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ORIGINAL MEMOIRS.

SURGICAL ASPECTS OF MEMBRANOUS PERICOLITIS.

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AMONG the surgical problems at present under discussion, much interest attaches to the effect upon intestinal peristalsis of certain membrane-like films, which in certain cases are found during exploration of the abdomen covering to a greater or less extent the cæcum and ascending colon. Over most of the areas in which such formations exist they appear as a thin veil-like film, but in some cases at certain limited areas a much more positive fibrous proliferation may be found to be present, producing distinct band-like conditions; these may very materially restrict the expansibility of the intestinal wall, or even bind down the gut at some point so closely as to positively narrow its lumen. The presence of such a membranous new formation at the caput cæci may so bind down the appendix as to markedly angulate it and lead to subsequent degenerative changes in its walls, or may so pull down and fix the terminal portion of the ileum as to interfere with the normal delivery of the fecal content of the ileum into the cæcum (Figs. 1, 5, 9, and 10).

For the first clear description of the pathological considerations and clinical relations of this condition, credit must be given to Dr. Jabez N. Jackson, in a paper read by him so

recently as December, 1908 (*Surgery, Gynæcology and Obstetrics,* September, 1909, p. 278). Jackson in his paper very justly remarks that he was sure that this condition had been observed, possibly frequently, by every surgeon of experience. Nevertheless it had not been either properly described from the pathological side or recognized as a clinical entity, neither had it received any special surgical consideration.

Lane, in his paper on chronic constipation, which was published in the same journal in February, 1908, practically describes the condition under consideration, characterizing it as consisting of the development of adhesions between the outer aspect of the large bowel and the peritoneum covering the abdominal wall in its vicinity. This formation, he says, is most apparent at the first instance in the cæcal portion, and gradually extends to the termination of the large intestine. The development of these films and bands of adhesion is considered by him as the sequel of long existing enteroptosis by which has been awakened some increased hypertrophic tendency in the strained fibres of the proper membranous anchors of the bowel, with results that, while they are compensatory as far as the ability to support strain is concerned, they are in some cases pathological in the degree to which they interfere with the normal peristalsis of the bowel.

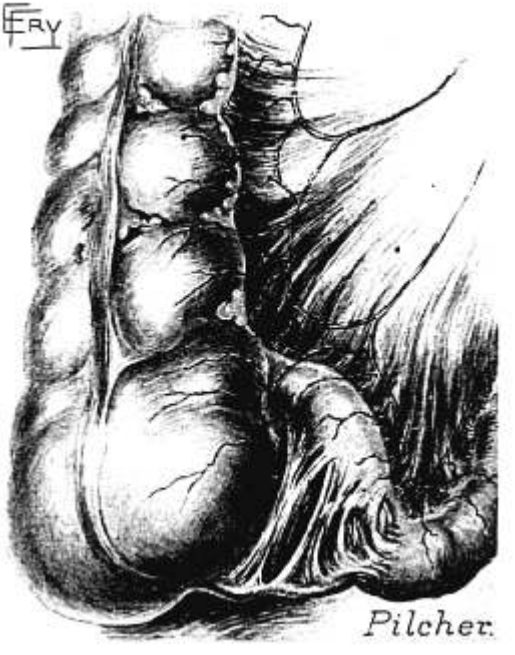
Charles Mayo, in a recent paper (Collected Papers, vol. ii, p. 221), suggests that these bands and films may be due in some cases to the "late rotation of the bowel and descent of the cæcum from its hepatic position after the formation of the parietal portion of the peritoneal cavity in the infant."

He adds, however, that he has observed many cases in which a definite kink of the ileum, within a few inches of its termination, was evidently a condition of inflammatory origin.

Gerster (ANNALS OF SURGERY, September, 1911, 325) regards them as the result of infectious processes associated with chronic colitis.

Since my attention has been called to this condition by these writings and the observations of my sons, Drs. Paul and James Pilcher, I have looked for it, and having learned to recognize it, I have found it to be by no means a

Fig. 1.



The simpler and more common disposition of adhesion bands binding appendix, cæcum and ileum together.

rare condition. I am sure that I had seen it repeatedly in past years, but my eyes had been closed so that I had not appreciated its meaning nor its relations to the symptoms for the relief of which my efforts were being exerted.

As to the *etiology* of these films and bands, that view which considers them to be *the result of long-continued or oft-repeated mild infections of the peritoneal covering of the cæcum and appendix* transmitted through the intestinal wall seems to me most probable. No one who has operated many times for the removal of the appendix can have failed to note the frequent co-existence of a more or less extensive, and a more or less intense, congestion of the cæcal peritoneum, a true typhlitis.

Thus, for example, in a woman under our care during the past year, who had suffered for six weeks from the symptoms of a subacute appendicitis, when she was operated upon an elongated, thickened, and congested appendix was indeed exposed and removed, but more, and of especial interest in this connection, the peritoneal surface of the adjacent cæcum also was much congested and was covered with a thick membranous film.

I have long appreciated that in occasional instances this co-existing perityphlitis and pericolitis was a more important pathological entity than the appendicitis itself.

In the cases which form the chief basis of the present communication, the history clearly indicated in each case that a pre-existing local infection was the cause of the films, which operation demonstrated to be present as a part of the morbid changes which had taken place.

The *symptoms* which such pericolitic membraniform new formations may produce will depend upon the degree of interference which they occasion with the proper function and circulation in the part. Though they may vary much in detail they will still have a general similarity. Discomfort, increasing at times to positive pain, in the right iliac region is quite constantly present. Deep pressure in this region will elicit tenderness. Exacerbations of this tenderness due to matters of diet or exercise occur from time to time, accom-

panied by colicky cramps, significant of paroxysms of muscular spasm in the bowel musculature.

Fecal stasis to a varying degree is the result of various factors which combine in many different degrees, at various times and in different cases, to interfere with the onward progress of the intestinal content. These are:

(*a*) Defective peristalsis due to the manner in which the bowel is hampered and confined by a broad enveloping film, or tied down by stronger and more distinct bands and adhesions; (*b*) Real obstruction due to a diminution of the bowel's lumen by constricting bands or sharp angulations; (*c*) Enterospasm, a variable, uncertain, and possibly transient but recurrent factor. The constant fretting of the affected segment of the gut in its efforts to do its work and the irritable condition of the wall of the gut predispose to the production of muscular spasm. Such spasm increases for the time obstruction and aggravates the local pain and tenderness. (*d*) Autointoxication: A long train of multiform general symptoms springs from the defective fecal drainage, more or less marked according to the avidity of the absorbents of the imperfectly drained segment and the special resisting power of the individual. The condition is quite different from that of ordinary constipation, in which the more or less dehydrated fecal matter is retained in the descending colon and sigmoid flexure, where the provisions for bacterial changes and for absorption are at a minimum. Into the cæcum and the adjacent ascending colon pour the fluid contents of the ileum; intestinal bacterial activity is here at its highest point, the supply of organic material in the most favorable condition for putrescent changes is continuous, the absorbents are abundant and active; drainage from this portion of the intestine should therefore be always adequate and prompt, and whenever it is interfered with, the symptoms of autointoxication become at once a prominent element in the symptom complex that attends the condition.

The systemic symptoms produced by the autointoxication caused by defective cæcal drainage may in fact so dominate the situation that the less strongly accentuated local symptoms

may be quite overlooked, or accepted as of little importance. The essential element, however, is the fecal stasis in the cæcal region. The vicious train begins with chronic pericolitis, includes next constricting bands and restraining films, then fecal stasis develops, then autointoxication ensues, and finally neurasthenia in some of its many forms crowns the process.

Pain may be felt in and often is referred to the stomach, and the secondary gastric distress and digestive disturbance may be so marked as to be considered as primary both in time and importance. The teaching, that in all cases of chronic gastric disturbance the condition of the cæcum and its appendix should be carefully inquired into, is eminently sound, for in a considerable proportion of such cases in the latter region is to be found the root of the disorder.

Kidney Complications.—Renal irritation and ultimate chronic nephritis may be a sequel to the long-standing cæcal stasis and should not be overlooked. It has been demonstrated by Franke (*Coliinfektion der Harnwege, Mitteilungen aus den Grenzgebieten der Med. und Chir.*, No. 4, pp. 511–674) that the cæcum and ascending colon are connected by a train of lymphatics with the right kidney. He further states that bacteria are able to pass directly from the intestine into the lymph-vessels if there is even a slight lesion of the intestinal wall. That there are produced by these micro-organisms inflammatory lesions of the wall severe enough to cause the production of a thickened tissue externally (membranous pericolitis) is evidence that such transmigration of the bacilli through the wall and into the surrounding lymph spaces does take place not infrequently. That some pathologic conditions of the kidney are directly consequent to precedent pathologic changes in the cæcum and ascending colon seems to be exemplified in such cases as the following in our series:

CASE I.—The patient was a lady who had for some time suffered from obstinate constipation. Two months before examination, after some unusual exertion, she began to suffer from severe cramps across the lower abdomen. The pain, after several days' duration, finally limited itself to the right side of the

abdomen in its lower quadrant. Several days subsequently, sharp stabbing pains referred to the right costovertebral angle began to be complained of, and at this point there was marked tenderness. During the succeeding weeks she suffered from a frequency of urination, and at times the tenesmus of the bladder was practically continuous. The urine contained a slight amount of pus, a trace of albumin, and numerous granular casts.

Cystoscopic examination showed an open dilated ureter ostium on the right side, the left being normal. The phenolsulphonephthalein reaction showed a delay of function in the right kidney of 29 minutes, the left being normal 10 minutes.

Operation, three months after the onset of the patient's complaint, revealed a chronic appendicitis and pericolic adhesions, with right kidney markedly congested and surrounded by a zone of perinephritic infection of recent development and in an acute stage.

CASE II.—A woman, twenty-four years of age. Had been suffering for several years from progressive constipation without any noticeable constitutional effects. Twelve weeks before examination by us she was seized with an acute pain referred to the right side. Its duration was brief and was accompanied by the passage of blood in the urine. It recurred at intervals subsequently, and radiated down the course of the right ureter to the labium. At various times she continued to pass small amounts of blood in the urine. There was a moderate frequency of urination during the day. Pus was reported in the urine by her physician during these attacks. Her chief complaint was continued pain in the back and painful urination. After cystoscopic examination elsewhere she was advised to have the right kidney removed, although repeated X-ray examination failed to show any stone. She now came under our care. Renewed cystoscopic examination showed a right-sided œdema of the trigone, leading directly up to the right ureter opening, which, however, was normal. Catheterization of the right ureter showed in the urine obtained an excess of renal cells, a few red blood-cells, but no pus. Vaginal examination elicited a tender point on the right side corresponding to the position of the ovary, pressure upon which caused the same pain which the patient had previously complained of. Abdominal palpation elicited a moderate tenderness over the region of the appendix and cæcum.

The previous advice of direct approach to the kidney was disregarded and a median suprapubic incision undertaken. The

right ovary was found markedly diseased and the right tube much congested and thickened. The appendix was the seat of a chronic inflammation of subacute type and was removed. The cæcum and ascending colon were further found to be covered by a definite film of inflammatory new formation, which was dissected off. Convalescence was uneventful, and after the second day up to the present time no further subjective sensations referable to the kidney have been remarked by the patient, and the urinary secretion became quickly normal.

To these particular cases which have come to operative demonstration, I would add the observation of our associate in radiography, Dr. Charles Eastmond, who informs us that he has noticed in many patients sent to him for kidney pictures, cases in which renal pain had caused suspicion of the presence of stone in the kidney, that in those cases in which the X-ray reveals no evidences of stone present in the kidney it was noticeable that in many the cæcum and ascending colon were markedly dilated and that also in many instances the kidney was lower than normal.

The anatomical fact that the lymphatic connections of the cæcum and ascending colon with the right kidney are such as to make possible the infection of the kidney from the cæcum and colon under certain conditions, this fact, I say, is of sufficient importance to lend additional gravity to the existence of the colonic condition. Too much stress cannot be placed upon the fact that in an individual case the right portion of the large gut and the right kidney may both be diseased, and that unless careful examination be made the pathologic condition involving the alimentary canal is likely to be overlooked, although it is the primary causative factor. In such a case an attack upon the kidney alone, from which the major complaint arises, would still leave conditions that would make the result imperfect. Persistent pain, referred subjectively to the right kidney, with some pus and blood and casts in the urine, with negative X-ray findings as to stone in the kidney and positive evidence of cæcal stasis, should suggest active efforts to relieve the latter as the condition of fundamental importance.

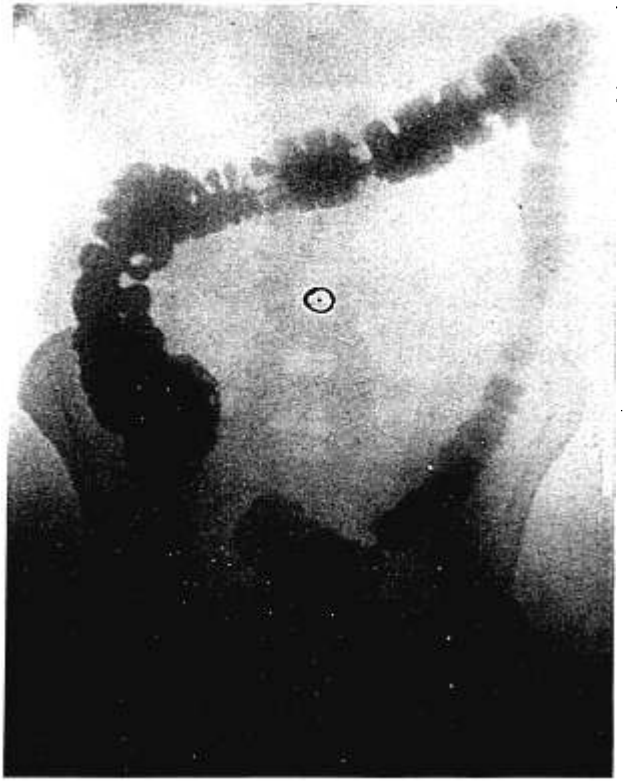
Diagnostic Use of the X-ray.—In case of chronic pain in the right iliac region, associated with intestinal disturbances, skiagraphs of the cæcum and colon, filled with a bismuth emulsion, are of great assistance in arriving at a positive diagnosis. The clear manner in which the colon can thus be outlined and its course traced is extremely striking. By aid of the bismuth filling the location and degree of a constriction, the presence of an angulation and the amount of ptosis, if any, can be plainly declared.

We present herewith reproductions of a number of skiagraphs so obtained, the special features of which are detailed in the legends attached to the several plates (Figs. 2, 3, 4, and 8). The skiagraphic work in these cases has been done by Dr. Charles Eastmond.

The technic of this bismuth meal is as follows: The bowels having been emptied during the day by a dose of castor oil, the patient is given at ten o'clock in the evening a mixture containing from two to four ounces of bismuth subcarbonate, the amount to be determined by the size and weight of the patient. To this is added six ounces of mucilage of acacia, and the quantity thus obtained made up to sixteen ounces with top milk, which serves to disguise the insipid taste of the bismuth and the acid taste of the acacia. The patient then reports to the radiographer the following morning at nine o'clock, after an approximate interval of twelve hours, at the end of which time it will usually be found that most of the bismuth emulsion has passed the terminal ileum and has already filled the first part of the big gut. Subsequent exposures must be determined according to the degree to which the bismuth is found to have progressed along the bowel at the first examination. In many cases a supplementary enema of bismuth is administered through a short rectal tube. Observation shows that the emulsion is carried around to the cæcum within four or five minutes by retrograde peristalsis. By combining the two methods a good demonstration of the entire large intestine can be secured (see Fig. 2).

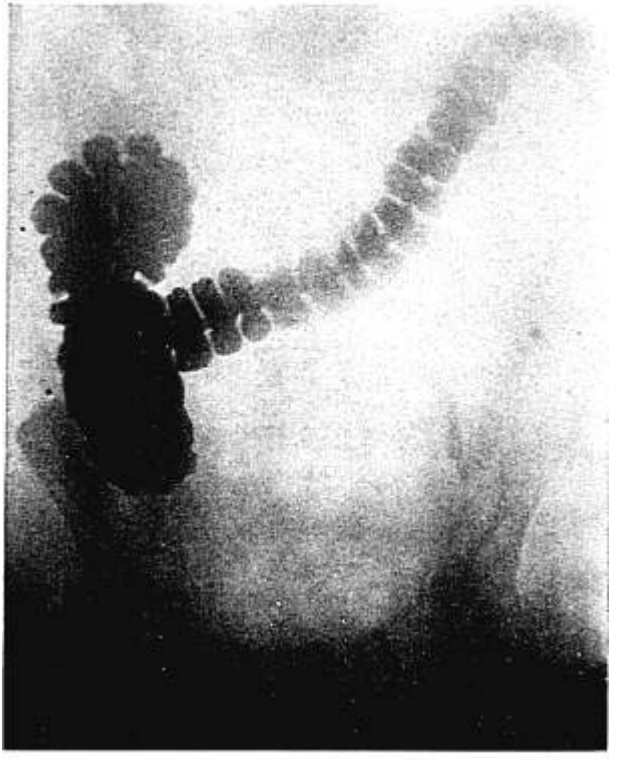
Position of the Cæcum and Colon.—Necessarily some familiarity with the location and appearance of the normal

FIG. 2.



The normal colon. Skiagraph taken 12 hours after the ingestion of bismuth emulsion, supplemented by an enema of the same given 10 minutes before the photograph was made. Note the position of the cæcum in the concavity of the iliac fossa; note the oblique manner in which the transverse colon crosses the abdomen about the level of the umbilicus upward to the splenocostal region on the left; note the sharp angle at the splenic flexure which is typical; note the crumpled folds of the sigmoid flexure in the superior pelvic strait. The position of the umbilicus is indicated by the circle. Skiagraph presented as a standard for comparison.

FIG. 3.



Reduplication of colon by film binding ascending colon and first portion of the transverse together. Position of cæcum somewhat higher than normal; sharp ascent of transverse colon as it passes to the splenocostal region.

N.B. In this case the dominant symptoms were those of obstruction at the splenic angle. At this point, on opening the abdomen was found a constricting band encircling the colon which had been formed by an epiploic appendage whose tip had been thrown around the bowel and adhered to the mesocolon so as to form a circular loop around it. The peritoneal surface of the transverse colon proximal to the point of constriction was congested and presented an incipient membranous film, presumably the early stages of the formation which in a more advanced development had bound the two segments of the colon together in the right iliac region.

intestine, when filled with bismuth mixture, is requisite in order to satisfactorily interpret the X-ray picture. The course and relations of a normal colon are well shown in Fig. 2. The cæcum is seen to be situated well above the brim of the pelvis. When the colon is ptosed, the cæcum may lie near the brim, and in severe cases may hang over into the true pelvic cavity. The hepatic flexure is found at or above the level of the umbilicus. The most constant point of fixation of the colon is at the splenic flexure where the intestine is attached by the short phrenocolic ligament to the left abdominal wall under the spleen. This is the highest attachment of the colon, and to this point the transverse colon normally ascends for some inches and there makes a sharp bend downward, so that portions of the transverse and the descending colon normally lie parallel to each other in close contact for some inches.

Exploratory Incision as a Means of Diagnosis.—While a due consideration of the local and general symptoms which attend cases of membranous pericolitis is sufficient to establish a strong probability of the existence of that condition in a given case, and the findings of the bismuth X-ray picture may corroborate the opinion formed, nevertheless, an exploratory incision is requisite to fully establish the diagnosis, estimate the full extent and nature of the condition, determine its amenability to treatment, and point out the exact procedures needed to best overcome the conditions found.

It should not be forgotten that an unduly mobile cæcum with ptosis may lead to distention, atony, and inflammation of its walls, and thus conduce to fecal stasis and the secondary changes springing therefrom, without the antecedent presence of the membranous films and bands which have been considered in the preceding paragraphs. The symptoms of *cæcum mobile* with atony and stasis and distention with gaseous products differ only in degree from those of the more positive obstruction, and inasmuch as they are amenable to control by such non-operative measures as suitable abdominal supporting bandages, proper exercise and diet, the use of enemata and laxatives, and the administration of intestinal antiseptics, the cautious surgeon would naturally reserve the

resort to operative measures until after a reasonable period of trial of such hygienic and medicinal treatment. The persistence of the local symptoms despite treatment should, however, call for operative exploration.

In a large proportion of cases the appendix is involved in the infection process, if indeed it has not been its original nidus, and it is probable that a case will come to operation with the primary diagnosis of appendicitis. It occasionally happens that when the appendix is exposed the changes found in it do not seem commensurate with the symptoms previously existing. In every such case the incision should be made sufficiently free to permit of full exposure and careful examination of the terminal portion of the ileum and the cæcum and colon as far as the hepatic flexure. More than this, it is desirable in many cases that the gall-bladder and pylorus be also palpated and their condition ascertained. In many cases the appendix will already have been removed months or years previous, and the persistent continuance of the right iliac symptoms notwithstanding the removal of the appendix is the occasion of the call for relief.

The best place for such an exploratory incision is along the outer border of the right rectus muscle, or through its substance, opening its posterior sheath. A primary longitudinal incision in this location with its upper end at a point somewhat above the umbilicus and extending downward some three inches or more will give good access to the region involved. Such an incision can readily be prolonged in either direction as the subsequent needs of the exploration may indicate.

The primary indication of treatment after the abdomen has been opened is to cut all the confining bands and remedy any sharp angulation that may be demonstrable (Figs. 1, 5, 8, 9, 10, and 12). A thin pannus-like membranous veil spreading out over the anterior wall of the intestine as a whole need not be removed *in toto*, but any cord or band-like aggregation of its fibres should be cut, possibly repeatedly, until full relaxation is obtained.

All raw surfaces produced by the freeing incisions must be

FIG. 4.

Membranous pericolitis with partial obstruction at hepatic flexure by band. Head of cæcum and terminal portion of ileum bound down to brim of upper pelvic strait. The skiagraph shows the cæcum and ascending colon to be distended by the bismuth mixture; the partial obstruction at the hepatic flexure is demonstrated. Note the cæcum drawn down to and projecting over the brim of the pelvis; note the lowered position of the transverse colon, which crosses the abdomen in a nearly straight direction below the level of the umbilicus, and then makes a marked angle in the left iliac fossa as it turns upward to ascend to the splenocostal region.

covered in by peritoneum secured by sutures, so as to prevent the renewed formation of crippling adhesions.

After-treatment should not be neglected following operative recovery. This should be along the same lines as those employed for relief before operation, and should now be followed by much more positive and lasting benefit.

ILLUSTRATIVE CASES.

CASE III.—An intelligent man, thirty-seven years of age, presented himself with the following history: As a youth and young man he had enjoyed good health and had displayed an activity and energy above the usual. About five years ago he began to suffer from pain and tenderness in the right iliac region. This was diagnosed as appendicitis, and for its relief he was operated upon in the usual manner by a surgeon in a neighboring State. He made a rapid and uncomplicated operative recovery—was out in two weeks—but since that time has never been well. He has suffered constant discomfort in the right iliac region, with frequent attacks of pain attended with a sense of distention and a perceptible temporary tumor in that region. He has been obstinately constipated, has manifested the usual effects of autointoxication, such as headaches, general malaise, exhaustion after slight physical effort, imperfect circulation as manifested by coldness and clamminess of the hands and feet, dizziness whenever he bends down, appetite good but frequent nausea, furred tongue, yellowness of the conjunctivæ, drowsiness, unrefreshing sleep.

Examination at the time of admission to the hospital confirmed the above conditions, except that palpation of the abdomen was negative save over the gall-bladder, where deep pressure elicited some tenderness. A bismuth X-ray skiagraph gave a distinct outline of the last portion of the ileum, of the cæcum, and the colon (see Fig. 4). There did not appear to be any kink in the ileum, but the base of the cæcum was depressed to the brim of the pelvis. The whole cæcum and ascending colon up to the hepatic flexure were greatly dilated, and the dilated portion was limited by a well-marked line of constriction which separated the hepatic flexure from the first portion of the transverse colon. The remaining portion of the colon, which had been

filled by a bismuth enema, was normal. A second exposure, made thirty minutes subsequent to the first, showed the cæcum less distended, some of the bismuth mixture filling it having now passed into the transverse colon.

As the patient had been under appropriate medical treatment for a long time, there was no hesitation in resorting without further delay to exploration. This was carried out by means of a five-inch incision through the upper and middle portion of the right rectus muscle. The head of the cæcum was found bound down to the brim of the pelvis by a fairly dense membranous sheet of inflammatory new formation (Fig. 5), which extended out upon the last three inches of the ileum. The appendix was absent, its point of insertion into the cæcum being marked by a smooth scar. The ascending colon, as far as the hepatic flexure, was covered by a thin translucent pannus-like film of similar character. At the hepatic flexure this was thickened into a well-marked band about one-half inch in width, which constricted the flexure. A free division of the ileocæcal pelvic sheet was made so as to free the head of the cæcum and the ileum to a normal degree (Fig. 6). The great vessels along the brim of the pelvis were exposed in this demonstration. The reflected portions of the peritoneum were replaced and sutured into position so as to cover in the raw surfaces exposed by this procedure (Fig. 7).

The film covering the anterior surface of the colon was carefully divided in the direction of the longitudinal axis of the bowel and allowed to retract, so as to expose the normal longitudinal band running along that portion of the intestine. The result of this division was manifestly to render more mobile the intestine. The band binding down the hepatic flexure was then divided and the hepatic flexure loosened. The peritoneum was drawn over the raw surfaces.

Careful examination of the gall-bladder and gall passages and adjoining viscera was then made, and no appreciable lesions were detected. They were not disturbed. The wound was then closed by the usual layer suture. A smooth operative recovery followed. The later effects of these measures have been relief of the constipation, the cessation of the local pains in the right iliac region upon the disappearance of the constipation, and a marked improvement in the neurasthenia.

FIG. 5.

A further extension of pericolic films. In addition to the adhesions binding together the appendix, cæcum, and ileum, note the strong band extending from the ileum to the iliac fossa and the films restricting the mobility of the cæcum and the ascending colon. Case III.

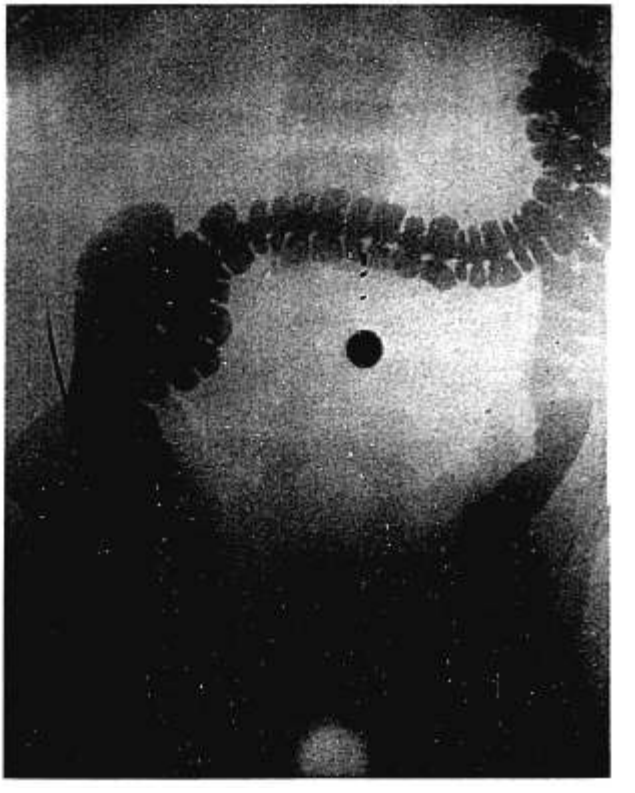
FIG. 6.

To show operative steps taken for the relief of the condition shown in Fig. 5. Membranous fold binding ileum, appendix and head of cæcum divided transversely and sutured longitudinally; appendix freed and ready to be removed; film and bands over cæcum and colon divided, dissected back, ready to be tucked and sutured beneath the freed cæcum.

FIG. 7.

Condition as presented at the conclusion of the operation for relief in Case III. The ileum and the head of the cæcum have been freed and are now being held up by the thumb and finger of the operator; the appendix has been removed; that portion of the floor of the iliac fossa from which these parts have been enucleated is again carpeted by peritoneum secured by proper lines of suture.

FIG. 8.



Acute angle at hepatic flexure. Ascending and first portion of transverse colon bound together after the fashion of the two barrels of a double-barrelled shot-gun by membranous veil containing multiple well-defined bands shown in the sketch forming Fig. 9. Note there is no ptosis of the cæcum or colon.

CASE IV.—This patient was a large, athletic, finely developed man, thirty-four years of age, who had always pursued an outdoor occupation. Seven years ago he was subjected to operation for what was diagnosed as acute appendicitis, from which operation he made an apparently uncomplicated recovery. At the end of a year, however, he began suffering from pain in the right iliac region of the same character and in the same location as that which had attended his primary attack, though less intense in degree. He was laid up by this for some days. Since that time up to the present he had had frequent similar attacks lasting from a few hours to a day. These he described as being attended with a sense of distention, and at times a visible tumor in the region of the cæcum could be determined. Relief was experienced after the sensation of the passing of gas. The bowels were habitually constipated, and at the time of these attacks relief followed a movement of the bowels. At the present time he has discomfort practically all the time over the region of the ascending colon and has the typical symptoms of autointoxication.

Upon examination there was tenderness upon pressure in the right iliac region. Gurgling sounds were produced by pressure on the cæcum and ascending colon, and percussion over the ascending colon was markedly tympanitic. A bismuth X-ray skiagraph (Fig. 8) showed the cæcum in normal position. The hepatic flexure lay somewhat lower than normal, and the first portion of the transverse colon was sharply angulated, so that some inches of the first portion descended in front of the ascending colon. Then it ascended in a sharp angle to the splenic flexure, which was normally placed. The descending colon and sigmoid were normal.

After the usual period of preparation the abdomen was opened by a longitudinal incision through the right rectus muscle. The ascending colon and hepatic flexure when exposed were found to be covered over their whole extent by a thin translucent membranous film, with well-marked, vascular congestion of the whole area. The thickened right border of the omentum at its tip was densely adherent to the wall of the flank near the iliac crest, forming a covering to the underlying colon. This omental mass was divided from its insertion and reflected. After this piece had been reflected there was exposed the first portion

of the transverse colon, which was also bound to the same point of the lateral abdominal wall by a very dense, strong, thick fibrous band about one-quarter of an inch in width.

The result had been to sharply angulate the colon at the hepatic flexure and to bring parallel to each other the ascending colon and the first part of the transverse colon, lying side by side like the two barrels of a double-barrelled shot-gun. The two parallel portions of the colon were bound together by thinner, more film-like adhesions (Fig. 9). These were divided and the thick band excised. The stump of this adhesion band on the intestinal side was buried by two points of Lembert suture. The raw area left on the lateral wall of the abdomen was likewise covered in by peritoneum.

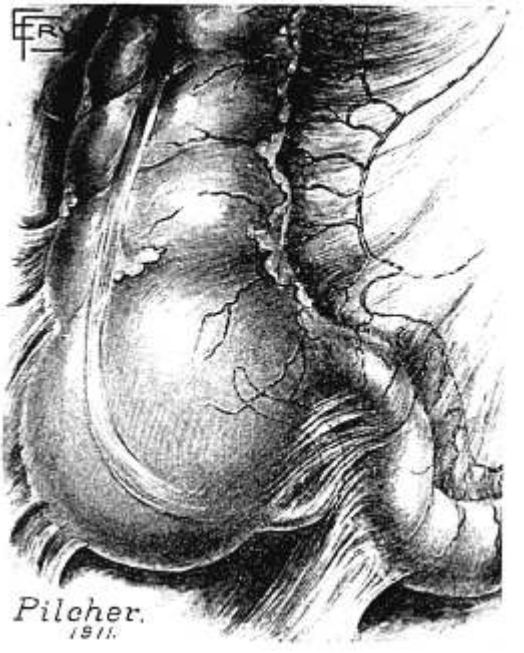
Traction upon the cæcum and terminal portion of the ileum showed these structures also to be drawn down and fixed by an extensive film of adhesion. By making traction upon the cæcum it was possible to demonstrate this condition most clearly and note the line of demarcation between the peritoneum of the pelvic wall and the peritoneum of the intestine. This adhesive film was freely divided and the cæcum liberated. The raw surface left was covered in by drawing over it suitable folds of peritoneum. The operation wound was then closed in the usual manner. An uncomplicated operative recovery has followed. Since the operation he has been free from the right iliac discomfort and attacks of pain. His general health has been good. The bowels are somewhat sluggish and he takes a mild aperient twice a week as a matter of precaution or possibly habit.

CASE V.—This was in the person of a lady thirty-two years of age, who for four years had been suffering from pain in the right iliac fossa. A year after its inception she was subjected to an appendectomy, from which she made a prompt operative recovery, but, nevertheless, continued to suffer from pain and tenderness referred to the right iliac region, with a marked degree of general neurasthenia. With this there was considerable bladder irritability, and there was an enlarged and sensitive right ovary. Urinary and cystoscopic examination negatived any kidney or renal complication. The abdomen was opened and the microcystic condition of the right ovary was remedied by a cuneiform excision. Examination of the right iliac region showed the cæcum bound by a well-marked membraniform film, which extended upward for some inches along the terminal por-

FIG. 9.

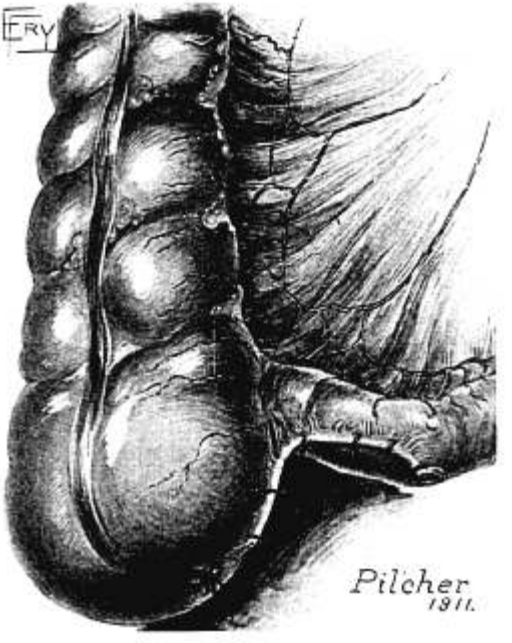
Cæcum and ascending colon covered by membranous film with multiple well-defined bands which extend upon the first portion of the transverse colon and bind it to the ascending colon like the two barrels of a double barrelled shot-gun, with acute angulation at the hepatic flexure. Sketch made from the case, the skiagraph of which is seen in Fig. 8.

FIG. 10.



Sketch made to show the condition present in Case V. Terminal portion of the ileum, the appendix and the cæcum bound together by strong membraniform film.

FIG. 11.



Condition left after removal of appendix and restraining bands. Case V.

FIG. 12.

Double barrel shot-gun association of two portions of the colon with acute angulation at the hepatic flexure. Sketch made from Case VI.

tion of the ileum, and bound that portion of the ileum and the head of the cæcum together (see Fig. 10). Along the central portion of the ascending colon there was a marked thickening of the film, which formed distinctly recognizable bands which bound the colon to the lateral peritoneal wall. As the hepatic flexure was approached, this film became much thinner, but still recognizable, containing abundant injected vessels, indicating a condition of continuous irritation. The membrane binding the ileum and cæcum together was divided transversely, and the two portions sutured longitudinally, so as to free the two portions of intestine from each other (see Fig. 11). The pericolic films and bands higher up were likewise divided, and the film dissected back so as to free the colon. The membranous flap produced by this procedure was placed behind the colon and cæcum, where it was attached by suitable points of suture. The parts having been readjusted, the wound was closed. Patient made an uncomplicated operative recovery, with immediate relief from the symptoms of which she had previously complained. The immediate improvement in her general neurasthenic manifestations was very marked.

CASE VI.—This patient was a lady fifty-one years of age, who had long been a delicate, ailing, neurasthenic woman. She suffered from retroversion of the uterus, and finally developed a large myoma, which was removed in 1904 by Dr. Paul M. Pilcher. She has for years suffered from pain and tenderness diffused through the lower abdomen, more particularly and constantly felt on the right side. She has had many transient attacks of sharp pain referred to the right hypochondriac region. More recently she has complained also of gastric discomfort. Her bowels have always been regular. The presence of renal and bladder complications was eliminated by proper examination. Upon opening the abdomen, the duodenum, gall bladder, and stomach were found to be normal. The colon was sharply angulated at the hepatic flexure, and the first part of the transverse colon descending sharply as far as to the ileocæcal junction was bound to the ascending colon, cæcum, and ileum by a well-marked membranous film, which presented at points along its course well-marked bands of thickening, these being lost beyond in the substance of the mesocolon (see Fig. 12). This membrane was divided longitudinally throughout its whole extent from the cæcum to the hepatic flexure, and the two por-

tions of the colon freed from each other. The appendix, thickened and partially obliterated, was confined and sharply angulated by a thick, short meso-appendix, which extended to its tip and bound it to the outer and posterior portion of the cæcum. This meso-appendix extended also upward upon the adjacent portion of the ileum, and produced a sharp angle in it as well. The appendix and meso-appendix were removed, and the peritoneal planes brought together by sutures, so as to cover in all raw surfaces and free the cæcum and terminal portion of the ileum from any restraining attachment. The patient made an uncomplicated operative recovery, and was at once freed from the special symptoms from which she had previously complained.

CONCLUSIONS.

As a result of these personal observations, together with the experience reported by other surgeons, it has seemed to the writer that these right-sided pericolic adhesions and membraniform crippling veils and bands form a fairly distinct pathological entity deserving of recognition as a well-defined surgical condition. In all cases they are a source of ill health and suffering. In some cases they are a positive menace to life. In most instances they can be relieved by procedures that are attended with a minimum of operative risk.

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