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ABDOMINAL SECTION FOR PERFORATED TYPHOID ULCER.[1]

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IN THE MEDICAL NEWS of November 26, 1887, in an article on "Surgical Consideration of the Abdominal Complications of Typhoid Fever," by Dr. Thomas S. K. Morton, two cases of abdominal section for perforating typhoid ulcer are reported. The first operation was performed at Strasburg in October, 1885, by Professor Kussmaul, who excised that portion of the gut including the perforation; the wound was closed by Lembert sutures, the peritoneal cavity cleansed with a salicylic solution, a large drain was inserted, and the abdominal wound closed; the patient never reacted, and died eleven hours afterward.

The second case was under the care of Mr. T. H. Bartleet about a year ago at Birmingham; perforation was diagnosed, an abdominal section was made, "great fecal extravasation was discovered upon opening the peritoneal cavity, an unsuccessful hurried search was made for the bowel opening, the cavity was irrigated, a drain put in, and the parietal incision was closed; the patient died during the

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second day after the operation." These two cases, with the one which very recently came under my observation, constitute all the instances I have been able to find of surgical interference in the intestinal complications of typhoid.

Even the most recent works on abdominal surgery make no mention of the surgical treatment of this complication in typhoid fever, nor of the possibility of repairing the intestine after perforation.

In the Philadelphia *Medical Times* of December 11, 1886, Dr. James C. Wilson called the attention of the profession to the possible propriety of surgical interference in perforating typhoid ulcers, and says: "In point of fact, the objections which may be urged against laparotomy in intestinal perforation in enteric fever, are no more forcible than those which would have been made use of, at first, against the same operation in gunshot wounds of the abdomen," and the fact must not be overlooked, says Dr. Wilson, that "while a few cases of perforation occur in the second week of the disease while the infective process has yet some time to run, a far larger proportion take place in the period of convalescence when the condition of the patient, except for deep ulceration, often single, is tending toward recovery."

Granted that the diagnosis of perforation has been made out, shall a patient, although in a most unfavorable condition from the very nature of the malady for any operation, be allowed to perish? or ought the surgeon to feel justified in making an attempt to save life? Indeed, is it not his duty to open the abdomen and repair the perforated gut? Especially it would seem to be indicated when the accident has been early recognized, and the patient not in a sinking or moribund condition.

Although recoveries after supposed typhoid per-

foration have been reported, it is highly probable that there was an error of diagnosis, at least recovery must be extremely unusual, for the fatality of such a complication is universally recognized.

The following case represents, so far as I am aware, the first operation done in this country for the repair of a perforated typhoid ulcer; unfortunately it was not undertaken until many hours after the accident had occurred, but the patient's condition even at that late period gave sufficient encouragement to warrant the performance of a formidable operation under most trying circumstances, and which, I believe, in no wise hastened the fatal termination.

Lee A., aged twenty-three, enjoyed perfect health until the last week of October, 1887. He then acquired specific urethritis, but was little troubled thereby and continued his usual occupations. One week later he first presented symptoms of typhoid fever.

His was what is commonly called a "walking" case of that disease, and he was scarcely in bed at any time until the last day and a half previous to his sudden death. Dr. Lewis W. Steinbach was his physician, and so light did the case seem that he had ceased visiting him regularly. Although at most it was but the end of the third week of disease his temperature had for several days been scarcely above the normal. On the afternoon of November 12th, he felt very well, and in the absence of his family he ate a hearty meal of meat, etc.

A few hours afterward he was seized with most excruciating pain in the right lower portion of the abdomen, followed shortly by a violent chill and subsequent rapid rise in temperature and pulse and respiration rate.

The abdomen became tympanitic, and the pain more diffuse.

I saw him in consultation next morning, positively diagnosed perforated typhoid ulcer, and urged abdominal section as the man's only chance. To this advice he and his friends were sensible enough to conform, and preparations for operation were at once made.

The man was of splendid physical frame, and at the beginning of his illness had weighed 190 pounds. Just before operation his temperature was 104½°, pulse 156, respiration about 45. His face was deeply flushed. He seemed perfectly rational; being able himself to decide in favor of the proposed operation. During the night he had vomited several times, but otherwise the symptoms aggregated simply as above at this time.

A room was cleansed as well as possible; anæsthesia by ether induced, and he was transferred to the table and the abdomen shaved and made surgically clean.

Operation.—Twenty hours after perforation; condition as above. A median incision from just below the umbilicus to the symphysis pubis was made. Considerable yellowish serum poured out, and in it floated flakes of purulent lymph. A little gas and feculent material also thus made their exit. The small intestine was at once turned out, and searched from the cæcum upward. About three feet above the valve a perforation was discovered. It was about three-eighths of an inch in diameter, and occupied the lower (toward the cæcum) end of a large ulcerated Peyer's patch. This lesion was repaired by turning the whole area of ulceration into the lumen of the bowel by means of eight Lembert sutures. These were started into the two outer coats of the

bowel, about three-sixteenths of an inch from the edge of the ulcer, brought out again one-sixteenth of an inch from that edge, then reintroduced in like manner upon the other side of the ulcer, paying no attention to the ulcer and bowel-tissue between. When these eight sutures were tied, the perforation, ulcer, and the bowel-tissue below it turned into the lumen of the bowel, whilst the peritoneal surfaces came into apposition above. This done, and the remaining portion of the intestine having been examined, attention was directed to a necrotic-looking ulcer which had been observed not far above the cæcum.

The ulcers were all outlined upon the peritoneal surface by a deep dusky-red, slightly swollen area corresponding to their own outlines. The one especially referred to presented in a portion of its area a gray aspect, as if of sphacelus. Although there was no actual perforation at this point, its speedy occurrence was thought likely, and that the more prudent course would be likewise to turn in this ulcer area. This was accordingly done with about six Lembert sutures. No other lesions were discovered upon further search of the intestines, etc., although ulcerations extended to quite a high point of the small gut. The whole intestine was greatly distended with gas, and quite difficult to manipulate: it was congested to a dusky-red hue throughout, while in various sized patches here and there the peritoneal covering of the gut was in a state of arterial hyperæmia, with an occasional recent ecchymosis.

The abdomen was then cleansed by very copious irrigation with water which had been boiled, and allowed to cool to a temperature of about 110° to 105°. Then the cavity was sponged dry, and the

intestines returned: they had during the whole process been protected by towels wrung out of hot water, and frequently changed.

Considerable difficulty was experienced in returning the intestines from their great distention, but it was accomplished without resorting to puncture.

The parietal wound margins were then brought into apposition with a glass drain running through the lower extremity of the wound, and down to the bottom of the pelvic cavity.

The patient speedily became conscious upon withdrawing the anæsthetic, and remained so, without pain, for several hours, although the pulse, temperature, and respiration still kept very high. Six hours after operation, he suddenly sank into a collapsed condition, became cold and pulseless, and in an hour died.

Post-mortem examination, twenty-four hours after death. Decomposition far advanced. Drain-tube had been removed shortly after demise. Upon opening the abdomen by an incision parallel to the operation-wound, everything was found to be as it should. The intestines were distended with air, and also contained a small amount of yellow feculent liquid. Some few of the coils in the upper portion of the cavity were slightly adherent from the presence upon their surface of recent, healthy looking lymph. Others of the coils were congested to a bright pink color. There were no subperitoneal ecchymoses upon the intestines, but here and there, upon the surface of the mesentery, near the intestinal attachment, were to be seen such extravasations; none were of greater extent than a half inch diameter. In the deeper tissues of the intestine, however, ecchymotic spots were present at quite a

number of points—one larger than a quarter inch in diameter.

Typhoid ulcers extended to a distance of probably eight feet above the cæcum; those nearest it being most marked, and, with one or two exceptions, furthest advanced. Three inches above the valve was the ulcer which had looked necrotic at the time of operation, and which had been turned into the lumen of the bowel as a precautionary measure. It was in excellent condition. Three feet above the cæcum the repaired perforated ulcer was come upon, and found in like excellent condition.

No additional perforations were discovered, and the intestine when distended even forcibly with water did not leak or give way at any point.

The lumen of the bowel at the points of suture, when moderately distended, was at least an inch. There was marked enlargement of the mesenteric glandular system. About two ounces of clear serum had collected in the hollow of the sacrum since taking out the drain tube, which had been done a few moments after death. The peritoneum was perfectly clean and free from extraneous matter, purulent lymph, or blood. The parietal incision had undergone no other change than that of simple gluing together of its surfaces.

The examination did not extend beyond the abdomen: otherwise than as above, the search of that cavity was negative.

Time for operation.—As soon as the diagnosis of perforation has been made out, the operation should be immediately performed, every moment of delay increases the danger of the situation; indeed if any successful results are to be chronicled, those operations which are undertaken immediately after the perforation will unquestionably be the successful ones.

Method.—One of three methods can be adopted, should an operation be decided upon: First, the perforation can be closed with Lembert sutures; second, a formal excision of a portion of the gut, including the entire ulcer as performed by Kussmaul; or third, the bowel can be brought to the surface and an attempt made to form an artificial anus.

Incision.—The median abdominal incision affords the best opportunity for an examination of the intestines; it should be ample and extend from the umbilicus to within two inches of the pubes; any portion of the intestine likely to be involved can thus be easily reached; the search should be thorough, and in addition to closing the perforations, the intestines should be carefully examined to determine the condition of other ulcers, and if any be found in which perforation seems likely to occur, such should be turned into the bowels by Lembert sutures in a similar manner.

Prior to abdominal closure the belly should be thoroughly cleansed with hot water. The after-treatment would not vary from the usual treatment of typhoid fever.

It is interesting to note that an examination of the specimens of the above case showed that although a considerable amount of tissue had been turned in, in both places, where the perforation existed, and where a perforation seemed likely to occur, no unsafe or marked diminution in the calibre of the bowel was found.