

THE PATHOGENESIS, ANATOMY, AND CURE OF PROLAPSE OF THE RECTUM¹

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INTRODUCTION

THE malady conventionally known as "Prolapse of the Rectum" has always occupied a prominent place in medical literature. The reason for this prominence is obvious; both our understanding of the disease and the methods thus far advocated for its relief are unsatisfactory. This dissatisfaction has stimulated me, as it has so many others, to study this disease more closely. A fairly extensive hospital service, augmented by the courtesy of many colleagues, has given me the abundant opportunity which I desired. As a result of these observations, I believe I am now able to formulate a satisfactory and perfectly demonstrable pathological anatomy of prolapse of the rectum; and based on this anatomy, I am also enabled to suggest an operation which in my hands has raised the percentage of cures from practically nil to one hundred.

My theory and operation are based upon the demonstrable fact, that prolapse of the rectum is a hernia; and that in all its features, etiological, pathological, clinical, and therapeutic, it conforms to the well recognized principles of hernia in other parts of the body. Inasmuch as my ideas on this subject may, therefore, appear somewhat unorthodox, I shall elucidate my subject in greater detail than usual. It is for this reason, I plead tolerance for any apparent prolixity of this paper.

NOMENCLATURE

The term "Prolapse of the Rectum" is to my mind a misnomer, because the anatomical rectum is not prolapsed, except in the very last stage of the disease. Nor should those maladies grouped under the generic name of "Intussusception" be included under the heading of this disease. Intussusception, as is well known, is due to a prolapse of a superior portion of the bowel, frequently of the ileocecal portion, sometimes even of the small

intestine. On superficial examination such an intussusception simulates a so-called prolapse of the rectum; but neither in symptomatology, nor in pathology, nor in therapy have they anything in common. At best they may be termed prolapses *out of* the rectum, but not *of* the rectum. This distinction may appear obvious, but it is surprising that most American textbooks on rectal diseases, and many special papers on the subject, still maintain this identity.

Broadly speaking, the disease we are considering is characterized primarily by a protrusion of the mucous membrane of the rectum outside of the anus. Experience has taught us, however, that granting even the existence of this essential characteristic, there may be present two entirely different maladies.

In the first there is a protrusion of the mucous coat only, while the remaining coats of the rectum are in normal relationship with the surrounding structures. This should be termed a "*Prolapse of the mucous membrane of the rectum.*" Incorrectly it has received the name "*Prolapse of the Anus.*" It is manifest that the anus, being merely a hole, cannot prolapse.

In the second, the mucous membrane is in normal relationship with the other coats, but the entire rectum (with certain restrictions in phraseology) has been protruded out of the anus, and has lost its normal relationship to the surrounding structures. This is the form which has, by the way, also incorrectly been termed "*Prolapse of the Rectum,*" and is the one which forms the principal theme of this paper. In view of the fact that the term "Prolapse of the Rectum" has become a convention, we will continue to use it, under protest, in want of a better.

True prolapse of the rectum, in turn, has numerous subdivisions, which, however, will be discussed under the heading of Pathological Anatomy.

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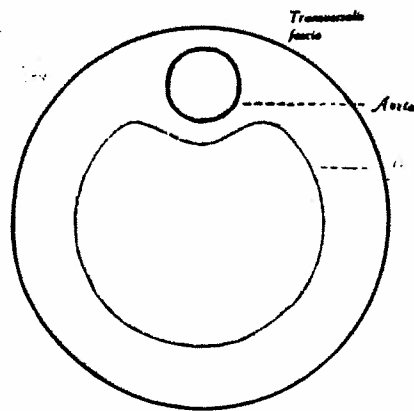


Fig 1

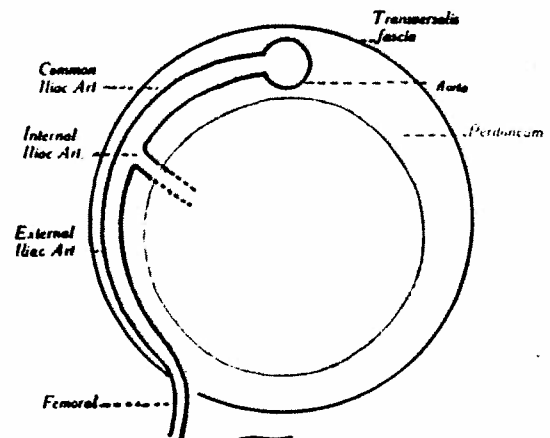


Fig. 2

PATHOGENESIS AND PATHOLOGICAL ANATOMY

1. The oldest, and I might add, the least probable theory as to the pathogenesis of a true prolapse of the rectum is that of Esmarch.¹ According to this author, the primary cause is an inflammation of the mucous membrane of the rectum, a sort of catarrh. The inflammation is then presumed to spread to the other coats, and ultimately involves even the supporting structures of the rectum. This theory is not tenable for several reasons; but principally because to our knowledge inflammatory conditions of the mucous membrane of the rectum, no matter how intense, are not followed by prolapses of the rectum. When we do have an inflammation of the mucous membrane, as so frequently seen in infants and young children, there follows at best a prolapse of the mucous membrane; but this, in turn, is not followed by a true prolapse of the rectum. It appears to me very probable that Esmarch has taken effect for cause, since we know that a catarrhal inflammation is only a late manifestation of prolapse of the rectum.

2. Jeannel,² as near as I could understand it, explains rectal prolapses as occurring in consequence of a ptosis of the small intestine, which allows them to sink into the cul de sac of Douglas; by their weight, the intestines cause a pressure atrophy of the levator ani,

¹ Esmarch. *Deutsche Chirurgie*. Lief. 48. Die Krankheiten des Mastdarmes und des Afters.

² Jeannel. *Gazette Hebdomadaire*. May 24, 1899.

which ultimately gives way, and allows a prolapse. This theory, while it goes somewhat nearer to the root of the trouble, is also untenable, because, as a rule, we do not find this pressure atrophy. The animal experiments which were carried out in order to prove this theory were so mutilating as to invalidate their significance.

3. The prevailing theory at present, and the one that I believe to be correct, is that prolapse of the rectum is a hernia, in the true sense of the word. This theory has arisen largely as a result of the anatomical studies of Waldeyer,³ and has been confirmed by the clinical researches of Ludloff,^{4,5} Zuckerkandl,⁶ Napalkow,⁷ Dix,⁸ and others.

In order to fully appreciate this theory, a substantial knowledge of the anatomy of the pelvis and its contents is essential. In addition there are, however, certain simple, fundamental principles, to which attention should be called.

In a paper⁹ read before the Surgical Section of the N. Y. Academy of Medicine, Dec. 1, 1911, I explained in detail my conception of a hernia, and pointed out the paramount importance of the transversalis fascia in relation

³ Waldeyer. *Das Becken*. Bonn. 1899.

⁴ Ludloff. *Archiv. f. klin. Chir.*, lix, 447.

⁵ Ludloff. *Archiv. f. klin. Chir.*, lx, 717.

⁶ Zuckerkandl. *Deutsch. Zeitsch. f. Chir.*, xxxi.

⁷ Napalkow. *Chirurgie*, x.

⁸ Dix. *Zur Pathogenese des Rectumprolapses*. Inaug. Diss. Bonn 1901.

⁹ Moscheowitz. *Medical Record*, December 30, 1911.

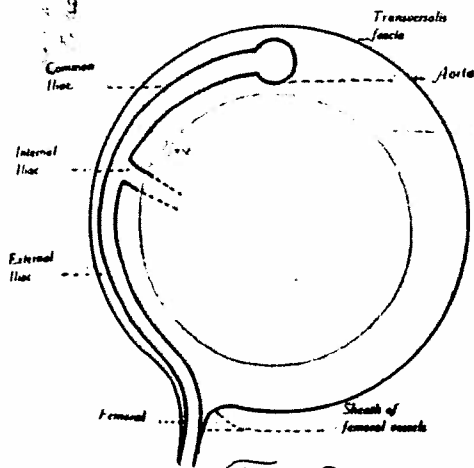


Fig. 3

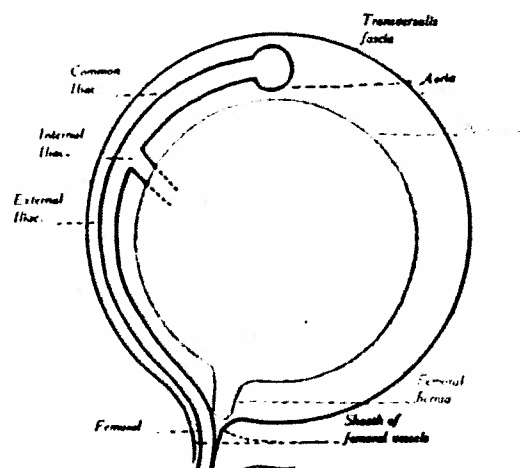


Fig. 4

to hernia. As a knowledge of this fascia is also essential to the proper understanding of prolapse of the rectum, I shall recapitulate briefly the anatomy of this structure; particularly its relationship to the various structures which pass through it.

1. The entire abdominal parietes, front, sides, top and bottom, are lined by peritoneum.

2. External to the peritoneum there is everywhere a layer of fascia. This fascia has received different names in different parts of the abdomen, e. g., transversalis, pelvic, iliac, diaphragmatic, etc. If traced, however, it will be found that these are merely parts of one continuous layer.

3. All the large vessels in the abdomen and all the viscera of the abdomen *lie upon* the transversalis fascia, and are *covered by* the peritoneum. I regard this fact of the greatest importance in the proper understanding of the anatomy of hernia in general, and of prolapse of the rectum in particular. For this reason I shall discuss this subject in detail. In order to elucidate my subject, I will explain first the pathogenesis of an ordinary hernia; and for the sake of simplicity, I have selected the femoral variety.

Fig. 1 represents schematically a cross-section of the abdomen at any point above the bifurcation of the aorta.

At the point of exit of the femoral vessels into the thigh, the diagram is modified as in Fig. 2.

If Fig. 2 is closely examined, it will be seen that, at the point where the external iliac vessels lose their relationship to the peritoneum, there is an opening in the transversalis fascia, in order to permit the escape of these vessels from the abdomen.

As a matter of fact, however, careful dissection will show, that the transversalis fascia is continued downward for a certain distance upon the vessels, gradually becoming thinner and thinner, blending finally with the vessel wall itself. To be exact therefore Fig. 2 should be modified as in Fig. 3.

In certain parts these perivascular prolongations of the transversalis fascia have been carefully studied, are well marked, and indeed have received special names. I mention as such the prolongation upon the spermatic vessels, which is called the "infundibuliform fascia," and the prolongation upon the femoral vessels, which has received the name of "sheath of the femoral vessels."

Although the importance of the transversalis fascia has not, I believe, been estimated at its true worth, it is an established fact that this fascia is, as a rule, strong enough to retain the viscera within the abdomen. It is, however, not strong enough to do so at certain definite anatomical points; and it is at these points, and at these points only, that we find hernia. A little reflection will show that hernia occur only where blood-vessels or viscera make their exit normally. In other

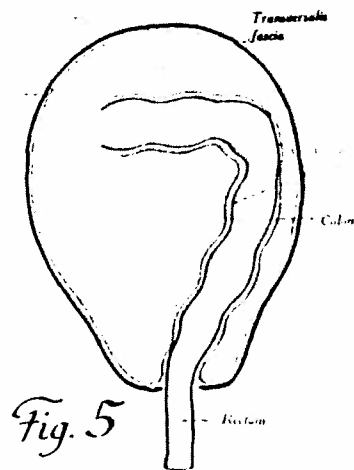


Fig. 5

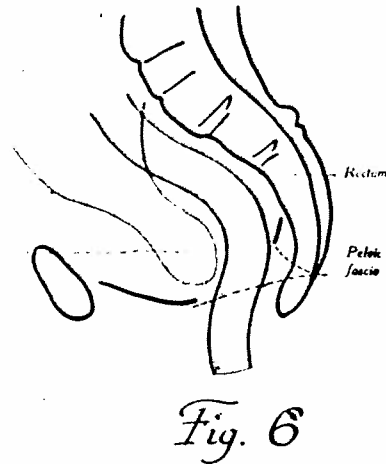


Fig. 6

words, it is very apparent that these weak anatomical points must be the attenuated perivascular or perivisceral projections of the transversalis fascia. Every hernia, e. g., femoral hernia, can therefore be diagrammatically presented as in Fig. 4.

There is no doubt, though it never was stated before, that a similar arrangement holds true for every blood-vessel that escapes from the abdomen to the periphery, as for instance, the obturator or sciatic arteries. Likewise there exists a similar hiatus in the transversalis fascia, whenever a viscus, e. g., the rectum or the vagina, escapes from the abdomen to the periphery, and is accompanied by a similar prolongation of the transversalis fascia.

Let us now note how a knowledge of these facts assists us in explaining the pathogenesis of prolapse of the rectum.

Fig. 5 represents diagrammatically a latero-vertical section of the abdomen, at the point where the large intestine escapes from the abdomen, and becomes rectum.

Fig. 6 represents the same condition in an antero-posterior section of the pelvis.

Both of these sections are intended to present the hole in the transversalis fascia, through which the rectum escapes from the abdomen.

Nature, however, adds a nicer finish to this hole; and just as it has been found that the transversalis fascia sends a downward prolongation upon the spermatic, femoral and

other vessels, we also find that the pelvic part of the transversalis fascia sends a similar outward prolongation upon the rectum, upon which it gradually becomes lost. To be exact therefore Fig. 6 should be modified, so as to appear as in Fig. 7.

If we now compare Fig. 7 with Fig. 3, we will note the close similarity of the two.

As in other herniæ, the subsequent development of a prolapse of the rectum is not easy of explanation. It is well known, that there exist two theories for the origin of herniæ. First, that which regards the sac as a congenital malformation, and second, that which regards the defect in the transversalis fascia as the *causa peccans*. We find, in truth, that both these theories are also applicable to prolapse of the rectum.

In early embryological life the peritoneum reaches downward almost to the perineum. Later it becomes shut off, and recedes higher and higher. It is quite conceivable, that if this shutting-off process stops early, the cul de sac of Douglas will be deeper than is normal. This affords a substantial basis for the congenital or saccular theory of rectal prolapse.

The congenital or saccular theory of hernia has never appealed to me strongly, except for those cases in which there is no doubt of the congenital nature of the sac; and I am more inclined to the second theory. In the paper already referred to (*Medical Record*, Dec. 30, 1911) I have pointed out my

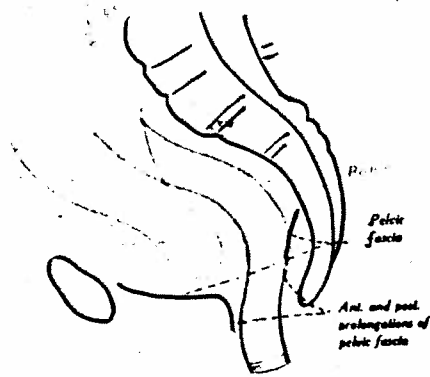


Fig. 7

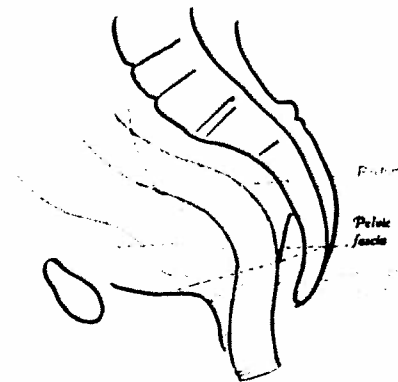


Fig. 8

conception of a hernia. In this I stated, first, that there must be a defect in the transversalis fascia whenever a vessel or viscus escapes from the abdomen to the periphery; and second, that at the location of this defect, there must be an eversion of the transversalis fascia which is continued downward and outward for some distance upon the vessel or viscus, gradually becoming thinner and thinner, and is finally lost upon it. The conditions being thus favorable, it requires only some added factor for the production of a hernia; namely, some increase in the intra-abdominal pressure, such as straining (secondary to heavy work, parturition, habitual constipation, coughing, phimosis, vesical calculi, stricture of the urethra, etc.), which will drive the peritoneum into the sheath formed by the outward prolongation of the transversalis or pelvic fascia.

When we consider all the points that I have just stated, I believe Fig. 8 would be a diagrammatic but nevertheless true representation of a prolapse of the rectum in its very incipency.

I need hardly say, that I have no proof of this state, and that I argue merely from analogy with other herniæ, and from the anatomy of the parts in question.

The subsequent development of the prolapse is most interesting, and depends upon definite anatomical facts, which must be known, in order that the pathological anatomy of prolapse of the rectum be intelligible. It is important for us to know:

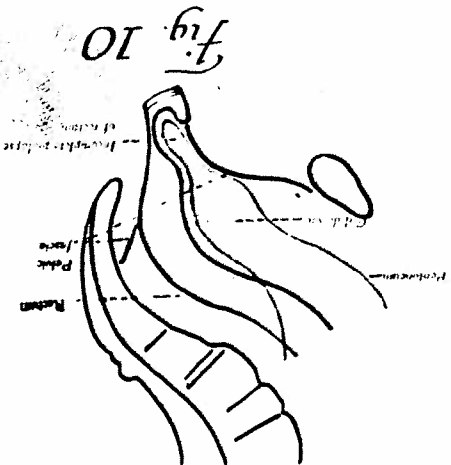
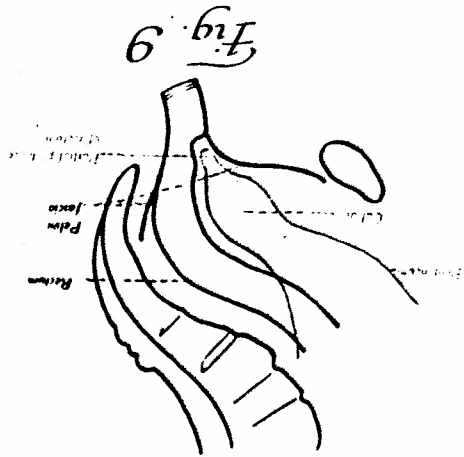
1. That the peritoneum covering the anterior surface of the rectum is intimately adherent to it. This is important, because it explains why, in spite of the fact that prolapse of the rectum is a hernia, we do not have a distinct and separable peritoneal sac. In other words, this hernia is exactly analogous to the so-called "hernie par glissement."

2. That the under surface of the levator ani is also covered by a very dense fascia; this, together with the other component parts of the perineal body, prevents the progress of the hernia in a downward direction.

For a short while the muscular wall of the rectum itself prevents the further growth of the hernia; but this is comparatively weak. Its resistance is limited, and it readily gives way to the persistent intra-abdominal pressure, so that the next step in the formation of the prolapse must be diagrammatically as illustrated in Fig. 9.

When this stage has been reached, there is for a while nothing to prevent the subsequent growth of the prolapse. The prolapse increases mainly in a posterior direction, until it is arrested, first by the posterior wall of the rectum, and when this ceases to give support, by the underlying sacrum and coccyx. So that, at this stage, Fig. 10 would be a true presentation of the prolapse.

But the intra-abdominal pressure still continues. The prolapse, as was shown in the last diagram (Fig. 10) can not extend backward, being prevented by the sacrum and



coccyx; it must therefore change its course, and sliding along the posterior wall of the rectum, it extends at first in a downward and forward direction, and finally backward toward the anus. Ultimately, this is also forced, and the prolapse appears externally. This stage is represented in Fig. 11.

I am in the fortunate position of having, by a peculiar circumstance, come across two cases of prolapse of the rectum, at what may be considered the stage represented in Fig. 10.

During my internship, at the N. Y. German Hospital in 1893, by the courtesy of Dr. Willy Meyer, I removed the coccyx in a case of supposed coccygodynia. The wound healed by primary union. Promptly upon his discharge from the hospital, the patient noticed a bulging in the scar. The bulging increased, and when I next saw him, he had in the coccygeal region a perfect hernia, with all its characteristics. He never consented to its radical cure. The more I think of this case, the more I conclude, that the symptoms complained of by this patient were due, not to a coccygodynia, but to an incipient prolapse of the rectum.

For my second case I am greatly indebted to Dr. Chas. H. Peck, who successfully operated upon it, by the method to be later described.

Mrs. M. W., 44 years of age, was admitted to the Roosevelt Hospital on November 7, 1911, suffering from a hernia in the median line posteriorly, just below the sacrum, in the cicatrix of an operation

I look upon both of these cases as prolapses of the rectum; but the coccyx, having been extirpated, was not present to withstand the progressive growth of the prolapse, as shown in Fig. 10. In the absence of the coccyx, the posterior wall of the rectum also gave way,

lapse of the rectum. The obliteration of the cul de sac, and thus of the hernial sac, seemed to me the keynote of the success of the operation.

The obliteration of the cul de sac, and thus of the hernia seemed completely cured. The charge from the hospital on December 16th, the difficulty, and not very satisfactorily, but on discharge. Closure of the aperture was effected with the pelvis and forced the rectum through the aperture, though the small intestines no longer descended low in the coccygeal region a perfect hernia, with all its characteristics. He never consented to its radical cure. The more I think of this case, the more I conclude, that the symptoms complained of by this patient were due, not to a coccygodynia, but to an incipient prolapse of the rectum.

No attempt was made to close the hernial ring at this time. On November 21, the hernial ring was closed by a second operation. Before this was done the patient was allowed to stand up, and it was found that the protrusion of the hernia had entirely disappeared, though the aperture was still open, i. e., the small intestines no longer descended low in the coccygeal region a perfect hernia, with all its characteristics. He never consented to its radical cure. The more I think of this case, the more I conclude, that the symptoms complained of by this patient were due, not to a coccygodynia, but to an incipient prolapse of the rectum.

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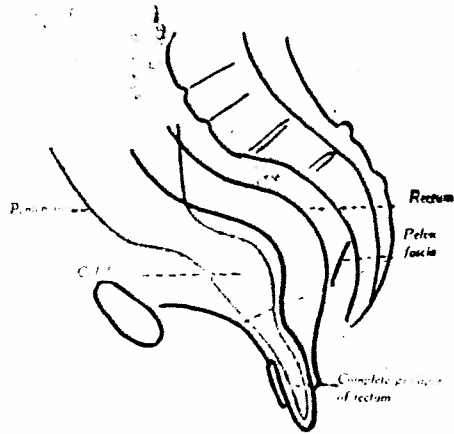


Fig. 11

and appeared as a bulging in the scar. According to my interpretation, Fig. 12 presents the disease at this very peculiar stage.

Thus far, as shown in the diagrams, only the anterior wall of the rectum is involved. The lowermost part of the rectum being firmly fixed, the prolapse can not increase at its expense; therefore, in the subsequent growth, it can enlarge only by drawing-in first, the two lateral, and finally also the posterior walls, until the further drawing-in of the bowel is prevented by the firm fixation of the organ.

This has a very important bearing upon the physical signs of complete prolapse, and explains why even the largest prolapses never exceed five to six inches in length.

With these data, we are now in a position to explain why the term "Prolapse of the Rectum" is a misnomer. All the walls of the rectum prolapse only in the very last stage, and even then are only drawn down by the anterior wall.

In order to complete the nomenclature according to my interpretation, I suggest the following subdivisions:

1. *Incipient prolapse of the rectum*, illustrated in Fig. 8.
2. *Partial prolapse of the rectum*, illustrated in Fig. 9.
3. *Incomplete prolapse of the rectum*, illustrated in Fig. 10.
4. *Complete prolapse of the rectum*, illustrated in Fig. 11.

This corresponds to the classification of

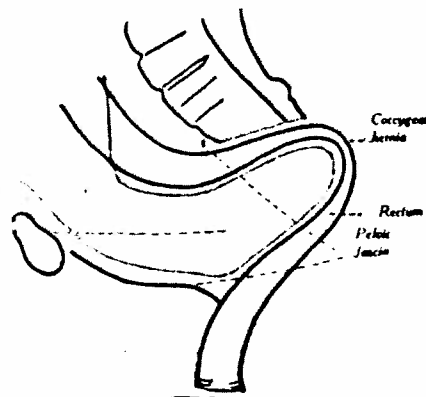


Fig. 12

inguinal hernia, in which we are also wont to distinguish between a bubonocoele and a scrotal hernia.

There is not the slightest doubt in my mind that all of these actually exist, although as a rule, the earliest stages can not be demonstrated. Unlike inguinal hernia, the rectal protrusion in its early stages is invisible, and the patient ascribes his symptoms as due to hæmorrhoids, habitual constipation, etc. If a physician is consulted the true nature of the malady is overlooked. I believe that in the course of time these conditions will be recognized; when this occurs, the prognosis and treatment of these cases will be affected materially.

SYMPTOMS AND PHYSICAL SIGNS

Primarily, I wish to mention that I intend to describe only the symptoms appertaining to true prolapse of the rectum; other conditions will be discussed only when a question of differential diagnosis arises.

The presence of a mass protruding from the rectum is manifestly the cardinal symptom. This is frequently accompanied by a discharge of pus and blood. The patient avers that the protrusion is of long standing, and that it had ceased growing after it had attained its present dimensions. At first the patient is able to reduce the protrusion voluntarily (action of the levator ani) but in the course of time reduction became possible manually only.

In neglected cases, and those of very long

duration, the sphincters are so stretched that the prolapse does not stay up even when reduced, and patients suffer, without ever attempting to reduce it. (In rare instances the prolapse becomes incarcerated, with all the symptoms of incarceration; of these, however, I will not speak at the present time.)

On inspection there is found a mass protruding from the anus; usually of an inverted cone shape, and hardly ever exceeding a length of five to six inches. (In reality, the mass is twice that length, for the protrusion is made up of two cylinders.) Its surface is covered by mucous membrane which varies in appearance; it may be normal, or greatly inflamed and thickened; or covered by ulcerations, which bleed very readily, or by a diphtheritic membrane. The mucous membrane of the inner cylinder is normal, or at most slightly hyperæmic.

Upon the apex of this protrusion there is an opening which is directed backward. If one would make two lateral incisions, exactly from the center of this opening, the anterior part would exceed the posterior by at least three to one. This must necessarily be so if the explanation of the pathological anatomy I have given is true.

The anterior half gives very frequently a tympanitic note on percussion, because it is usually filled by small intestines; the posterior half is dull on percussion. These symptoms are not present in so-called prolapse of the anus, nor in invaginations.

If the case has been neglected, has not been operated upon before, invagination of the finger between the sphincter and the anterior surface of the prolapse will be prevented by a sulcus of about an inch in depth (see Fig. 11). In prolapse of the anus there is no such sulcus, because the prolapse begins at the muco-cutaneous junction; while in intussusceptions the sulcus is so deep that it can never be reached by the examining finger.

Unless incarcerated (very rare) the entire prolapse can be reduced, either by the patient's contracting the levator ani, or it can be replaced manually. Sometimes gurgling is noted when the prolapse is being reduced, on account of the small intestines contained in the anterior half.

When the prolapse is reduced, the following physical signs are present. The rectum imparts a sensation of fullness to the examining finger, because the normal outlines are obliterated, and because of the laxity of the tissues. The anterior surface gives as distinct an impulse on coughing as any hernia. To prove that rectal prolapse is a hernia, I have demonstrated a very interesting phenomenon. I have found that after the prolapse is reduced, if the finger is introduced along the anterior wall, it requires but the slightest pressure of the fingers to keep it reduced, no matter how much the patient strains. If the finger is now held against the posterior surface, no amount of pressure exerted will prevent the prolapse from coming down.

The tone of the sphincter ani varies; in some cases its tone is very good, and its voluntary contractions are very readily elicited. In other cases, the tone is entirely lost, its fibres are stretched to a maximum, easily permitting the introduction of the entire fist.

TREATMENT

It is a well known axiom in medicine that the more remedies there are suggested for the cure of a malady, the less the likelihood of the efficacy of any particular one. This is eminently true in regard to the immense number of measures that have been recommended for rectal prolapse. The following are the more important procedures employed or suggested:

A. *Nonoperative methods.*

I. Medication and topical applications to cure the catarrh. This is doubtless of value in cases of so-called prolapse of the anus, but certainly can not be of permanent benefit in cases of true prolapse of the rectum.

II. Electricity.

III. Submucous injections of astringents, or of carbolic acid, strychnine, ergot, tannic acid, etc.

IV. Mechanical supports.

V. Massage after the method of Thure Brand. Good results have been reported from this measure. The use of massage is founded on the theory that it strengthens the muscular wall of the rectum and the levator ani. It is based on the misconception, that the primary

cause of prolapse of the rectum is a weakness of these structures. Furthermore, the favorable results reported are mostly in children, in whom true rectal prolapses are rare.

B. Operative methods.

I. Methods the aim of which is to cause a narrowing of the anal aperture, and more or less of the adjoining rectum.

1. Cauterization of the rectal mucosa with the actual cautery, nitric or sulphuric acid, or chloride of zinc.

2. Elliptical resections of the mucous membrane of the rectum, with subsequent suture. Delorme.¹

3. Wedge-shaped resection of the posterior wall of the rectum, including more or less of the sphincter, with subsequent suture, has been practiced by Dieffenbach,² and was subsequently revived by Roberts.³

4. Thiersch⁴ introduces subcutaneously a ring of silver wire, in the region of the sphincter, which is supposed to heal in, and act as a support.

5. Gersuny's⁵ method of twisting the rectum is too well known to require lengthy description.

6. Paraffin injections in the region of the sphincter have been proposed also by Gersuny.

7. Bier⁶ removes the entire mucosa from the outer cylinder of the rectal prolapse. The submucous structures are then reefed together into a welt, thereby strengthening the external sphincter; finally the mucosa is sutured to the integument.

It does not require lengthy argument to show the fallacy of these methods. At best, they merely act as a sort of a natural pessary, and a very poor one at that. Sooner or later the prolapse must recur. The good results that have been reported from the application of any of these methods can be accounted for by too short a period of observation.

II. *Methods devised to strengthen the natural supports of the rectum.* These methods are closely related to the preceding group;

¹ Delorme. Bull. de Soc. de Chir. de Paris, 1901, No. 24.

² Dieffenbach. Die Operative Chirurgie, Leipzig, 1848.

³ Roberts. Annals of Surgery, xi, page 255.

⁴ Thiersch. (Goldmann. Über Mastdarmvorfall, etc. Inaug. Diss. Strasburg, 1892.) (Original not obtainable.)

⁵ Gersuny. Zentralbl. f. Chir., 1893.

⁶ Bier. Deutsche med. Wchnsch., 1904, No. 11.

the difference being, that the procedures are performed upon the bowel, at a somewhat higher level.

1. The method of Ott,⁷ who performs what is practically an inverted perineal plastic.

2. Hoffmann's⁸ method, also recommended by Poppert.⁹ An "H"-shaped incision is made behind the anus; the resulting side to side denudation is then stretched so as to form an antero-posterior denudation, which is then closed by deep and superficial sutures. In view of the fact that Hoffmann, in his article, shows an excellent conception of the pathology and pathogenesis of prolapse of the rectum, it is somewhat surprising that he nevertheless devises and recommends an obviously inefficient method for its cure.

3. Beresnegowsky¹⁰ attempts to build up a new support for the rectum, by a muscle plastic from the two glutei.

4. Napalkow¹¹ was the first to recognize the importance of the deep structures. He makes a transverse incision in front of the anus, and works his way upward to the peritoneum; this he closes off and finally sutures the two levators together; if the latter are too lax they are shortened by reefing sutures.

None of the methods of this group can be looked upon as curative, because they do not take into consideration the pathology of prolapse of the rectum. I except from this criticism the method of Napalkow. The objections to Napalkow's method, however, are, that he overlooks the important fact that prolapse of the rectum is a sliding hernia, and that therefore there is no hernial sac which can be resected and extirpated; furthermore, it is exceedingly difficult, if not impossible, to suture together, at such great depth, the two levators and the upper layer of the pelvic fascia with the requisite care and exactness.

III. *Methods which pay particular attention to the fixation apparatus of the rectum.*

1. Methods which attack the problem below the level of the levator ani.

⁷ Ott. Jr. Geb. und Gyn., 1900.

⁸ Hoffmann. Zentralbl. f. Chir., 1905, 905, and 1906, 667.

⁹ Poppert. Deutsche Zeitsch. f. Chir., c, 327.

¹⁰ Beresnegowsky. Archiv. f. klin. Chir., xc, 627.

¹¹ Napalkow. Chirurgie, z.

(a) Verneuil¹ resects the coccyx and sutures the rectum to the integument.

(b) Gerard Marchant² also resects the coccyx; he then infolds the rectum by longitudinal sutures, and finally fastens it to the lower end of the sacrum. This operation was modified by Koenig, who passes the sutures through holes drilled through the sacrum.

(c) Ekehorn³ reduces the prolapsed rectum, and passes, under the guidance of the finger, a silk suture, on one side of the sacrum, into the rectum, and out on the other side of the sacrum; the suture is then tied behind the sacrum. He reports three cases as cured, but it is questionable whether any of his cases were true prolapse of the rectum. From their description, one is more inclined to the opinion, that they were merely prolapses of the mucous membrane. Furthermore, while no ill luck followed any of his cases, surgeons at the present time rather fear the occurrence of infection after such an operation.

(d) Sick⁴ argues against Ekehorn's operation, and in its stead recommends merely tamponade of the retrorectal space.

In fact, all of these operations are badly conceived; they all operate upon the posterior wall of the rectum, which, as we have shown, plays no rôle in the production of a prolapse.

2. Methods in which the fixation apparatus of the rectum is strengthened, through a laparotomy incision. They are based upon the notion that the fixation apparatus of the rectum through its connection with the sigmoid flexure is too lax. In consequence most of them are practically only sigmoidopexies, variously modified in their execution.

(a) Jeannel⁵ sutures the sigmoid to the anterior abdominal wall. For the purpose of firmer fixation, and also for the sake of being able to treat the colo-proctitis by means of irrigations, he also opens the gut, and establishes an artificial anus which is to be closed at a subsequent operation.

In order to obviate this opening of the gut and yet to attain its permanent fixation, the

operation passed through a number of modifications, but all are based on Jeannel's theory, of fixation of the sigmoid flexure. Thus:

(b) Weber⁶ attaches the sigmoid to the fascia and muscles of the anterior abdominal wall.

(c) Herzen⁷ fixes the sigmoid to the anterior abdominal wall, and in addition makes an anastomosis between its two limbs.

(d) Rotter⁸ makes a retroperitoneal pocket in the left iliac fossa for the sigmoid flexure.

(e) Caddy⁹ performs, what may be termed a proctopexy to the anterior abdominal wall.

(f) Ludloff¹⁰ recommends division of the sigmoid, and fixation of the distal limb to the anterior abdominal wall after closure of its divided end; the proximal end is then implanted laterally into the distal.

(g) Von Eiselsberg¹¹ has advised resection of the sigmoid flexure, prior to its fixation to the anterior abdominal wall.

These are the operations which have gained the greatest favor among surgeons, at the present time. This is due to the ease of performance, and minimum of risk. It appears to me, however, that they are all badly conceived, because the distal end of the sigmoid is fixed to the sacrum, and pulling upon it can have but very little, if any, effect upon the prolapse of the rectum. Nor do I wish to speak at length, at this time, of the risk of unnecessarily fixing the intestine to the anterior abdominal wall; a danger which I have pointed out in a previous communication.¹² Theory aside, the futility of these operations is shown in the almost invariable recurrence of the prolapse after a sufficient period of observation.

IV. *Methods which attempt to get rid of the prolapse by resecting it.*

1. Gerhardt removed the prolapsed rectum by means of an eccraseur.

2. Weinlechner¹³ removed the prolapsed rectum with a ligature.

⁶ Weber. *Deutsch. Zeitsch. f. Chir.*, lxxii, 500.

⁷ Herzen. *Wjestnik Chir.*, 1901. Quoted after Beresnegowsky.

⁸ Rotter. *Zentralbl. f. Chir.*, 1903, No. 39.

⁹ Caddy. *Annals of Surgery*, xxi, 153.

¹⁰ Ludloff. *Archiv. f. klin. Chir.*, liv, 447.

¹¹ Von Eiselsberg. *Archiv. f. klin. Chir.*, lxxvii, 746.

¹² Moschowitz. *N. Y. Med. Jour.*, July 14, 1906.

¹³ Weinlechner. *Verhandlungen der K. K. Gesellschaft der Ärzte zu Wien*. June 8, 1883.

¹ Verneuil. *Bull. de la Soc. de Chirurgie*, xv, 754.

² Gerard Marchant. *Bull. et Mem. de la Soc. de Chirurgie de Paris*, xvi, 288.

³ Ekehorn. *Archiv. f. klin. Chir.*, lxxxix, 463.

⁴ Sick. *Zentralbl. f. Chir.*, 1900, No. 36.

⁵ Jeannel. *Gazette Hebdomadaire*, May 24, 1890.

3. Esmarch¹ used for this purpose an elastic ligature, and finally

4. Mikulicz² (in reality done the first time by Aufert) removes the prolapse with knife and scissors, closes off the anterior cul de sac, and then sutures the outer and inner cylinders together, at the line of section. This operation has undergone numerous modifications, mostly as to the technique, e. g., Sheldon,³ Cunningham,⁴ etc.; but the underlying principle remains the same. It has, however, numerous objections. Amongst these I would mention: hæmorrhage; the difficulty to suture together two sections of gut of such unequal calibers as are the inner and outer tubes; the danger of sepsis and peritonitis; in fact, this is the only operation which has an appreciable mortality; and, last but not least, the fact that the number of recurrences, in spite of the great authority of its sponsor, is very high. This is readily accounted for according to the pathology I have offered. In fact, the operation may be said to even invite a recurrence, because the hernial sac still remains, and has, if anything, been brought down to a lower level.

THE AUTHOR'S OPERATION FOR PROLAPSE OF THE RECTUM

My experience with the operations just enumerated does not extend to all. I have tried several, (cauterization with the actual cautery, Delorme, Roberts, Thiersch, Bier, Marchant, sigmoidopexies of various kinds, and Mikulicz's method) that at the time have appeared to me to be rational, and have witnessed the results of a considerable number of various operations in the practice of my colleagues. In all, recurrence was the almost universal rule.

When my studies led me to the conclusion that prolapse of the rectum was in every essential a hernia, I set out to devise an operation in which the principles of an operation for the cure of a hernia could be carried out.

In my earlier studies, with this end in view, I conceived an operation which could be per-

formed from below. I therefore performed the following operation in one case.

Abraham R., 50 years of age, was admitted upon the First Surgical Div. of Mount Sinai Hospital, in the service of Dr. A. G. Gerster (and I take great pleasure in acknowledging my gratitude for his co-operation and permission to operate these cases), April 17, 1908, with a prolapse of the rectum, four inches in length, and of twelve years duration. He was operated upon April 21st, by the following method:

An incision was made from about the middle of the sacrum to the posterior margin of the anal sphincter. The sacrum was now divided transversely, and the entire bone flap, including the coccyx and attached muscles, was reflected downward. My idea now was, to loosen up the rectum and retract it to one side, in order to reach the peritoneal sac. I was chagrined to find, however, that the ampulla of the rectum was so large as to completely block the anterior structures; furthermore, the resulting hole was so deep that sutures could be passed with the greatest difficulty only. To add to the embarrassment, I had overlooked the important fact that we were dealing with a sort of a sliding hernia; in other words, there was no isolable and removable sac. However, I finished the operation by closing off by sutures that part of the cul de sac of Douglas which I had opened, and then sutured the two levators together and to the rectum. The bone flap was replaced and fastened by sutures. In the subsequent course the bone flap necrosed, necessitating its removal. Patient lived a little over four weeks, and died of an ascending pyelonephritis.

It is true that during his lifetime there was no recurrence of the prolapse, but I would not be understood as reporting a cure. On the contrary, in spite of the correct anatomical principle involved, I abandoned the procedure and returned to my original method, that of reaching the malady by the abdominal route. This is the one practiced by me at present, and which I submit for your consideration.

Median abdominal incision, extending from the symphysis pubis to the umbilicus. After opening the abdomen, the patient is placed in an extreme Trendelenburg position. Every one with any experience knows the depth of the cul de sac of Douglas in a normal case, but he will be intensely surprised at its depth in cases of prolapse of the rectum; in fact, it extends several inches beyond the anus, as one can readily convince himself. The rectum is now pulled up and held taut. The

¹ Esmarch. *Deutsche Chir.* Lief. 48. Die Krankheiten des Mastdarmes und des Anus.

² Mikulicz. *Archiv. f. klinische Chir.*, xxxviii, 74.

³ Sheldon. *Surg., Gyn., and Obs.*, xi, 308.

⁴ Cunningham. *Annals of Surgery*, xlix, 681.

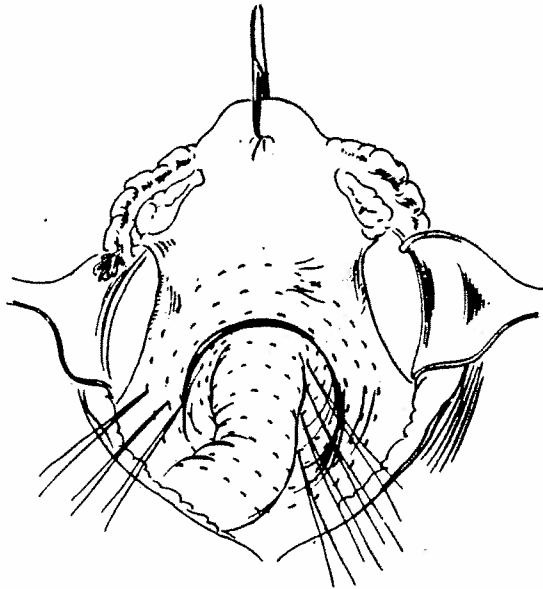


Fig. 13.

subsequent steps vary according to the sex of the patient; I shall describe an operation in the female sex.

Pagenstecher or silk sutures are passed circularly around the cul de sac of Douglas, and tied. The lowermost suture is placed about one inch above the inferior extremity of the cul de sac; similar sutures, six to eight in number, are passed at intervals, and persisted in as long as the peritoneum comes together until practically the entire pouch of Douglas is obliterated. (Fig. 13.)

It is advisable, and I always try to include in my suture the pelvic fascia, particularly that part which covers the levator ani; how often I really succeed in doing this I am not in a position to state.

(Theoretically it would be better to split the peritoneum in the depth of the cul de sac, and to suture the fascia first. I have attempted to do so in one case, but found the procedure so difficult that I abandoned it.)

When the sutures reach the region of the supravaginal portion of the cervix and body of the uterus, the sutures are anchored to these structures.

When approaching the rectum, the sutures coming from the sides of the pelvis, catch the serosa covering it, in firm and close stitches.

This is done, in order to prevent the possible formation of a hernia; in addition, these lateral sutures also materially aid in fixing the rectum to the sacrum and coccyx.

There are two structures which should be avoided, namely, the ureters and internal iliac vessels. The former can be marked by introducing ureteral catheters; the pulsation of the latter serves as a guide; neither of these structures have thus far caused me any embarrassment.

In older women the uterus is stitched to the anterior abdominal wall.

No fixation of the intestine, viz., sigmoid flexure, is undertaken, as it is superfluous.

Suture of the abdominal wall in layers.

The after-treatment is simple. I neither constipate nor move the bowels of the patients. The bowels will generally move of their own accord in less than a week. I have found that most of the patients require catheterization. In other particulars the after-treatment is that of any laparotomy.

To my mind the operation thus described would be ideal and perfect, providing we could select our cases and operate only those depicted in Figs. 8, 9, and 10. After the prolapse has become complete, i. e., when the prolapsed anterior wall has also drawn down the two lateral and posterior walls, it may become necessary to add also some sort of a plastic or fixation operation. I have thus far done so in two cases only. I have purposely refrained from performing this step, because I wished to test the principles underlying my operation.

REPORT OF CASES

Case 1. Sophie K., 34 years of age, was admitted upon the First Surgical Div. of Mount Sinai Hospital, July 26, 1907, suffering from a rectal prolapse, which had existed four years. Local physical examination revealed a prolapse the size of a fist. July 30th I performed a typical operation. Primary union. Discharged August 21st.

Patient was last seen and examined by me March 2, 1912. The result after nearly five years, is ideal in every respect.

Case 2. Marie W., 44 years of age, was admitted upon the First Surgical Div. of Mount Sinai Hospital, December 9, 1908. She had been suffering for over fifteen years from the discomforts of a rectal prolapse. Numerous operations had been performed upon the rectum, and finally six years ago, sigmoidopexy. The benefit obtained from these

operations amounted to nothing, as they were promptly followed by a recurrence of the same dimensions as before operation.

Local physical examination revealed a prolapse the size of a child's head; the sphincters were very much relaxed, easily admitting the entire hand.

December 26, 1908, typical operation. Primary union. Discharged January 30, 1909.

Patient was last seen and examined by me February 24, 1912. The result is an excellent one. Patient considers herself cured; but on extreme straining, a narrow rim of mucous membrane just becomes visible.

Case 3. Elka I., 58 years of age, was admitted November 16, 1908, upon the Second Surgical Div. of Mount Sinai Hospital, in the service of Dr. Lilienthal. She has been suffering from a prolapse of the rectum, for a number of years. At first the prolapse was reducible by contracting the levator ani, for the past year it could be reduced only manually.

Local physical examination showed a rectal prolapse the size of an orange.

November 20th, Dr. Lilienthal extirpated the entire prolapse after a modified Mikulicz method. An uneventful convalescence followed; but while the patient was still in the hospital, a recurrence was noted, and reached a size of three inches.

January 10th, at the request of Dr. Lilienthal (and I gladly avail myself of this opportunity to again express my gratitude for his invitation to operate on this case) I performed a typical operation. Primary union. Discharged February 6, 1909.

Patient was last seen and examined by me February 26, 1912. The result is excellent. Patient considers herself cured, but on extreme straining a narrow rim of mucous membrane just becomes visible.

Case 4. Fanny P., 42 years of age, was admitted to the First Surgical Div. of Mount Sinai Hospital, February 4, 1910, complaining of incontinence of feces, and a prolapse of the rectum, which had existed for three years. Local physical examination showed a rectal prolapse the size of a goose egg, and in addition a very large rectocele and cystocele.

February 8th. Typical operation. Primary union. March 3d, Hegar perineorrhaphy. Discharged March 21, 1910.

Patient was last seen and examined by me March 5, 1912. The result, as far as the rectal prolapse is concerned, is perfectly ideal; but she has a hernia in the laparotomy cicatrix.

Case 5. Harry H., 22 years of age, was admitted to the Har Moriah Hospital May 19, 1911, with a prolapse of the rectum, which had existed for sixteen years. Local physical examination revealed the presence of a prolapse of the rectum the size of a goose egg.

May 22d, typical operation, in the presence of Dr. Hy. Roth. Primary union. Discharged June 9, 1911.

Patient was presented at a meeting of the Surgical Section of the N. Y. Academy of Medicine December 1, 1911. He was last seen and examined by me February 22, 1912. Result ideal in every respect.

Case 6. Annie S., 50 years of age, was admitted to the Second Surgical Div. of Mount Sinai Hospital September 1, 1911, with a rectal prolapse, which had existed for six months. Local physical examination revealed the presence of a rectal prolapse the size of an orange.

September 6th at the request of Dr. Chas. A. Elsberg (and I take great pleasure in expressing my thanks for his invitation to operate on this case) I performed a typical operation. Primary union. Discharged September 28th.

Patient was last seen and examined by me February 26, 1912. Result excellent. Patient considers herself cured in every respect; but on extreme straining a narrow rim of mucous membrane just becomes visible.

Case 7. Jennie G., 50 years of age, was admitted July 29, 1911, upon the Gynecological Division of Mount Sinai Hospital in the service of Dr. Brettauer. She had been suffering for over fifteen years from a prolapse of the rectum, and was operated upon repeatedly from the rectal aspect, and once by laparotomy for its relief. August 1, 1911, she was operated upon by Dr. S. M. Brickner by a modified Bier method. None of these operations were followed by a curative result. On December 20, 1911, she was admitted upon the First Surgical Div. with incontinence of the rectum, and a prolapse the size of a goose egg. On account of the numerous preceding operations upon the anus, there was practically no sphincter present. After reduction of the prolapse, it immediately prolapsed, even in the recumbent posture, so that the patient never made even the attempt to reduce it.

December 27th, typical operation; primary union. January 10th, Hegar perineal plastic, at which occasion an attempt was also made to reunite whatever fibres of the sphincter still remained. Primary union. Discharged February 14, 1912.

Patient was last seen and examined by me February 24, 1912. Result ideal in every respect.

In connection with these histories, I take great pleasure in incorporating the following letters and histories.

N. Y., March 4, 1912.

My dear Doctor Moschcowitz:

Enclosed please find the history which I promised to send you. I have examined the patient to-day, and find that he is perfectly well and presents not the slightest evidence of a return of his former disease.

With kindest regards, I am

Sincerely yours,

(Signed) HENRY ROTH.

Case 8. Hospital No. 34543. Henry F., 25 years old, bookkeeper by occupation, was admitted to Lebanon Hospital on August 30, 1911, and gave

the following history. For the past eighteen years he has suffered from severe rectal tenesmus. During defecation he feels a large protrusion of the rectum. There is a passage of blood and mucus every time he has a bowel movement. The protruded bowel must be replaced to allow the escape of feces. He was operated upon for prolapsed rectum three years ago, and again one year ago. In both instances the operation consisted in cauterization of the prolapsed bowel. He obtained very little relief from these operations. Shortly before his admission to the hospital he passed through an illness, which presumably was an attack of appendicitis.

On physical examination slight tenderness was revealed in the right iliac region. On straining, the rectum was readily prolapsed, the protruding mass being about six inches long and bluish red in color. It bled on the slightest touch. The patient was quite anæmic, but fairly well nourished.

Operation by Dr. Henry Roth, on September 6, 1911. Coeliotomy slightly to the left of the median line. Trendelenburg position, pelvis cleared of all intestine except sigmoid, which was pulled up as far as possible. The recto-vesical cul de sac was then obliterated by a series of purse-string sutures of Pagenstecher linen thread, according to the method of Dr. A. V. Moschowitz. Appendix showed evidence of recent inflammation and was therefore removed. Layer-suture of abdominal wall. Had postoperative pneumonia, which ran a mild course.

Discharged cured September 28, 1911.

N. Y., February 28, 1912.

Dear Dr. Moschowitz:

. . . If there are any other facts in regard to the cases which you wish to know, please let me know.

Very truly yours,

(Signed) CHARLES H. PECK.

Case 9. Mrs. E. P., 45 years, housewife, was admitted to the Roosevelt Hospital November 6, 1911, suffering from complete prolapse of the rectum, which on straining protruded several inches beyond the anus. All coats were included in the prolapsed portion.

The patient was emaciated and debilitated and, as the sequel proved, in no condition to be subjected to any major operation. The operation of obliteration of the cul de sac was performed on November 13, 1911, through a median laparotomy wound. The cul de sac was very deep, and the tier sutures of catgut were carried well up on the body of the uterus. The result seemed very satisfactory in keeping the small intestines out of the depths of the pelvis, and in anchoring the mesorectum to the lateral pelvic walls. The operation was apparently well borne, but suppression of urine developed, and the patient died on November 20, seven days after the operation.

Autopsy showed the sutures holding perfectly, the small intestine well up out of the depths of the pelvis, and what seemed effective anchorage of the rectum. Careful examination for possible inclusion

of a ureter in the suture showed that both were free and uninjured.

Death was due to causes not connected with the operative procedure, and would have undoubtedly followed any major operation.

The conception of rectal prolapse, in complete cases, as a hernia of the pelvic contents, the sac of which is the cul de sac of Douglas, seems to me a most rational one, and obliteration of the cul de sac by suture is well worthy of a trial as a means of cure.

RESULTS

A total of nine cases have been operated upon, thus far, by this method. On account of the fatal issue of Case 9, there are available only eight cases for the purpose of estimating the ultimate outcome.

The final results may be judged from two viewpoints; that of the patient, and that of the surgeon. It is surprising, that in this instance the patient is better satisfied than the surgeon. In fact, from the patient's viewpoint the cures may be estimated at one hundred per cent.

From the hypercritical surgeon's viewpoint, however, I would say that only five cases (cases 1, 4, 5, 7 and 8) may be considered cured; not only symptomatically, but anatomically. By this I mean that in these five cases there is, not even on greatest straining, more of the mucous membrane of the rectum visible than is normal. In the remaining three cases (cases 2, 3 and 6) I estimate the percentage of the cure at about ninety. In other words, under normal conditions, for instance, during defecation or coughing, there is absolutely no deviation from the normal, but when the patient strains his utmost, the anus opens up, so that a narrow rim of the mucous membrane is just visible. I am of the firm opinion that even this can be corrected by the addition of a small plastic in the case indicated.

PREVIOUSLY DESCRIBED OPERATIONS COMPARABLE TO THE ONE JUST SUBMITTED

My studies on prolapse of the rectum date back six years. The first operation, done by the method which I described, was performed July 30, 1907, the last performed December 27, 1911. Appreciating the fallibility of an operation for prolapse of the rectum, which

has not stood the test of a long period of observation. I refrained from publishing this operation previously. I would not have done so even at present, had not an eminently successful case, which I presented at the N. Y. Academy of Medicine, stimulated our honored chairman to invite me to present my observations at this meeting.

Up to a few months ago I was under the impression that both my ideas and my operation were original with me. In the course of preparation of this paper, I discovered that Quenu and Duval,¹ in 1910, published a method in which two sutures are placed circularly in the cul de sac of Douglas. A more extensive search of the literature brought to light that Bardenheuer² and Samter³ in 1902 advocated a similar procedure. While all these writers divined the essential principle of the operation for the cure of prolapse

of the rectum, their understanding of the true pathology of the malady is not altogether perfect, inasmuch as they all recommend colopexy as a principal part of their operation. My contention is furthermore substantiated by the paucity of the theoretical aspects of the subject in their publications. In fact, there is not in literature one satisfactory, systematic exposition of the true anatomy and pathogenesis of prolapse of the rectum.

Indeed it is surprising that the operation was not conceived before, in view of the highly significant investigations of Waldeyer upon the anatomy of the pelvis, published in 1899. A careful perusal of the work suggests such an operation almost intuitively.

However, the question of priority of this operation is not a matter of profound importance. My main purpose is a desire to throw light on a subject which has commanded only superficial attention, and to interest you in an operation which brings relief to a class of patients that have hitherto obtained little or none.

¹ Quenu and Duval. *Revue de Chirurgie*, xli, 135.

² Sonnenschein. (Bardenheuer) *Zentralbl. f. Chir.*, 1902, 1129

³ Samter. *Mitteilungen aus den Grenzgeb.*, etc., 1907.

GASTROENTEROPTOSIS

WHEN IS SURGERY INDICATED?¹

By JOSEPH RANSOHOFF, M. D., F. R. C. S. (ENG.), CINCINNATI
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IN the ever-widening border-strip between medicine and surgery, across which the internist and the surgeon regard the manoeuvres of each other with interest, or, possibly, with suspicion, stands the unfortunate visceroptotic, knowing not whither to turn. Passive from birth, through heredity, or by natur-anlage, he, or oftener she, is pushed from one to the other, and knows not where to land. Read the report of the combined meeting of the American Obstetrical and the American Surgical associations in the transactions of the American Surgical Association, 1910, and it will appear that the patient with visceral ptosis has been definitively given a passport to the domain of the

internist, from which the orthopedist may yet get him by requisition. It is to be regretted that ptosis of the abdominal viscera was always considered by Glenard as only a part phenomenon of a very complex condition. There can be no question but that in very many cases this is true. Then, if it is not congenital, it develops early in life, is distinctly hereditary, and is unmistakable in its manifestations. A young woman, more rarely a male, without any of the pathologic causes of tissue relaxation, has stooped shoulders, a dry skin prematurely wrinkled, breasts pendulous, and an abdomen flabby, like that of a woman who has given birth to children; hernial apertures open, with uterus lowered

¹ Read before the Southern Surgical and Gynecological Association, Washington, December, 1911.