

I think that the light that has been shed upon operative procedures for hemorrhage from gastric ulcer teaches us that another brilliant sphere has been found in surgery, and it seems at least reasonable that a hemorrhage from a gastric ulcer should be dealt with as hemorrhage from other sources. The history of cases of acute ulcer certainly teaches that medication is sufficient to effect a cure, except in rare instances where the hemorrhage is so severe as to place the patient in jeopardy. But truly, on the other hand, the history of chronic ulcer is a different picture. Hemorrhage once started may be so severe as to produce death shortly. More commonly repeated hemorrhages which, though not large in amount, will cause anæmia to such an extent that the patient may get beyond surgical aid, or at least come to operation in a most miserable condition.

That chronic ulcer is prone to keep on and not tend to heal seems to demand that surgical interference be undertaken not alone to check hemorrhage, but to guard against other sequelæ, as carcinomatous tendencies, perforation, cicatricial contraction, and, finally, as a cure for the primary lesion.

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## THE SURGICAL COMPLICATIONS OF TYPHOID FEVER.

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THE mortality of typhoid fever, taken year by year, varies in direct proportion to the severity of the epidemic. The statistics of hospitals show a relatively high rate because they treat a high percentage of the complicated and severe cases, and frequently receive cases late in the disease. The death rate and percentage of accidents in private practice are correspondingly low. This is especially true in densely populated districts, where the environment and habits of life lower the vitality and power of resistance of the inhabitants. Hence, it is that 9 to 15 per cent. will express about the hospital mortality of typhoid fever.

If we exclude from this list the causes which can be appropriately designated accidental the death rate falls to 7 to 9 per cent, while those cases which die of typhoid toxæmia represent about 4 to 7 per cent. of the entire mortality.

Under medical accidents are classed pneumonia, meningitis, pleurisy, heart lesions, and infection of the gall-bladder and kidneys.

Surgical accidents include perforation of the bowel, primary perforation of the gall-bladder, perforation of the appendix, peritonitis without perforation, acute intussusception, rupture of the

peritoneal coat of the mesenteric glands, bone infections, phlebitis, parotiditis, etc.

The purpose of this paper is to briefly call attention to the surgical accidents which occur to the abdominal viscera with especial reference to two of the rarer accidents, a case of each of which is reported.

In order of frequency perforation of the bowel comes first, occurring, it is said, in from 1 to 11 per cent. Hart and Ashhurst (*Annals of Surgery*, January, 1904) have collected 8881 cases, including cases reported by Leibermeister, Murchison, Griesinger, Flint, Curschmann, the Montreal General Hospital, the Episcopal and Pennsylvania Hospitals, Philadelphia, with 225 perforations—a percentage of 2.54.

Perforation of the appendix during typhoid fever is less common than that of the bowel, but is probably next in frequency. Peritonitis without actual perforation is the next most common accident, the infection of the peritoneum occurring by transmigration of organisms through the thin, diseased wall of the bowel.

Primary rupture of the gall-bladder has occurred in 34 reported cases.

Acute intussusception occurring during the course of typhoid has occurred in 3 reported cases. One<sup>1</sup> in which six inches of ileum had slipped into the cæcum. Operation six hours after onset of symptoms. The patient, a soldier, aged twenty-five years, on the ninth day of a relapse was suddenly seized with acute abdominal pain which passed away only to return in an hour with vomiting and marked rigidity, but without distention. The pain was referred to the umbilicus and epigastric region. Under anæsthesia a mass could be felt in the right iliac fossa which was dull to percussion. The patient was operated; the intussusception being reduced and the patient making an uninterrupted recovery. The second case was discovered at post-mortem and the third I operated on November 25, 1903, at the German Hospital.

Dr. J. C. Wilson<sup>2</sup> speaks of invagination of the bowel occurring during the course of enteric fever, but relates no cases. This statement was probably founded on post-mortem findings.

W. B., aged seventeen years; family and personal history good; admitted to German Hospital on the eighth day of typhoid fever. Temperature ran fairly regular course, although the daily range of temperature was considerable, the difference between highest and lowest for a day being as much as 3°. The highest recorded temperature was 104 $\frac{3}{8}$ °.

On the twenty-first day had a blood-stained, liquid stool. Tubing stopped.

On the twenty-fifth day the highest temperature was 102° and

<sup>1</sup> Ash, *British Medical Journal*, May 3, 1902.

<sup>2</sup> Keating's *Encyclopedia of Diseases of Children*.

the lowest 101°. The tuh hath had been resumed at patient's request. At 8 P.M.: temperature, 101.3°; respirations, 24; pulse, 112; after hath: temperature, 99.3°; respirations, 24; pulse, 104. At 9.40 P.M.: hemorrhage, 120 c.c. At 11.35: another hemorrhage, 650 c.c.; temperature, 99.1°; respirations, 24; pulse, 96.

At 1.30 A.M. of the twenty-sixth day patient awoke with a violent abdominal pain without any particular point of intensity; there was some rigidity of the right rectus muscle. The patient screamed with pain for fifteen minutes, was only relieved by morphine 0.01. At 2 A.M.: temperature, 98°; respirations, 20; pulse, 80. At 4.40 A.M. he had another hemorrhage, 820 c.c. Between the time of onset of the pain and 3.30 A.M. there was a slight increase in the abdominal distention. There was a leukocytosis of 16,000. It was thought that the patient had had a perforation and the abdomen was accordingly opened without further delay.

Immediately upon opening the peritoneal cavity it was evident that perforation had not occurred, as there was entire absence of gas or fecal matter. There was no lymph or inflammatory exudate.

It was thought wise to make a search of the small intestine. The terminal twenty inches of ileum was moderately distended and showed the typhoid ulcers and the bleeding points very distinctly through the thin bowel wall. From this point to the duodenum the bowel was completely collapsed; about three feet from the junction of the duodenum and jejunum an intussusception about two and a half to three inches long was discovered, the invagination being from above downward. It was readily reduced and the bowel slowly distended. The sides of the invaginated portion were slightly sticky and very soon would have become adherent. The peritoneal cavity was filled with salt solution and the abdominal wound closed without drainage. Intravenous transfusion of 1000 c.c. salt solution was given. The patient's temperature remained at 98°, after operation rising gradually to 101°.

On the twenty-seventh day patient had two hemorrhages, one of 120 c.c. and one of 250 c.c.

Temperature normal on the twenty-eighth day.

Thirty-fourth day, temperature normal and patient's condition good. He has since made an uneventful recovery.

I do not believe that there is a special pathological cause for intussusception under these circumstances, except it be the lack of muscular tone due to inflammatory infiltration of the howel wall in localized areas permitting a greater degree of distention in different portions of the howel.

There is a similarity in the pathology of perforation of the howel, appendix, and gall-bladder, inasmuch as it occurs as an extension of the process of sloughing. If the slough involves all the coats of the organ, perforation of course results, when the slough is cast

off by the process of necrosis. If, on the other hand, the slough does not involve all the coats, then an ulcer results.

Rupture of the thin peritoneal coat of the bowel covering a deep typhoid ulcer occurs as a result of traumatism, usually by straining at stool, coughing, vomiting, etc. (In this form the perforation is a linear tear.)

There are on record 34 cases of primary perforation of the gall-bladder occurring during the course of or convalescence from typhoid fever. Keen in his book on *Surgical Complications of Typhoid Fever* has collected 30 cases. Erdman (J. F.), of New York, has collected 4 more, one of which he operated.<sup>1</sup> Of this number 7 cases were operated, 4 recovered, 3 died. Of the 27 cases not operated all died. Under fifteen years of age, 9 cases; between fifteen and twenty-five years, 6 cases; over twenty-five years, 10 cases; 12 females; 13 males. Onset, first week, 1; second week, 5; third or later, 21. Stones were found in 8 cases, while in 17 no stones were found. Of the 7 cases operated upon, the perforation was near the cystic duct in 3 instances, in the fundus once, others not stated.

In making a diagnosis the amnesia is of great importance. The location of the pain and tenderness, the existence of tenderness during the course of the fever, over the gall-bladder, are points of vital importance in properly diagnosing the accident. It must be remembered that pain in the gall-bladder region may be due to rupture of perforating ulcer of the stomach near the duodenum or of the duodenum, or to acute disease of the pancreas. It is true, however, that these accidents rarely complicate typhoid fever.

The following case will illustrate a primary perforation of the gall-bladder operated in the preperforation stage:

Mrs. K., aged thirty-two years; case of Dr. S. Gerhord. Prodromal symptoms lasted about ten days. Active stage of the disease ushered in by an attack of syncope at 9 A.M. on January 18, 1903. The disease ran a moderately severe course, characterized by marked delirium and sleeplessness. Temperature moderate, never rising beyond 103°. Constipation marked throughout attack and convalescence. Convalescence began about the twenty-sixth day. On the eighth day of convalescence she had a sudden severe attack of colicky pain localized to the right hypochondriac region, referred to the back. Symptoms of intestinal obstruction rapidly supervened. There was a well-marked swelling in the region of the gall-bladder, tender and hard, and extending well down to the umbilical line. There was nausea and vomiting, but no rise in the temperature. The swelling and pain subsided under morphine and rest, only to return. Two days later a third attack came on, at which time she was seen by Dr. Howard Anders, who diagnosed

<sup>1</sup> *Annals of Surgery*, June, 1903, p. 873.

typhoid infection of the gall-bladder and advised immediate operation, which was refused. Eight days after the primary attack the writer was called in and corroborated the diagnosis and urged operation, which was accepted. By this time jaundice had made its appearance.

*Operation.* A six-inch incision was made through the right rectus muscle. Peritoneal adhesions were numerous and dense, involving the omentum, transverse colon, and duodenum. Only enough of the adhesions were broken up to liberate the compressed large bowel and to expose the gall-bladder. The liver was enlarged, Riedel's lobe extending beyond the umbilical line. After carefully isolating the gall-bladder area by gauze tampon, the liver was carefully lifted up, exposing the gall-bladder filled with pus. In breaking up the adhesions between the gall-bladder and omentum the gall-bladder ruptured through a slough in the anterior wall of the organ; the wall about the sloughing area was gangrenous. A large quantity of pus and gallstones escaped. The cavity was thoroughly cleansed and the gall-bladder drained by a rubber tube held in place by catgut sutures. Three pieces of gauze coming out through the anterior abdominal incision and large rubber tube to the liver space provided drainage.

After a stormy convalescence and a temporary fistula she finally recovered. She weighed 97 pounds at the time of her discharge from the hospital. After the spontaneous closure of the biliary fistula she rapidly gained, finally reaching 161 pounds. She is at present in perfect health.

The vermiform appendix is frequently involved during the course of an attack of typhoid fever. This usually occurs in that stage of the disease when the micro-organisms other than the typhoid bacillus have taken on acute progressive properties. Therefore, infective appendicitis occurring as a complication of typhoid would seem to be secondary to the typhoid infection. The appendix once infected adds a serious aspect to the case, as its well-known tendency to destructive changes are quite as well marked here as under ordinary conditions of infection. The prognosis of perforation of the appendix is, however, better than for perforation of the other portion of the bowel, for the reason that the symptoms are more apt to be localized and the general peritoneal cavity is more easily protected by nature, owing to the location which the appendix usually holds.

The question of treatment of the various disastrous occurrences has only of recent years received the attention they deserved.

Whatever be the course of procedure as far as our experience and knowledge go at the present writing the vast majority of these cases die—and yet I believe that if the condition could be recognized early and the patients operated the mortality would not exceed 50 to 60 per cent.

The keynote to success depends upon the early recognition of the condition and immediate operation. The only reliable symptoms to be recognized in time to forestall the rapidly impending disaster are pain and muscular rigidity. Pain occurring during the course of typhoid should always be suspected as an indication of probable perforation without regard to its locality. I operated one case where the pain was originally in the glans penis and there remained for several hours. This man had a perforation and died, because the location of the pain so entirely threw us off of the track that by the time we had recovered the patient's sun had sunk beneath the horizon.

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## PROTOZOA IN THE STOMACH AND THEIR DIAGNOSTIC SIGNIFICANCE.

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A RECENT finding of protozoa in the stomach attracted attention to this subject, and examination of the literature showed such a surprisingly small number of similar cases reported that the matter is deemed worthy of presentation.

My case was that of a white man, clerk, born in Virginia, aged thirty-five years, who entered Garfield Hospital, Washington, D. C., March 16, 1905, in the service of Dr. G. Wythe Cook, to whom I am indebted for the opportunity of reporting it. The family and previous personal history were irrelevant.

The patient had suffered from chronic indigestion for fourteen years, with attacks of vomiting, occasional epigastric pain, etc. During the last few months the dyspeptic symptoms had become worse, his food disagreeing more and more. For the past five months he had been unable to helch or vomit. He had never vomited blood. Constipation was marked. Latterly the pain had become constant and some difficulty in swallowing had developed.

At the time of admission to the hospital he was much emaciated and extremely pallid. Palpation yielded a sense of resistance in the epigastrium. Temperature subnormal. Blood: red cells, 4,680,000; hæmoglobin, 80 per cent.; leukocytes, 7800. Urine examination negative.

The stomach tube, passed March 20th, an hour after an Ewald test meal, encountered slight obstruction, easily overcome, at the cardiac orifice. About 15 c.c. of material was obtained, of extremely fetid odor, thick and viscid, the first portion colorless, the last portion containing much stale blood, and with necrotic fragments