Deaver (J.B.)

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BY

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INFLAMMATION IN THE RIGHT ILIAC FOSSA, ASSOCIATED WITH LESION OF THE CECUM, THE VERMIFORM APPENDIX AND ADJACENT TISSUES.[1]

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IT was with no little hesitancy that I selected for the subject of my remarks "Inflammation in the Right Iliac Fossa, Associated with Lesion of the Cecum, the Vermiform Appendix and Adjacent Tissues," as I was conscious that the part of the subject coming especially under the head of appendicitis is one upon which much has been written. My apology, therefore, is that I hope to present it in a somewhat different manner than it is usually dealt with, and, to insist upon the importance of the surgeon being called in counsel earlier than has been the custom. So often have I been impressed with the responsibility of the position of the physician who is called to treat cases of this character and does not seek the advice of the surgeon until the eleventh hour, when, perchance the patient has de-

[1] Read at the Twelfth Annual Meeting of the Lehigh Valley Medical Association, held at Bethlehem, Pa., July 7, 1882.

veloped a diffuse peritonitis, or is in a state of collapse, most commonly caused by the rupture of an abscess, that I feel warranted in offering this suggestion.

Inflammation in the right iliac fossa, associated with lesion of the cecum, the vermiform appendix and adjacent tissues, can be divided clinically into two classes, namely, intra-peritoneal and extra-peritoneal. The former includes the cases referred to in the text-books as those of appendicitis, typhlitis and peri-typhlitis. I propose the term intra-peritoneal inflammation to include all cases of inflammation in the right iliac fossa having their origin within the peritoneum and associated with lesion of the cecum or the appendix, for the following reasons: 1. I believe it impossible to differentiate between appendicitis, typhlitis and peri-typhlitis. 2. I believe the terms typhlitis and peri-typhlitis to be misleading, and so long as it is taught that they are distinct affections, independent of trouble with the appendix, will the physician be misled. As a result of this classification, there is delay from day to day, in the hope that the case is one either of typhlitis or peri-typhlitis, and that operation is not so urgently called for as were the case one of appendicitis. I consider it nothing more than a mere refinement to divide inflammation of the cecum, as is done, into inflammation of the gut proper and inflammation of its serous covering (peri-typhlitis). I cannot see the practical value of such a division, as both conditions require a common treatment, and further, I do not believe it possible to make the differentiation at the bedside.

It has been my fortune to have seen a large number of cases of inflammation in the right iliac fossa, as well as to have operated on many, and I think I have clearly demonstrated that the best classification of the three pathologic conditions, appendicitis, typhlitis and peri-typhlitis, is under the head of intra-peritoneal inflammation in the right iliac fossa. In the greater number of cases of inflammation in the right iliac fossa the vermiform appendix is the organ primarily attacked; yet there are cases, as has been demonstrated post-mortem, in which the cecum alone is the seat of the trouble. Again, I believe, as do most observers, that when post-mortem both the cecum and the appendix are found to have been the seat of inflammation the starting-point has been in the appendix. Granting, then, that there are three pathologic conditions included in intra-peritoneal inflammation in the right iliac fossa, and that it is only in exceptional cases that the diagnosis between typhlitis and peri-typhlitis can be made, is it not safer and more rational to dispose of all three conditions as one? The differentiation is to be compared with the attempt to recognize the different coverings of the strangulated hernia: while anatomically there are several coverings, these are practically indistinguishable. The differentiation between typhlitis and peri-typhlitis, I think, requires an astuteness greater than we are willing to concede even to the most expert.

Extra-peritoneal inflammation in the right iliac fossa includes the class of cases in which the tissues adjacent to the cecum and the appendix are in-

volved and constitutes para-typhlitis. While I do believe that there are cases of extra-peritoneal inflammation (para-typhlitis) that originate independently of any trouble in the appendix, and involve simply the connective tissue adjacent to the cecum, I do not deny that the starting-point of such an inflammation may not be in the appendix. The latter condition may arise when the appendix is an extra-peritoneal organ, as when it lies posteriorly to the cecum and the ascending colon. When the appendix is post-cecal, as well as post-colic, and is the seat of ulcerative inflammation, it is readily understood how, by extension by continuity of tissue, the inflammatory process may involve the connective tissue adjacent to the appendix, and thus occasion a so-called para-typhlitis. This anomalous position of the appendix, when the seat of perforative appendicitis, further accounts for extra-peritoneal collections of pus in the right iliac fossa due to appendicitis and not (in every instance) consequent solely upon inflammation of the connective tissue in the neighborhood of the cecum. It likewise explains why abscess, the result of an appendicitis, does not always point internally to the anterior superior spine of the ilium, but may from its position simulate peri-nephric or lumbar abscess. An intra-peritoneal inflammation starting as an appendicitis and forming a circumscribed swelling, shutting itself off from the general peritoneal cavity by the formation of adhesions, may go on to pus-formation and even rupture into the peri-cecal and peri-colic tissues.

With a knowledge that all inflammations in the right iliac fossa associated with lesion of the cecum,

the vermiform appendix and the adjacent connective tissue are divisible into intra-peritoneal and extra-peritoneal, our first duty is to distinguish between them. This we will do under the following heads: 1. *History*. 2. *Symptoms*. 3. *Physical Examination*.

History.

Extra-peritoneal Inflammation.	*Intra-peritoneal Inflammation.*
Usually constipation.	Constipation the exception rather than the rule.
Very slow onset, particularly if not caused by injury inflicted from without.	Onset sudden.
	There may have been one or more attacks before. Likely to follow a very heavy meal, eaten in a hurry, or the ingestion of indigestible food.

Symptoms.

Pain confined in great measure to the outer part of the iliac fossa in the line of the loin. Constitutional disturbance not at all pronounced early. Disposition, when standing, to incline to the right side, soon followed, if the trouble does not abate, by flexion of the thigh upon the abdomen. Numbness and pain in the right leg frequently complained of. When the inflammatory deposit is great enough to exert pressure upon the right iliac vein there will be edema of the right leg.	In most cases, pain at first referred to the umbilical and epigastric regions, but later to the right iliac fossa. Nausea early and very often vomiting, which becomes uncontrollable if the case does not yield to active treatment. Thirst, which may be extreme. Furred tongue. Bowels usually confined, but there may be a slight tendency to diarrhea. The temperature ranges from 101° to 103°, or higher, with a rapid pulse-rate. Here, too, there may be a disposition on the part of the patient to incline the body to the affected side, as well as to flex the limb upon the abdomen. Very often, frequency of urination.

PHYSICAL EXAMINATION.

Extra-peritoneal Inflammation.	*Intra-peritoneal Inflammation.*
Tenderness above the crest and externally to the anterior superior spine of the ilium and in the line of the loin.	General tenderness over the right iliac region is very marked.
	In the majority of cases I have not found the greatest amount of tenderness at any one point in the fossa, as has been described by McBurney. Yet, in a few cases, I have seen it most pronounced at the so-called McBurney point.[1]
Dulness followed by flatness, at first upon deep percussion, and later upon superficial percussion in the line of the crest of the ilium.	Superficial percussion in the very early part of the case yields negative information, while deep percussion will reveal dulness, and later flatness, as the case steadily advances.
If the case steadily progresses, a mass corresponding in position with the area of dulness will be detected.	Palpation detects very decided resistance offered by the abdominal muscles of the affected side.[2]
	In many cases an indurated mass is detected by palpation of the abdominal wall, which, in many instances, is circumscribed, while in others it becomes rapidly diffused, particularly in the direction of the linea alba and of the pelvis.
Digital examination through the rectum yields negative in-	Deep rectal, as well as vaginal, examination[3] I do not re-

[1] This point I regard as more useful in approximately locating the site of the base of the appendix than as a diagnostic sign. If the inflammation is most intense in the terminal portion of the appendix, as well as in the class of cases in which the appendix is anomalously located, of what value can this so-called point be? I consider it of no significance whatever in helping to arrive at a correct conclusion as to the nature of a given case.

[2] This I regard as an important sign to be considered in the diagnosis.

[3] When I speak of deep rectal examination, I mean introduction of the finger alone, and not the introduction of the hand, as has been suggested. The latter I consider a most deplorable measure.

formation. Vaginal examination may be of some value, and should at least be made.

If suppuration takes place, it is usually first manifested by edema of the abdominal walls overlying the mass. Fluctuation is more readily made out than in intra-peritoneal inflammation.

gard of much diagnostic importance, early in the case at least. In those cases in which the appendix holds its third position, I regard it of value.

Suppuration is not so readily dectected in this as in the extra-peritoneal form, as fluctuation is more difficult to elicit. Yet I have seen it moderately well pronounced many times.

If the mass can be felt through the rectum or the vagina it is well to palpate the abdominal walls at the same time, and in this way elicit fluctuation.

Edema of the overlying abdominal walls I have not found present as often in the intra-peritoneal inflammation as in the extra-peritoneal. If associated with the presence of a mass in either variety of inflammation there are decided chills and sweats, it would be very evident that pus is present.

Case I.—W. R., thirty-eight years old, seen in consultation, presented a swelling in the right iliac fossa, extending backward in the line of the loin; edema of overlying abdominal walls; a rather sharply defined mass. The thigh was flexed on the abdomen. The temperature had been fluctuating for several days, and there had been chills and sweats. The history was one of slow onset, with pain in the right iliac fossa, extending to the loin.

A diagnosis of extra-peritoneal inflammation was made, and operation advised. An incision was made in the right semi-lunar line down to the transversalis fascia, which was opened, and the sub-peritoneal fat exposed, when, after a little dissection, carried backward in the direction of the loin, a large quantity of pus was evacuated. The cavity was

washed out, drained, and packed with iodoform-gauze.

Palpation of the peritoneum, which was clearly exposed, over the site of the appendix, yielded negative information. Recovery was complete and uneventful.

CASE II.—R. B., twenty-two years old, was admitted to the German Hospital for acute abdominal trouble. The temperature was 102°; the pulse-rate 112. The woman had been sick for three days. There was abdominal pain, most intense in the region of the umbilicus; and diarrhea, followed by constipation. The greatest amount of pain was now referred to the right iliac fossa. Examination of the abdomen elicited tenderness, especially pronounced over the right iliac fossa, with the presence of a distinct mass a little above and to the inner side of the anterior superior spine of the ilium. Deep vaginal examination detected a painful mass. Rectal examination was not satisfactory. Operation was advised. An incision was made in the right semilunar line, exposing the peritoneum, which on palpation presented the presence of an unquestionable mass. The peritoneum was incised, an abscess-cavity containing the vermiform appendix opened, and the appendix removed. The cavity was washed out, a glass drainage-tube introduced, and the wound packed with iodoform-gauze. Either end of the incision was closed with two sutures. Some days later, this cavity still containing a small amount of pus, a counter-opening was made through the loin into the cavity, and thorough drainage established. Recovery soon followed.

CASE III.—M. H., nineteen years old, was seen in consultation. The woman gave a history of having been taken suddenly ill five days previously, with nausea, severe pain in the right iliac fossa, accompanied by constipation. A tumor rapidly

developed in the right iliac fossa, which, within thirty-six hours, extended in the line of the linea alba and of the pelvis. At the time of my visit the patient was vomiting almost incessantly, the stomach being practically non-retentive. The abdominal walls were decidedly rigid over the right iliac fossa, with very slight edema, and a diffused mass presenting questionable fluctuation. Rectal and vaginal examination yielded negative results. A diagnosis of intra-peritoneal inflammation was made.

An incision was made in the right semi-lunar line down to the peritoneum, which bulged into the wound, and upon palpation presented a fluctuating mass. The peritoneum was opened, and found to be adherent to the great omentum, which was distributed over the most prominent part of the mass. The incision was carried carefully through the omentum. In attempting to examine the underlying mass with the finger a large abscess-cavity was ruptured, giving exit to a quantity of fecal-smelling pus. The cavity was washed out with warm distilled water, and further examination made with the finger, when the cavity was found to be shut off from the peritoneal cavity by a limiting wall. The appendix could be neither seen nor felt. The cavity was drained by glass and rubber, and packed with iodoform-gauze. Recovery was uninterrupted.

CASE IV.—H. J., thirty-two years old, after eating a large quantity of peanuts, was seized during the night with violent paroxysms of pain in the right iliac fossa. Medication was resorted to for a few days without producing any good effect. When I first saw him the abdomen was tympanitic, the walls of the right iliac fossa tense, but not pitting on pressure, and an indistinct mass was discovered. The family strongly objected to operation. On the following morning the patient being worse, with

persistent vomiting, I was hastily summoned. A diagnosis of intra-peritoneal inflammation was made, and operation advised. An incision was made in the right semi-lunar line, down to the peritoneum, through which a small tumor could be distinctly seen. The peritoneum over-lying the tumor was incised. The mass was opened, and about one ounce of pus escaped. The abscess-cavity was washed out, when by touch it was found to contain the appendix. The appendix was ligated, and was found to be perforated, as well as containing a small piece of a peanut. The cavity was packed with iodoform-gauze. Recovery ensued.

Case V.—A. M., twelve years old. History of pain in the umbilical region. A tumor was found in the right iliac fossa, extending back into the loin. Resistance was offered by the overlying abdominal muscles. The temperature ranged from 100° to 102.° The patient was seen twelve days after the onset of the trouble with the attending physician, Dr. Stephen R. Ketcham, who told me that, until within a few days at least, he regarded the case as one of appendicitis, of which it had presented all the symptoms. The pain was now referred to the right costo-iliac space, which, when compared with the the opposite side, was found to be bulging, with edema of the overlying integument. Examination further revealed an unquestionable collection in the loin-space. The patient was removed to the German Hospital, where an incision was made in the loin, and a large quantity of fecal-smelling pus evacuated. The cavity was washed out and packed. Two days later the appendix was cast off through the wound with a quantity of fecal matter. A fecal fistula resulted, but spontaneous recovery ultimately ensued. This was in all probability a case of inflammation of an anomalously-placed appendix,

resulting in an extra-peritoneal collection of pus, simulating a peri-nephric abscess.

Case VI.—Mr. S., eighteen years old, became uddenly ill, with pain in the right iliac fossa, adiating to the region of the umbilicus. A day later he pain was much more severe, with distention of he abdomen and nausea. The temperature ranged between 101° and 102.5°. The pulse-rate increased correspondingly. The bowels were moved by Rochelle salts. A mass about the size of an orange was now to be felt in the right iliac fossa. The pain becoming much more severe, and the abdomen enlarging, I was asked to see the case. I found the patient considerably better, the pain much less, the abdomen smaller, the mass less apparent. The man had gotten out of bed, when his bowels were copiously moved; the dejecta, it was stated, contained milk. With this history, I believed an intra-peritoneal abscess of the right iliac fossa to have ruptured into the cecum.

Operation not advised. Recovery ensued.

The use of the exploring or the hypodermatic needle, to determine the presence of pus, I do not think wise or judicious, and I believe it to be capable of doing much harm. It will be inferred that it is difficult to say when a case of inflammation in the right iliac fossa, associated with a lesion of the cecum, vermiform appendix, or the adjacent tissue, demands operation. The decision will be governed by the local as well as the general condition of the patient, and the result obtained by well-directed medical means. If the recently accepted treatment by means of mild purgation with salines, or calomel if the stomach rebels against salines, and the very moderate use of opium if necessary, fails to render

the patient comfortable, to allay vomiting, to prevent abdominal distention, to produce liquid evacuations, the temperature remaining high or tending to rise, and the local trouble becoming more pronounced, with increase of abdominal resistance, tenderness, and induration, I at once and unhesitatingly advise operation. Constant retching, increasing abdominal distention, and obstinate constipation, are three conditions that, when associated, warrant immediate interference, granting that the patient's general condition does not contraindicate interference. There is, I think, already a sufficient number of fatal cases on record in which treatment by opium alone in gradually increasing doses has been adopted in preference to operation, to disabuse the minds of both physicians and surgeons of the fallacy of such a course. After refusing to operate on many cases brought into the hospital in approaching collapse, with a diagnosis of peritonitis consequent upon an obstruction of the bowels, with hugely distended belly, incessant retching, with a history of the bowels not having been moved for four or five days, and death following in from eight to twelve hours, the autopsy showing the abdominal cavity flooded with pus, the vermiform appendix perforated if not gangrenous, the coils of small intestines greatly distended and matted together with layers of fibrinous lymph, I cannot conscientiously form any other opinion than that the attending medical man did not believe in operative treatment, or deferred calling the surgeon until the golden opportunity was a thing of the past. Under circumstances like these, the argument, Why

not operate, if the patient is sure to die any way? is often brought forward. In answer to this, all that I can say is that it often requires better judgment to decide when not to than when to operate. The conscientious surgeon should always be willing to take desperate chances if there is the slightest indication of benefit to his patient, but certainly not otherwise.

In cases in which the symptoms and the local conditions are relieved by the treatment I have suggested, surgical interference should certainly not be considered. I recently operated upon a case of extra-peritoneal inflammation, with suppuration, referred to me by my friend, Dr. Charles Styer. Fluctuation being most pronounced in the loin, I carried my incision through this part and evacuated a considerable quantity of fecal-smelling pus. As the case was originally believed to be one of inflammation of the appendix, I exposed the appendix by an incision in the right linea semilunaris, when both appendix and cecum were found to be perfectly normal. This case, as well as others upon which I have operated, demonstrates beyond doubt, to my mind at least, that we meet with cases of extra-peritoneal inflammation associated with the bowel, arising independently, and not caused by intra-peritoneal irritation. This being so, is it not unwise to argue that every case of inflammation in the right iliac fossa arising in connection with the bowel, and going on to pus-formation, should be subjected to laparotomy? I am, therefore, forced to believe that the operative technique, as I have described it, is the safer procedure in dealing with inflammation of the fossa when it is impossible to

say whether it is intra-peritoneal or extra-peritoneal, as is so often the case.

The operative technique for the relief of inflammation in the right iliac fossa associated with lesion of the cecum, vermiform appendix and adjacent connective tissue consists in exposing, first, the transversalis fascia and the sub-peritoneal fat, through the right linea semilunaris by a vertical incision of from four to six inches in length, the middle of which should correspond with the point at which a line drawn from the anterior superior spine of the ilium to the umbilicus intersects the semilunar line. The transversalis fascia and the sub-peritoneal fat having been exposed, if the inflammation be of the extra-peritoneal variety, and if pus be present, the fluid is very readily evacuated, while, at the same time, if the surgeon prefer, a counter-opening can be made well back in the flank, through which a drainage-tube can be introduced and the cavity thus drained to the best possible advantage, or the operation may be terminated after the manner of Parker. If the inflammation be of the intra-peritoneal variety, the peritoneum is taken up between a pair of hemostatic forceps and incised, when, if an abscess exists, it is evacuated, and the appendix removed, as the case may be. The abscess having been evacuated and thoroughly washed out, the appendix is sought for, care being taken not to break through the limiting wall of the abscess-cavity, granting that it is shut off by such a wall from the general peritoneal cavity. If the appendix is not to be seen or located, I at once complete the operation by either introducing a glass and a rubber drainage-tube to the

bottom of the cavity, around which I pack iodoform-gauze, or simply pack the cavity with gauze, not using any drainage-tube. In the cases not under my care after operation I prefer to use the drainage-tube, and have it irrigated twice daily with Thiersch's solution, which when thrown into the rubber drainage-tube will escape through the glass tube, and *vice versâ*. The case progressing favorably, the gauze need not be removed for two or three days. When suppuration has decidedly lessened, the tubes are removed, the cavity washed out and packed with gauze, and healing by granulation promoted.

In the class of cases in which the general peritoneal cavity is involved, I make further search for the appendix if it is not to be seen or felt at the bottom of the wound, keeping in mind its three relations. Most commonly the appendix lies behind the terminal part of the mesentery, pointing in the direction of the spleen. The second most common position of the appendix is directly behind the ascending colon; in the third it dips down into the pelvis. To ascertain if it occupies the first position, it is necessary to lift up the cecum and the terminal portion of the ileum, when the retro-mesenteric space will be exposed. When it occupies the second position, it becomes necessary to lift up the cecum and probably the commencement of the ascending colon as well; this may necessitate dividing the external layer of the ascending meso-colon, which is selected in preference to the internal layer, as the bloodvessels that supply this portion of the gut are in relation with the latter. When the appendix holds the third position, it is more readily

exposed, and in the female it is not uncommon to find it attached to the right uterine appendage. The appendix, having been exposed, is ligated close to the cecum and severed on the distal side of the ligature. It has been suggested to invaginate the stump of the appendix into the cecum, and stitch over it the serous covering of the latter. This procedure I have never had occasion to adopt.

In the event of the appendix having been separated from the cecum by ulceration, leaving an orifice of communication with the latter, I close the opening with two or more Lembert's sutures, if the margin of the opening is not infiltrated to too great a degree to warrant the removal of the diseased portion of the bowel. When the cecum is thus perforated by the separation of the appendix, and its coats are very much diseased, I believe it better practice not to attempt to close the opening, but simply to thoroughly drain the wound. My experience has been that the majority of fecal fistulæ of this character close spontaneously. If they do not, subsequent operation can be resorted to.

In Case V of the series here reported, a fecal fistula resulted, through which the evacuations continued to pass for some days. It ultimately healed without operative interference. The point to be borne in mind in cases of this character is the establishment of free drainage, thus preventing the passage of fecal matter into the peritoneal cavity. The probabilities are that in this class of cases the peritoneal cavity has been shut off from the perforated bowel by inflammatory exudation, thus explaining why recovery so often takes place under such circumstances.

From what I have said regarding the operative

technique, it will be inferred that I disapprove of meddlesome interference, by which I mean, making a prolonged search for the appendix when it is not readily found. I have seen patients practically disemboweled in an eager search for the appendix, and even then it was not discovered. We know that prolonged exposure of the bowels is attended by profound shock, and is to be avoided if possible. The success of abdominal operations in general depends upon their being done with as much rapidity as possible, granting, of course, that every care is taken in each step of the operation. In work of this character I also disapprove of the introduction of the entire hand into the abdominal cavity, believing that, in the majority of cases at least, two fingers, the index and the middle, with, in some instances, the assistance of one or two fingers of the opposite hand, are sufficient to accomplish all necessary manipulation. We have all seen a sufficient number of cases of laparotomy for the removal of diseased uterine appendages, particularly cases of pyosalpinx, to know that the skillful surgeon accomplishes the removal with but two fingers; this holds good in cases of the character included in the subject of this paper.

The after-treatment consists in the administration of occasional doses of salines or calomel, depending upon the retentive power of the stomach, in order to have the bowels freely moved two or three times daily, and, if the patient suffers much pain, a small amount of opium. I do not believe in the exclusive use of salines, both before and after operation, in cases in which pain has been an important factor, but I likewise give ano-

dynes, being governed by the amount of suffering. On the other hand I very much disapprove of giving enough opium to mask the symptoms of the disease, as I regret to say is so often done. (Paralytic distention of the bowel, a most unfortunate complication in cases of advancing intra-peritoneal inflammation, is certainly favored by the administration of opium, when given to the extent of producing its physiologic effect.) Opium has held very much the same relation to abdominal troubles in the past as has blood-letting in the acute sthenic inflammatory affections. Both are still useful when properly employed. While I appreciate that opium not administered very cautiously in these cases is harmful, yet I do believe that restlessness and sleeplessness will be more hurtful to the patient than a judicious dose or two of the drug. On the other hand, active purgation by means of drastic cathartics, such as podophyllin and others of its class, I equally disapprove of, as I feel that the excessive peristalsis that is certainly brought about by these agents aggravates the local condition. I have said nothing about suturing the abdominal wound. This I do not approve of, with the exception of one or two sutures at the angles of the wound. In other words, I rely upon healing by granulation. I have found that ventral hernia is not any more likely to follow when the wound is treated in this manner than when it is sutured.

In my earlier operations for the removal of the appendix, in which I closed the wound with sutures, I made a counter-opening in the loin and introduced through drainage. By treating the wound by the open method this is not necessary.