarged veins, or as a slight swelling at the verge of the anus and passing up into the bowel. When inflamed, it will appear as a round dark swelling, tense, smooth, and very tender to the touch. Flaps of redundant skin near the anus are frequently mistaken for piles. Such hypertrophies are often due to pruritus and ascarides, and these growths do not contain dilated veins and are not liable to sudden enlargement.

With regard to the *diagnosis of internal piles*, when a patient complains that something always protrudes when the bowels are moved, the best plan is to inject a pint of warm water and examine the part after the injection has come away. If the protrusion consist of piles, one or more tumours presenting the appearances already described will be seen projecting from the anus. If, however, protrusion has not taken place, and the patient complains of a sensation of fulness and weight in the lower part of the bowel, and states that bleeding occurs during or after defæcation, it is equally necessary to make a digital examination of the interior of the bowel. An enema should first be administered, and when this has come away, the patient should be placed on a couch on the left side with the right leg drawn up,

and told to strain down as the surgeon's forefinger is introduced. Sometimes the piles will protrude, but if not, the finger will detect some amount of fulness of the mucous membrane. Such swellings are never tense and defined, as hæmorrhoids are when protruded. At the same time the bowel should be examined in order to discover whether any other disease or complication exists, *e.g.*, fissure, polypus, fistula, ulceration, stricture or malignant disease.

Treatment of External Hæmorrhoids.—The cause should be discovered and dealt with as far as possible. Errors in diet and mode of living should receive proper attention and the bowels should be kept open by the aid of mild purgatives. If, as often happens, there be indications of congestion of the liver, a few doses of blue pill at bedtime, followed by a mixture containing sulphate of magnesia and liquid extract of taraxacum will constitute the best treatment. When the active symptoms have subsided, nitro-muriatic acid may be given with advantage. Lead lotion either warm or cold, is the best local application for an inflamed external pile. Cold is generally preferable; but the application of ice is not to be recommended. The practice formerly recommended, of incising a thrombotic pile and removing the clot is fraught with danger; it is liable to cause phlebitis and pyæmia. If suppuration has taken place, an incision may of course be made. Warm applications are more suitable for inflamed external piles occurring in pregnant women. In all cases until the inflammation has subsided, the patient must be kept in bed and placed on low diet. Cutaneous

excrescences about the anus, when inflamed and painful, should be treated by astringent lotions and cold; afterwards they should be removed by the knife or scissors, care being taken not to cut away too much integument; cases are by no means rare in which much misery has been caused by the too free use of the scissors. In treating a case of external piles, it is desirable to ascertain whether internal hæmorrhoids are likewise present.

After the active symptoms of external hæmorrhoids have been relieved, the patient's diet and habits of life should receive careful attention. Constipation, if present, must be obviated by mild purgatives; confection of senna, compound liquorice powder, or some one or other of the natural bitter waters may be taken with advantage. Carlsbad salts are especially useful when a gouty tendency exists. The diet should be simple and contain a large proportion of vegetables; stimulants should be prohibited, and over-exertion of all kinds should be avoided. The skin should be attended to, and the parts about the anus should be washed night and morning with cold water.

Treatment of Internal Hæmorrhoids.—This may be discussed under two heads *(a)* Palliative and *(b)* Radical.

In all cases of internal piles the cause of the malady should be discovered and treated or removed if possible. If, as often happens, there be evidences of hepatic congestion, attention to diet, the withdrawal of stimulants and the use of alteratives and laxatives will relieve the hæmorrhoidal troubles; and this kind of treatment, if adopted in the early stages, may pre-

clude the necessity for operative interference. It is especially indicated for cases in which the patients decline to submit to an operation. Suitable laxatives have been already mentioned (see page 37). An enema of cold water after each action of the bowels will aid in constringing the dilated vessels, and calomel ointment, or an ointment containing the sub-sulphate of iron (℥ j to ℈ j) applied by means of a suitable instrument, will have a similar effect. While this treatment is being carried out, the patient should adopt the recumbent position as much as his avocations will permit.

When internal piles become protruded and inflamed, the patient must be kept in the recumbent position and warm lead-lotion will be found the best application. The diet must be low and laxatives are generally indicated. If strangulation has occurred, attempts should be made to effect replacement by administering an anæsthetic and gently compressing the protruded hæmorrhoids. If the latter cannot be returned within the bowel, or if they again protrude after replacement, it is best to attempt their radical cure, either by means of the ligature or some one or other of the methods to be presently described.

When strangulation of protruded hæmorrhoids is followed by gangrene, the ordinary treatment of this condition is indicated. Poultices should be applied until the part becomes detached. Some amount of constitutional disturbance is likely to occur and hæmorrhage may be expected when the slough separates.

In many cases of internal hæmorrhoids, constitu-

tional and local treatment, aided by suitable diet and habits of life, will relieve troublesome symptoms, and gradually cure the disease. Such a result cannot, however, be attained without great care on the part of the patient, and in not a few cases the necessity for further treatment sooner or later becomes urgent. Oft-recurring hæmorrhage, even if only slight in quantity, frequent protrusion of the hæmorrhoids, causing much pain and distress to the patient, and repeated attacks of inflammation are the principal symptoms which render an operation necessary. It may be laid down as a general rule that an operation is required for the cure of hæmorrhoids which have reached the second and third stages (see p. 31).

Destruction of the hæmorrhoidal tumours is the object aimed at in the various operations suggested and performed for the cure of piles. The destruction should be complete and lasting in its effects, and should be achieved in such a manner as to injure the mucous membrane as little as circumstances will permit, while the risk of bad consequences to the patient should be as small as possible. An operation fulfilling these conditions has, for some years, been practised at St. Mark's Hospital, and although many other methods have been suggested, the one referred to, *viz.*, the application of a ligature, will be found suitable for ninety-nine out of every hundred cases. A description of this operation will first be given, and the other methods will be afterwards discussed.

Before operating, it is desirable that the bowels should be thoroughly freed from any fæcal accumu-

lation, and accordingly a full dose of castor oil should be given on the previous day. To make quite sure that the rectum is empty, an enema should also be administered two or three hours before the operation.

The patient, fully under the influence of an anæsthetic, is placed on the right side with the knees well drawn up towards the abdomen, the couch being so arranged that the buttocks are exposed to a strong light. The left buttock is raised by an assistant, and the surgeon thoroughly dilates the sphincter. This preliminary much facilitates the application of the ligatures, and lessens the tendency to, or altogether prevents, that spasmodic contraction of the muscles which often causes great pain after the operation. Dilatation having been accomplished, the surgeon seizes each hæmorrhoid with a hook having two, three, or four prongs, and draws it away from its attachment; he next, with a pair of Salmon's scissors, cuts along the line where the skin joins the mucous membrane making the incision on each side of the hæmorrhoid and parallel with the long axis of the bowel. A strong silk ligature is then applied round the base of the hæmorrhoid, and tied as firmly as possible. Its application will be facilitated if the assistant draws out the pile from its attachment, and the ligature should be placed in the groove formed by the incision made with the scissors. When several hæmorrhoids exist, a ligature must be applied to each of them. When this has been effected, the piles, if small, may be replaced within the bowel; if of large size, a portion of each may be cut off with

scissors before replacement. These incisions should not be made too near to the ligatures. An anodyne is then to be administered and the parts having been carefully sponged, a pad of lint or cotton-wool and a T-bandage should be applied. The knot which fastens together the ends of the bandage should be over the pad, so as to concentrate the pressure upon the anus.

After the operation, the patient must of course be kept quiet and in bed, and low diet should be prescribed. The bowels should be restrained from acting for four or five days, by means of opium or catechu. On the fifth day a small dose of castor-oil should be given and followed after a few hours by an enema of warm water. After an interval of two or three days, if the bowels do not act spontaneously, the castor-oil and enema should be repeated. The diet should at this time be improved, but the patient should keep in the recumbent position until the separation of the ligatures has taken place; this usually occurs in from seven to fourteen days after the operation. A little simple ointment should be applied daily to the bowel. The patient should, for another week, abstain from any form of active exercise. After that time the granulating surfaces will have healed and the cure will be permanent.

Retention of urine sometimes occurs after the operation and may continue for some days. It is due to spasm of the urethral muscles. Warm fomentations over the pubes should first be tried, and if these fail, a catheter must be introduced.

Hæmorrhage is another accident which sometimes

attends operations on piles, and it may occur during the operation, a few hours afterwards, or when the ligatures come away.

Hæmorrhage during the operation is of rare occurrence and is easily dealt with. If it comes from an artery, a ligature should be applied; venous oozing, however free, stops when the operation is completed and the pad and T-bandage are applied.

Hæmorrhage appearing a few hours after the operation, or recurrent hæmorrhage, comes from some vessel or vessels which were divided during the operation but did not bleed at the time.

Secondary hæmorrhage, or that which occurs when the ligatures come away, is much more serious than the other two varieties. It is generally venous in character and is most prone to occur in debilitated persons and in those whose constitutions have been impaired by excesses. The quantity of blood lost may be very great. This form of hæmorrhage has never happened in my experience except after the use of the clamp.

Recurrent and secondary hæmorrhages, the latter especially, require active treatment inasmuch as the effects may speedily become serious. For recurrent hæmorrhage, the wounded vessel should be searched for and tied. If the condition be that of general oozing, ice-cold water should be injected into the bowel or a plug of ice may be introduced. The same means may be tried for a case of secondary hæmorrhage, but it will generally be necessary to plug the rectum by introducing a tube and then packing cotton-wool around it. In another method, a sponge of a

suitable size and shape is armed with a double ligature, and after being wetted and squeezed dry, is passed several inches up the rectum. Below this, cotton-wool well covered with powdered alum is to be gradually introduced, until the bowel is filled. On pulling at the ligature attached to the sponge, and keeping the cotton-wool in position with the fingers of the other hand, great pressure is exercised on any bleeding spot. The tube and cotton-wool are most convenient for application and retention; they may be kept in for several days, opium and catechu being administered to restrain action of the bowels. A preparation of wool impregnated with iron is an excellent styptic in these cases. The patient must of course remain in the recumbent position and nutriment must be administered according to circumstances. Patients in whom this secondary hæmorrhage occurs are often much reduced, and nourishing food, tonics, etc., are generally required. If retention of urine follow the introduction of the plug, it must be relieved by the catheter. Accumulation of flatus is sometimes troublesome; it will not, however, occur if the tube be used. In from six to eight days, the plug may be carefully removed; it is best not to promote any action of the bowels until several days have passed.

If proper precautions are taken, it rarely happens that the destruction of hæmorrhoids by means of the ligature is followed by any unpleasant results. Sometimes, however, the wound left after separation of the ligature refuses to heal kindly and an ulcer results which gives rise to pain and the passing of a

little blood on defæcation. This, however, seldom occurs except in debilitated subjects. It should be treated by rest, the use of laxative medicines to keep the stools soft and the application of calomel ointment. Black wash and a lotion of sulphate of copper (gr. iv to ʒ j) injected into the bowel, are also suitable for these cases.

Contraction at the anal orifice, and even higher up in the bowel, is another, though a very rare sequela. In the former case the stricture is due to the removal of skin; in the latter, to the cicatrices left after ulceration. Risk of contraction at the orifice can be prevented by taking care not to include any integument within the ligature. Contraction of the mucous membrane can be cured by the daily use of a bougie for a few weeks.

Judged by the results, both as regards cure of the disorder, and almost entire absence of risk of any kind, the treatment of internal hæmorrhoids by the ligature must be pronounced most satisfactory. Many surgeons of large experience have never had a single fatal case, or one in which any serious symptoms presented themselves. Indeed so great is the freedom from danger and so certain are the results, that any improvement upon this operation is, in my opinion, scarcely within the range of probability. For the same reasons, other methods of operating upon internal hæmorrhoids will require only a brief notice. The principal of these are as follows:—(*a*) the application of nitric acid to the surface; (*b*) the injection of caustics into the substance of the pile; (*c*) removal by means of a clamp and scissors, hæmorrhage being

arrested by the actual cautery; (*d*) removal by means of a screw-crusher.

(*a*) *The application of nitric acid* has been largely employed by some surgeons, but it is suitable only for small capillary hæmorrhoids. It is easily applied, but serious hæmorrhage is apt to follow its use even to a small area, and it is impossible to destroy large hæmorrhoids by its means. For the treatment of capillary hæmorrhoids, in which there is no distinct tumour, but a circumscribed red vascular area of dilated capillaries, it may be applied on a glass rod or on a small wooden brush after the surface has been well dried. Any excess of acid should be neutralized by sponging the part with a saturated solution of bicarbonate of soda. A little oil should then be applied. A yellowish slough forms, leaving on detachment a superficial ulcer which heals with a certain amount of contraction. Care should be taken to apply no more acid than is *absolutely necessary* and to protect the parts around. If these precautions be neglected, there will be risk of serious hæmorrhage on separation of the slough, and likewise of contraction of the bowel when the ulcer heals. Strong carbolic acid may be used as a substitute for the nitric acid.

(*b*) *The injection of caustics into the substance of the pile.*—Carbolic acid, caustic potash and solutions of subsulphate of iron are the principal remedies that have been used in this manner, and of these the first named appears to be the most suitable. My friend and colleague, Mr. Swinford Edwards, has recently treated several cases of hæmorrhoids by means of carbolic acid injections. He uses three or four drops of the

following solution:—Carbolic acid, twelve grains, glycerine and water, of each one drachm; each pile is separately injected. This treatment has the effect of restraining both prolapse and hæmorrhage, and should these symptoms recur (as may happen after a few weeks) the injections should be repeated. In one case thus treated, in which there were three large internal hæmorrhoids, one injection sufficed for a cure. Mr. Edwards informs me that he has never seen any bad results follow the injections; only one patient experienced considerable pain at the time of the puncture. This method of treatment is, he considers, most suitable for cases in which there is not much prolapsus of the hæmorrhoids, though there may be considerable bleeding. There are certainly two advantages connected with it, for (1) anæsthesia is quite unnecessary, and (2) the injections do not necessitate confinement to bed. It is only right to state that in the hands of some surgeons the injections have not yielded satisfactory results.

(*c*) *Removal by means of a clamp and scissors, hæmorrhage being arrested by the actual cautery.*—In this operation each hæmorrhoid is drawn down by means of a hooked forceps, and a clamp is applied to its base, which is then divided with a pair of curved scissors. The cautery iron, heated to a white heat, is applied to the stump thus left. The operation is sometimes varied by dividing the base of the pile by means of the knife of the Paquelin cautery. In either case the division should not be made too close to the clamp. After the cautery has been applied, the clamp should be slightly opened, so as to see whether

any blood escapes, in which case the cautery is to be again applied after the clamp has been tightened. Its hold is again to be relaxed, and if there be no appearance of hæmorrhage, the instrument can be removed. Oil is applied and the parts replaced within the rectum. Secondary hæmorrhage is more likely to occur than after the use of the ligature, and, as compared with the latter, the results of the operation are not satisfactory.

(*d*) *The removal of piles by means of a screw-crushing instrument.*—This instrument is made of solid steel, it has at one end an open square in which a second bar of steel slides up and down. This bar is connected with a screw apparatus, but it has a sliding movement as well. The instrument is used in this way: the bar being withdrawn so as to open the square, the hæmorrhoid is drawn into the latter by means of a hook or vulsellum; the bar is pushed down so as to compress the base and then screwed home as closely as possible. A knife or scissors are then used to detach the pile, and the crusher is kept in position for about half-a-minute and then removed. In some cases the operation is followed by severe pain and there is generally considerable œdema of the external parts. Hæmorrhage rarely takes place after the operation, but contraction is somewhat liable to occur unless great care be taken not to remove too much tissue with the hæmorrhoids. After the operation, a little oil is applied and the parts are replaced. I can only repeat that, judging by the results of my own experience, the use of the ligature is, as a general rule, to be preferred to any

of the methods just described. For a certain proportion of cases other plans are doubtless worthy of adoption. Mr. Edwards thinks that the treatment of piles by means of either Allingham's or Pollock's crusher has much to recommend it, and that it is particularly advantageous for cases in which time is an object of importance. Patients can generally be allowed to move about within from four to seven days of the operation, whereas a longer period of recumbency is usually required after the use of the ligature. On the other hand the crushing operation is more likely to be followed by slight hæmorrhage. Cocaine has received a fair trial at St. Mark's Hospital in these operations, and has acted very satisfactorily in cases where, owing to thoracic disease, the administration of ether or chloroform was contra-indicated. Three or four minims of a ten per cent. solution are used for injection. It cannot, however, be regarded as a perfect substitute for general anæsthetics, inasmuch as cases sometimes occur in which after the first few steps have been taken, a more prolonged operation than was previously contemplated is found to be necessary. Under such circumstances general anæsthesia can scarcely be dispensed with.

CHAPTER IV.

FISTULA-IN-ANO.

Frequency of fistula-in-ano—Its nature and varieties—Anal and rectal fistulæ—Causes—Precursory symptoms and external appearances—Course and consequences—Causes which prevent spontaneous closure—Diagnosis and methods of examination—Treatment—Early opening of perineal abscesses—Operation for fistula—Substitutes for the knife—Injection of tincture of iodine into the track—Incisions for the cure of fistulæ—After-treatment—Modifications of the operation—Risk of oblique incisions through the sphincter—The operation in phthisical subjects—Indications and contra-indications—Treatment of fistula by ligatures, elastic and otherwise—The actual cautery.

FISTULA is one of the most common affections to which the lower part of the bowel is subject. It consists of a passage, limited by more or less callous walls, and situated in the connective tissue in or near the wall of the anal part of the rectum. It originates in an abscess, the starting-point of which may be either outside the bowel or an ulcer in the mucous membrane, through which irritant matter passes into the connective tissue. The suppuration of inflamed hæmorrhoidal veins in the walls of the rectum is another cause of fistula. When an abscess forms in the ischio-rectal fossa or in the submucous connective tissue of the bowel and bursts externally, and the track fails to close, it constitutes what is termed

blind external fistula. This kind of fistula is most frequently the result of a subcutaneous abscess close to the anus. When there is an opening into the bowel alone, there is a *blind internal fistula;* and when there are two openings, one in the bowel and the other in the integument, and these are connected by a sinus or passage, the fistula is said to be *complete.* Mr. Swinford Edwards* has pointed out that internal fistula is sometimes due to the formation of an abscess between the bowel and the levator ani muscle. As a matter of course, the tendency in a blind internal fistula is to become complete, as suppuration is apt to recur and advance towards the surface. Fistulæ may also be divided according to their position into *anal* and *rectal;* those of the former class opening just inside the orifice, and those of the latter piercing the rectum at some distance from the aperture.

The *causes* of fistulæ, with the exception of those due to ulceration, are somewhat obscure. In a general way, fistula is most common among tailors and cobblers and others who lead a sedentary life. The affection is common in phthisical patients, and is usually the result of the breaking down of the tuberculous deposit in the bowel. Irritating matters pass into the connective tissue and cause inflammation and suppuration. In these cases the fistulæ are generally wide and open at their upper ends, while the lower aperture is less free, hence fæcal matters are very apt to enter and cause increase of irritation. Constipation is sometimes

* *St. Bart. Hosp. Reports*, vol xiv., p. 354.

a prominent symptom in the subjects of fistula, while others again are liable to diarrhœa. Fistula in children is most often due to the presence of ascarides. Other causes of fistula are injuries to the part, and the irritation produced by inflamed hæmorrhoids and the presence of foreign bodies, as bones, which have been swallowed, and in some cases the formation of an abscess in the ischio-rectal fossa has been preceded by exposure of the part to cold and damp. A similar result is sometimes due to necrosis of the pelvic bones. Fistulæ often co-exist with ulceration and stricture of the rectum.

Fistula-in-ano may occur at any period of life. It is comparatively rare in very young subjects, and most common in middle life, and males are more liable to it than females.

Symptoms.—In many instances the development of a fistula is preceded by the symptoms of periproctitis and of inflammation and abscess in the ischio-rectal fossa; and sometimes in addition, by those of ulceration of the bowel. In a few cases the precursory symptoms are very slight; after a little pain and swelling the integument gives way and more or less purulent fluid exudes. There is often great pain when a large abscess is forming. The external aperture of a fistula is more often at the side of the anus than in front or behind it. It is generally round and has elevated margins; and is sometimes partially occluded by one or more button-shaped granulations. In other cases it is narrow and slit-like and concealed within folds of skin near the anal orifice. There are sometimes several external

openings, at varying distances from each other, the intervening integument being reddened, swollen and indurated. In bad cases the perinæum is sometimes completely riddled with fistulous openings, and the intervening skin not unfrequently ulcerated, and large irregularly shaped open sores are thus formed. The inner opening is usually narrow and single, except when the fistula has been due to ulceration. In most cases it is within two inches of the anus, and it is frequently to be found either between the two sphincters, or just above the edge of the internal sphincter. The track may, however, run through both sphincters, and sometimes it passes in the connective tissue external to these muscles and opens high up in the rectum. In these latter cases the external opening is generally near the anus.

The communication between the bowel and the integument by no means always forms the whole of the sinus, for the latter often extends up outside the intestine for some distance above the opening into the bowel. Sometimes several fistulæ co-exist, and the sinuses are often branched and tortuous, and in some cases pass horizontally round a large portion of the circumference of the bowel, forming what is called a "horse-shoe fistula." When fistula and stricture of the rectum co-exist, the sinuses are apt to be numerous and extensive. It far more commonly happens that there are several external openings, than that there is more than one internal aperture; but when ulceration has been the starting-point, two or even three internal openings are not unfrequently found. After a fistula has

existed for some time, its walls become hard and contracted, and are lined with granulation tissue.

The discharge from a fistula varies in quantity and quality; it is generally slight and watery after the condition has become established, but as a result of fresh irritation, it is liable to be increased in quantity and purulent in character. The constant oozing, however, is a cause of much discomfort to many patients; the perinæum becomes sodden and irritable, and an eczematous eruption is often developed, and sometimes there are warty growths, which become a source of fresh trouble. It is rare for fæculent matter to escape externally, as the inner opening is usually small and covered by a fold of mucous membrane; but when ulceration is present, this opening is apt to be wide, and fæces are liable to pass through. In most cases of complete fistula there is escape of flatus from time to time. So long as the track of the fistula and the external opening remain patent, there is generally little, if any, pain complained of, but only more or less uneasiness; if, however, the lower opening closes, or the track becomes obstructed, the secretion accumulates, tension and pain are experienced, and all the symptoms of abscess soon become developed. These disappear when an external opening is again established, and the patency of the track is restored.

It rarely happens that any form of fistula-in-ano heals spontaneously, and there are several reasons to account for the permanence of the condition. In the early stages the walls of the abscess are kept asunder by the accumulation of the pus, which more-

over is apt to become putrid and then prevents the development of healthy granulations and favours ulceration. In addition to this, owing to the surrounding parts, the walls of the abscess and of a fistulous track cannot be retained in a condition of rest which is essential for the healing process. Not only during defæcation, but in various movements of the body and during respiration, the structures in the anal region are disturbed and the suction-like action of the sphincters upon the ischio-rectal fossæ tends in an especial manner to draw open any cavity in that situation. Other causes which prevent healing are the liability of the secretion to become retained, and of irritating substances to enter the inner opening of the fistula. The action of the sphincters constitutes the greatest obstacle to the healing process. But in spite of these unfavourable conditions, spontaneous healing sometimes occurs, while partial adhesions of the walls of fistulous tracks are by no means uncommon.

The *diagnosis* of fistula-in-ano rarely presents any difficulty, provided that the parts are carefully examined. The patient perhaps complains only of discomfort and discharge and moisture about the anus. For purposes of examination the patient should be placed on whichever side is most convenient, with the legs drawn up towards the abdomen. The right side is the more convenient for most surgeons, but it is generally best to place the patient on the side on which the swelling, etc., exist. The parts round the anus should be separated and felt by the fingers, and when an external orifice exists it

often comes into view at once. When the fistula is of the *blind internal* variety, some amount of thickening and induration is generally perceptible at some spot near the anus. Having discovered an external opening, a probe-pointed director should be gently passed into it, and allowed, so to speak, to find its own way along the track. It will sometimes pass straight into the bowel; but if an obstacle is experienced no force must be used, the forefinger of the other hand should be passed into the bowel and an endeavour made to find whether an internal opening exists. In a complete fistula the opening can generally be felt by the finger and the director can be guided towards it. The opening, as already mentioned, is often considerably lower than the upper end of the fistulous track. There may, of course, be more than one internal opening, and when single it may be situated in the circumference of the bowel opposite to the external aperture. In examining for a fistula it is well to discover whether the bowel is in other respects normal, or whether hæmorrhoids, ulceration, stricture, or malignant disease, are likewise present.

If there be no internal opening the finger in the rectum will feel a layer of tissue between it and the director. If, however, an internal opening be suspected to exist, but cannot be discovered, it is well to introduce a speculum into the bowel, and then, by means of a syringe, to inject a little milk or coloured fluid into the track of the fistula. When the case is one of blind internal fistula, the opening can sometimes be felt by the tip of the finger, and if a speculum be previously introduced, a bent probe can be passed

into it. This variety is much less common than the others, and when it exists, it does not necessarily cause any external change in the parts about the anus. It is often associated with an ulcer in the bowel, from which sinuses may run both upwards and downwards.

In all forms of fistula, but especially in the complete variety, diverticula from the main track not unfrequently exist, and these should be carefully searched for. An intermittent discharge is suggestive of the presence of diverticula; when the discharge is profuse and purulent a large cavity is indicated; when slight and watery and apparently continuous, there is probably an old-standing and uncomplicated fistula. In phthisical subjects, both openings, but especially the internal one, are large and patulous, while the skin is undermined for some distance around the external aperture. The discharge is thin and serous and very seldom purulent in character.

Treatment.—Before describing the treatment applicable to fistulæ, it is well to point out the measures which should be adopted for preventing their formation. Abscesses in the vicinity of the anus, whether in the ischio-rectal fossæ or in the subcutaneous tissue close to the orifice, should be freely opened as soon as any induration can be felt. The best method of operating is to place the patient on a couch on the side on which the swelling exists; the forefinger of the left hand is then introduced into the bowel, and pressed against the swelling so as to make it more prominent towards the surface. In the case of a subcutaneous abscess a curved bistoury is thrust into

the outer part of its circumference, and a free incision made towards the anus. In dealing with an abscess in the ischio-rectal fossa, the incision should be made from behind forwards, and if the suppuration be extensive, it may be necessary to make another incision at right angles to the first and in an outward direction. The wound thus made is to be dressed with plain cotton-wool, and the dressing should be changed every twenty-four hours at first. Drainage-tubes will be of service when the cavity is large and suppuration profuse. The wound should heal from the bottom by granulation. After a few days, if a local stimulant be necessary, a lotion of sulphate of zinc or sulphate of copper may be applied. For most cases, however, plain dry cotton-wool is all that is required.

When a fistula already exists, an operation of some kind is necessary for its cure, in the large majority of cases. Spontaneous closure can never be anticipated with any degree of confidence. On the other hand it very seldom happens that operative treatment, properly carried out, fails to achieve the desired result. It is never advisable to wait, with the hope that a fistula will spontaneously heal, for it always tends to burrow and grow worse. A blind external fistula may, and very often does, remain without change for a considerable time; but the other two varieties, and especially the blind internal form, are almost certain to become aggravated as time goes on. In the case of the latter, renewal of the suppuration is the general course, with the formation of sinuses and an external opening as the ordinary

results, and when this stage has been reached, fresh suppuration and multiplication of sinuses are but too prone to occur. An operation affords the only means whereby the occurrence of these evils may be prevented, and the operation in its simplest features consists in laying open the track of the fistula, and dividing the parts between it and the rectum, including one or both sphincters.

It sometimes happens, however, that patients exhibit a great aversion towards any kind of operation, and inquire whether any other method can be practised with any chance of success. If the fistula be uncomplicated, there are a few plans that may be tried in such cases, but the patients must be warned that failure is highly probable, and that much time and attention will assuredly be required. The setting up of healthy action in the fistulous track is the object to be aimed at, and this may be accomplished by the application of various stimulants. But it is generally necessary in the first place to dilate the external opening, so that any discharges may have a free exit. A small sponge-tent, or a piece of laminaria, kept in for a few days, will effect the necessary amount of dilatation. To excite healthy action along the track, pure tincture of iodine injected into the sinus forms the best application. In successful cases the track is gradually closed by granulations. Other stimulants, *e.g.*, sulphate of copper and nitrate of silver have sometimes been tried and with good results. Astringent remedies, as tincture of rhatany and tincture of perchloride of iron, have been injected, but with few satisfactory results. This plan of treat-

ment is more likely to be successful in blind external fistulæ than in the complete form. After any such application the patient must be kept at rest for a fortnight or more, and a little opium or catechu should be given to keep the bowels confined for several days.

In the large majority of cases of fistula, the laying open of the sinus from end to end is the only method that can be recommended. The details of this operation are as follows:—In the first place, supposing that the case is one of complete fistula, the position of the internal opening must be carefully ascertained, for this is often below the upper extremity of the sinus. If, in such a case, the *cul-de-sac* be left untouched, recurrence of mischief is apt to ensue, even though all the fistula below the internal opening be included in the incision. By way of preparation, as it is desirable that the bowels should not be moved for some days after the operation, a dose of castor oil should be given on the previous day, and it is well to give an enema in the morning in order to make sure that the rectum is empty. For the performance of this operation, the patient should be placed on a bed or couch and on the side on which the fistula exists, with the knees drawn up towards the abdomen, and the buttocks just overhanging the side of the bed. The previous administration of an anæsthetic is generally advisable. A probe-pointed director is then to be passed along the track of the fistula as far as its internal opening. If this be near the anus, the forefinger of the other hand is introduced into the bowel and the end of the director can

be easily made to protrude from the anus. The parts lying upon the director are then to be divided with a sharp bistoury.

The simple procedure just described will not be practicable when the internal opening is more than an inch from the anus. The probe-pointed bistoury should then be introduced into the track upon a director, so that its point impinges upon the finger in the rectum. The necessary incision is then made as the instrument and the finger are both withdrawn. When the track of the fistula is much indurated and more force is therefore required to make the incision, it will be better to perform the operation by means of Salmon's scissors and a director. The latter, which has a deep groove, is passed into the sinus and the probe-pointed blade of the scissors is run along the groove, the forefinger of the left hand having been introduced into the bowel. The parts are then divided with the scissors. After the incision has been made, it is necessary to determine whether it involves the whole length of the fistula, or whether a portion above the internal opening remains untouched. In the latter case either the knife or the elastic ligature should be used to divide the remaining portion. Sometimes also the original fistula sends out lateral branches, and unless these are divided there will probably be a recurrence of the mischief. When sinuses burrow for some distance in the pelvi-rectal spaces, they should not be laid open into the bowel, as incontinence of fæces would almost certainly result; they are best treated by injections. It is very necessary to lay open any sinus under the mucous mem-

brane as far as it runs up the bowel. The elastic ligature is also suitable for such cases.

In operating for the cure of blind external fistulæ, a spot can generally be found where only a thin layer of tissue intervenes between the finger in the bowel and the director in the track of the fistula. Through this the point of the director should be carefully pushed, and the operation is then completed in the usual way.

The operation for a blind internal fistula is necessarily of a somewhat different character. If there be a hard swelling in the perinæum, an incision should be made into it, and then the wound can be examined with a probe or director to ascertain if the sinus has been reached. Supposing that the director passes into the bowel, the operation is completed as above described.

If there be no external signs, such as swelling or induration, a probe or director should be bent at a right angle, and this being introduced into the bowel, an endeavour is made to pass the bent portion through the internal opening. The point can then be felt subcutaneously and cut down upon, and the remainder of the operation completed.

There is seldom much hæmorrhage after an operation for fistula, but if a large vessel has been divided, it should be secured by a ligature. If there be profuse general oozing, the rectum must be plugged with wool, and a styptic applied to the wound. Wool impregnated with a preparation of iron is the best application.

After the operation, a little finely-carded cotton-

wool should be gently placed between the surfaces of the wound. A pad of wool and a T bandage are then applied. The dressing in the wound is allowed to remain until it comes away with the discharge. Afterwards the insertion of a little cotton-wool will suffice to keep the edges of the wound from uniting. The patient should remain in bed or on a couch, and on the fourth night after the operation, if the bowels have not previously been moved, two pills (containing five grains of blue pill and compound colocynth pill) may be given, and followed by a draught in the morning. After the bowels have been moved the wound should be syringed out with warm water in order to remove any fæcal matter, and the syringing should be repeated after each action of the bowels. If the healing process goes on satisfactorily, no other dressings will be required, but if the granulations are sluggish, and the discharge is thin and serous, it will be well to syringe the track of the wound with some stimulating lotion, and to dress it with the same. Under favourable circumstances, and provided that it has not been necessary to make a very deep incision, complete union may be expected in about three weeks. For severe cases, two months may be required. The patient should be kept at rest, and not allowed to walk about, until the wound has thoroughly healed. Fistulæ due to the presence of a foreign body, *e.g.*, a fish-bone, heal up much more quickly after operation than those connected with constitutional disorders. Fistulæ vary very much in character, and it is often necessary to modify the

operation in order to suit the circumstances of the case. When the track is superficial, it may involve the external sphincter in such a way as to pass through it, and in such a case if only the superficial fibres are divided, the wound will not heal, owing to the action of the deeper portion which has escaped the knife. To obviate this result, after the fistula has been laid open, an incision should be made through the remaining fibres of the external sphincter. Also in cases in which the walls of the fistula are much indurated, it is desirable not only to divide one or both sphincters, but to make one or more linear incisions into the hardened tissues.

When several external openings co-exist, and the integument of the perinæum is much undermined, it is sometimes advisable not to lay open all the sinuses at the same time in addition to dividing the fistula. If many incisions are made, there is danger lest the wounds should remain open for a very long time or even refuse to heal. On this account, after operating on the fistula, two or three of the sinuses should be laid open, and when they have healed, the remainder should be similarly dealt with, the patient in the meantime being placed under favourable conditions of hygiene.

In operations upon fistulæ when deep incisions are necessary, the risk of permanent incontinence of fæces as a result of dividing both sphincters must be borne in mind. There is little, if any danger, of more than temporary incontinence, if both muscles are divided at one spot only, provided that the incision be made at a right angle to their fibres.

Oblique incisions leave the cut surfaces of the muscles in a condition unfavourable for healing. If the muscles be completely divided on both sides, serious incontinence of fæces is certain to follow. In these cases of double fistula, when both tracks extend above the internal sphincter, it is better to operate upon one only, and to watch the result. After division of the sphincters on one side, the second track may possibly heal. In operating upon deep fistulæ, the knife should never be thrust higher than is absolutely necessary. In the case of women, another precaution should be observed, the knife should never be carried freely through the anterior part of the sphincter ani. This portion decussates with the sphincter vaginæ, and owing to the anatomical relations of the parts, a free division at the point of decussation would be likely to be followed by a permanent incontinence.

After an operation for fistula, supposing that all goes on well, the discharge gradually diminishes, until it ceases with the healing of the wound. More or less sudden increase of discharge is an indication that burrowing has taken place somewhere in the track of the wound, and if this be permitted to continue, it may not only prevent the wound from healing, but may prove to be the starting-point of a new sinus. Search should therefore be made for any accumulation of pus, and if a lateral sinus be discovered, it should be at once incised. In another class of cases, *viz.*, those in which the healing process is sluggish, local and constitutional treatment will be required. The patient must be kept at rest, the bowels should be carefully regulated and a nutritious

but non-stimulating diet prescribed. Tonics are generally indicated and astringent solutions should be applied to the track of the wound.

In the great majority of cases, the treatment by incision is followed by very satisfactory results, and the operation is contra-indicated under comparatively few circumstances. As a matter of course, its performance would be unjustifiable in the subjects of very serious organic disease in which a fatal termination was evidently not far distant. In elderly people also, a blind external fistula which has been quiescent for some time, may be safely let alone. Only those cases in which the fistula is connected with phthisis are likely to cause any difficulty in coming to a decision for or against the performance of an operation. It is difficult to lay down general rules, for there are several forms and many stages of phthisis, and each case requires special consideration. One objection to operating in these cases is based upon the supposition that the cure of the fistula, even if attainable, would cause the cessation of the discharge, and that the pulmonary disease would therefore be likely to advance with renewed virulence. This view is, however, rendered untenable by the fact that in not a few cases of operation for fistula in phthisical subjects, the incisions have healed quickly and satisfactorily, and the health of the patients has subsequently improved. It would seem quite safe to assert that in cases in which the lung-affection is not far advanced and is not rapidly progressing, an operation may be performed with a very fair prospect of success and of benefit to the patient, provided

always that the *treatment can be conducted under favourable hygienic conditions.*

There are, however, several risks connected with the operation on phthisical subjects. In the first place there is the danger, though slight, of the ill consequences of loss of blood, and secondly there is the possibility of severe febrile movement after the operation, with very depressing results. There is, moreover, the risk of the wound not healing, and this result would be only too probable if there were tuberculous ulceration in the rectum, or if a harassing cough formed a prominent symptom. An operation would not be advisable if ulceration existed, and if a cough were the sole unfavourable condition, alleviation by treatment should be secured before operating on the fistula.

Other special precautions are necessary, both before and after an operation, in such cases. Besides attending to the cough, the general health of the patient should be improved in every possible way. A few weeks at the sea-side or in fresh country air, a nourishing diet including plenty of milk, the administration of various tonics, especially iron and cod-liver oil, are the best measures to be adopted by way of preparatory treatment. In performing the operation it is advisable not to incise the sphincter too freely in these cases; the reparative power is low, and the risk of incontinence of fæces must be borne in mind. After the operation the patient should not be kept long in bed, but in two or three days should be moved to a couch in an airy well-ventilated room, the diet and tonics being continued as before. The wound should be

dressed as already indicated; if granulation goes on sluggishly, stimulant and astringent lotions should be applied by means of a syringe.

In nearly all cases of fistula, the operation of laying open the track by the aid of a bistoury and director is followed by excellent results, but there are other methods which may be adopted, either as substitutes for the knife or as auxiliaries to a cutting operation. Of these the ordinary and the elastic ligature and the actual cautery are all that require to be noticed.

The treatment of fistula by ligature was practised in very early times, and a description of it has been given by Celsus. In its simplest form it consists in the insertion of a piece of stout thread into the track of the fistula; one end is passed into the rectum and brought out through the anus, and this is tied into a firm knot with the other end, which projects from the external opening. The tissues between the track and the rectum are thus strangulated, and the ligature gradually cuts its way out. This method, however, causes a great deal of pain, and as regards the cure of the fistula, the results are far from satisfactory. There is a modification of this plan, in which the thread is not drawn tight, so as to strangulate the parts, but the ends are loosely knotted together, so as to keep the ligature in its place. Some weeks are required for the thread to cut its way through, and it is not necessary to confine the patient to bed while the process is going on. The result, however, is uncertain, and in most cases in which the ligature has been tried in this way, it has been necessary to complete the operation by the aid of the knife.

The elastic ligature, a recent invention, yields far better results. It exercises a continuous pressure and does not in some cases cause much pain or irritation; it generally cuts its way out in from five to ten days. It is suitable for cases in which there is great dread of the knife, or where confinement to bed is impossible or undesirable. Anæsthesia is unnecessary; there is no hæmorrhage, and but little suppuration while the ligature is cutting its way out. The method is well adapted for phthisical subjects, as the patient can be allowed to move about in the open air. It is also a valuable auxiliary to the knife in dealing with cases where a sinus runs up for some distance along the bowel, where hæmorrhage might be difficult to control. The drawbacks connected with the use of the elastic ligature are not many, but they are such as to militate against its general applicability. The principal objection is that it affects only the main track of the fistula along which it is passed; any branches or sinuses that exist are left untouched. Under such circumstances, even if the wound heals, accumulation of secretion will take place in the sinuses and the fistula will recur. One of its advantages is that in some cases the patient is able to go on with his work while the ligature is cutting its way out. I once operated upon an actor and he was not prevented from following his avocation.

The elastic ligature consists of a strong cord of solid india-rubber, about one-tenth of an inch in diameter. Various plans and instruments have been devised for its introduction. In one method a probe

is used, having at one end a rounded opening or eye, through which the ligature is threaded. This is passed through the fistulous track from without inwards, and then drawn through the rectum and out at the anus. My colleague, Mr. Allingham, has devised an instrument by means of which the ligature can be drawn from within the rectum, through the internal opening of the fistula (or through an artificial opening, if it has been necessary to make one) and thence into the track and out through the external opening. The instrument consists of a curved probe fixed in a handle, and terminating in a blunt point. A cannula is fitted to the probe, and when drawn back, exposes a notch which receives the loop of india-rubber. The probe is passed along the track till its extremity protrudes in the bowel. The fore-finger of the other hand, with a loop of india-rubber around it, is passed up the rectum till it meets the probe. The cannula is then drawn back and the loop is directed over the end of the probe and caught in the notch. Lastly the cannula is pushed forward so as to hold the ligature firmly in the notch, and the instrument is then withdrawn along the track. A double ligature has thus been introduced through the fistula and the bowel. The second thread can be utilised if the first one breaks in tying; but in order to fasten the ends it is better to use a leaden clamp, or as Mr. Allingham has suggested, a small oval ring of soft metal. Through this the ends of the ligature are passed and drawn as tightly as is requisite, and the ring is then firmly closed over them by means of a strong pair of forceps. The second ligature can then be withdrawn.

The last method which needs description involves the use of the cautery for the division of the tissues. Paquelin's thermo-cautery is the best instrument for this purpose. The red-hot knife may be used instead of the bistoury, in cases in which there is reason to fear profuse capillary hæmorrhage. The divided parts are covered with an eschar and no subsequent dressing is required. In performing the operation with the cautery, a proper speculum and guard must first be introduced into the rectum.

CHAPTER V.

Fissure and Irritable Ulcer of the Anus and Rectum.

Causes of Fissure—Symptoms and Appearances—Diagnosis and Method of Examination—Treatment—Aperients—Diet—Local Applications—Forcible Dilatation of the Sphincter—Free incision through base of Fissure—After-treatment.

In this affection, the anus and the lowest part of the rectum are the seat of a superficial sore, taking the form either of a fissure or crack or of a small ulcer. The ulceration is a secondary stage, and is due to the action of the sphincter and to contact with irritating matters. Intense pain on defæcation and for a varying time afterwards, and spasm of the sphincter are the principal symptoms.

Causes.—The affection is more common in women than in men, and most often occurs in middle life; it is rare in children. In women it is sometimes caused by the pressure of the child's head in labour. In other cases fissure co-exists with displacement of the uterus. It is frequently attributed to constipation and to the passage of hard and dry fæces, as likewise to the straining often associated with diarrhœa. Fissure and small ulcers at the anus are not unfrequent accompaniments of polypus in the rectum, being caused by the straining to which the presence of the growth gives rise. Congenital con-

traction of the anus is a frequent predisposing cause of fissure. Herpetic and other eruptions about the anus, *e.g.*, those due to syphilis are occasional causes. It would appear that fissure of the anus is most often traceable to constipation, a condition which becomes much aggravated after the fissure has been produced.

Symptoms and Appearances.—Fissure of the anus is a very painful complaint and frequently causes an amount of suffering out of all proportion to the extent of the lesion. The pain is usually paroxysmal and is most intense during the act of defæcation and for some time afterwards. It is not accompanied by any protrusion from the anus. In some cases the pain subsides after a variable interval, but only to recur when the bowels are again moved; in others, it continues almost indefinitely with slight, if any, diminution of intensity. The pain is described as being of a burning or tearing character; it radiates from the perinæum to the sacrum, urinary and genital organs, and thighs. The paroxysms are accompanied by spasmodic contraction of the sphincter and levator ani, and sometimes by spasm of the urethral muscles causing retention of urine. The pain during defæcation is so great that many patients restrain the action of the bowels for as long a time as possible; the suffering is of course aggravated by the passage of the hardened fæces, and a little blood sometimes escapes.

In some cases the pain is not of the intense character just described, and is much diminished or even passes off altogether soon after the bowels have been relieved.

The differences are probably due to variations in the depth and position of the fissure. When both skin and mucous membrane are equally involved, the pain is always greater than when the lesion affects the mucous membrane alone.

When a fissure of the rectum has existed for any length of time the patient's general health almost invariably suffers. The seat and intensity of the pain, anxiety as to its cause, the symptoms produced in neighbouring parts, and the constipation which generally co-exists, often induce severe depression of mind and body and other forms of disorder. Not a few, however, of these patients, in spite of their manifold sufferings, allow months or even years to elapse before seeking medical advice.

When a patient complains of the local symptoms above described, a careful examination of the part should always be made. In the majority of cases the fissure is situated in the posterior part of the circumference of the anal orifice. In some patients, on examining the folds at the orifice, the fissure can be seen extending from the skin at the verge of the anus and passing upwards into the bowel. In other cases the lesion is situated higher up in the bowel, *i.e.*, close to the lower edge of the internal sphincter, or between this and the anus. It then assumes the form of a small ulcer, either more or less rounded or elongated in form. In order to see these a speculum must be introduced, but the finger alone will detect a rough excavation with somewhat hard edges, near the orifice of the bowel and generally on its posterior aspect.

The lesions, whether fissure or ulcer, vary in depth; sometimes they are quite superficial, while in other cases they involve the whole thickness of the skin or mucous membrane, so that the base of the sore consists of the fibres of the sphincter. In order to make a complete examination, an anæsthetic is generally required, as the parts are often exquisitely tender, and the sphincter and levator ani muscles are spasmodically contracted and resist the introduction of the finger or speculum. In all cases careful examination by the finger is of the highest importance, not only for the sake of a correct diagnosis, but in order to determine the presence of complications, and especially of a polypus. If any such complication be overlooked, an operation dealing only with the fissure will be unsuccessful.

The ulcers are generally single, but occasionally several are present. The base of the sore is sometimes red and irritable, and bleeds freely when touched; sometimes it is grey and indolent in appearance. In some instances the edges are undermined, with little sinuses extending from beneath them, and these ulcers may burrow with fistula as a result. A tab of skin not unfrequently projects from the lower portion of the ulcer, thus acting as a sign-post to the lesion above, and several of the anal folds are often swollen and inflamed. When a polypus exists, it will be found near the upper part of the fissure.

The peculiar pain and the spasmodic contraction of the sphincters, characteristic of anal fissure, are accounted for by the fact that the lower end of the bowel is very freely supplied with sensory nerves;

stimulation of these nerves causes, by reflex action, contraction of the sphincters. When a fissure or ulcer of this kind exists, the exposed nerve-fibrils are liable to irritation from fæcal matter, and become stretched or even torn when the bowels are moved. The origin of the nerves supplying the rectum is closely connected with that of the nerves distributed to the urinary and generative organs, and thus the symptoms often manifested in these parts are easily explained.

Pain, more or less resembling that caused by fissure, and accompanied by spasm of the sphincters, is occasionally noticed in persons who on examination are found to be quite free from any rectal lesion. Such cases are rare, and unless a very careful examination be made, there is always the possibility that a minute fissure or ulcer has been overlooked. In the absence of any lesion of the rectum or adjacent parts, it may be presumed that the condition is due to neuralgia. It must not be forgotten that spasm of the sphincter is observed in acute and chronic inflammation of the rectum, but in these cases the pain or discomfort is very different from that which characterises fissure.

Treatment.—In cases in which the fissure is tolerably superficial and of recent origin (*i.e.*, of not more than six months standing) and the patient can be placed under favourable conditions, a cure may often be affected by the use of a few simple measures. Inasmuch as constipation is generally present and tends greatly to aggravate the lesion, laxatives should be administered in order to keep the bowels open and

to render the stools soft. The confections of senna and of sulphur in combination, the compound liquorice powder, and one or other of the well-known purgative waters are well adapted for these cases. The patient should carefully sponge the anus with warm water after each action of the bowels. The diet should be of an easily digestible, non-irritating character, and as much rest as possible should be enjoined. There are various local applications which may be tried, calomel ointment being generally the most efficacious. For the relief of pain an ointment containing cocaine (gr. v-x to ʒ i) may be applied with advantage. Resin ointment promotes healing in some cases, and suppositories containing belladonna or cocaine are useful in subduing pain. Caustic applications of all kinds are useless and mischievous.

It is seldom advisable to persist in the use of these local remedies for any length of time, as they are apt to prove inefficacious, especially when the ulcer or fissure is of long-standing, and involves the parts at some little distance within the bowel. There are two operative measures easily performed, either of which rarely fails to effect a cure. These are (1) forcible dilatation of the sphincter, and (2) free incision of the base of the fissure. A combination of the two methods, *viz.*, a limited incision after forcible dilatation also yields good results.

Forcible dilatation of the sphincter, as usually practised, owes its efficacy to the fact that it causes a temporary and partial paralysis of the sphincter. It is also probable that the stretching of the nerves aids in lessening the sensitiveness of the ulcer.

As a result of dilatation spasmodic contraction ceases, and one great hindrance to the healing process being thus removed, a healthy action is soon set up in the ulcer, and cicatrisation follows. In order to effect dilatation no great amount of violence should be employed, and the process can be completed more efficiently by the hands alone than by any form of dilator. An anæsthetic is generally required, and the patient should be fully under its influence. Any existing growth should be first removed. The surgeon introduces first one thumb and then the other, back to back, into the anus; the thumbs are separated and the sphincter is thus forcibly dilated. By altering the position of the thumbs and pressing in different directions, all portions of the sphincter are equally stretched, and these manipulations should be continued until the muscle has lost all trace of hardness, and has become quite pliant and unresisting. There is a little ecchymosis around the anus, and a few drops of blood may escape from the bowel, but there should be no extensive lacerations of the mucous membrane. In successful cases the operation affords immediate relief to pain and spasm, and when the bowels act, the peculiar sensation of burning or tearing will no longer torment the patient. The bowels should be kept confined for a few days after the operation; catechu may be given for this purpose. An enema should subsequently be used in order to obtain an action of the bowels.

Dilatation of the sphincter proves successful in comparatively recent and uncomplicated cases, but when the fissure is deep and of long-standing, another

form of operation is likely to be required. It consists in incising the base of the fissure, and dividing portions of the sphincter muscles. An anæsthetic is generally necessary, and a speculum may be required if the fissure runs up the bowel for some distance, but in most cases it can be dispensed with. The fissure is exposed by the fingers of the left hand, and a probe-pointed bistoury is drawn through its base so as to incise the subjacent muscular fibres at right angles to their course. If a speculum be necessary, the fenestrated form of instrument is the one best suited for the purpose. When this has been introduced and the plug withdrawn, the ulcer will be fully exposed.

The question as to the depth of the incision is of some importance. The operation, when first performed, was of a formidable character, for both sphincters, the cellular tissue and the integuments, were freely divided. The result was an extensive triangular wound, with the apex above and base below. A free incision of this character, is however, quite unnecessary; on the other hand, simple scarification of the ulcer is insufficient. At least the superficial layers of the fibres of the sphincter must be divided, and it is well to begin the incision a little above, and to end it a little below the ulcer, so as to ensure its being carried quite through the sore. Any excrescences from the mucous membrane should at the same time be removed with a pair of scissors. If any complications, such as piles or polypus, coexist, they must be dealt with at the same time, for the reason already mentioned, and redundant skin should be removed.

After the operation, a little cotton-wool should be placed in the wound; rest for a few days, and a little opium or catechu to restrain the action of the bowels constitute the remainder of the treatment. The deeper the incision, the greater is the necessity for local and general rest. Enemata should afterwards be used to open the bowels. The relief afforded by the operation is very marked; the peculiar pain and the spasm of the sphincter completely pass away, and in almost all cases a permanent cure results. The healing process is usually complete in a fortnight. In unsuccessful cases insufficient division of the sphincter is the ordinary cause of failure.

CHAPTER VI.

Inflammation of the Rectum or Proctitis—Inflammation in the Tissues surrounding the Rectum or Periproctitis.

Inflammation of the Rectum or Proctitis—Causes—Symptoms—Course and Consequences—Treatment—Inflammation in the Tissues surrounding the Rectum or Periproctitis—Causes—Symptoms and Course—Chronic Periproctitis—Treatment.

The rectum is not unfrequently the seat of inflammatory processes, due to various causes. The inflammation may be either acute or chronic, circumscribed or diffuse. Injuries and the presence of foreign bodies, either introduced through the anus or having passed through the intestines, are common causes of acute circumscribed inflammation.

Diffuse inflammation of the rectum, of an acute character, occurs in some cases of dysentery; it may also be provoked by the use of violent purgatives and by the presence of hard scybalous masses in that part of the bowel. Arsenic and corrosive sublimate in poisonous doses cause violent inflammation of the rectum and of other portions of the bowels. Thread-worms in children and exposure of the part to cold and damp are occasional causes of proctitis. Contact with the virus of gonorrhœa has been noticed as a cause of rectal inflammation in women. Diphtheritic

inflammation, generally spreading from the perinæum, has been observed in this part.

Symptoms.—Acute inflammation of the rectum begins with a sensation of fulness, heat and pain in the part. The pain soon becomes very severe and extends to the bladder, inner sides of thighs and sacrum. Tenesmus is a prominent symptom; the sphincter is spasmodically contracted, and forcible attempts at defæcation increase the distress. There is some amount of feverishness and general discomfort, and vomiting in severe cases. Irritability of the bladder and retention of urine are commonly superadded, and all the symptoms are aggravated by movement. In children the straining efforts to relieve the tenesmus generally cause some amount of prolapsus of the mucous membrane. Both sphincters are spasmodically contracted; any attempt at examining the bowel by introducing the finger causes severe pain. A little bloody mucus exudes and sometimes enlarged veins protrude.

When the active symptoms have subsided and the bowels are relieved, the motions are streaked with blood and covered with mucus. In cases of gonorrhœal inflammation, the secretion is profuse and purulent in character.

The course of the affection varies with its nature and origin. In dysentery the condition is apt to become chronic, and recurrences of the acute symptoms often take place. Ulceration and extensive destruction of the mucous membrane are very prone to follow. Simple catarrhal inflammation, in the absence of complications, will generally terminate in

a week or ten days, but some amount of muco-purulent secretion may be observed even for a longer period. If the inflammation extend to the colon, the symptoms of colitis will be superadded. If the condition become chronic, all the symptoms are much moderated, and the patient complains only of a sensation of more or less fulness and weight in the part. Defæcation may be painful and the fæces are coated with mucus, and with pus and blood when ulceration exists. The mucous membrane and submucous tissue are œdematous, and if the condition persist for some time, the tissues may become indurated and contracted, and a process is set up which gives rise to stricture of this part of the bowel. Polypoid excrescences are another result of chronic inflammation of the rectum.

The *treatment* of inflammation of the rectum varies with the cause. If due to the presence of a foreign body, the latter must be carefully removed by the finger, forceps, or by the aid of enemata, according to circumstances. In cases of acute proctitis attended with purulent discharge, constant irrigation is the best method of treatment. For this to be carried out, the anus is forcibly dilated; a wire speculum is then introduced and kept in position, so as to separate the inflamed surfaces. Fissure and hæmorrhoids will require appropriate treatment. When worms are suspected, enemata of salt and water, and santonin internally should be administered. In cases of dysentery when the rectum is especially involved, besides the ordinary ipecacuanha treatment, enemata of starch and laudanum and warm sitz-baths, will

serve greatly to allay the distressing symptoms. When the inflammation is due to the gonorrhœal virus, constant irrigation as above described and afterwards solutions of nitrate of silver are indicated. When proctitis becomes chronic, the bowels should be kept open by non-irritating laxatives, and injections containing sulphate of zinc, alum or other astringents should be employed. The confection of black pepper may be given internally, and old-standing cases are generally benefitted by cubebs.

Inflammation in the tissues surrounding the rectum—periproctitis.—The rectum is connected with neighbouring parts by loose cellular tissue, in which inflammation is somewhat apt to occur, and to be followed by suppuration. The process may be due to a variety of *causes*, *viz.*, injuries to the bowel or adjacent parts, foreign bodies in the rectum, the extension of inflammation from the rectum itself, ulceration of the bowel, whether tubercular, syphilitic or catarrhal. When ulceration exists, fragments of fæces are apt to become impacted in the submucous tissue, and to set up inflammation and suppuration. The disintegration of gummatous deposits in the tissues surrounding the rectum may give rise to abscesses in this region. In some cases of periproctitis no assignable cause can be discovered. Some persons are especially liable to the formation of small abscesses close to the anus, but these are generally superficial. Sometimes the inflammation spreads from other organs, as the urethra, prostate and bladder, or from the uterus or vagina. In other cases the process occurs in the course of pyæmia.

Chronic suppuration in the tissues surrounding the rectum is most common in tuberculous subjects; in some of these it results from ulceration in the bowel, in others the pus is derived from caries of the vertebræ, or from suppuration of some of the pelvic glands.

The *symptoms* of acute periproctitis are generally severe and well-marked. There is acute pain in the neighbourhood of the anus, increased by pressure and defæcation. Swelling accompanied by increase of heat can be felt by the finger, introduced into the bowel, and when pus has formed, fluctuation is manifest. There is severe tenesmus and the bowels are generally constipated. Constitutional symptoms are often prominent; there is more or less fever, and the attack is not unfrequently ushered in by rigors.

The course of the inflammation varies; suppuration is the rule, but sometimes resolution takes place. The abscess may open either into the rectum or into adjacent parts, *e.g.*, the bladder, vagina, uterus, or into the peritoneum. In some cases the quantity of pus is enormous, and extensive destruction of tissue takes place. The pus from these abscesses is always very offensive, and in severe cases symptoms of pyæmia are almost certain to be present.

In chronic periproctitis the process is of a much less severe character; there is more induration and less pain and fever. Pus is, however, formed, and sometimes in large quantities, and the abscess opens as in acute cases. Sometimes there are several fistulous openings in the perinæum.

In the *treatment* of periproctitis, before fluctuation

can be detected, endeavours should be made to promote resolution. With this object, the patient should be kept in bed; the diet should be low and the bowels kept open by mild laxatives. When the abscess is the result of periproctitis above the levator ani, it will bulge into the rectum, and no signs of its existence will appear externally. In such a case, dilatation of the sphincter and incision of the abscess from the rectum constitute the proper treatment. A large drainage-tube should be inserted through the opening in the rectum and kept in position, its end protruding from the anus. Through this tube, the cavity of the abscess should be washed out two or three times daily. If the resulting sinus remain unhealed, an operation for blind internal fistula will be required. The treatment of abscesses in the ischio-rectal fossæ has been described in the chapter on fistula.

CHAPTER VII.

Ulceration of the Rectum.

Ulceration of the Rectum—Causes and Various Forms—Ulceration due to dysentery, struma or tuberculosis, and syphilis—Question as to syphilitic ulceration—Part played by soft sores, hard chancres, syphilitic mucous papules and gummata—Ano-rectal Syphiloma—Symptoms of ulceration of the Rectum—Diagnosis and Methods of Examination—Treatment—Diet and Medicines—Local Applications.

Ulceration due to various causes somewhat frequently occurs in the rectum. Erosions of the mucous membrane are often the starting-point of ulceration as a result of the irritation to which the bowel is exposed from the presence and passage of fæces. Wounds of all kinds and foreign bodies are obvious causes of ulceration; and a similar condition sometimes follows catarrhal inflammation, especially that form of it which is due to the application of gonorrhœal virus. Ulceration from this latter cause is apt to be severe and extensive; if it persist for any length of time, the submucous tissue may become hypertrophied, thickened, and indurated, a condition which may give rise to one form of stricture. Prolapsed internal hæmorrhoids are another cause of ulceration. As a result of inflammation, they sometimes become gangrenous and are detached in fragments, leaving ulcers behind, which are very

prone to bleed. Follicular ulceration is sometimes noticed in children who have suffered from chronic diarrhœa, and in adults towards the close of exhausting diseases. The solitary follicles become inflamed and disintegrated, and finally open upon the surface of the bowel. These openings, at first very small, gradually enlarge and small ulcers are formed, showing no tendency to heal, but rather to spread both superficially and deeply into the submucous tissue. In this way the edges become undermined and soon disappear with the extension of the process. Union of the ulcers is another way in which the mischief spreads, and thus great loss of substance is apt to ensue. The muscular coat may be perforated and the ulceration may extend into the bladder, vagina, etc.

Ulceration of the rectum is also caused by specific processes, the most important of these being dysentery, struma or tuberculosis, and syphilis. In addition to these, rodent or lupoid ulcer sometimes occurs in this part, and ulceration is, of course, a frequent concomitant of the malignant growths.

Dysenteric ulcers result from destruction of small patches of mucous membrane, and also from inflammation and disintegration of the follicles. The loss of substance is considerable and rapid in its progress; the ulcers are large, deep, and irregular in form and are apt to invade all the coats of the bowel; they are generally situated high up towards the sigmoid flexure, but they may extend almost to the anus. Destruction of the muscular coat is not uncommon in severe cases, and this is liable to be followed by

abscesses, fistulæ, and sometimes by fatal peritonitis and pyæmia. If these ulcers heal, some amount of diminution of the calibre of the bowel is a certain result, and in severe cases, bad forms of stricture are produced.

Strumous or tuberculous ulceration of the rectum is seldom of primary origin; it occurs most often as a secondary process in persons suffering from pulmonary consumption. These ulcers are caused by the disintegration of small tuberculous nodules deposited in the mucous membrane and submucous tissue. They are sometimes scattered and sometimes closely packed together. The nodules, at first greyish in colour, soon become yellow as a result of softening; the surface gives way and lenticular ulcers are formed. The bases and edges of these ulcers are dotted over with similar nodules, which soon become disintegrated and thus the process extends both superficially and deeply. By the coalescence of several ulcers, a large raw surface is formed, sometimes embracing the entire periphery of the bowel, the base and edges being as before studded over with grey and yellow nodules. These latter appearances are characteristic of this form of ulceration. Some of the deeper deposits run a less rapid course, and instead of softening, become indurated and calcified. On the other hand in much debilitated subjects, disintegration and ulceration are the rule, and the latter process sometimes takes place without any previous deposit of tubercles.

Tuberculous ulceration rarely heals completely, but a few separate ulcers may undergo cicatrisation,

which is always followed by contraction of the calibre of the bowel. In the majority of cases the ulceration progresses slowly but steadily, perforating all the coats of the rectum and opening either into the peritoneum and causing fatal peritonitis, or into the ischio-rectal fossæ and giving rise to abscess and fistulæ. This latter result is often witnessed in cases of pulmonary consumption. If the process advances death generally occurs from exhaustion consequent upon hæmorrhage or diarrhœa.

A form of scrofulous ulceration has been described distinguished from the tuberculous by the fact that the solitary follicles are the seat of caseous degeneration, which is followed by ulceration and deposition of tubercles around the ulcers. This, like the tuberculous form, occurs in cases of phthisis, and the only difference would appear to be as regards the place in which the deposit first occurs.

It is worthy of note that tuberculous ulceration sometimes involves the orifice of the anus and adjacent parts. The distinguishing characteristics of such an ulcer are its chronic course, and the presence on its surface of many yellowish nodules, especially near the margin, some being in a state of disintegration. The diagnosis would of course be aided by the discovery of symptoms of tuberculosis in other parts. The crucial test is the presence of the bacillus tuberculosis.

Syphilitic ulceration of the rectum.—Various forms of syphilitic disease occur in the rectum. Thus hard chancres, mucous papules with attendant ulceration, cracks and ulcers connected with condylomata

about the anus and ulceration due to the breaking-down of gummatous growths are all found in this part of the intestine. Syphilitic ulceration is one of the causes of stricture. Fournier also describes a condition of the rectum, due to infiltration of the ano-rectal walls with a new formation which undergoes fibroid changes, and thus induces contraction of the calibre of the bowel, but is not generally attended by ulceration. In addition to these lesions of true syphilis, soft chancres are found near the anal orifice, and sometimes in the rectum itself, where the ulceration may give rise to stricture.

By some French writers, and notably Gosselin, these soft chancres are alleged to be the only cause of so-called "syphilitic stricture of the rectum." My own opinion, which, I believe, coincides with that of most English surgeons is that the condition in question is very rarely the effect of either soft or hard sores, though the possibility of such a causation cannot be denied. The ulceration may extend from soft chancres near the anus, or the secretion may be brought into contact with the mucous membrane of the bowel in another way. These ulcers not unfrequently become phagedænic. After a time, the cicatrised and thickened portions form a hard ring; but the healing of such ulcers is much impeded by the action of the muscles and the passage of stools. As a result of cicatrisation and contraction, the muscular coat becomes hypertrophied, and above the constricted portion the mucous membrane is denuded of its epithelial and glandular layer. The majority of cases occur in women.

Syphilitic papules are not of common occurrence in the rectum, but ulceration and fissures extending from condylomata about the anus are frequently met with. With regard to the occurrence of papules on the mucous membrane, Prof. Lang, of Innsbruck,* states that he examined the rectum in 110 cases in the irritative stage of syphilis (forty-five men and sixty-five women) and that he found papules on the rectal mucous membrane in three men and thirteen women. In most cases ulceration was present, but only three patients complained of pain. In the majority there were also papules round the anus. In the healing of ulcers resulting from mucous papules, contraction is of course likely to take place, and the anal orifice is especially liable to be involved. A few French writers have stated that papules on the rectal mucous membrane may attain such a size as to block up the bowel. Ulceration from papules and condylomata belongs to the early stages of syphilis.

Gummatous deposits and infiltration of the submucous tissue are the most common antecedents of syphilitic ulceration of the rectum. The disintegration of the gummata gives rise to ulceration, and this, in its turn, to contraction of the bowel. This form of ulceration belongs to the tertiary period of the disorder, and is wont to spread higher up in the bowel than that due to chancres; the ulcers are deep, exposing the muscular coat which becomes much thickened. In fatal cases the ulceration has been

* *Vorlesungen über Path. und Therap. der Syphilis*, p. 241.

found to extend into the colon. In typical cases the appearances are characteristic. At the upper portion of the affected part the mucous membrane is studded over with dark-coloured roundish nodules, as large as a hempseed or even a pea, and these on section are found to contain a brownish-red gelatinous matter. These growths do not appear to consist of enlarged follicles, but are due to nodular deposits. Lower down in the bowel some of them are seen to be ulcerated, and the gummatous contents can be squeezed out when an opening is made. Advancing disintegration increases the size of the ulcers, which are at first round, with sharply defined margins. When several ulcers coalesce the loss of substance is considerable, and the process extends deeply so as to expose the muscular coat. In the lower part of the bowel nearly the whole of the mucous membrane may be thus destroyed. Neighbouring parts are sometimes perforated, *e.g.*, the bladder and vagina, and perineal fistulæ are common.

In some cases of syphilitic ulceration of the rectum, gummatous nodules have been found between the submucous tissue and the muscular coat, and even upon the latter when laid bare by ulceration. Some of these growths may be so large as almost to resemble polypi, from which, however, they differ altogether in structure. They consist of young granulation tissue, resembling that found in gummatous growths elsewhere. Growths of a similar form and character also occur in the larynx in cases of syphilis.

Gummatous deposits sometimes occur in the tissues

surrounding the rectum, and their disintegration gives rise to abscesses which may open in various directions, as into the rectum, vagina or perinæum, and thus cause fistulæ. In a few cases, the semi-purulent matter has found its way towards the crest of the ilium and thus reached the surface, causing fistulous passages which likewise extended into the rectum.

The *symptoms* of ulceration of the rectum vary according to the stage and situation of the lesions, but as a general rule they resemble those of more or less severe chronic proctitis. When the ulcers are small and high up in the rectum, they may exist for a long time without giving rise to any discomfort; but when the ulcers are large or near the anus they cause more or less distress and tenesmus. Frequent calls to go to stool and diarrhœa are prone to occur, the matters passed containing blood, mucus and pus, and often composed only of these materials. Sometimes constipation alternates with diarrhœa. In some cases diarrhœa occurs when the patient leaves his bed, the discharge consisting mainly of brownish mucus. When the mucous membrane covering the sphincters is the seat of ulceration, the pain is very severe and burning in character, and increased on defæcation. When the ulcers are higher up, the pain is often felt in the sacral region. In cases in which ulceration is associated with hæmorrhoids, severe bleeding is not unfrequent. When contraction takes place other symptoms are superadded; these will be described in the chapter on stricture of the rectum. Constitutional symptoms are almost always

present in cases of ulceration of the rectum. The patient loses flesh and strength, and suffers from irregular febrile attacks. The stomach is often irritable, and vomiting is troublesome. Abscesses in the ischio-rectal fossæ and fistulæ are apt to occur, and the health is still further reduced. In chronic cases hectic sets in, and there is often amyloid degeneration of internal organs.

In *examining* cases of ulceration of the rectum, the sphincters are generally found to be firmly contracted, and the introduction of the finger or of the speculum causes severe pain. It is, however, necessary to make a careful examination of the part, and for this purpose an anæsthetic is sometimes desirable. An enema of warm water should first be administered, and after the sphincter has been dilated, the surface should be further cleansed by means of pieces of sponge mounted on whalebone. Ulceration can usually be detected by means of the finger, but the speculum is sometimes required. Examination with the finger alone enables us to judge of the extent of the ulceration, its depth, the condition of the base and margin, and likewise to determine the presence or absence of tumours or other growths. In cases of ulceration the skin around the anus is generally swollen and sodden by the discharges. Any secretion should be examined microscopically.

When ulceration has been detected it is often difficult to determine its exact nature. It is always necessary to take into consideration the general condition of the patient, and to look for signs of constitutional disease in other organs. If there be

evidences of tuberculosis in the lungs or joints, the nature of the process in the bowel will in all probability be of a similar character. A history or signs of syphilis will in like manner afford a clue to the nature of the local disorder. In syphilitic ulceration, evidences of the constitutional disease will rarely be absent. The genital organs, the glands in the groin, and the throat, should be carefully examined.

In the *treatment* of ulceration of the rectum, rest in the recumbent position is of primary consequence. The healing process will not advance if the patient follows his ordinary avocations. The medicinal treatment must be adapted to the circumstances of the case and the nature of the lesion. Tonics are generally indicated and the diet must be of such a character as to leave as little fæcal residue as possible. Eggs, milk, and meat are suitable; vegetables should be forbidden. A little wine, port or claret, may be allowed in debilitated cases. In scrofulous and tuberculous subjects cod-liver oil is especially indicated, and it may be combined with the iodide of iron. In dysenteric cases, ipecacuanha and opium and extract of bael fruit are the best remedies. In syphilitic ulceration, constitutional treatment by mercury or iodide of potassium is of the first importance.

In all cases local treatment occupies a prominent place. Remedies which act as astringents are the most serviceable; among these are solutions of nitrate of silver, alum, sulphate of zinc, and of extract of rhatany. These can also be applied in the form of ointment, by means of a little instrument known as an ointment-introducer. The bowel should pre-

viously be cleansed by an injection of warm water. When the ulcer can be readily exposed by the aid of a speculum, the solid nitrate of silver, or a brush previously dipped in a solution of this salt may be applied to it.

When the ulceration is attended by much pain, suppositories containing morphia or belladonna will afford relief; if diarrhœa be troublesome, opium and various astringents should be administered to combat it. For the relief of pain, cocaine ointment (gr. v-x to ʒ j) is often very efficacious. For constipation, enemata are to be preferred to purgatives; the latter, if used, should be of a very mild character.

The local treatment in syphilitic ulceration is as important as the constitutional. The part should be kept very clean and calomel ointment may be applied with a brush, or black or yellow wash by means of a syringe. If phagedæna sets in, active treatment will be necessary. The application of strong nitric acid and the galvanic cautery are the best means of checking the spread of the mischief. Mercurials are of course out of place; tonics and stimulants are especially indicated. The treatment of stricture, due to ulceration will be given in the following chapter.

CHAPTER VIII.

Stricture of the Rectum.

Causes of Stricture of the Rectum—Inflammation, ulceration, and cicatrisation—Dysentery, syphilis, and tuberculosis—Question as to origin of Syphilitic Strictures—Ano-rectal Syphiloma—Anatomical appearances in cases of Stricture—Lesions in adjacent parts—Symptoms of Stricture—Complications—Diagnosis and Methods of Examination—Treatment—Dilatation by means of bougies—Diet, etc.—Treatment of strictures beyond reach of finger—Electrolysis—Treatment by incisions—Longitudinal division of stricture and portion of rectum below it—Paquelin cautery—Colotomy in cases of stricture of the Rectum.

Stricture of the rectum is a condition in which the normal calibre of the bowel is diminished by changes in its walls. The rectum is of course liable to be encroached upon by enlargements of adjacent organs, *e.g.*, the prostate, bladder, or uterus, and likewise by the formation of tumours within the bowel itself. Such cases, however, are to be distinguished from those of stricture, properly so-called.

The *causes* of stricture of the rectum are of two principal kinds, *viz.*, inflammatory deposit and cicatricial contraction after ulceration; and these two processes are frequently associated, the latter being consequent upon the former. A third variety is said to be due to atrophy and degeneration of fibres of the

levator ani muscle (Cripps). Spasm of the circular muscles of the bowel often aggravates an organic stricture, but it cannot, *per se*, give rise to permanent diminution of calibre. Chronic catarrh of the bowel is the ordinary cause of inflammatory stricture. The mucous membrane, sub-mucous tissue, and the muscular coat are progressively infiltrated, and the fibrous degeneration of the deposit is attended by diminution of the calibre of the bowel. Ulceration plays, however, a much more prominent and obvious part in the production of stricture; and owing, as already stated, to the function of the part, this process is very apt to occur, and once set up, to spread deeply as well as superficially. Cicatrisation is accompanied by contraction which not only persists, but becomes greater as time goes on.

The causes and symptoms of ulceration of the rectum have been already described. Syphilis, dysentery, and struma (or tuberculosis) are the most important factors. Strumous ulceration is very common. With regard to syphilis, it has been pointed out that the ulceration is most often due to the disintegration of gummatous growths, and is therefore connected with the tertiary stage of the disorder. The opposite opinion of Gosselin must be regarded as quite untenable. He considered that "rectal stricture, described as syphilitic, is not of constitutional origin, but a lesion developed above a chancre of the anus, that is to say, inflammation is developed around the chancre and spreads to a certain height above it; and this inflammation, suppurative close to the sphincter, leads to hypertrophy

where this muscle touches the ampullary portion of the bowel and to ulceration in this latter part."

This view has been adopted by several French surgeons, but it is irreconcilable with plain facts. A soft sore in the neighbourhood of the anus may spread into the rectum and give rise to ulceration and subsequent contraction, but the latter process involves especially the anus, at all events it is more marked at the orifice. Moreover, strictures of the rectum, undoubtedly syphilitic in origin, are usually developed after an interval of several years has elapsed since infection, and at a time when no external lesion is manifest. Such cases must be regarded as of constitutional origin; their etiology has been described in the chapter on ulceration of the rectum.

The ano-rectal syphiloma, described by Fournier, does not necessarily lead to ulceration. It consists of a kind of diffuse gummatous infiltration, which tends to take on a fibroid character and progressively to contract. The submucous tissue and the muscular coat are the chief seats of this deposit, and strictures of this character are very rigid and indurated.

The ulceration due to dysentery and to the disintegration of tubercles may also give rise to stricture. Among other causes may be mentioned injuries and operations carelessly performed. Women are far more liable than men to rectal stricture, the first symptoms often showing themselves some time after a difficult labour. In excising external piles it is necessary to avoid the removal of too much integument, otherwise contraction of the anal orifice is

likely to result. Stricture of the rectum is in some cases congenital. The subjects of the acquired form are generally middle-aged.

Anatomical appearances.—These differ according to the stage and cause of the lesion. In the majority of cases the stricture is within three inches of the anus, and when the ulceration has been very severe, the calibre of the bowel may be reduced to that of a quill, or even altogether obliterated. In such cases the walls of the strictured portion are composed of fibrous cicatricial tissue, much indurated and firmly resisting attempts at dilatation, and cracking on section. Small collections of purulent matter are sometimes to be found in the walls, and these may give rise to fistulæ which are not unfrequent as a complication. Above the stricture the bowel is considerably dilated in consequence of the accumulation of fæces; the muscular coat is hypertrophied, the mucous membrane is ulcerated for a variable distance and often presents fungoid granulations, especially in the neighbourhood of the constricted portion; ulceration often exists below the stricture. The strictured portion varies in length; in extreme cases the bowel for four or five inches may be converted into a firm unyielding tube; in an opposite class of cases the lesion may be represented by a linear contraction. Severe strictures are for the most part tubular, and involve the whole circumference of the bowel. Sometimes the contraction is crescentic and sometimes annular, or in the form of a ring round the bowel. The cause of the stricture cannot be inferred from its position, inasmuch as

lesions due to syphilis and those resulting from dysentery are both found to occupy the same portion of the bowel.

The most reliable statistics which appear to have been published with regard to the position of rectal strictures, are those of Perret, who reports fifty-eight cases. In four of these the stricture began at the anus; in thirty-two, the strictured portion was less than six centimetres distant; in three, at six centimetres; in seven, between six and nine; in five, above nine and in a similar number at the junction of the rectum with the colon. As stated above, the majority of strictures are within three inches of the anus. In cases in which the stricture has resulted from chronic catarrh, without ulceration, the submucous tissue is considerably hypertrophied and indurated, but there are no cicatrices or other evidence of loss of substance (Bushe). The stricture thus formed is sometimes complicated by enormous hypertrophy of the glands above and below it, to such an extent as to form a broad ring of grayish-white colour and soft consistence, resembling a medullary cancer in appearance. The tissue is, however, of a glandular nature, and it may form the starting-point of cylindrical epithelioma (Esmarch).

Lesions of adjacent parts not unfrequently accompany stricture of the rectum. Sometimes openings form into the vagina and bladder; in other cases openings take place into the ischio-rectal fossæ, into which fæcal matter finds its way, with abscesses and fistulæ as results. Redundant skin, eczematous eruptions, and excoriations, are often met with about

the anus, and the tissues in the ischio-rectal fossæ are liable to become infiltrated and indurated as a result of chronic inflammation.

Symptoms.—When ulceration has preceded the stricture, the symptoms of the former condition will have existed for a shorter or longer period. Some time, however, may elapse before those of stricture become superadded. In cases not due to ulceration, the symptoms are generally of a very insidious character. In syphilitic cases, in which the stricture is preceded by gummatous deposits and ulceration, defæcation will be attended with severe pain and the discharge of more or less ichorous pus, which irritates the skin of the anus and produces painful excoriations. This discharge has a peculiarly offensive odour.

The patient at this stage often complains of pains in neighbouring parts, *e.g.*, the lower part of the abdomen, the loins, scrotum, and penis, and uterine catarrh is common in females. Cramps in the lower extremities and coldness of the feet are also common, and the appetite and digestion are more or less impaired. There is, however, nothing characteristic about these symptoms.

When the calibre of the bowel has become reduced, there will be more or less difficulty of defæcation and obstinate constipation. The patient finds that aperient medicines are required in increasing quantities, and even after their use he is often conscious of a sensation as if the bowel had not been properly emptied. Ordinary injections are of little service, for they return unchanged. From time to time attacks of

diarrhœa occur. In some cases the symptoms of intestinal obstruction come on very rapidly; but more often as contraction slowly advances the constipation becomes more obstinate; accumulation, sometimes to an enormous amount, takes place above the stricture; the evacuations consist of fæces in small fragments, often mixed with mucus and abundant puriform secretion stained with blood. When the stricture is situated close to the anus, the evacuations are generally of a more solid character, consisting of long thin pieces. If, on the other hand, the stricture be high up in the rectum, the fæces may appear almost normal in shape, as they have room to collect between the strictured portion and the anus. As the constriction becomes more severe, attacks of diarrhœa are increasingly frequent, the matters passed containing little fæces but much mucus and pus. The abdomen becomes enormously distended with gas; on percussion the colon is found to contain much solid fæcal matter, and the patient's sufferings are much increased. The stomach becomes irritable and eructations are frequent. The general symptoms already mentioned become aggravated; the whole system appears to suffer, and symptoms of profound hypochondriasis are generally prominent. Some patients become very anæmic and cachectic.

Stricture of the rectum seldom exists for any length of time without giving rise to some of the complications already mentioned, such as, suppuration and its consequences, prolapsus and hæmorrhoids. Severe febrile symptoms, profuse diarrhœa, irritation of the bladder and neuralgic pains in the legs are seldom

absent in severe cases. The symptoms are, for the most part, proportionate to the degree of constriction and the extent of ulceration. In fatal cases death occurs from exhaustion, or from intestinal obstruction, or peritonitis. It is worthy of note that in some cases of stricture of the rectum, the symptoms are very mild and indefinite. In others, they are almost or quite absent and the lesion is discovered only after death.

Diagnosis.—Examination by the finger affords the most reliable evidence of stricture of the rectum. By this means it is possible to explore an extent of the healthy bowel varying from four to five inches, and the majority of strictures occur within these limits. In such cases, as the finger is passed upwards, a more or less hard and firmly resistant ring will be felt; great pain is caused when attempts are made at dilatation, and little if any change is produced. When an obstacle is felt to the passage of the finger, attempts should be made to follow the canal of the bowel. If the opening of the constricted part be in the centre, it will be felt by the tip of the finger. The opening may, however, be near to the wall of the bowel, and a fold of mucous membrane may still further impede the passage of the finger. The track may also be sinuous and obstructed by fungous granulations. When, however, the finger can be introduced into the stricture, information is gained as to its condition with regard to narrowness, length, induration or resiliency and other particulars. In women, vaginal examination will aid the diagnosis. When the stricture is in the lower part of the bowel,

the finger in the vagina will discover its extent and amount of induration, and likewise any swelling formed by the accumulation of fæces above the obstacle. In all cases the speculum ani may be used to aid the diagnosis, if necessary, but the information obtained by the finger is the most valuable and is generally sufficient.

When the stricture will not allow the passage of the finger, or when it is too high up to be thus reached, it is necessary to have recourse to bougies of various kinds. In the first case, careful attempts at dilatation should be made by the aid of a small conical bougie. Great gentleness is necessary, and if after trying this method for a few days, no progress is obtained, an effort should be made to introduce an olivary-headed sound or bougie. If this can be passed through the stricture, until the extremity is free beyond it, and then withdrawn, the length of the constriction can be accurately measured. There are several sources of error in examining for a supposed stricture out of reach of the finger. The bougie may impinge against the promontory of the sacrum and be there stopped, and a fold of mucous membrane may produce the same result. It is well to use a hollow bougie through which a stream of water may be injected when an obstacle is met with. A flexible bougie is liable to bend upon itself when it meets with an obstacle. We can, however, be sure that we have a stricture to deal with when the olivary-headed sound after overcoming an obstacle is felt to be free, and when on withdrawal a similar difficulty is experienced. If in a patient presenting the sym-

ptoms already described, this result is obtained on repeated examination, the obstacle being always experienced in the same situation, there is strong evidence of the existence of a stricture. It must of course be remembered that various other conditions, such as diseases and displacements of neighbouring organs, may so affect the rectum as to give rise to many of the symptoms of stricture. Among these the principal are enlargements of the prostate, tumours of the bladder and large calculi, tumours and displacements of the uterus, effusions between the bladder and rectum, bony and other growths from the pelvic bones, and tumours in the rectum itself. The absence of all these conditions should be decided upon, before arriving at a positive diagnosis.

Treatment.—As in the analogous condition of the urethra, stricture of the rectum may be dealt with either by dilatation or incision, and the operative measures are of several kinds, the object of course being the restoration as far as possible of the normal calibre of the bowel. As might be expected, favourable conditions for treatment are more likely to be present (1) in recent cases; (2) when the stricture is low down and of slight or moderate extent; (3) when adjacent parts are not involved; (4) when the patient's constitution is not much impaired. Before beginning any operative procedures, the history of the case should be carefully considered. In cases presumably due to syphilis, constitutional treatment is insufficient; local measures are always required.

In all cases of stricture of the rectum, mechanical dilatation by means of bougies is the first method to

be thought of. Such treatment must be conducted with great care on the part of the surgeon, and it is necessarily a tedious process, generally requiring several months for its accomplishment. No force should be used in introducing the bougie; neglect of this precaution has been followed by fatal results. These instruments are of various sizes, and the conical form is the most suitable. Supposing that the stricture is within three inches of the anus and that only the smallest bougie can be passed, before introducing it, it is well to give an enema of warm water, in order to lessen the sensitiveness of the part. When the enema has come away, the bougie, warmed and well oiled, should be passed as far as it will go, into the stricture. The patient should be kept in bed and the introduction of the bougie should be repeated on each succeeding day until the stricture is permeable to its full extent; a bougie of the next larger size should then be used, and so on until the requisite amount of dilatation is effected. In the case of annular strictures, near the anus, this dilatation may be facilitated by making a few incisions through the indurated tissues, and by using Holt's dilator. These incisions should not be too deep, and three or four are usually sufficient. Should troublesome hæmorrhage occur, a hollow vulcanite tube open at both ends should be introduced, and the rectum around this is to be plugged with dry cotton wool. Subsequently the bougie is introduced and kept in position, unless much irritation is the result. It should be removed once a day for the bowels to act, and afterwards dilute Condy's fluid should be used as an injection.

When dilatation is accomplished, the patient's symptoms are much relieved, the bowels act more comfortably and regularly, and with little or no straining. It must, however, be remembered that a relapse is very liable to occur, unless the bougie be passed at regular intervals for some months after the dilatation has been effected. The patient's diet also requires careful attention, and everything which tends to irritate the bowels must be avoided. Constipation, if present, is to be dealt with by mild laxatives, such as castor oil, or the compound liquorice powder. If there be dyspepsia and flatulence, bismuth is indicated.

In cases in which the stricture is beyond the reach of the finger, the difficulties of treatment are much increased. The bowel should be carefully examined by means of the olive-headed probe, or a sound consisting of a vulcanite ball, mounted on a pewter stem having a flattened handle. The position, length, and other characters of the stricture having been ascertained, attempts should be made to dilate it, and a wax bougie is the best and safest instrument for this purpose. It should be passed in the direction of the bowel, *viz.*, backwards and towards the left side, and when an obstacle is met with, only the least degree of force should be used. When the point of the instrument has entered the stricture, it will be more or less closely gripped thereby, as will be felt on attempting to withdraw it, and the direction of the instrument should be changed until this sensation is experienced. Very little force should be used; there are several cases on record in which the bougie

has been driven through the bowel, with fatal peritonitis as a result. Peritonitis indeed may be set up in the absence of perforation. When the stricture has been reached, the bougie should be allowed to remain *in situ* for a few minutes or even longer, provided that no great amount of irritation be set up. The patient is of course to be kept in bed and at rest, and all due precautions must be adopted with regard to diet.

Other methods are required for treating cases in which no improvement can be effected by the use of the bougie, either because the induration and contraction are too great to be thus dealt with, or the cicatricial tissue resists the efforts at dilatation. The question as to the employment of caustics may be dismissed in a few words. The effect of these agents is only to make matters worse; destruction of tissue is followed by fresh cicatrices and contraction. The use of the galvanic cautery is open to the same objections. Forcible dilatation is dangerous and indeed criminal; it is impossible to determine how far the lacerations may extend. The various methods by incision remain for consideration, but before discussing these, reference must be made to a new plan of treatment, *viz.*, that by electrolysis.

My colleague, Mr. Swinford Edwards, is now treating two cases of rectal stricture by electrolysis, and so far with good results. He uses a Stöhrer's battery of thirty cells, furnished with a galvanometer in order to regulate the current used. The negative rheophore, which is shaped like a bulbous-headed bougie, is placed in the rectum; the positive pole is held in the patient's hand. Anæsthesia is not requi-

site, inasmuch as the application is almost or quite painless. No force must be used; the instrument is handled in the same manner as a bougie in dealing with urethral stricture. Mr. Edwards finds that patients can bear from five to ten milliampères. The treatment must extend over several weeks or even months; the rheophore is applied about once a fortnight, and kept in position from five to thirty minutes. Time alone will show whether this plan of treatment for simple strictures will supersede the other methods now in vogue. Additional information on the uses of electricity in rectal surgery will be given in a subsequent chapter.

Annular strictures, near the anus, can, as already mentioned, be satisfactorily dealt with by incisions followed by dilatation. In the case of strictures higher up, relief or cure has sometimes been obtained by dividing the indurated portion. There are, however, several drawbacks connected with this operation. In the first place, there is the risk of serious hæmorrhage, and if this be avoided, there is the danger of infiltration of irritating matters from the bowel and also of peritonitis.

The best method of dealing with those strictures which are not amenable to dilatation is by complete longitudinal division, involving the stricture, the portion of the rectum below it, and the internal and external sphincter. In this way a triangular gap is made, with the apex above and the base below. The division of the sphincters insures the free escape of the contents of the bowel, and of the discharge from the wound, and thus reduces to a minimum the

chances of absorption. This operation is especially suitable for cases complicated by fistulæ; indeed it was probably first performed for the cure of the latter, the stricture being discovered only after the incision was made. In uncomplicated stricture the operation is thus performed: the patient being placed in the lithotomy position, the operator passes his left forefinger as far as possible into the rectum, through the stricture if this be permeable, and if not, as far as its commencement. A curved sharp-pointed bistoury is introduced along the finger and the edge is then turned towards the sacrum. The point is made to transfix the bowel above the stricture and is brought out at the coccyx, all the intervening tissues being thus divided. This operation is termed *linear proctotomy;* it has now been performed upon a large number of cases, with a considerable amount of success. There need be no fear of severe hæmorrhage, provided that the incision be made in the median line. If, however, any bleeding should occur which cannot be arrested in the ordinary way, the tube and cotton-wool should be inserted as before described.

In order to achieve the desired result, Professor Van Buren advocates a lateral section, and the use of the knife of Paquelin's thermo-cautery, at a cherry-red heat, for the division of the parts. He begins the operation from below, dividing the external sphincter and extending the incision gradually upwards by repeated strokes of the cautery knife, using boxwood spatulæ to keep the parts asunder, so that the interior of the bowel and the stricture can

be fairly brought into view. After the use of the cautery knife, the divided surfaces are retracted and covered with an eschar, which prevents fæcal infiltration. The after-treatment consists in keeping the wound clean by syringing with a weak solution of permanganate of potassium. It is well to be provided with a second thermo-cautery knife ready for use, as the blade is apt to get covered with carbonaceous incrustation from the charred tissues, and its cleansing (which is to be effected by raising the heat and scraping) causes a little delay. Dr. Van Buren thinks (and I fully agree with his opinion) that in cases of stricture complicated with fistula, it is not always necessary to lay open fistulous tracks after complete longitudinal division, as they will sometimes get well spontaneously.

When all other methods have failed, colotomy affords the only remaining means of relieving the patient's symptoms, and it should not be too long delayed. The best method is that known as Amussat's, in which the artificial anus is made in the left lumbar region. The following are the steps of the operation. Anæsthesia having been induced, the patient is placed on the operating table in a nearly prone position, with a small hard pillow beneath the left side of the abdomen, so as to make the left loin prominent. The free edge of the quadratus lumborum muscle on the left side indicates the position of the descending colon, and a good guide may be obtained by finding a spot on the crest of the ilium, rather more than half-an-inch posterior to a point midway between the two superior spinous processes

(Allingham). It is well, before beginning the operation, to mark this spot on the crest of the ilium with ink. The incision may be made obliquely from the last rib towards the anterior superior spinous process of the ilium; it should be about four inches in length, and its middle point should be in a line with the mark already indicated. I prefer to make a horizontal incision, parallel to the last rib, and midway between it and the iliac crest. The skin and subcutaneous tissue are cut through and then some fibres of the external oblique and latissimus dorsi muscles are divided on a director, and in the next steps the aponeurosis of the internal oblique and transversalis and the subjacent fascia are similarly dealt with, and the edge of the quadratus lumborum muscle exposed. This is to be divided with a blunt-pointed bistoury, and the colon will then be found in a line with the point on the crest of the ilium, and lying immediately below the kidney. The bowel is often covered by fat. All the incisions must be kept of the same length as the first, otherwise there will be a difficulty when the colon is reached, owing to the limited space the surgeon has to work in.

When the intestine has been found, it should be cleared from fat and connective tissue for about an inch of its length. If there be difficulty in finding the bowel, it is well to endeavour to distend the colon with air. A needle armed with silk is then passed through the skin and bowel, then again through the latter and out through the skin in the other lip of the wound. Another suture is then passed in a similar way near the other end of the

incision, and the colon is opened longitudinally for an inch with a pair of scissors. The loops of the sutures are then drawn out from the bowel and cut, so that four threads remain, which, by tying their ends, unite the intestine with the integument. Care must be taken not to wound the peritoneum. If this accident should perchance happen, the surgeon must be prepared to act accordingly, and he has the choice of two plans. He may at once sew up the opening in the serous membrane with catgut, or he may enlarge it and hook up the bowel, and then complete the operation in the following manner. He must first, however, make sure that he is dealing with the colon. This portion of the intestine can be recognised by its somewhat sacculated appearance and the longitudinal bundles of fibres. The margins of the opening in the peritoneum should be carefully fastened to the serous coat of the bowel, with six to twelve fine catgut sutures. From four to eight days should be suffered to elapse in order that adhesive inflammation may take place, and the bowel may then be opened.

When the bowel is opened fæcal matter usually escapes; but it is sometimes necessary to remove scybalous masses with a scoop. The opening should be kept as clean as possible by means of dilute Condy's fluid; the fæces pass at irregular intervals for some time, but by degrees periodicity becomes established. If all goes on well, in about a month the parts will be fit for the application of an indiarubber pad, fitted to a mechanical contrivance for keeping it over the aperture. As a matter of course, the opening must be kept perfectly clean and be well sponged after each discharge of fæces.

CHAPTER IX.

Malignant Disease of the Rectum—Lupoid Ulceration.

Forms of malignant disease found in the rectum—Carcinoma and Sarcoma—Varieties of carcinoma—Epithelioma, Cylindrical-celled Epithelioma and Scirrhus—Causation and frequency—Symptoms and progress—Diagnosis—Treatment—Extirpation of the disease—The operation—Treatment of cases unsuitable for excision—Colotomy—Littré's operation—Palliative treatment—Lupoid ulceration—Symptoms and treatment.

Malignant disease of the rectum may be either carcinoma or sarcoma. The latter is very rare, and when it does occur, the disease has usually spread to the rectum from some neighbouring organ, *e.g.*, the bladder. When its primary seat is the bowel, it commences either in the muscular layer or in the submucosa; it may be either of the spindle-celled or round-celled type.

Carcinoma of the rectum is found in three forms. (1) Epithelioma or squamous epithelial cancer; (2) Cylindrical-celled epithelioma; and (3) Scirrhus. In addition to these, lupoid ulcer, which is probably a form of epithelioma, has been observed in a few cases.

1. **Epithelioma or squamous epithelial cancer** takes the form of a warty or nodular growth, commencing at or near the anus. These cases are the

most favourable for excision. The epithelial nests which the growth contains are composed of large squamous cells. As in epithelioma elsewhere, ulceration is prone to occur; the disease is also liable to extend into the bowel.

2. **Cylindrical-celled epithelioma** constitutes the majority of rectal cancers. It begins in the mucous membrane of the rectum, above the sphincter, and originates from the epithelium lining the follicles of Lieberkühn. It may occur in any part of the rectum, but is most often found at from two to three inches from the anus. Histologically, the growths consist of nests of irregularly shaped tubules containing epithelial cells; some cylindrical, others globular in form. The stroma is composed partly of fibrous tissue and partly of fusiform and oval cells. The epithelial cells are prone to undergo colloid changes. In most cases the progress is rapid, ulceration is wont to occur at an early stage, and secondary deposits are often found in other parts.

3. **Scirrhus.**—It is difficult to distinguish scirrhous cancer from the foregoing variety. There is, however, in scirrhus a greater amount of stroma, while the cells and cell-groups are smaller, and the former have lost their cylindrical form. So far as regards treatment, scirrhus may be considered as identical with cylindrical-celled epithelioma.

Cases described as *encephaloid cancer* of the rectum were probably instances either of sarcoma, or of cylindrical-celled epithelioma, which had undergone mucoid degeneration. So-called "colloid cancer" is simply a malignant growth in which a change of

that kind has taken place in the cells. Some tumours of the rectum, described as *myxomata*, have been in reality cancerous growths, which have assumed a gelatinous texture as a result of mucoid changes affecting both the stroma and the cells.

With regard to the *causation* and *comparative frequency* of cancer of the rectum, our knowledge on these points may be summed up in a few words. Heredity is sometimes traceable, though not so often as is generally supposed. Primary cancer in the rectum is more frequent in males than in females, and the majority of the patients are over forty years of age; the disease is found in the rectum in about four per cent. of all cases of cancer. In addition to heredity, sedentary and luxurious habits may be regarded as predisposing causes, while the existence of any source of continuous irritation may induce the development of cancer in the rectum.

Symptoms.—In the early stage the symptoms of cancer of the rectum vary much in different cases, the form they assume being dependent to a great extent upon the variety of the disease and the part of the bowel first attacked. It may be stated generally with regard to cylindrical-celled epithelioma, that the nearer the growth is to the sphincter, the greater is the rapidity with which it is developed.

In cases of cancer, especially if high up in the rectum, the symptoms are often very obscure, the tissues becoming considerably involved, before the patient's notice is particularly drawn to the part. The first stages in the development of the disease are in one case accompanied by constipation, and in

another by diarrhœa, the matters voided being fæculent in character, but mingled with clots and glairy matter. As time goes on, the stools contain more or less blood and slimy offensive materials, either mixed with the fæces or passed separately. Alternating with these symptoms, difficulties of defæcation, amounting perhaps to complete obstruction, are liable to occur from time to time. After such a condition has existed for some days, during which perhaps only a little glairy fluid has escaped, a large quantity of fæcal matter mixed with blood, sanious pus and *débris*, is discharged after great straining. The patient is more or less relieved, though the feeling that something more has to come away is wont to recur. The obstruction to the passage of fæces is due to the growth of the cancer, portions of which block up the bowel, and detachment of fragments is the cause of the relief. Sometimes small polypoid growths project from the diseased surface, and, during straining efforts at evacuation, descend to the anus and come in contact with the sphincter, producing spasmodic contractions. Intussusception of the rectum is another condition, which sometimes results from cancerous deposit, and causes severe obstruction.

Invasion of neighbouring organs sooner or later takes place during the course of cancer. The bladder is occasionally involved, an opening being established between the cavities. Sometimes urine passes into the rectum; in other cases, fæces find their way into the bladder and are discharged by the urethra. The peritoneum is also liable to become

involved, and in women, the recto-vaginal septum is occasionally perforated, with escape of fæces into the vagina as a result. The uterus is seldom invaded by the disease. In both sexes abscesses sometimes form and open either externally or into adjacent organs. Hæmorrhoids are a somewhat frequent complication.

More or less pain generally accompanies some of the stages of cancer of the rectum, but this symptom varies very much in different cases. In some, the prevailing feeling is rather that of uneasiness or fulness in the bowel; in others, the pain is intense and distressing to a degree, particularly after the passage of a motion. When present, it is felt in the rectum and perinæum generally, whence it radiates to the adjoining parts and to the thighs, legs, and loins. It is often very severe over the sacrum, especially when the disease is situated high up, and at the posterior part of the bowel. Pain, however, may be almost entirely wanting, even during defæcation, while other symptoms, such as diarrhœa, discharge of blood and *débris*, emaciation, etc., are very prominent. Pain is sometimes more marked in certain parts at a distance from the seat of the lesion, *e.g.*, the feet and legs, than in or near the rectum itself. When the sphincter is involved, the local pain is generally very great. The patient can seldom sit on a chair, but has to keep in the recumbent position.

Constitutional symptoms rarely fail to make their appearance. There is loss of flesh and strength, and a pale waxy condition of the face, while the conjunctivæ have a yellowish tinge. Œdema of the lower limbs is sometimes present. The degree of cancerous

cachexia varies in different cases and with the form of the disease; its progress is less rapid in squamous epithelioma than in the cylindrical-celled variety.

As the disease advances, the canal of the bowel may become completely blocked up by cancerous deposit, when the symptoms of obstruction will ensue. The abdomen becomes much distended; nausea, hiccough and vomiting set in, and death follows unless relief be obtained by giving-way of the obstruction or surgical interference.

In cases of scirrhus, in which the tumour contains a large proportion of fibrous elements and a comparatively small amount of cellular growth, the progress is, as a rule, slow, and the symptoms are apt to be obscure and insidious. The functions of the rectum may be normally discharged for some time, and pain, if present, may be felt in some distant part. Constipation is generally the first symptom which attracts attention, and the progress of the case resembles that of simple stricture. When, however, ulceration sets in, the symptoms become more severe, and there is a decided change in the character of the excreta, which contain blood, glairy flakes, puriform and sanious fluid, having a very offensive odour. The discharge of this fluid, at first intermittent, afterwards becomes almost continuous, and is apt to cause eruptions, sores and papillary vegetations in the neighbourhood of the anus. Accumulation of fæces and ulceration are prone to occur above the cancerous deposit. If the disease extends downwards and involves the sphincter, incontinence of fæces sooner or later results, and the muscle may become de-

stroyed, while portions of the growth project from the orifice.

An epithelioma at the verge of the anus precisely resembles epithelial cancer of the lower lip. Its progress at first is slow, but from its position, the patient's attention is soon attracted to it. The base of the ulcer is hard, and the process spreads, until it involves more or less of the circumference of the anus. The sphincter becomes indurated and loses its elasticity, so that defæcation is very painful, and provokes lacerations of the opening, which greatly aggravate the patient's distress.

Diagnosis.—From the account just given it will be seen that the predominant symptoms of cancer of the rectum are pain, constipation alternating with diarrhœa, discharge of blood, mucus, pus, sanious fluid and *débris*, and sooner or later cancerous cachexia. The relative importance of these symptoms has already been discussed; the degree in which they exist varies greatly in different patients, but the presence of any one or more points to the necessity of a careful digital examination. When the finger has been passed as far as it will go, and nothing abnormal has been detected, the patient should be requested to strain down so as to bring another inch or more of the rectum within reach.

If in a case presenting the above-described symptoms of cancer, induration can be detected by the finger, its position and extent should be very carefully investigated. Sometimes there are distinct irregular nodules, sometimes one or more softer fungoid masses; in other cases, there is a single hard tumour occupy-

ing more or less of the calibre of the bowel, while in others there is a pretty uniform layer of induration under the mucous membrane, with ulceration over part of its surface. Such an ulcer has a firm indurated base, and raised, prominent margins.

In some cases, the cancerous material is deposited pretty uniformly and in the form of a ring round the bowel. The opening which exists, may perhaps admit the tip of the finger. When the growths are fungoid in character, they bleed on the slightest touch. Sometimes a portion can be detached by the finger and a microscopical examination will then aid in determining the nature of the case. The speculum may, if necessary, be used to assist the diagnosis, and in such a case it is generally desirable to administer an anæsthetic.

With regard to the *differential diagnosis*, cancer may be mistaken for simple fibrous stricture, for syphilitic disease, for villous tumour, and for other innocent growths. The symptoms of fibrous stricture most closely resemble those of cancer, and in a few cases, a diagnosis can be made only after careful examinations and observation of the patient for some little time. The duration of the symptoms is an important point. Cancer runs its course somewhat rapidly; during the second year, if not before, its symptoms always become serious and prominent. Its progress is, moreover, attended by a varying amount of cachexia; but, on the other hand, fibrous stricture generally causes deterioration of the general health. There is less pain connected with simple stricture, and less hæmorrhage and discharge of *débris*. In epithelioma of the

anus, the inguinal glands are generally enlarged. Syphilitic ulceration with thickening of the coats of the bowel and contraction may closely simulate cancer, but the history of the case and the previous symptoms will make the diagnosis clear. Villous tumour is very rare indeed. Though soft to the touch, it is not friable, but resistant. It yields a viscid mucous secretion, whereas a fungoid cancerous growth is covered with *débris* and sanious fluid. Moreover, villous growth may exist for several years without causing any of the symptoms of cancer. It is apt to protrude from the bowel with every evacuation and to give rise to considerable losses of blood. The walls of the rectum appear healthy and show no signs of induration. Polypi of the rectum are not easily mistaken for cancer. There is absence of pain and constitutional symptoms, the tumour is movable, and the peduncle can be felt by the finger.

It is only necessary to add that digital examination is required to discover the true nature of the following conditions, all of which resemble cancer in so far as they are liable to cause more or less obstruction of the bowel. Tumours and displacements of the uterus; tumours of the ovary; enlargement of the prostate; large urinary calculi; abscesses near to but outside the rectum and bony tumours from the sacrum.

Treatment.—In dealing with a case of cancer of the rectum, several courses are open to the surgeon; but the choice of these will depend upon certain conditions. The methods generally available may be classified as follows:—(1) Removal of the diseased portion of the

bowel, and, as a substitute in certain cases, removal of the growth or of portions thereof by the aid of a sharp scoop or spoon. (2) Operative treatment of a palliative character, the object sought to attain being the formation of an artificial anus in the lumbar region or in the groin. (3) Palliative treatment by means of drugs, etc., the objects aimed at being the comfort of the patient and the diminution of suffering.

An account of the application of electricity to the treatment of rectal cancer, will be given in the succeeding chapter.

Extirpation of the diseased portion is attended with very good results in properly selected cases. To be successful, it should be as complete and early as possible. It is especially suitable for cases in which the lower part of the rectum alone is affected, and the finger can be passed above the diseased portion. If there be a healthy strip of mucous membrane between the anus and the disease, the upper limits of which are within reach of the finger, the case is still more suitable for operation, inasmuch as the sphincter can be preserved intact. As in other operations for cancer, a sufficient margin of healthy tissue should be removed with the disease. Subject to the conditions above-mentioned, the operation is advisable even when the disease has existed for some time, for as a general rule, in cancer of the rectum, the lymphatic glands remain unaffected until a comparatively late period. The cases which afford the best prognosis are those of epithelioma of the anus, and of cylindrical-celled epithelioma of the rectum. When a portion only of the circumference of the rectum is implicated,

e.g., where there are one or more circumscribed and movable nodules, these should be freely excised, after forcible dilatation of the anus.

The dangers of so serious an operation as removal of several inches of the rectum are as follows: hæmorrhage, which is often free, but can generally be controlled without much difficulty; purulent inflammation and infiltration of the connective tissue of the pelvis, causing septicæmia, etc., injury to the peritoneum, followed by peritonitis. Purulent inflammation can generally be prevented by the free use of antiseptics during the operation, and in the subsequent treatment, and by taking care that all discharges from the wound are allowed to escape freely. Even if the peritoneum be opened, fatal inflammation will not necessarily occur, provided that antiseptic precautions are adopted. The opening into the peritoneum, if large, may be closed by suture, or, if small, a sponge sprinkled with pulv. iodoform. should be kept in apposition with it for twenty-four hours.

The operation, as a whole, is contra-indicated if the disease extend beyond the reach of the finger, and likewise if the adjacent structures are much implicated. Such extension to neighbouring parts is more common in female patients, the disease generally spreading to the vagina. When this is the case, and the parts are closely matted together, the peritoneum in Douglas's pouch is certain to be involved, and would be freely opened, if the attempt were made to separate the tissues from each other. When the disease is confined to the posterior part of the rectum, this contingency will not exist, and the

case is so far suitable for operation. As in deciding upon the question of operating in other cases of cancer, interference is contra-indicated if there be evidences of cancerous deposit in other organs.

Excision of the lower portion of the rectum is performed in the following manner:—The bowels having been emptied, the patient, thoroughly under the influence of an anæsthetic, is placed in the lithotomy position, the legs being well separated by means of a Clover's crutch. A strong, sharp-pointed, curved bistoury is passed through the anus, and its point made to perforate the bowel in the central line behind, as high up as convenient, and brought out at the tip of the coccyx. The operation so far is thus what is termed "linear proctotomy." An incision in the form of a horse-shoe, beginning and terminating at the anterior extremity of the first incision, is next made through the skin around the anus, or, if the disease does not extend to that part, through the mucous membrane just above the external sphincter. The next step is to separate the bowel from its attachments, and for this purpose it is convenient to transfix it with several loops of strong whipcord, by means of a curved needle, inserted outside the bowel, and passing out from the anus. The ends of these ligatures are knotted and tied together, and by making traction with the left hand, the separation of the bowel from the adjacent parts is much facilitated. An assistant also draws aside the outer margin of the wound with a retractor; the fibres of the levator ani are cut through all round, and the surgeon uses his finger or the handle of the scalpel to effect the necessary

separation of the bowel from the adjacent parts. Anteriorly the adhesions may render this part of the operation very difficult. In the male it is advisable to have a bougie or catheter passed into the bladder, to serve as a guide to the membranous urethra, which is liable to be opened in this part of the operation; in the female, assistance will be obtainable by passing a finger into the vagina. Posteriorly, the parts can be separated without difficulty. The necessary manipulations are continued until the upper border of the diseased portion has been passed; if hæmorrhage occur, the vessel should be sought for, and the clamp-forceps applied. The large arteries are between the bowel and the sacrum. When the gut has been separated to a sufficient length, it should be drawn down by means of the ligatures, and divided transversely above the diseased portion by the aid of a wire ecraseur. After removal, ligatures are to be applied to any bleeding vessel, and the wound should be syringed with a solution of carbolic or boric acid, or of perchloride of mercury (1 to 1000). If there be much oozing, a sponge covered with powdered iodoform may be pressed into the bottom of the cavity, and dry cotton-wool and a T-bandage are then to be applied. A pillow is placed under the buttocks and a pad of lint or some carbolised tow applied to catch the discharge; Condy's fluid diluted is used as a wash to keep the parts clean. Small doses of morphia are given to relieve pain, and food of a nourishing and easily digestible character, such as milk, eggs, and beef-tea, should be administered. The bowels must be kept from acting for a few days

by means of opium or catechu. The wound must be kept as clean as possible until cicatrisation has taken place. It has been recommended to draw down the bowel and stitch it to the skin, but experience shows that this is not only unnecessary but ineffectual, as the sutures generally give way.

When the case progresses favourably, the large gap resulting from the operation is gradually filled up by granulations, and in about six weeks cicatrisation is complete. The relief to the patient is enormous, and some amount of control over solid motions is generally acquired as time goes on. The distance between mucous membrane and skin gradually diminishes, and in some cases (even where four inches of bowel have been removed) a prolapse of mucous membrane has been known to occur. The patient is for the time being, and possibly for months or even years afterwards, rid of his complaint and able to follow his employment; and the normal position of the anus is retained. Recurrence may of course take place, but the early and free removal of the disease renders the prognosis decidedly hopeful in this respect. One point requires especial attention in the after-treatment, and that is the prevention of contraction as a sequela of the operation. For this purpose, if healthy granulations have sprung up, the rectum-tube, of as large a size as possible should be introduced on the seventh or eighth day, and retained for a short time, and this should be repeated daily until the parts have pretty well healed. If stricture should unfortunately become developed, in spite of all precautions, it must be dealt with by division, elec-

trolysis or colotomy, according to the condition of the parts.

When the disease is confined to a portion of the bowel, beginning from one to two inches from the anus and terminating within reach of the finger, the case is still more suitable for operation, inasmuch as the sphincter can be retained.

It remains to consider what methods are available for dealing with those cases which are unsuitable for excision, *viz.*, those in which the disease is situated high up in the rectum, having either commenced there, or gradually spread upwards. In such cases, the sooner colotomy is performed, the greater the chance of relief to the patient, for two obvious reasons: (1) recuperative power is greater than it would be at a more advanced stage of the disease; (2) by abolishing the normal function of the part, the vascular supply is diminished and the growth of the disease is consequently retarded. There is another important advantage connected with the early performance of colotomy, *viz.*, the patient is thenceforward spared the pain caused by the passage of fæces over the ulcerated surface of the rectum. The method of performing the operation of colotomy has been already described in the chapter on stricture of the bowel. (See page 112).

Some surgeons have expressed a preference for Littré's method of opening the colon, *i.e.*, in the groin, for the following reasons. The opening in the groin is more accessible, more under the patient's control, and easier to cleanse than one in the lumbar region. It is true that in Littré's operation the peritoneum is

wounded, but the membrane is liable to be involved in the lumbar incision. The use of antiseptics, however, renders the risk inconsiderable. The operation in the groin is easier of execution. If, however, there be reason to suppose that the upper part of the rectum is involved, Littré's operation must not be performed.

Judging from the results in my own cases, I am led to prefer lumbar colotomy. I do not find that the patients experience any difficulty in wearing a pad and controlling the escape of fæces. I will, however, briefly indicate the details of Littré's operation, as recently described by Mr. Arthur E. Barker, (see *Lancet*, Nov. 6, 1886).

The patient, fully under the influence of an anæsthetic, is placed in the recumbent position, and an incision, about three inches long, is made from a point about an inch internal to the anterior superior spinous process of the ilium, and carried downwards and inwards, parallel to Poupart's ligament. The skin, superficial tissues, and layers of muscles having been carefully divided, the peritoneum is exposed and opened for about an inch-and-a-half under antiseptic precautions. Any arteries that bleed should be secured before the peritoneum is opened. The edges of the membrane are then carefully stitched to the skin by silk sutures, and into the opening which is thus formed, a portion of the sigmoid flexure of the colon is drawn and secured by means of silk sutures on either side, passing through the serous and muscular coats of the bowel and then through the parietal peritoneum and skin. It is important to obtain close contact of the serous surfaces at each angle of the

wound. This first step of the operation is completed by closing the angles of the skin-wound by means of silk sutures. The wound itself is then dusted over with iodoform and covered with salicylic wool and a spica bandage. In Mr. Barker's case, the wound was examined on the fourth and six days and found to be progressing satisfactorily. On the eighth day, complete union having taken place between the edges of the wound in the parietal peritoneum and the visceral layer, an opening about an inch long was made into the bowel and the margins were everted and secured with four silk stitches. Iodo-vaseline was smeared over the edges of the wound and skin, and a pad of oakum laid over all. On the tenth day fæces began to be discharged, and thenceforward only bloody slime escaped from the rectum. The bowels acted regularly through the new opening.

As a substitute for colotomy and only as a palliative step, it has been proposed to take away portions of the growth with the aid of a sharp scoop or spoon. This procedure is adapted only for dealing with such cancerous masses as are easily removable. In suitable cases its performance is followed by diminution of pain, tenesmus, hæmorrhage and discharge, and some amount of healthy granulation may spring up, but reappearance of the cancerous growth will sooner or later take place. Its results are not to be compared with those of complete extirpation. In isolated cases, however, it is possible to scrape away the greater part or even the whole of the growth, with corresponding benefit to the patient.

The last class includes those cases in which opera-

tive interference is inadmissible, for reasons already given, and those in which it is declined by the patients. Various measures may be adopted to lessen suffering.

If the pain be great, opium by the mouth or in the form of a suppository must generally be relied on, but many drawbacks are connected with its use. Increasing doses are always required, and it frequently causes sickness, loss of appetite, constipation and distressing mental conditions. Belladonna and conium may be tried as substitutes. The bowels should be kept open either by means of enemata of warm water, to which a little oil and Condy's fluid may be added, or by mild purgatives, such as confection of senna or compound liquorice powder. A large gum-elastic catheter should be used for the injections; it can be passed above the diseased part without causing much irritation. If diarrhœa occur, it must be checked by means of chalk-mixture, kino, catechu, etc. The parts should be kept as clean as possible; any discharges should be received on carbolised cotton-wool or tow, frequently renewed. The boric acid ointment applied to the external parts will relieve irritation. The food should be nourishing and easily digestible; milk is generally suitable. Cod-liver oil may be given if it agree with the stomach. The patient should not remain in bed unless absolutely necessary. When not prevented by pain, he should take a moderate amount of exercise in the open air, whenever possible.

I shall conclude this account of malignant disease of the rectum by describing a form of ulceration of this part of the bowel, a few examples of which have

come before me in practice. The process in question resembles that of severe lupus, and may be termed *lupoid* ulceration. Rodent ulcer is another name for it. The disease is rare; in the course of my practice I have seen only three or four cases. The patients are generally of the strumous constitution.

The disease begins at the verge of the anus; but it is very rarely seen by the surgeon in this stage. A little ulcer is soon formed and enlarges more or less rapidly, spreading over the perinæum as well as extending into the rectum. The ulceration is superficial rather than deep, but it may extend in the latter direction. The margin is abrupt and irregular and neither hard nor raised; the surrounding mucous membrane appears quite healthy. The base is very red and smooth and inclined to be dry and glossy; the discharge when present is thin and scanty. A few granulations sometimes appear, and some amount of cicatrisation may even take place, but the cicatrices soon break down, and the ulcer spreads as before. There is neither the solid deposit nor the characteristic cells and nests of epithelioma; the disease does not affect the lymphatic glands or cause deposits in remote parts.

Pain is a prominent symptom of this form of ulceration. It is very severe and is described as of a gnawing, burning character, and seldom abates. It is aggravated by moving about and by the action of the bowels. In women the ulcer may burrow into the vagina and extend in that canal. The ulceration is not attended with any constriction of the bowel; on the other hand, the opening may be more patulous

than usual. The course of the disease is always from bad to worse; the ulceration continues to extend and death results from exhaustion, the progress of which is sometimes accelerated by attacks of diarrhœa.

Treatment.—Removal of the diseased part with the knife is the only method likely to prove efficacious in dealing with this disease. Caustics of many kinds have been tried; but their effects are found to be only transient. The knife should be carried for fully half an inch round the diseased part, the whole of which should be removed, with as much as possible of the subjacent tissue. If removal be impossible, owing to the extent of the ulceration, the administration of opium in some form constitutes the chief means at our disposal for the relief of the pain.

CHAPTER X.

The Use of Electricity in Rectal Surgery.

Stricture of the rectum can, like all other strictures, be treated by electricity. The amount of success achieved by this means depends upon the nature of the obstruction. In some cases cure can be effected, in others relief only can be obtained. But in these latter cases, where the stricture is due to cancer, life can be prolonged for a variable period, and made more endurable by the relief of pain; and that last and terrible expedient of colotomy can be postponed and perhaps dispensed with altogether.

Electricity is used for dissolving strictures on account of the property it possesses of decomposing all compound substances, that are conductors, into their constituent elements. This property was called by Faraday *electrolysis*. Electrolysis is the decomposing of compound substances by the *chemical action* of the galvanic current. During the process the electrodes or needles which convey the current to the tissues do not become hot, as in the galvano-cautery.

For electrolysis a battery composed of a large number of cells is required, and these cells are arranged so as to enable them to overcome a high external resistance. The power of affinity which keeps all chemical compounds in combination, requires a strong force to overcome it. A substance

to be decomposed by electricity must be a conductor; all animal tissues are fairly good conductors, the skin being perhaps the worst of all.

The exact decompositions which take place in the electrolysis of animal tissue have never been thoroughly made out. Animal tissue itself is such a complex substance and the combinations of elements are so various and in so many different proportions, that it would be almost impossible to make any correct analysis; decompositions and recombinations must vary with every description of tissue experimented upon. Tissues that we call by the same name vary in their composition in different parts of the body. Take for instance, fat; in some situations stearic and palmitic acids are present in greater excess than in others. This difference is very evident in butcher's meat; the fat which is found on the upper surface of a sirloin of beef is very different from the suety fat found beneath the "undercut." If these two descriptions of fat were subjected to electrolysis the resulting decompositions would be different. An accurate account of the decompositions which take place in the electrolysis of a stricture would therefore offer difficulties which are almost insurmountable. As a general principle we know that the bases and metals of all salts are liberated at the negative, and the acids at the positive pole. As all metals are more or less oxidisable, if the positive electrode is made of metal, it will be more or less decomposed by the oxygen or acid liberated at its surface and will enter into the new combinations of elements which take place. The

metal of which the negative pole is composed is not thus affected. This difference in the action of the electrodes has an essential bearing on the treatment of strictures by electrolysis. If the positive pole were used as the dissolving electrode, we should have parts of the metal of which it is composed, forming fresh compounds with the elements liberated from the stricture; the electrode would become partially adherent and glued to the tissues, and its withdrawal would require such force, that the parts would be torn and hæmorrhage produced. The negative pole is, therefore, the one held against the stricture. At the negative pole we know that among other things the potassium and sodium, which are found in all animal tissues are liberated. These elements, while in a nascent state, seize upon any other elements which may be present, and with which they easily combine, and form a deliquescent *débris* which has no tendency to adhere to the electrode. Among other things the potassium and sodium decompose the watery constituents of the tissues, combining with the oxygen and liberating the hydrogen, which can be seen or felt as bubbles of gas. If it is possible to see the parts where the decomposition is taking place, a frothy exudation is visible, resembling very fine soap-suds, and the reaction, if tried with test-paper, is found to be alkaline.

The steps of the operation for the electrolysis of stricture of the rectum are as follows:—A galvanic battery of from 20 to 30 cells is required. The number of cells to be employed depends upon the composition of the battery, and the length of time it has been in use.

The current-strength, that it is most advantageous to maintain is one of five milli-ampères, which can be guaged by means of a galvanometer. A pad moistened in salt and water is connected by a conducting wire with the positive pole of the battery, and placed on some indifferent part of the body, and a specially made bougie electrode is connected with the negative pole, and held against the stricture. The bougie electrodes are made in sizes corresponding to the ordinary rectal bougies. It is first necessary to ascertain by means of an ordinary bougie, what is the calibre of the stricture. An electrode bougie of one size larger is then taken and attached to the battery as already described, and held against the stricture until it has dissolved enough away to enable it to pass. The circuit is then broken and the bougie withdrawn. The patient is left ten days or a fortnight before any further examination is made. It is then generally discovered that a rectal bougie two sizes larger than the one originally used will pass the stricture. An electric bougie of a larger size is then again taken and the operation repeated. The number of times that this process is necessary, depends upon the size of the stricture at the commencement. If on each occasion the electric bougie does not pass in about twenty minutes or half-an-hour, it is best to desist, as too large a slough may be produced at the seat of the stricture, but after these apparent failures, it will be found at the end of ten days or a fortnight, that a bougie one size larger than that used will pass the stricture easily.

This method of treatment of stricture has these

great advantages. The patient is not incapacitated from following his ordinary occupation, provided his general health in other respects is good enough for him to be about. No anæsthetic is required; the pain is very trifling, and the strength of the current is regulated to a great extent by the feelings of the patient. It is therefore necessary that he should be conscious. There is usually no bleeding, if the operation be properly performed, and no necessity for any antiseptic precautions, as the procedure itself is aseptic. In the majority of cases there is no contraction or return of the stricture; but if due to cancer, a fresh growth of diseased tissue is very likely to take place, necessitating a recourse to the treatment. Successive applications of electricity are far better than the *dernier ressort* of colotomy, and may keep the intestine patent as long as the disease allows the patient to live.

Electricity may also be employed for the removal of hæmorrhoids, and for the treatment of fistula-in-ano. For these purposes it is used in a different way from that described for electrolysis, although very frequently the two methods are confounded. The removal of hæmorrhoids is accomplished by electricity, by what is called galvano-cautery. This consists in heating a piece of platinum or platinum-wire by the passage of a galvanic current, and requires a specially constructed battery and suitable instruments.

A galvano-cautery battery is composed of from two to six cells of large size. The negative and positive plates are placed as closely together (without

touching) as is possible, and expose broad surfaces to the exciting fluid. This reduces the internal resistance of the battery, so that a large *quantity* of electricity is produced, which is conveyed through thick conducting cords (having a large transverse sectional area) in a short space of time. The circuit is completed through the piece of platinum or platinum-wire with which the operation is performed. The circuit is therefore metallic throughout, and not completed through the body, as in electrolysis. The only point at which a current from a galvano-cautery battery meets with any appreciable resistance, is at the part of the circuit composed of platinum, which is therefore raised in temperature. The quantity of electricity passing in a given time determines the heat to which the platinum is raised, it may be to a dull-red heat or a white-heat, or to a point at which the platinum is actually fused. A dull-red heat is the temperature to be desired in operating. Platinum is selected as being the metal which offers the greatest resistance both to heat and electricity, and also has the highest fusing point. Different arrangements are made in galvano-cautery batteries for regulating the current so as to keep the platinum wire at the desired temperature. In some a rheostat is used, which is an arrangement for introducing into the circuit more resistance; in others the amount of zinc that is immersed in the exciting fluid can be regulated either by lowering the zincs into the fluid or raising the fluid to the zincs. This is accomplished in many batteries by a mechanical arrangement attached to the lid. Another circumstance has to

be taken into consideration in working a galvano-cautery battery. The chemical action which takes place in the cells is very rapid; zinc being dissolved and replacing the hydrogen in the sulphuric acid. The free hydrogen attaches itself to the surface of the negative element, usually carbon, and chokes it. This is called "polarisation," and it retards the rapidity of the current by increasing the internal resistance of the cell. To obviate this polarisation, many devices are practised. Bichromate of potassium is put into the fluid, or the cell is rocked to and fro in order to disengage mechanically the bubbles of hydrogen, or a piece of vulcanite is made to pull up and down over the carbons so as to sweep their surfaces, or the fluid may be moved up and down by movement of the lid of the battery, so as to wash off the hydrogen.

For the removal of piles, a galvanic écraseur may be used, which carries a platinum-wire, and can be attached by rheophores to the poles of a battery. Each pile is seized by a small vulsellum, and the wire of the écraseur passed over the handles and carefully adjusted and tightened round the base of the hæmorrhoid, while the wire is cold. The circuit is then closed and the wire becomes hot; it is then gradually tightened, but so slowly as not to anticipate the action of the cautery. If the current is regulated properly, and the wire kept at a dull-red heat, the growth is removed without producing any hæmorrhage, and a dry charred eschar is left, which heals more rapidly and gives less after-pain than when removal has been accomplished by any other method.

If the wire is raised to a white heat it cuts almost like a knife, and is followed by hæmorrhage, and if the current is not strong enough, the tissues to be burnt through so cool the wire that it acts only as an ordinary écraseur. If the base of the pile is too broad to be encircled by the wire of an écraseur, it is best to use two handles with clips at the ends which will hold the wire. With a handle in each hand the operator has such command over the wire, that he can pass it when hot in whatever direction he wishes.

For the treatment of fistula-in-ano, a platinum wire can be passed up the fistula into the rectum, and brought down by the finger, and then each end of the wire is attached to one of the clip handles. The circuit being closed, slight traction is made upon the wire, and it is allowed to burn its way through. When properly performed the operation ought not to be accompanied by hæmorrhage. The adjacent parts must be protected with pieces of wet lint. Instruments are made with a sharp terminal point of platinum-wire which can be made hot by a galvano-cautery battery, and with which the lining membrane of a fistula can be burnt and destroyed. This can also be done by electrolysis; a wire is inserted along the entire track of the fistula and connected with the positive pole of an ordinary galvanic battery, the negative pole being placed on some indifferent part of the body. The circuit is then closed, and the lining membrane of the fistula destroyed by chemical decomposition. The method with the galvano-cautery is perhaps preferable and usually gives the more satisfactory result.

CHAPTER XI.

Polypus of the Rectum—Villous Tumour of the Rectum.

Polypi met with in two forms, besides villous or vascular growths —Hard or fibrous polypi—Symptoms—Diagnosis—Soft polypi —Symptoms — Diagnosis — Treatment — Villous growths — Symptoms—Treatment.

Polypi are of somewhat common occurrence in the rectum. They are more frequent in children than in adults, and two forms are met with, *viz.*, the hard or fibrous, and the soft or mucous polypi. Villous or vascular growths are of less frequent occurrence. The polypi are pedunculated growths, attached to the mucous membrane of the rectum, at varying distances above the sphincter, but seldom more than three inches from the anus.

The hard or fibrous polypus of the rectum is of firm consistence, red in colour, and creaks when cut. It is composed of bundles of fibrous tissue crossing each other in various directions, and is covered with thin mucous membrane. In some of these polypi smooth muscular fibres are intermixed with the fibrous tissue, and may indeed form the greater portion of the growth. The tumours vary in size, and may be as large as a walnut, and the pedicle is from one to two inches in length or even longer; it tends to increase as time goes on. It may contain

vessels of some size; pulsation can sometimes be felt. These polypi are usually single, but occasionally multiple, and, in rare cases, disseminated over the bowel. They sometimes complicate other affections of the rectum, *e.g.*, hæmorrhoids, prolapsus, fistula, and fissure. The straining provoked by the presence of a polypus is one of the causes of fissure. Spontaneous detachment of the growth has been noticed in a few cases, and the growth of a second polypus has also been subsequently observed.

The *symptoms* caused by these polypi are of an indefinite character. A sensation of weight or pressure in the rectum, shooting pains, tenesmus, occasional diarrhœa with discharge of blood and mucus are more or less commonly present. The character and intensity of the symptoms are influenced by the size of the growth, but especially by the length of its pedicle. When the latter is short, the polypus may attain a considerable size without causing much inconvenience. When, however, the pedicle, by reason of its length, allows the polypus to reach the anal orifice and to protrude therefrom, the symptoms are certain to become prominent. The escape of blood during defæcation and protrusion of the polypus are the symptoms which generally cause the patient to seek advice. As a matter of course he attributes his symptoms to piles. A digital examination will, if polypus be present, detect a firm roundish growth, more or less freely movable, and attached by a pedicle to the wall of the rectum, the posterior aspect of the bowel being the usual seat of implantation. If the pedicle be long, the tumour may escape the

finger, being pushed up into the rectum in the attempts to discover it. Under these circumstances, it is well to give an enema, and then examine the bowel before the fluid has escaped.

Soft polypi of the rectum are more common than those just described. These growths are most often met with in young subjects; males and females are equally liable to them. They form small tumours, spongy, bright-red in colour, and either smooth or more or less nodulated on the surface. On examination with a lens of low power, the surface is seen to be dotted over with small punctiform openings of Lieberkühn's follicles. The majority of them are true adenomata, consisting of hypertrophied and newly-formed glands of the mucous membrane. They sometimes contain cysts, due to the dilatation of the glandular follicles. The tumours are generally single, but sometimes multiple, and in very rare cases disseminated over the bowel; the pedicle is usually short and thick and attached to the posterior wall of the rectum, not far from the anus. The pedicle may contain vessels of sufficient calibre to give rise to considerable bleeding should spontaneous detachment take place.

Symptoms.—As in the case of fibrous polypi the symptoms are in no way characteristic. Hæmorrhage from the rectum, however, in a young child, is almost always due to polypus. When the tumour has so far descended as to reach the anus during straining efforts at defæcation, more or less hæmorrhage is certain to take place. Two or three teaspoonfuls of blood may be discharged each time, and

unless proper treatment be adopted, the symptoms of anæmia soon become very marked. In some cases the hæmorrhage has been observed at irregular intervals and apart from defæcation. A discharge of fœtid mucus is an occasional symptom, and the child, if old enough, complains of discomfort about the anus and has a frequent desire to defæcate. Protrusion of the polypus sooner or later takes place; the mass is spontaneously retracted after the bowels have acted.

Diagnosis.—Polypus may be mistaken for internal hæmorrhoids and prolapsus of the bowel. An enema should be administered, and the rectum examined as the fluid is escaping. Either the polypus itself, or its pedicle will be felt by the finger. Usually, when the child strains, the polypus will protrude from the anus in the form of a rounded, vascular, bright-red body more or less resembling a raspberry.

Treatment.—This consists in the removal of the growth. All that is necessary is to apply a ligature and then snip off the polypus. The bowels should be kept at rest for a few days by means of a little catechu, and the patient should not move about as usual until after the separation of the ligature. This process takes place in three or four days. Another plan is to twist the peduncle by means of a torsion-forceps until it breaks.

Villous growths in the rectum are much less common than polypi. They are soft and spongy in character, and their surface is studded over with little tufts, each containing loops of blood-vessels. The pedicle is short and thick, and sometimes the growths appear to be sessile upon the mucous membrane.

They resemble in structure the villous growths of the bladder. They are not malignant; they do not invade other organs, and are not liable to ulceration. They consist of a loose shaggy mass of tissue, containing but little solid material. As in the case of the bladder, the mucous membrane of the rectum is sometimes dotted over with patches of villous growths. These tumours also resemble those found in the bladder in being sometimes detached spontaneously. They have been known to recur after removal, and, in a few cases, have been followed by epithelioma.

The *symptoms* of villous growth of the rectum are hæmorrhage, protrusion of a soft tumour on defæcation and sometimes after exertion, and the discharge from time to time of a thin glairy fluid, resembling thin mucilage or starch. This last symptom is almost characteristic. It is worthy of notice that a peculiar symptom, known as "fibrinuria," is sometimes associated with the presence of villous growths in the bladder, the fibrinous effusion being caused by pressure upon the vascular loops of the villous tissue. In like manner, the mucous discharge in villous disease of the rectum is probably due to congestion. With a higher degree of tension, the walls of the vessels give way and more or less hæmorrhage results. These growths have hitherto been found mainly in adults and in advanced life. Their rate of progress is slow and they may attain a considerable size, *e.g.*, that of an orange.

Treatment.—Removal by the aid of a ligature affords the best means of dealing with these growths. As the pedicle is generally short and flattened, it

should be transfixed with a needle threaded with a double ligature, after the tumour has been drawn down as far as possible. The ligature having been divided near the eye of the needle, both halves of the pedicle are tied and the tumour is cut off, if the pedicle be long enough.

CHAPTER XII.

PROLAPSUS ANI.

Prolapse of the anus and rectum, definition and varieties of—Causes—Symptoms—Appearance of the protruded part—Peritoneum sometimes involved—Diagnosis—Treatment—Removal of causes—Replacement—Astringents—Nitric acid—Actual cautery.

PROLAPSUS ANI is a somewhat general term, used to express a morbid condition of the lowest portion of the bowels, of varying degrees of importance and severity. It signifies a protrusion, through the anus, of parts which in the normal state are within and above that aperture, the protrusion consisting of mucous membrane, either alone or combined with some one or more of the other coats of the bowel. In exceptional cases, the protruded part contains within its folds a loop of the small intestine. In the mildest form of prolapsus, only a ring of mucous membrane just above the anus is protruded, and to this condition the term *prolapsus ani* or partial prolapsus is properly applied; in the worst cases, the entire rectum projects through the anus, thus constituting what may be termed *prolapsus recti* or complete prolapsus. Between these extremes there are many intermediate stages.

Causes.—The most potent cause of prolapse of the rectum is straining at stool, and hence the complaint

is wont to occur in children who often suffer from diarrhœa, and especially in those of a strumous habit. In such children intestinal catarrhs are of frequent occurrence, and protrusion is favoured by the relaxed state of the sphincter and the swelling of the mucous membrane. Moreover, in children, owing to the absence of the sacral curve less support is given by this bone to the rectum than is the case in adults. Children also are apt to strain very violently during defæcation, and they often continue such efforts when the bowel is really empty. Prolapsus ani is also liable to occur in children who are the subjects of vesical calculus, and is caused by straining efforts at micturition. Prolapsus is sometimes traceable to ascarides, and to rectal polypus, and phimosis sometimes leads to a similar result. Violent and long-continued attacks of coughing may also induce prolapsus, and hence this condition is sometimes seen in children during an attack of whooping-cough. In adult life, prolapsus ani is far less common, but it occurs sometimes in women who have borne many children, and in men as a result of mechanical obstruction to micturition, caused by stricture, prostatic enlargement, calculus, etc. Rectal polypus and internal hæmorrhoids are other causes of prolapsus. In advanced life, any urinary troubles which previously existed, are wont to become more marked, and the contractile power of the muscles around the anal orifice becomes diminished; hence prolapsus is of more frequent occurrence.

Symptoms.—These vary according to the degree of

the prolapsus. In the early stage and in slight cases, the protruded portion consists of a ring of mucous membrane, which comes down when the bowels are moved, and is replaced either spontaneously, or by the efforts of the patient. The protruded portion is of a deep-red colour, and overlaps the anus; it is marked with folds or rugæ, and its surface is covered with mucus, often stained with blood. There is at first no sulcus at the base of the protrusion ; the mucous membrane is seen to be continuous with the skin of the anus. In a subsequent stage, the protrusion is increased in extent, and forms a tumour of variable size, more or less pyriform in shape, and projecting from the anal orifice. At the free end is the opening, generally narrow and slit-like, into the canal of the bowel, and this is surrounded by circular or transverse folds consisting of mucous membrane and portions of the muscular coat. A sulcus or *cul-de-sac* of varying depth exists at the circumference of the protrusion, so that the mucous membrane cannot be traced directly into the skin of the anal margin. In these two classes of cases, the rectum alone is involved, but portions of the colon are sometimes prolapsed, and drag down with them more or less of the rectum. When a sulcus or furrow exists at the base of a prolapsus, its outer wall is formed by a small portion of the rectum which has remained in its natural position. Through this, as through a ring, the upper portion protrudes or is invaginated, and the length of such protrusion (when the rectum alone is involved) varies from one to five inches, or even more.

When the protrusion is small and of recent forma-

tion, it can generally be replaced without much pain or difficulty, though it is likely to reappear when the bowels are moved. In the case of large protrusions, replacement is often difficult and attended with much pain, but when the condition has existed for some time, the anus becomes patulous, and the sphincter and adjacent parts lose much of their elasticity. Under these circumstances the protrusion becomes permanent, and although replacement is easily effected, the parts return to their former condition whenever the bowels are moved, or even when the patient makes the slightest exertion.

The appearance of the protruded part becomes altered when the condition has existed for some time. Chronic congestion of the mucous membrane gives rise to a livid appearance and to œdema and thickening in the sub-mucous tissue; there is more or less profuse secretion, and hæmorrhages are apt to occur from superficial ulceration, the result of friction against the patient's thighs and clothes. In other cases the surface loses its velvety condition and becomes dry, hard and insensitive.

Other changes sometimes occur in the protruded part in cases of prolapse of the rectum. Congestion is followed by inflammation, with sloughing as a result. If the patient survive, portions of the intestine become detached, and healing may result, but death from pyæmia or peritonitis is the more probable ending.

When the portion of peritoneum which is dragged down by the protrusion constitutes a hernial sac, it occupies the anterior part of the tumour. This por-

tion on examination is found to be tense and full, and the opening into the bowel is turned towards the sacrum. On making pressure over the anterior part of the tumour, with the pelvis raised, the hernia is reduced with a gurgling sound, the anal orifice is then found to be in its usual position and the protrusion can generally be replaced without difficulty. Mr. Quain points out that this peritoneal *cul-de-sac*, at the anterior part of the prolapsus, "exists not only in examples of extensive displacement of the intestine, but even where the protruded part measures no more than an inch."

The *diagnosis* of prolapse of the rectum is for the most part easily made; hæmorrhoids and polypus are the only affections with which it is likely to be confounded. Protrusion of a tumour from the bowel is a symptom common to all these, but the appearances differ considerably in the three cases. In prolapse the folds of the mucous membrane, with the anal orifice in the middle, are always recognisable; there are no separate tumours, as in hæmorrhoids; and nothing in the form of a pedicle, as in polypus, which moreover is sometimes firm and lobulated. It must of course be remembered that a certain amount of prolapsus often occurs with internal hæmorrhoids, and that the former condition is sometimes due to the presence of a polypus. Invagination or intussusception of the colon, which sometimes occurs in children, requires to be distinguished from prolapse of the rectum. Such invagination may result from straining efforts at stool during catarrhal diarrhœa, or from the presence of a polypus in the colon or upper part of the rectum. In

such cases the protruded part may measure twelve or fourteen inches; it is cylindrical in form, and at its lowest portion is a small opening which leads into the canal of the bowel. A sound can be introduced for a long distance between the tumour and the wall of the rectum, without reaching the base of a sulcus. Invagination of this kind may be sudden in its origin, but it is more likely to occur gradually. The protruded part has been known to slough off and recovery to take place.

Treatment.—In all cases of prolapsus, either partial or complete, a careful examination should be made to ascertain whether any obvious cause be present, such as a polypus in the rectum, ascarides, hæmorrhoids, phimosis, calculus in the bladder, etc. As a matter of course, no measures dealing with the prolapsus alone are likely to be successful if any of these causes remain in operation. In children, prolapsus often depends upon a catarrhal condition of the bowels, and when this exists, various combinations of Hydrarg. cum Cretâ, Sodii Bicarb., Pulv. Rhei and Pulv. Ipecac. Comp., are indicated, and Catechu or Kino if obstinate diarrhœa be present. When the state of the bowels has been improved, cod-liver oil and some preparation of iron may be given, due attention being of course paid to the diet and other hygienic matters.

When protrusion has occurred, it is sometimes necessary to have recourse to various manipulations, in order to replace the portion of bowel. In the case of children, replacement is for the most part easily effected. The child should be laid on its chest across

its nurse's knees, with its head lowered; a little oil or vaseline is then applied to the protruded part, and pressure is made with the fingers, so as to replace it within the sphincter. After a few manipulations, the part generally slips back, but sometimes continuous pressure is requisite, and a soft sponge should be employed for this purpose. When replacement cannot be effected, by reason of the struggles of the child, a little chloroform should be administered. After replacement the child should be kept at rest for some time; it should never be allowed to strain at stool, indeed, it is better that its motions should be passed while the child is lying on its side, and the skin near the anus should at the same time be drawn to one side with the hand. In mild cases these measures may suffice, though protrusion is apt to recur, and especially if the above-mentioned precautions be neglected. Both constipation and diarrhœa must of course be prevented. It is sometimes useful to apply astringents to the prolapsed part before returning it, and decoction of oak-bark, sulphate of iron lotion (gr. i to ʒ i) or alum lotion (gr. iv to ʒ i) may be employed for this purpose. When the exposed surface is ulcerated, a solution of nitrate of silver (gr. xv to ʒ i) should be applied. Every endeavour should be made to prevent a recurrence of the prolapsus, for the longer the part remains in its normal position the greater the probability of a cure. For this purpose the application of a perineal bandage and pad is useful as an auxiliary measure. When, however, the protrusion recurs in spite of the treatment above described, the best plan is to apply

strong nitric acid to the protruded mucous membrane by means of a camel-hair brush. An anæsthetic is of course required, and the acid must not be allowed to touch the skin at the verge of the orifice. The protrusion should be smeared over with vaseline and replaced, and a pad and bandage applied. The bowels should be kept confined for a few days by means of a little opium and catechu. The application of the actual cautery, as about to be described, will also effect a cure of severe prolapsus in children.

In dealing with prolapsus of the rectum in adult subjects, palliative measures may first be tried. Any possible cause should be dealt with, and any predisposing constitutional condition improved as far as possible. If hæmorrhoids co-exist, they should be treated as described in a previous chapter. When the prolapse recurs in spite of palliative treatment and the removal of any probable cause, an operation may be recommended with every prospect of success. The cure of the prolapsus involves the attainment of several objects:—(1) the production of adhesions between the coats of the bowel, so as to prevent them from separating from each other and passing through the anus; (2) the removal or destruction of redundant mucous membrane; (3) diminution of the size of the anal orifice which has become unduly relaxed and patulous. Strong nitric acid has been used for these purposes, but its application is attended by several drawbacks. It is impossible to limit its action to the degree required; large sloughs may form, with severe hæmorrhage when these separate, and with stricture of the rectum as a further consequence after the wounds have healed.

The employment of the actual cautery yields far better results in these cases, and Paquelin's instrument will be found very convenient for the purpose. The following is the method of using the cautery. The patient being fully under the influence of an anæsthetic, is placed upon his back, with the hips raised, on a table of suitable height and in a good light. The protrusion is to be replaced and a fenestrated speculum introduced into the rectum. The cautery at a dull red-heat is then to be drawn along the mucous membrane, in a line three or four inches long, parallel with the axis of the bowel, and terminating just above the junction of the mucous membrane with the integument. Three or four similar lines are to be drawn on the mucous membrane, parallel with the first and equidistant from each other. Large vessels should be avoided, and the eschars should not be made too deep above, because of the risk of injuring the peritoneum. Near the anus the cautery iron may be pressed somewhat firmly against the mucous membrane, but the skin should not be touched unless the sphincter has lost its tone; in this latter case it is desirable to apply the cautery to the muscle on each side, in such a way as to divide some of the marginal fibres. After the operation the patient must remain in the recumbent position, until the wounds have thoroughly healed, and a bed-pan must be used when the bowels are moved. All straining efforts must be avoided; a few days after the operation, castor oil or an enema may be administered if necessary.

The results of this operation, the main features of

which have been suggested by Dr. Van Buren, are very satisfactory. The cicatrices contract both longitudinally and transversely, and thus diminish the calibre of the bowel. Moreover, the inflammation set up between the muscular and mucous coats causes adhesions which aid in preventing prolapsus. There is little or no danger of subsequent stricture, provided that the cautery is not too freely applied. In very severe cases, some amount of contraction of the orifice of the anus sometimes results, but this is to be aimed at rather than otherwise, especially in those cases in which the anus has become unduly patulous.

A second application of the cautery is sometimes necessary in order to complete the cure; it should then be applied to the mucous membrane in the intervals between the cicatrices resulting from the first operation. If the Paquelin cautery be not at hand, the ordinary cautery iron may be used. For a child, its extremity should be about as large as that of a full-sized probe; for adults, a larger point is required. The cauterised lines should always be vertical and never circular in their direction.

Many other operations have been devised and performed for the cure of prolapsus, but none have proved so effectual and so safe as that just described. Removal of elliptical portions of integument and mucous membrane at the orifice of the anus; the excision of wedge-shaped masses from the same part, and the subsequent application of deep sutures, and the removal of portions of the prolapsus by scissors, after applying ligatures, are the principal plans that have been adopted. The clamp has also been

applied to successive portions of the prolapsed part, the tissue beyond the clamp being cut off as in dealing with hæmorrhoids. Lastly, it has been proposed that, after failure of palliative treatment, the protruded mass should be removed. Such a recommendation, however, is based upon the idea that the prolapsed portion always consists of mucous membrane alone; but it is now well known that all the coats of the bowel are implicated in all but the mildest cases for the cure of which excision is altogether unnecessary.

Replacement of a large protrusion is sometimes difficult. The patient should be placed on his back with the buttocks well raised, or else on his chest with a large pillow under the pelvis. Gentle pressure should then be used. The application of ice, with the view to reduce the size of the protrusion, is dangerous, for it is liable to cause sloughing of the part.

CHAPTER XIII.

Pruritus Ani.

Pruritus, meaning of—Causes of Pruritus Ani—Symptoms—Treatment, Local and Constitutional.

The term "pruritus" is still used in a somewhat general manner to designate several cutaneous affections associated with itching, with or without visible pathological changes. It is, however, better to restrict the use of the term to a cutaneous affection which consists solely in the abnormal sensation of itching, without any constant pathological appearances, such as pustules, papules, etc.

Pruritus sometimes affects the skin all over the body, but it more often attacks isolated portions, and the neighbourhood of the anus is one of its most common seats. It also affects the adjacent mucous membrane of the rectum, and may spread to the scrotum in the male and the vulva in the female. The itching is very troublesome and is often the source of the greatest distress to the patient, who generally endeavours to obtain temporary relief by rubbing and scratching the part. These manipulations, however, only aggravate the condition. Pruritus ani is generally aggravated by heat, and is therefore worse when the patient is in bed; it sometimes comes on in paroxysms before and after defæcation.

Causes.—These are those of pruritus in general, besides certain local conditions or peculiarities. Anal pruritus is most common in middle-aged and elderly patients of the male sex. It is sometimes associated with oxyurides in the rectum, but it more frequently depends upon a varicose condition of the veins of this part, just as occurs in a similar condition of the veins of the leg. It is much aggravated by excesses in eating and drinking, probably because any existing hæmorrhoidal congestion is thereby increased. It is not uncommon in gouty subjects, and sometimes alternates with acute attacks of gout in the toe-joint. The complaint is, however, sometimes seen in persons of abstemious habits, and in such cases is probably of neurotic origin. Not unfrequently it is found associated with more or less severe eczema of the skin of the perinæum. In other cases there is constipation, uterine disorder, or some form of obstinate and severe dyspepsia to which the itching is attributable. Certain articles of food, such as shell-fish of various kinds, sometimes provoke attacks in those who are predisposed to pruritus; while champagne, beer, and excessive smoking produce similar effects in other cases. The affection thus resembles in many respects the cutaneous symptoms of the uric acid diathesis. In another class of cases the patients are of the nervous, irritable type, and the pruritic attack is induced by any special strain upon the nervous system.

Symptoms.—As stated above, the prominent and indeed the only essential symptom is the severe itching, but signs of cutaneous inflammation are often

present. In some cases there is chronic eczema, with moist exudation, and excoriations due to scratching. Sometimes the anal folds are raw and cracked, and sometimes there are signs of eczema marginatum, which is due to the presence of a parasite. In the majority of cases there is no abnormal appearance, but when the condition has become chronic, the part is apt to look peculiarly white owing to disappearance of pigment. A catarrhal condition of the rectum and internal hæmorrhoids are sometimes found co-existing with pruritus ani.

Treatment.—To be successful this must be both local and general in character. If thread-worms be present they must be dealt with in the usual way, *viz.*, by injections of lime-water, or salt and water, and by santonin and other anthelmintics internally. Hæmorrhoids must likewise be attended to. Eczema marginatum is best dealt with by applying sulphurous acid diluted with an equal part of water; and a solution of perchloride of mercury (gr. iv to ʒ j) applied after well washing the part with soap and water, will not fail to destroy the parasite.

The itching is often so severe in cases unattended by local changes that palliative remedies are urgently demanded. One of the best of these is chloroform ointment, made by rubbing lard with as much chloroform as it will take up. Tincture of iodine, either of full strength or diluted in various degrees, is also serviceable for a like purpose, and for many cases nothing acts better than a strong solution of nitrate of silver in spirit of nitrous ether (gr. xx to ʒ j) painted over the part with a camel-hair brush. The

ointments of boric acid, carbolic acid, salicylic acid, and white precipitate are sometimes efficacious, and a saturated solution of bicarbonate of sodium will sometimes relieve the itching in a very satisfactory manner. Liquor Carbonis Detergens, either as an ointment (1 to 7), or as a lotion (℥ j to ℥ j), is also recommended. As a matter of course the patient should be advised to refrain from scratching the part.

Constitutional remedies are generally required. If the patient be of full habit, and given to excess in eating and drinking, or smoking, moderation must be enjoined. Alcohol must be forbidden, and animal food allowed only once a day. The bowels should be kept open by means of such purgatives as reduce congestion of the liver. The various purgative mineral waters are useful for this purpose; Carlsbad salts form a good combination, being alkaline as well as purgative, and if they prove insufficient, a little colocynth and blue pill should be taken occasionally at bed-time. The patient should take enough exercise to keep the skin in action, should use daily a tepid bath made alkaline with a little potash, and should wash the perinæum every night with soap and warm water. When the prurigo occurs in thin delicate persons, lowering measures are inadmissible; on the other hand, tonics are indicated, and quinine and arsenic form a good combination. If there be a gouty history, colchicum and alkalies, with attention to the state of the liver and bowels, and suitable regimen, will relieve or cure the pruritus. The bromides are sometimes useful when the patients

are of the nervous irritable habit and the itching prevents sleep. In the same class of cases, suppositories containing Opii (gr. $\frac{1}{4}$ to $\frac{1}{2}$), Extract. Belladonnæ (gr. $\frac{1}{2}$), Olei Theobrom. (gr. xv), will often afford great relief. In women any co-existing uterine derangement will require careful attention.

CHAPTER XIV.

Wounds and Injuries of the Rectum—Foreign Bodies in the Rectum—Impaction of Fæces.

Comparative rarity of wounds and injuries of the Rectum—Causes of incised and lacerated wounds—Gunshot wounds—Symptoms and consequences—Treatment—Foreign bodies in the Rectum—Intestinal concretions—Symptoms and Diagnosis—Treatment in cases of impacted fæces and of foreign bodies in the Rectum.

Owing to its sheltered position, the rectum is rarely the seat of accidental injury, though its lower part is not unfrequently involved in surgical operations, *e.g.*, those performed for the cure of fistula, fissure, hæmorrhoids, and polypus, and likewise for the removal of malignant disease. This portion of the bowel was incised in the recto-vesical operation for calculus, now no longer practised. It has been sometimes accidentally cut into in the ordinary lateral operation. The rectum is occasionally injured from the introduction of the pipe of an enema-apparatus, the point of the instrument being thrust for a greater or less distance through the coats of the bowel. Inflammation and diffuse purulent infiltration are the probable results of such an accident. A similar kind of injury may be inflicted by the careless and forcible introduction of a bougie.

Lacerated wounds of the rectum are wont to occur

from falls upon sharp and hard objects, *e.g.*, a wooden stake, leg of a chair, or portion of iron palisade. In children, injury to the rectum sometimes occurs through the breaking of a chamber-pot, and in these cases considerable laceration of the perinæum is generally associated with the injury to the bowel. When a hard pointed object, *e.g.*, a stake, is driven into the rectum, the bladder and other adjacent organs seldom escape injury.

Gunshot wounds of the rectum sometimes occur without injury of any other pelvic organ. A rifle-ball has been known to strike the lower part of one side of the sacrum, to pass through the rectum, and to make its exit on the opposite side of the bone. In other cases the ball has lodged in the rectum. When the bullet strikes in the opposite direction, the bladder and peritoneum are almost certain to be involved.

Other forms of injury to the rectum require only a brief notice. As a result of difficult labour, laceration of the perinæum sometimes extends into the adjoining portion of the bowel. A rare cause of laceration, which may be transverse as well as longitudinal, is the passage of a hard mass of fæces. The rectum has sometimes been perforated in attempts to pass a catheter. Injuries due to the voluntary introduction of foreign bodies will be described at the end of this chapter.

The *symptoms* of injuries to the rectum vary according to the position, extent, and cause. Hæmorrhage is almost always present, owing to the vascularity of the injured part. The blood, however, may not escape externally, but may accumulate within the

bowel, giving rise, of course, to all the general symptoms connected with loss of blood. As further results of injury to the veins of the rectum, inflammation and thrombosis are liable to occur, with pyæmia as a further consequence. Fæcal infiltration of the cellular tissue almost invariably follows wounds of the rectum, especially when they are deep and situated above the internal sphincter. The local and general effects of the infiltration are very serious. Fæcal matter acting as a powerful irritant, soon sets up cellulitis, which speedily becomes diffuse and extends in various directions among the organs of the pelvis, the patient dying with symptoms of septicæmia. Injury of the anterior wall of the rectum is apt to cause peritonitis; and emphysema of the cellular tissue is another, though an uncommon result of injury of this division of the bowel.

Injuries and especially lacerated wounds of the rectum, even when not dangerous to life, are sometimes followed by very troublesome consequences. When both sphincters are torn through, or when a similar condition is produced by sloughing, incontinence of fæces is very apt to be produced, especially as regards liquid and gaseous matters.

Treatment.—Inasmuch as the majority of wounds of the rectum are of the lacerated and contused varieties, healing by first intention is seldom possible. In one class of cases, however, *viz.*, that which includes laceration produced during labour, every attempt should be made to procure as rapid union as possible, and to ensure this end, the parts should be carefully cleansed and brought into close

apposition by means of a sufficient number of sutures. Treatment of a like kind is also indicated whenever the nature of the wound will admit of it, but in the majority of cases the parts cannot be completely brought together, and healing takes place by granulation.

Hæmorrhage will require prompt attention. If the bleeding be arterial and profuse, the vessels must be sought for and ligatures applied. If the source of the hæmorrhage cannot be discovered, after all clots have been carefully syringed away with cold water, a piece of ice should be passed into the bowel and a T-bandage and pad applied. The patient should be placed on his side, with the pelvis slightly raised. If these measures fail, styptics may be had recourse to, and the sub-sulphate of iron is one of the best. A piece of sponge, to which a string is attached, is passed up the rectum and above the wounded portion; below it, cotton-wool sprinkled over with the sub-sulphate reduced to fine powder is then introduced. Another means of restraining hæmorrhage from the rectum is the use of a caoutchouc bag, which, introduced empty into the bowel, is then filled with iced water, thus obtaining the combined effects of cold and pressure.

Another point to attend to in treating wounds of the rectum is to keep the parts as clean as possible and to prevent fæcal infiltration. When there is no hæmorrhage to forbid such a procedure, the rectum should be well washed out with warm water, to which Condy's fluid or carbolic acid may be added, and this should be repeated from time to time during

the healing of the wound. Small doses of opium with catechu may be given for a few days, in order to keep the bowels confined. Afterwards, when owing to inflammatory exudation, the risk of fæcal infiltration is removed, castor oil or other mild purgative may be given to open the bowels. When the wound is deep, a drainage-tube should be introduced, and the part should be frequently syringed with Condy's fluid well diluted.

While healing is going on, the patient must be kept in the recumbent position, with the pelvis somewhat raised, and when hæmorrhage threatens, the prone position may be adopted with advantage, a pillow being placed under the pelvis. In this position, a bladder of iced water can be conveniently applied to the perinæum. The diet must be adapted to the circumstances of the case, and constipation should be prevented by castor oil or the careful administration of enemata.

Foreign Bodies in the Rectum—Impaction of Fæces.

A large number of foreign bodies, of various kinds, have been met with impacted in the rectum, either having found their way into this portion of the bowel after traversing the intestinal canal or having been introduced through the anus. In a third category must be placed intestinal concretions which are apt to become lodged in the rectum.

The substances which, either accidentally or intentionally swallowed, have passed along the bowels and lodged in the rectum, would require pages for

their enumeration. It will suffice to mention a few which have been most frequently met with, and these are as follows: fragments of bone swallowed when eating, the stones of fruits, coins, fragments of glass, rings, pebbles, artificial teeth, nails and other pieces of metal, knives, etc. In many instances, these and similar substances pass through the bowels and are voided after a greater or less interval, and sometimes without causing any very decided symptoms. On the other hand, and especially if sharp and angular, they frequently remain fixed in the rectum. The irritation caused by impacted fish-bones is a not uncommon cause of fistula.

In a second class of cases, the foreign substances are introduced through the anus either accidentally or intentionally, and the number and variety of such objects are likewise very great. The foreign bodies which may pass into the rectum as the result of accidents have been already described, and portions of these bodies becoming detached, may remain in the bowel. Thus pieces of wood, glass, stone, or metal, forced into the bowel, may become broken off and impacted. Again, substances may be introduced intentionally, *e.g.*, to relieve constipation or some imaginary ailment, and may slip from the grasp of the patient. Bougies, portions of enema-apparatus, pieces of metal, and even glass bottles, have been known to become impacted. The rectum has also been used as a hiding place for stolen goods, such as coins, precious stones, etc. Finally, objects of various kinds have been forced into the rectum by persons to gratify vicious propensities, etc., and they

have likewise been forcibly introduced into the rectum of another person out of spite, or for purposes of revenge.

Intestinal concretions form a third category of substances which are apt to become lodged in the rectum. These most often consist of hardened masses of fæces, which accumulate in and distend the colon, and are gradually forced into the rectum. Such a condition is liable to occur in old people and in women after confinements. It is also not uncommon in the subjects of cerebral and spinal paralysis, and in cases of hysteria.

The impacted masses sometimes consist of fæces alone, hardened and dried in consequence of the length of time they have remained in the bowel. Various substances, *e.g.*, plum-stones, coins, and pebbles, which have been swallowed, sometimes form the nuclei of these concretions. In other cases, they are largely composed of masses of magnesia, taken by the patient to relieve constipation. Insane persons have been known to swallow masses of hair which have formed the basis of enormous concretions. Gall-stones, again, are sometimes found in these masses. These concretions may attain a very large size, especially in women. It often happens that several are present, being closely packed together.

The *symptoms* caused by the presence of foreign bodies in the rectum, vary according to the nature, shape, and size, of the substances. The symptoms of concretions are the most uniform, and will be the first described.

There is always more or less constipation in cases

of impaction, though the considerable fluid discharge which not unfrequently takes place, sometimes leads to an erroneous diagnosis of diarrhœa. There is often tenesmus, colicky pain, flatulence, and distension. Severe hypochondriacal symptoms, and in some cases, symptoms resembling those of phthisis, are sometimes present. On examination, there is dulness and prominence over some part of the colon, and sometimes a large tumour over the cæcum. On passing the finger into the rectum, a solid mass is felt, sometimes fixed, and sometimes movable, with fluid, matters, the product of the catarrh which has been set up, passing between it and the bowel. There is often spasmodic contraction of the sphincters, and sometimes vomiting and other signs of derangement of the stomach; and retention of urine, either partial or complete, is a very common symptom in these cases.

When foreign bodies of a different nature are contained within the rectum, other symptoms are liable to be present, especially if the objects are hard and angular. Pain of a stabbing, pricking character, is generally present, and there is tenesmus and sometimes hæmorrhage from the bowel. In some cases, if the foreign body be allowed to remain, ulceration and abscesses are set up, or there may be perforation of the walls of the bowel, and of neighbouring organs. Retention of urine is a common symptom whenever the foreign body is otherwise than small.

Cases of foreign bodies in the rectum are often difficult of diagnosis; the patients themselves, from various motives, often give no assistance to the sur-

geon, but try to lead his judgment astray by false statements. Whenever there are any symptoms referable to the presence of a foreign body in the rectum, a careful examination with the finger is always necessary. The presence of the object and some at least of its characters can be thus discovered. The sphincters should be well dilated, chloroform being administered to facilitate this procedure, and if necessary, a speculum may be introduced.

Palpation of the lower part of the abdomen will sometimes assist the rectal examination, as foreign bodies of an elongated form may extend into the lower portion of the colon. Large hard fæcal accumulations are usually felt on one or other side of the abdomen as irregular movable masses.

Treatment.—Having ascertained that a foreign body is situated in the rectum, the steps to be taken for its removal have next to be considered. It will be convenient to describe first the various methods of dealing with impacted fæces. After dilating the sphincters, the fingers should be employed to break up and remove as much as possible of the impacted mass, and the handle of a spoon or a scoop may be used to assist the manipulations. Afterwards warm water injections with a little soap are advisable, and these should be persevered with until the rectum and colon are emptied. Kneading the abdomen will aid the action of the injections. A purgative, such as castor oil or decoction of aloes may then be given by the mouth and the patient should be warned to prevent the bowels from becoming constipated. Faradisation is often useful in these cases, and the diet

requires careful attention. Without care the condition is very apt to recur.

For the removal of a foreign body, the bladder should first be emptied, the sphincters should be thoroughly dilated, and an attempt made to remove the object with the fingers or with a pair of suitable forceps. The fingers should first be tried; in dealing with an elongated object, it is often necessary to change its direction as it is apt to get fixed transversely across the rectum. If the lower extremity of the object be found to have passed through the coats of the bowel, it must be carefully dislodged and then drawn downwards by the aid of a pair of forceps. When it is found to lie transversely across the bowel, as sometimes occurs when a bone has been swallowed, it is well to divide it with a bone-forceps and to remove each fragment separately. In dealing with bodies of large size, which have been pushed through the anus and have become firmly impacted, it is well to inject some oil and warm water in order to lubricate the surface. After the injection has been retained for as long as possible, a pair of suitable forceps should be introduced and an endeavour made to seize the object and draw it down, without injuring the mucous membrane.

Much difficulty is likely to be experienced in removing fragile substances, such as glass bottles, especially when broken by previous attempts at withdrawal. Prompt removal is, however, necessary, as serious mischief is certain to ensue if the fragments are allowed to remain. Pieces of broken glass are especially dangerous, as being likely to cause lacera-

tion and severe hæmorrhage. Chloroform is of course indispensable in these cases, and the sphincters should be thoroughly dilated. If necessary, these muscles may be divided posteriorly so as to give more space. When the foreign body is composed of earthenware, extraction will probably be facilitated by crushing it with suitable forceps and then removing the fragments with the thumb and fingers. After extraction, the case must be treated according to the state of the bowel. Rest is necessary, and opium is generally required to relieve pain and prevent the bowels from acting.

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