

Classic Articles in Colonic and Rectal Surgery

MARVIN L. CORMAN, M.D., *Editor*

Edmond Delorme

1847-1929

Edmond Delorme was born in Lunéville, France, August 2, 1847, the son of a cabinetmaker. Early on, he demonstrated an interest in military science and enrolled in the medical military school at Strasbourg in 1866. He followed the army in its battles throughout Europe and in North Africa. In 1877, he was named professor of operative medicine at Val-de-Grâce and, ten years later, professor of clinical surgery. He was the director of a number of hospitals and introduced the concept of antisepsis in French military medicine. In 1903, he became head of all the health services of the French Army. A highly influential surgeon, he was elected successively president of the French Academy of Medicine, of the Society of Surgery, and of the Society of Military Medicine. He was also a grand officer of the Legion of Honor.

His contributions to surgery were manifested in many specialized areas—the treatment of war injuries, of fractures, lung decortication, and rectal surgery. He is eponymously associated with the operation for rectal prolapse that is reproduced in translation here. Three cases are reported with one death. While the operation has virtually been abandoned for full-thickness prolapse, it still may be usefully employed in patients with primarily mucosal involvement.

Delorme died in Paris, January 25, 1929, at the age of 81.

Delorme E. On the treatment of total prolapse of the rectum by excision of the rectal mucous membranes or recto-colic. *Dis Colon Rectum* 1985;28:544-553.

BULLETIN ET MÉMOIRES DE LA SOCIÉTÉ DE CHIRURGIE DE PARIS

Séance du 9 Mai, 1900. Vol. 26, P. 499-518

Communication sur le traitement des prolapsus du rectum totaux, par
l'excision de la muqueuse rectale ou recto-colique,

par

M. Delorme

Translated by N. McGill

Communication

*On the treatment of total prolapse of the rectum by
excision of the rectal mucous membranes or recto-colic,
by Monsieur Delorme*

Since on February 14, 1899, I presented to you a patient cured for nearly four months of a prolapse of the rectum with invagination, after having undergone the removal of a mucosal sheath 30 cm long; and so that I can tell you of a second patient on whom, for an enlarged invaginated prolapse I carried the excision of the mucous membrane to 80 cm, I put myself to the task of going over my notes on these two patients and describing the operation that I performed on them.



Edmond Delorme

[Photograph courtesy of Blanchard, Paris]

It seems to me that the time has come for this for two reasons: first, because your attention has been drawn to the question of rectal prolapse by the very interesting communication of our colleague, Dr. Gerard Marchant, and also because I have a new patient to show you, who six and one-half months ago underwent the same operation and shows definitely satisfactory results.

The operation to which I had recourse consists of the careful separation of the mucosa from the ano-rectal mass and above in the case of *total* prolapse with *one wall*; in

the *double wall* prolapse it consists of the separation of the mucosa of the invaginating cylinder, the external wall of the invaginated cylinder, and the canal of the invaginated cylinder for a certain length; finally, in the suture of the mucosa to the anal orifice.

This excision of the mucosal sheath, reserved up until now for the treatment of strictly mucosal prolapse, has not, as you know, found a place as a treatment for total prolapse, with or without invagination.

It is understood that it will be from now on.

Because, in effect, who would have dreamt of a pure and simple removal of the mucosa when all of the layers of the rectum make an integral part of the total prolapse? This practice would have seemed insufficient, and today, when the most accepted pathology no longer gives a role to the mucosa, or has reduced this role considerably, there would be even less reason than before to dream of it.

Well, Gentlemen, the patient that I showed you in 1899, and this one here, demonstrate that this operation, paradoxical in appearance, is good and sufficient, even for the large prolapse. In neither of them is there any trace of recurrence, even during sustained effort.

I will gladly explain similar cures in the following manner:

In the prolapse with invagination, the *muscularis* roughened by the removal of the mucosa, *adheres to the inside cylinder*, which is likewise roughened.

All slippage against each other, so easy when a mucous membrane coats the lining, has now become *impossible*.

On the other hand, by the fact of joining the sheathing and sheathed surfaces of the prolapse, one has accumulated, at the level of the anus, a regular, carefully conserved layer of smooth muscles which continue the internal sphincter, which is most often very hypertrophied, and the thickness and continuity of which astonish the surgeon.

These fibers, which remain in contact with their vessels and nerves, come to reinforce the action of the natural sphincters.

Then, in the case of a patient who has reached a prolapse with invagination, one uses the rectal touch, the index finger penetrates the space of the first phalanx, and two thirds of the second phalanx, into a thick, distensible and contractable canal. This canal actively encloses the whole length of the finger when the patient closes his anal orifice.

That is not all. After the sacrifice of the large mucosal sheath the one which is left is more or less tight, and forms a sort of elastic band, capable of resisting abdominal pressures which affect the anus, whether these pressures come from the prolapse or transmit directly to the intestine.

So, *suppression of slippage, thickening of the contractile tissues* in the region of the sphincter, *tension of the*

mucous membrane, these are the advantages realized by the paradoxical excision of the large mucosal sheath, in the case of the prolapse *with invagination*.

In the case of prolapse *without invagination*, the *compression* of tissues at the level of the anal orifice and the *tension* of the mucous membrane seem to explain the cure.

Here is the account. It appears to me to be rigorously dedicated to the study of the facts. If it is defective, it matters as little to the surgeon as to his patient. The operation cures. That is the essential.

This operation includes three stages, but, before submitting to it the patient is the object of special preliminary preparation which is used in the case of patients to be operated on in the ano-rectal area: his intestine has been carefully emptied of all constricting or infecting contents. He has been purged one or two days before: series of enemas of boiled water, boric acid and glycerine were given to him two days before the operation, the day before, and the morning of the day of the operation. For several days before he submitted to a milk diet and the use of an intestinal antiseptic, salol for example.

The region has undergone the usual antiseptic, which will be insufficient because of bowel movements if not done at the moment of operation.

The chloroform is entrusted to a very capable assistant.

The rectal cavity is obstructed by antiseptic tampons.

OPERATING TECHNIQUE.—The operation includes: 1st, *dilation of the anus*; 2nd, *the separation of the sphincters and the mucosa*; 3rd, *the division of the mucosa and its suture*.

1st. *Dilation of the sphincter*.—This is done progressively with the fingers until the ischium is contacted. It is a good idea to have an aide do this. I prefer dilation by hand rather than by machine, which is more harsh.

2nd. *The separation of the sphincter and the mucosa*.—In the anal region, securely held by several forceps, one makes a semicircular lower posterior incision from the union of the mucosa to the skin, followed by a semicircular incision above or in front.

The section of mucosa having been carefully marked with forceps, one *detaches* it circularly for a short space with a scalpel, or rather with a blunt instrument, the end of a grooved director, the point of a blunt scissors, a thumb or index finger nail; then, higher up, where the surgeon is less hampered by blood, one exposes the exterior surface and anterior edge of the external sphincter, the integral conservation of which is indispensable.

It is well to know that this free edge can be pushed back some distance behind the incision, towards the anal orifice.

By the separation of the mucosa which covers it, the border of the external sphincter is successively disengaged in the whole area of the wound.

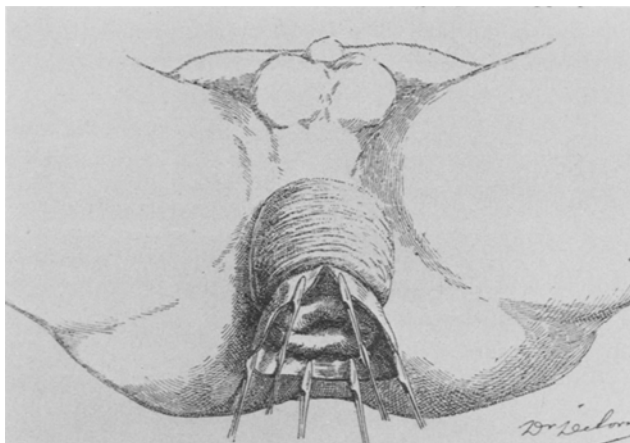


FIG. 1. (2nd stage). Dissection of the mucosa from the protrusion of a prolapse with invagination. (obs. 1)

The mucosa has already been cut along part of its length, then marked with forceps.

Below that, one can see a part of the protrusion, already roughened, the surface of which is covered with annular muscular fibers forming a continuous layer.

In the middle of the head of the mucosa the orifice of the invaginated canal appears.

Following exactly the exterior face of the mucosa, one frees with the same blunt instruments all of the red fibers from the external sphincter, the almost white fibers of the internal sphincter, the annular white fibers of the musculature which follow and which, very hypertrophied, form a continuous thick layer which resembles fish flesh. This separation is first effected on the top where blood will interfere less with the surgeon.

Not until the path of cleavage has been found can the removal of the mucosa, held by the traction of forceps on it or placed on the prolapse, be continued on the sides and bottom.

As the separation of the mucosa continues, in the case of a prolapse with invagination, a large *globe* on which the circular fibers of the intestine are displayed appears and develops. (See figure 1*)

It is this globe from which the mucosal sheath is separated.

When one has passed the end of the groove which separates the invaginating cylinder from the invaginated cylinder, and has arrived at the dissection of the mucous membrane from the canal of the latter, this globe is 12 cm long by 10 cm wide. (See fig. 2)

The separation of the mucosa can be continued, circularly, to the excision, or, in order to get some light, one can cut circularly after having dissected it for some distance, then secured it by a series of forceps. (Fig. 1)

It seems preferable to me to proceed in the following manner:

After having disengaged it for a length of 8 to 10 cm, especially in front and along the sides where it is the most

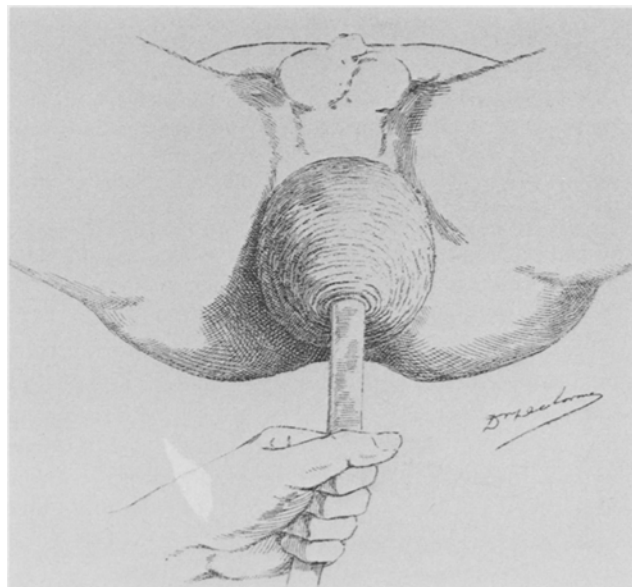


FIG. 2. (End of 2nd stage). The dissection of the mucosa has been advanced in the canal of the invaginated cylinder.

The prolapse, the surface of which is covered with a continuous layer of round, very fine muscular fibers, is at its maximum development. (12 cm $\times$ 100)

The hand of the surgeon pulls on the mucosal sheath which forms, as it comes out of the opening of the invaginated cylinder, a flat and regular cylinder.

The detached mucosa shown here is exceptionally long. (obs. 2)

accessible and less adherent than in back, complete the separation in back and above for several centimeters; place across it one or two forceps to seal the cavity; below them other crosswise forceps mark their position, then cut the mucosal sheath between the two series of forceps. One works from above to below, not from below to above, which is more difficult, to achieve the separation of the lower posterior mucous portion represented by a square flap adhering to the sacrum.

The field of operation is, due to this excision, well open.

Returning to the marked mucous sheath, continue with a nail, the blunt end of a scissors, or a grooved director, the very methodical separation with the smooth muscular fibers of the prolapsed globe.

At the level of the folds of the invagination, where the muco-muscular adherence is closest, and the dissection is most delicate, the surgeon redoubles his attention and slows down his work.

One arrives, freeing a little at a time, at the level of the invaginated cylinder's cavity. Soon the mucosa changes character. Up until this point it has been large, red, thick, brittle and bleeding; now it has normal dimensions, is more solid and thinner, the exterior surface is almost white, bloodless and is as wide as a thumb.

When one ascertains that after a moderate pull the

mucous sheath springs back when released, and perceives that it cannot be pulled any further without effort, it is time to stop the stripping and proceed with the excision and suture.

3rd. *Suture of the mucosa*.—Through a slit 4 or 5 cm long made in the anterior wall of the mucosa (see figure 3), a little above the point that the circular excision passes, one puts through from outside to inside, then inside to outside, four threads of silk (no. 4) in a U, which, at the top, bottom, right and left ties the mucous membrane to the anal skin (a little way from its division.)

The knots of the four cardinal sutures should be placed outside to facilitate the removal. (see fig. 4)

These supporting threads taken care of, each quarter of the mucous membrane, between the threads in a U, receives smaller sutures to fit the sections.

Four threads, more if necessary, are placed between each U shaped thread.

Because the field of operation, especially during the removal of the first 8 cm of mucosal sheath, is constantly soiled by blood, it is rare that one is able to proceed to a ligature. The blood is filled throughout with veins or little arterial vessels.

Clamping assures hemostasis.

The operation is finished. It lasts about one hour.

Dressings.—The dressings that I used consisted of several layers of gauze soaked in iodoform or salol at the level of the anus, and restraining cotton-wool wrapped around the perineum, the buttocks and the tops of the thighs.

To avoid all tension on the anal region during abduction movements of the lower limbs, the knees are wrapped in cotton wool and tied together with bands.

POST-OPERATIVE CARE. All care is directed towards the aim of assuring absolute repose for the intestine until the wound has solidly healed.

The persistent *immobilization* of the area operated on by the use of extensive and constrictive dressings and the tying together of the knees is absolutely necessary.

Constipation.—The patient is constipated by opium until the first dressing is removed on the tenth or twelfth day, (8 pills of opium, each 1 cg, or 30 drops of laudanum for the first three or four days; 6 pills or 25 drops of laudanum the following days.)

The administration of opium constitutes, for me, an indispensable precaution. It is impossible to obtain the intestinal rest without it.

Diet.—The patient is subjected to a strict *diet* during the first two days to avoid provoking the vomiting of chloroform which might be left in the intestine, thereby displacing the joined surfaces and pulling out the sutures. If this vomiting should occur, it is immediately treated with ice or seltzer water taken in small quantities.

After the period of reaction to chloroform has passed, the diet, which it is so essential to regulate in detail in

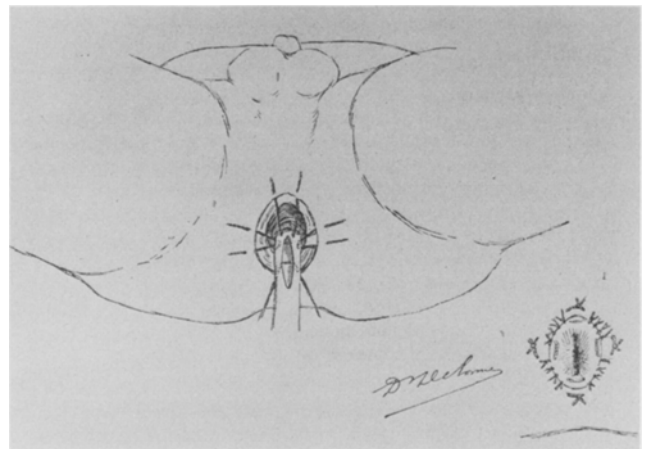


FIG. 3. (Suture of the mucosa). This figure shows the incision of the anterior wall of the mucosal cylinder made to allow the passage of four U shaped supporting sutures.

One can make out the loops of the upper and lower sutures in the intestinal cavity; those of the lateral sutures are represented by a dotted line.

FIG. 4. (Immediate results of the operation). Cardinal supporting sutures. V-shaped sutures in between.

order to avoid premature or too abundant bowel movements, still has the surgeon's complete attention.

From the second to eighth day the patient takes at intervals only a small quantity of plain bouillon, or bouillon made more nourishing by adding tapioca, noodles or one or two egg yolks each day. The bouillon can be alternated with several spoonfuls of milk.

Starting on the eighth day the patient can be allowed one additional egg, or a diet of meat which leaves little waste. Bread and vegetables are allowed only in very small quantities.

After the dressings and stitches are removed, the diet is restrained until the 15th or 20th day, that is to say until the scar is very solid and will withstand the consequences of the distension forced by large feces.

The urination, slowed down the first few days, starts up again spontaneously. Certain patients require catheterization.

Removal of the dressings and stitches.—The dressings are removed on the tenth day; most of the smaller sutures have fallen out, the U shaped ones have separated.

The removal of the dressing and stitches takes place with the two lower limbs remaining united by the dressing on the knees, all abduction movement of the lower limbs, as any slightly exaggerated pressure exerted on the buttocks to separate them, can distend or rupture the scar in certain places.

After the stitches are removed, the dressing is replaced in the deeper parts and maintained for two more days in order to allow the traces left by the threads to heal.

Deconstipation.—The first bowel movement, very

abundant, is facilitated on the twelfth day by a series of enemas given by an experienced person careful to shelter the scar from all untimely pressure.

Enemas of glycerin (80 gm), vaseline (80 gm) tepid boric acid or boiled water (500 gm) are given after having taken care to raise the patient's pelvis so that he can retain them longer.

These are followed by washing the wound with boric acid.

For the first bowel movement the dressing is kept on the knees.

The patient is allowed to get up the 20th to 25th day.

Certain of these precautions might appear exaggerated. They are not at all excessive; to forget them might completely compromise the result of the best conducted operation in allowing distension or raising of a scar that ought to remain linear and anal.

OBSERVATIONS OF CASES.—All three of these were furnished by adults.

OBSERVATION 1.—*Voluminous rectal prolapse, dating from the age of three years, separation of a mucosal sheath thirty cm long; transverse section, suture; cure by first intention.*

Patient named Brag... (Alexandre) from Chenières (Meurthe-et-Moselle), twenty-two years old, tailor by profession, soldier in the 37th infantry regiment, entered my practice at the hospital of Châlons camp, on October 3, 1898, to be treated for a rectal prolapse.

This had started, he told me, at the age of three, but up until age nine it had only appeared at long intervals, and the patient felt pain once in a while during bowel movements.

At the age of nine he received a violent kick in the anal region from his stepfather. He felt vivid pain and was obliged to go to bed for several days, at the end of which he fell into a faint while passing stools. While reviving him his mother noticed the reappearance of his prolapse.

This persisted for several months, then until the age of twenty-one and a half the rectal prolapse reappeared at the least intestinal upset every 8, 10, 15 days or more.

At his induction visit to the Army Medical Board Brag... carefully hid his infirmity; but in October, 1898, the pain that he felt during exercises and after bowel movements, the persistence of the rectal tumor and the difficulties that he met in treating it, forced him to enter the hospital.

At the time when he entered the hospital a mass more globular than cylindrical, 8 to 10 cm long by 6 cm in diameter, more prominent in front, was coming out of his anus. The mucosa of this prolapse was bluish purple, a little bloated, secreting, not ulcerated.

Several days after the reduction of prolapse, the mucosa resumed a more normal appearance.

The complete invaginated prolapse would come out at

the least effort, and return easily with either direct pressure or a flexing movement of the trunk behind. Anterior perianal groove, several centimeters deep; posterior groove 8 cm deep. Behind, the finger could feel the smooth rectum, adhering to the sacrum; orifice facing the rear.

Pain during marches in the kidneys, the insides of the thighs, and in the bladder; intermittent incontinence of urine.

This man, generally in good health, fairly vigorous, presented a solid perineum and a sufficiently resistant sphincter.

Operation.—On October 19, in the presence of my colleagues Drs. Comte, Lenoir, Lanel, Talayrach, Fargin, Imbert and Vincent, I performed, under a regular chloroform anesthetic, the operation which I have just described to you; so I will report here only certain details particular to this patient.

1st. *Dilation of the Sphincter* by the fingers until they contact the ischium. The sphincter resisted well enough. I, as well as my assistants was struck by the size of the rectal ampulla.

The invaginated part which struck the eye was, during the chloroformed rest, the length of an index finger from the anal orifice. I pulled on it with hemostatic forceps and reproduced the pattern already indicated; shallow cul de sac in the anterior half-circle, cul de sac of 8 cm in the posterior half-circled invaginated cylinder.

Ceasing to pull with the forceps, I could see the rectal posterior face well spread out and firm. After establishing this, I couldn't help but think of the idea of holding the rectal amplitude in back, because the natural holding ties on this side were as firm as the artificial ones that I could use, and it was clear that in acting thus I would not act on the prolapsed intestinal portion.

I, therefore, persisted in my first idea of removing the subperitoneum, or rather mucosa of the prolapse. I will follow this latter part.

2nd. *Disengagement of the external sphincter.*—In the anal region, firmly held, I cut a little behind the intersection of skin and mucosa, as for an excision of hemorrhoids by Whitehead's operation, a semi-circular posterior incision, completed by a semi-circular anterior incision; and I denuded the top of the external sphincter first, in order not to have blood interfere.

I had to search by dissecting the mucosa for the free edge of the sphincter, well behind the limits of the line of the cutaneo-mucous incision. I separated it first into the high or anterior semi-circle where the blood loss was limited and ended with the disengagement of the posterior semi-circle.

3rd. *Disengagement of the mucosa.* I next detached the intestinal mucosa from front to back, using the scalpel a little, but mostly my finger, a grooved director and the point of a blunt scissors, carefully preserving the red fibers

of the internal sphincter, and the round muscular fibers which followed it and which, being hypertrophied, formed a thick, continuous layer.

The separation of the mucosa being somewhat irksome due to its adhesions, was prolonged first along the length of 8 to 10 cm on the front and sides, and the least in back and below, the postero-lateral parts of the prolapse being the least accessible, and the muscular wall there being the least pliable.

At a distance of 10 cm I completed circularly the separation of the mucosa in the back for a short space and, placing the hemostatic forceps across the mucosal sheath I sectioned it crosswise below them. I disengaged from top to bottom by a dissection aided with traction, the posterior mucosal portion still adhering. The field of operation was made very clear by this removal.

Again, taking hold of the mucosa with the forceps (see fig. 1) I continued with my nail and the blunt end of a pair of scissors to separate very methodically the large annular rings of muscular fibers. Joined directly to the mucosa, without the interposition of tissue, they formed a continuous cover on the globular and smooth tumor, the progressive growth of which surprised me.

After having freed the invaginated fold, where the muco-muscular adhesions were closest, and the dissection the most delicate, this tumor grew to dimensions larger than the head of a fetus. It was 10 cm across by 12 cm vertically. (see Fig. 2)

Passing the edges of the opening of the internal invaginated cylinder, I stopped laying bare the mucosa when I was sure, from a sufficient but not excessive applying of tension, that *the mucosal sheath could not be pulled without some effort*.

It was likely that it was then safe from all future slippage.

The exact length of the mucosal sheath, measured at the time of the operation and reconfirmed afterwards was 30 cm.

Suture of the mucous membrane.—Through a slit 5 cm long cut in the anterior wall of the mucosal sheath a little above the point of the definite circular excision, I passed 4 threads of silk (no. 4) shaped in a U, which, above, below, to the right and left connected the anal skin, (a little way from its incision) to the mucous membrane.

Knots on the outside.

Four threads were put successively between each section of the U shaped threads, in each quarter around the mucous membrane. The joining is complete.

Length of operation.—One and one quarter hours.

Gauze soaked in mercuric oxide on the wound, constraining cotton-wool dressings around the perineum, the buttocks, and the tops of the thighs. The two lower members held together at the level of the knees, well padded at first with cotton-wool.

Fasting the first day; some nausea. Ice in very small quantities. 8 pills of opium, each 1 cg, injection of 1 cg of morphine at night. Urination slow but spontaneous. Temperature 37.2°. Pulse normal. Some anal pain, calm night.

Second day.—Subicteric color which lasts several days. State generally good. Colic produced by the gas; same dose of opium; spoonful of bouillon every two hours; small pieces of ice. Temperature and pulse normal; no sensitivity of the stomach; very keen thirst produced by the opium and calmed by frequently rinsing the mouth.

Third day.—Thirst remains strong. Temperature 37.4° and 37.7°. Pulse 74. The patient lets out less gas than the day before; urination normal, no pain. A spoonful of bouillon every hour. Opium, 8 pills of 1 cg.

Fourth day and following.—The temperature remains normal, pulse regular, less sensation of thirst starting with the fourth day. No colic. Jaundice disappears the sixth day.

The diet, which is so essential to regulate carefully in order to avoid premature or overly abundant bowel movements, has consisted of: the 4th day, one spoonful of bouillon and milk every hour; the fifth and following, 2 spoonfuls of bouillon and milk each hour and, in addition, one unfertile egg; then, starting on the eighth day, two eggs. Opium, 8 cg per day until the removal of the dressings, the 11th day.

The 11th day, appetite diminishes, colic, issue of great quantities of gas. Temperature 38°, Pulse 90. The dressings on the perineum are removed. Removal of 4 or 5 stitches and the supporting stitches; the rest have fallen out. The scar is complete and linear.

Several enemas of glycerin (80 gr) or vaseline (80 gr) given with most extreme precaution to avoid a violent result, and in order not to compromise the union by intemperate pressure of the canula. Abundant and easy bowel movements by the patient during the next two days, a light case of diarrhea which is stopped by salicylate of bismuth.

Normal food. Patient gets up on the twentieth day. Complete cure.

When the patient was presented to the Société de chirurgie, (Surgery Society) nearly four months after the operation the result was satisfactory; since then the cure has been maintained; the bowel movements are easy and regular, and the prolapse has not reappeared.

OBSERVATION II.—*Voluminous rectal prolapse dating from the age of eight years; separation of a mucosal sheath 80 cm long; transverse section. Suture. Death.*

November 18, 1898, a young soldier of the 37th infantry regiment named 'X'...from Puteaux, entered the camp hospital at Châlons. He had, during the induction visit before the Army Medical Board, hidden his infirmity.

Parisian originally, well supported, nervous, he could

think of nothing in his previous life that would explain this rectal prolapse. He informed me that this prolapse dated from the age of 8, and that after the least effort in defecating it would come out the length of an index finger and return very easily.

Since this same age he also had incontinence in urination (urinating six to eight times each day.)

During the examination I established that there was a total prolapse of the indicated length, coming out at the least effort; after reduction the sphincter contracted energetically enough; the perineum was solid. No digestive problems.

After having prepared the patient like the previous one, I performed on him the described operation on November 24 with the help of my colleagues, Drs. Comte, Imbert and Vincent, of the camp hospital staff.

The anal orifice being, under chloroform, open enough to easily admit two fingers; I judged that dilation was unnecessary and dangerous to the integrity of the sphincter, so after having secured the mucosa by several hemostatic forceps, I proceeded directly to its circular division at its union with the skin, starting with the lower semi-circle to finish with the higher semi-circle.

I took care during this division to include only the mucous membrane in the path of the incision, because if I had passed its edges directly I would have in part endangered the integrity of the external sphincter. The free edge of this, in fact, because of the few adhesions that the mucosa had on it, and because of its distension, was not at the union of the skin and the membrane, but several centimeters behind this point, as in my first patient.

The surface and edge of the external sphincter being disengaged above, on the sides, then below, I continued sometimes with the grooved director, sometimes with the point of a blunt scissors or with my thumb nail, the separation of the mucous membrane on the first cylinder and particularly on the anterior semi-circle, the most accessible and most adhesive. At this time grave respiratory problems forced me to abandon the chloroform and practice artificial respiration.

Difficulties with hemostasis, which lasted until the middle of the operation, complicated it and by masking the field of operation with an abundance of black blood, lengthened and made more painful this separation of the mucosa than that of the previous patient.

These difficulties were made even worse by the extreme friability of this mucosa, which kept, even after separation, a very marked and morbid redness, contrasting strongly with the pallor of the upper mucosal sheath. This mucosa tore frequently under the pressure of the forceps. This friability did not disappear until I had reached the edges of the second cylinder.

Separated successively from its mucosa by a thumbnail or the point of a blunt scissors, acting not as a cutting

instrument but for the separation of the most resistant tracts, the first cylinder showed a red-yellowish muscular surface, pale where it was not stained with blood.

This layer was uniform, as well as formed by long concentric fascicles. The separation of the mucosal sheath required only the application of several hemostatic forceps (4 or 5) on the very small arterial vessels corresponding to the cardinal planes.

When I reached the level of the internal sheath, in order to get some more light, I divided the mucosa crosswise several centimeters below it, and secured it with new forceps.

With this patient, as with the preceding one, the separation was particularly delicate and slow where the internal and external sheaths met. It is at this junction point that the mucous and muscular adhesions are the closest, especially in front and on the sides. It is here that I find the vessels of the mucosa the most important. Whether it is this way normally, or whether their volume is linked to the breathing problems of the patient, I always find the external wall of this mucosa especially on the sides and in back covered with veins dilated like those of small hemorrhoids. Their presence is a signal to the surgeon, though it only hinders him slightly.

When, with tension aided by prodding with the grooved director, blunt scissors or nail, I had disengaged the mucosa at the base and the salient part of the internal cylinder, I was struck, as were my assistants, by the volume and new form that this rectal tumor took. Its volume was magnified by nearly half, and, instead of it being formed by two globes, it had only one round regular mass, 12 cm in diameter vertically and 10 cm in diameter across, measured exactly and several times. This growth was probably connected to the overdistension by the small intestine on the pouch of the hydrocele, which the disengagement of the intermediate rectal wall between the two cylinders had left latitude for larger development. (see fig. 2)

From this moment the separation of the absolutely healthy mucosa, which was much narrower, was almost a game, it was so easy. I managed it in a few minutes; I could almost say a few seconds to stress it.

Using only my nail, or pressing the mucosal sheath between my thumb and index finger while pulling with the left hand, I pursued its disengagement to 80 cm from the anal orifice, as I confirmed during the operation, and as my assistants and I verified afterwards. I was haunted by the idea that the descending colon participated in the prolapse. (Figure 2, which shows traction on a healthy mucosa, was based on this patient.)

I stopped when my left hand felt a *very distinct* sensation of resistance to *light pressure* and when, after stopping all traction, the mucosal sheath penetrated 6 to 8 cm. I could at this point legitimately suppose that the intes-

tine would have no tendency to form a new prolapse.

Before going any further I must mention that during the separation of the last 15 to 20 cm or so, the mucosal sheath appeared to be lined with fatty globules, and that it seemed less protected by the regular muscular rings and that it was, in the intervals of the fibrous fascicles almost immediately and very distinctly covered with a transparent and smooth membrane which was nothing other than the peritoneum. I redoubled my attention to the separation of the mucosa.

From the time when the base of the second cylinder was freed, the disengagement of the mucosa came down to a single important vessel; also the external face of the membrane kept until the end its uniform pink aspect, contrasting with the redness of the thicker, inflamed membrane of the exterior cylinder.

No ligature was used, either during or after the operation.

A very light pressure having reduced the muscular globe, which already tended to return on its own if one stopped pulling on the mucosal sheath which crossed it. This muscular globe was carefully disinfected by dry sublimate compresses; then I narrowed the orifice of the sphincter with two silk threads applied to the lower part.

The immediate result was that of a radical cure of hemorrhoids by circular removal of the mucous membrane.

Dressings the same as for the previous patient.

Knees kept together.

Length of operation: about one hour.

During the first four days this very nervous patient showed no special symptoms; his temperature did not go above 37.5°; his pulse was normal, urination slow but spontaneous. Vomited chloroform several times the second day.

It is worth noting the incessant movements of this patient, which the strong admonishments of the attending physician did not stop, his frequent desire to urinate, because of his incontinence of urine, which necessitated constant lateral displacement, which could not be managed by the nurses without abdominal pressure.

The fourth day, although all signs gave hope for a complete and brilliant cure, his temperature rose to 38.4°; the soiled and odorous dressings had to be removed.

The sutures were holding well. A blackish, odorous liquid appearing to come mostly from the intestine, but also coming out of the space between the upper sutures, forced me to cleanse the intestine and per-intestinal pouch with boric acid.

The fifth day, same state, same soiling, same redoing of the dressing; temperature 37° and 38.3°; pulse very fast. Pain from pressure in the left iliac fossa and in the pit of the stomach, abdominal facies; nausea.

The sixth day, the dressings were soiled by a colored,

almost odorless liquid; the general state worsened, vomiting.

Collapsed in death at 10:30 p.m.

The autopsy, which was full of lessons, showed my colleagues, Drs. Comte and Imbert, as well as myself that the sutures had not held.

The end of the internal cylinder protruded 6 cm. from the anal orifice.

The rectal wall and that of the invaginated cylinder, which resembled the muzzle of a tench, greatly enlarged, dangling into the rectal cavity, was covered with a pulpy layer, easily dissolvable. Slight quantity of odorless liquid in the rectal ampulla.

Curious thing to note: In spite of the considerable extent of the abrasion of the mucosa on the living patient, the loss of substance from the mucosa did not appear, either to my assistants or to myself to have passed the level of the sacral promontory. Now, we had concentrated all our attention on several occasions on this important point, the establishment of which seemed so paradoxical considering that 80 cm of mucosa, *not drawn out*, had been removed.

The posterior rectal wall was firmly pushed into the sacrum and the wound consisted of a veritable invagination.

The rectal-colic ties were solid. It would have been useless then to proceed in this case with either a colopexy or removal of the colon.

The peritoneal cul-de-sac was intact, but the peritoneum was affected by lymphatic congestion: Adhesions were spread on the serosa of the small intestine and large intestine, both on the left and the right, and some purulent effusions were observed between the loops.

In brief, the patient succumbed to peritonitis following acute infection of the field of operation.

The failure of the sutures, ordinarily so solid, was due in large part to the incessant movements of this intractable patient, which neither my prayers nor my orders could stop; by the frequent displacements imposed by his frequent desire to urinate, which caused the nurses to put pressure on his sides and abdominal walls; to the contraction of the sphincter which I thought I could manage better without dilating; to the possibly abusive length of mucosa removed which I pushed so far because I was haunted by the idea that the colon was involved in the prolapse, an idea which the autopsy showed me there was no chance of, at least with this patient. All of these causes came together: excessive tension of the mucosa, insufficient immobilization, in this patient these were opposed to the reunion of the mucosa and the permanent joining of the two cylinders.

This failure strongly affected me, but it was explicable from easily understood causes, which were related at once to an imprecise technique and an intractable patient; it

did not make me doubt the worth of the operation itself, and a new and beautiful success furnished by the patient I am going to present to you restored to me the confidence which had been momentarily shaken.

OBSERVATION III.—*Ano-rectal prolapse dating from childhood; resection of 28 cm of intestinal mucous membrane, cure by first intention.*

The patient No. . . (Alfred), soldier in the 106th infantry regiment, formerly a coal miner in Villeneuve-Saint-Georges, entered the military hospital in Vincennes in April 1899. He carried since childhood a total ano-rectal prolapse which he had hidden when inducted.

The prolapse projected about 8 cm outside the anus during effort and showed the classic grooves. The congested mucosa exhibited a slimy secretion. Habitual constipation.

The perineum did not seem to have support consistent with the muscle and vigor of the patient; it bulged on top.

June 18, 1899, after the usual preparation; milk diet for several days, purgative two days before the operation and salol, numerous antiseptic enemas on the day before and the same day, I performed, with the assistance of my colleagues Drs. Bourdon, Gils, Daireaux, Metzquer, an excision of the mucosal sheath, 28 cm long.

Anal dilation, enormous rectal ampulla.

Disengagement of the mucosa from the surface and edge of the external sphincter, on the internal sphincter and on the cylinder formed by the muscles.

The well-developed fibers of this membrane form a continuous covering which the grooved director, scissors point and nail easily follow. Light venous ooze which does not hinder the surgeon. Muscular fibers, very pale at first, resembling the flesh of undercooked fish, take on a more and more marked pink tint the longer they are exposed to the air.

The rectal mass increases noticeably in volume, especially after the detachment of the mucosa at the base of the grooves.

The friable mucosa tears frequently under the pressure of the forceps.

After a circular detachment at a height of about 10 cm the mucosa is cut out in order to give me a better view and prevent infection of the field of operation. After this excision the forceps are replaced.

A little above the invaginated canal the mucosa becomes normal; it is almost bloodless, an attenuated pale pink; its adhesions are very weak, and moderate traction and several strokes of the nail are sufficient to separate the latter.

I ceased to detach it when the traction placed on the mucosal sheath caused a *very weak* sensation of resistance and when, if this traction stopped, the sheath sprang back lightly.

Division of the mucosa and sutures placed as described. Usual dressings.

Length of operation: one hour, ten minutes.

Easy awakening. Fasting the first day, almost total fast the next, to avoid the effort of vomiting (less than a spoonful of bouillon every two hours,); frequent rinsings of the mouth with fresh water to relieve thirst; opium, 8 cg per day.

Some nausea, no vomiting; urination slow but spontaneous.

Constipation was prolonged to the 14th day, thanks to the opium and insubstantial nourishment consisting almost entirely of meat given starting the 8th day.

The bandages were removed and the last U shaped stitches removed on the twelfth day; the others had fallen out spontaneously.

The first bowel movement was very difficult, even with abundant enemas.

In spite of the efforts to defecate, the prolapse did not reappear, and the mucocutaneous membrane adhesion remained solid.

The patient got up on the sixteenth day.

The operation took place ten and a half months ago; the obtained result is as follows:

Invisible scar. The anus has its normal radiating folds. Upon inspection of the region, the patient does not seem to have undergone an operation. The perineum appears more resistant. During effort the anal mucosa is invisible; all trace of a prolapse has disappeared. To the touch the anal orifice is normally dilatable, the sphincter contractile. Instead of falling almost directly into the rectal ampulla, the finger penetrates a distensible canal lined with a regular mucosa—the length of the first and two-thirds of the second phalanx of the index finger. This canal squeezes the finger when the patient tries to close his anus. Above this canal the rectum is sharply and circumferentially widened, without being shrunken having normal dimensions.

Constipated before the operation, the patient has daily bowel movements; he retains his matter and gas.

In summation, surgical intervention has brought about a complete and firm cure.

RESULTS: I have not performed this operation which does not yet have a place in the treatment of rectal prolapse three times. Two of my patients were cured; one succumbed, but one would, I think, greatly underestimate the worth of this method, by computing its seriousness from my cases, which are too few for statistical accuracy and on which lies, like a black shadow, this second intervention so different from the first and third.

Is it not, unhappily, the usual balance sheet of all important operations to produce, at first, an excessive mortality which lessens as their indications and contraindications become more precise, the pathologic operative anatomy of the complaint is better known, and the post-operative care better regulated?

From the *functional* point of view: with my first

patient, who was presented to the Surgery Society and on whom the operation was performed eighteen months ago, the result was entirely satisfactory; with this one, with whom the mucosal excision is eleven months old, the result is so complete that he shows no apparent trace of his operation, as you can judge.

Invisible scar, radiating folds reestablished, prolapse disappeared along with all of its consequences, pains, bouts of diarrhea alternating with constipation, etc., continent and dilatable rectum closed by a resistant sphincter; all of this can be verified.

This result is good enough to encourage one to continue performing this operation, at least to make a complete and controlled test.

CONCLUSIONS.—The removal of the mucosa reserved up until now for the treatment of purely mucosal prolapse is equally applicable to prolapse of a second group, in which all the layers of the intestine participate in the rectal prolapse, whether or not it is invaginated.

The extent of the portion of mucosa to be excised cannot yet be precisely determined. Further experience will determine this point of prime interest.

We must be careful not to make the excision too extensive. For prolapse with invagination, even if voluminous, the removal of 20 to 30 cm seems to suffice. Perhaps one will be able to reduce this, to be content with the excision of the mucosa of the prolapse itself.

This operation, consisting of a long, precise dissection in a field of operation soiled by an abundant bleeding, is delicate.

It would be well not to attempt it until after having previously performed radical cure for hemorrhoids by circular removal of the anal mucosa.

The post-operative treatment is of prime importance. A poorly directed post-operative treatment, not restrictive enough or compromised by an intractable patient, can

prejudice or destroy the results of the best performed operation and expose the patient to infection of the field of operation, or the perineum, to ugly scars and to narrowing of the rectum.

Immobilization of the anal region until a solid scar has formed; this is the goal to pursue. It cannot be lost from sight for an instant.

Opium; a single protective and very retentive dressing; the tying together of the knees to prevent dangerous movements in the lower limbs; a very rigorous diet at first and nourishment as reduced as possible imposed until the wound is completely covered with scar; prudent laxative use, late getting out of bed; these are the means which appear to be the best for effecting cure.

Only an accumulation of data can allow us to appreciate the exact worth of this operation, which is paradoxical in appearance, rational in reality and simpler than many of the possible alternatives.

Future experience will determine for us the indication and contra-indications of this method, and tell us if it can be sufficient by itself or will need the assistance of former methods.

I believe that it is indicated, especially for adults and children in whom the tissues present particularly favorable adhesive conditions, because the perineum is solid, the sphincters resistant and the anus not too dilated.

Acknowledgment

The editor is grateful to Eugene S. Sullivan, M.D., for suggesting this paper and for encouraging Ms. Nancy Capps McGill to provide the translation.

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