Original Articles.

EIGHT CASES OF APPENDICITIS.¹

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In reporting these cases of appendicitis which have been treated during the past year by my colleagues of the Waltham Hospital and by myself, I want to emphasize the importance of early surgical interference in the treatment of this disease. There are possibly two kinds of appendicitis. One kind gets well of itself, and therefore does well under any treatment. This is the kind physicians cure. For a day or two it may frighten the surgeon, but generally from the first the symptoms moderate. As this kind of appendicitis never turns up on the autopsy or even on the operating table, it is perhaps impossible successfully to dispute its right to the name "appendicitis." Why not call it "peri-appendicitis"? The other kind of appendicitis certainly deserves the name, and the following cases are all of this kind. That death resulted in only one of the eight (and in that case it will be noticed the early operation here advocated was not allowed) is not due to any special skill on the part of the operators, and certainly not to any mildness in the form of the disease, but is entirely due to the earliness of the operation.

We believe that genuine appendicitis results in gangrene and perforation of the organ. If not interfered with there follows either immediate general peritonitis, or local peritonitis with the formation of an abscess which may safely discharge its foul and fearfully septic contents but is liable to discharge into the abdominal cavity. We realize most keenly that in the first stage of the disease it is an easy matter to nip it in the bud, before the gangrenous organ is bound down by adhesions of neighboring mesentery, omentum and bowels. And in view of the entire safety of the early operation, and of the fearful risk that is incurred by waiting, we believe not only that the early operation is justified, but that delay is inexcusable. It was good surgery to cut anywhere for foul pus. It is better surgery to remove what will inevitably cause foul pus if left to nature's management.

The best time for operating will vary in every case. It cannot be determined beforehand, nor by the gravity of the symptoms at any hour, but by the progress of the disease. The proper treatment of the disease being surgical, cases of appendicitis should be in the surgeon's hands from the start. I do not know of any case where an operation has been done too early, and, in view of the multitude of cases where death was due solely to the surgeon's delay, I believe if ever laparotomy is done, as it shall prove, needlessly, that it should nevertheless be justified as "explorative."

CASE I. Mrs. A. L. H., patient of Dr. E. R. Cutler's, a healthy woman in the prime of life. Has been subject to attacks of "colic." On January 6, 1889, the pain began in the morning and increased through the day. Her evening temperature was normal. There was tenderness on pressure, but no evidence of tumor in the right iliac lumbar region. The next day there was more pain, and the evening temperature was 99°. After a fairly good night, her temperature was 100°. Micturition difficult. Severe pain in vagina and in right abdomen, which was slightly

distended and very tender. There was no dullness on percussion, and only a slight resistance on pressure. *Per vaginam* the uterus was found slightly pushed to the left and exquisitely painful if moved by the finger. Rectal examination negative.

Operation fifty-four hours after initial symptoms. Incision three inches long in the right linea semilunaris. A few ounces of turbid inodorous serum escaped. The swollen appendix was easily found and drawn outside. Its tip was gangrenous. Owing to the firmness of the adhesions binding down the cæcum, it was very difficult after amputating the appendix to approximate the peritoneal surfaces of its stump. Silk sutures were employed. The abdomen was flushed with hot boiled water, and the wound closed with silkworm gut sutures. She rallied fairly well, but for five days could keep nothing in the stomach. Peptonized enemata kept her alive. The temperature for the first week was normal. The troublesome distention of the abdomen was relieved by turpentine enemata and use of rectal tube. During the second week the stitches were removed and there was a slight discharge of thin odorless pus. On the twelfth day there was discharged from the sinus a silk ligature which had been left in by oversight; and a week afterwards the silk sutures which had been used on the stump were also discharged. Recovery perfect.

CASE II. W. H. C., a farmer, forty years old, when first seen by Dr. E. R. Cutler, March 8, 1889, had had pain in right abdomen for nine days and had been confined to his bed for three days. He had vomited frequently. His abdomen was moderately distended, tympanitic except in right iliac lumbar region where there was a well-marked tumor. Pulse 90, temperature 100.6°. He was at once removed to the hospital for operation.

Incision three inches long in the right linea semilunaris. The omentum was adherent to the peritoneum. On breaking through it there escaped a pint or more of clear fluid. The appendix was found after long search, delayed by the strong adhesions in its neighborhood. It was swollen, grayish and perforated. After amputation, the peritoneal surfaces of the stump were approximated by cat-gut sutures. Abdomen flushed with hot boiled water. Wound entirely closed with silkworm gut sutures.

He rallied well from the effects of the operation, but began hiccoughing the next day. This continued for several days and was relieved only by amyl nitrate inhalations. On the fourth day, the wound looking badly, one stitch was removed. Foul pus escaped. Two days after, all the stitches were removed. The edges of the wound were then sloughing. During the second week the wound became healthy and the edges were drawn together by adhesive plaster. At the end of the third week he was discharged well, except for granulating sinus. Contrary to advice he began working too soon, tramping over rough country several miles sometimes. Two months after his discharge he was readmitted to the hospital with a supposed abscess of the liver. He was expectorating, vomiting and also voiding per rectum pus very freely. His condition seemed desperate. Dr. M. H. Richardson saw him in consultation and agreed that his condition did not warrant any operative interference.

He gradually rallied. The expectoration of pus ceased. In a month he was again at work, and has since, so far as is known, continued well.

¹ Read before the Surgical Section of the Suffolk District Medical Society, December 4, 1889.

CASE III. J. C., a strong, healthy machinist, thirty years old. From boyhood had been subject to occasional attacks of severe "colic." On June 1, 1889, worked hard all day, lifting more than usual. He was taken sick that night; pains in belly not relieved by vomiting. When seen the next day by the writer, he complained of severe pain in the umbilical region. There was no tenderness on pressure nor dulness on percussion in any part of the abdomen. Pulse 74, temperature normal. The next morning the pulse was 80, temperature 99.8°. There was retention of urine. The pain was more severe and was now referred to the right abdomen. There was slight dulness and considerable tenderness in the right lumbar region. That evening his pulse was 90, temperature 102°. The pain was now definitely located in the region just described, and above the crest of the ilium there was marked dulness and great tenderness. Rectal examination negative.

On June 4th, sixty-six hours after initial symptoms, the patient having been removed to the hospital underwent operation. Incision through abdominal walls two and one-half inches, in the right linea semilunaris. Exactly where the pain and tenderness had been most marked was found the rigid appendix lying along the outer side of the colon, pointing upwards and outwards. Delicate adhesions connected its mesentery with the colon and a neighboring coil of the small intestine. The appendix was easily brought outside. It was four inches long, gangrenous in its distal half. Its mesentery extended nearly to its tip. This was ligatured with cat-gut, and the appendix, having been cut loose from it, was amputated by a V-shaped incision. The flaps of the stump were then rolled in and their peritoneal surfaces approximated by fine silk sutures. Abdominal cavity washed out with hot boiled water. Wound closed with silkworm gut sutures. No collapse followed.

The next day his temperature was normal. The second day his bowels were moved by salts and enemata. He was free from pain and fever for five days. His wound had then entirely closed. But an abscess developed where the appendix had lain, which was evacuated on the ninth day by reopening the wound. Discharged from the hospital on the twenty-fourth day. Recovery complete.

CASE IV. R. S., a healthy school boy of thirteen years, was feverish the night of June 12, 1889. The next morning he vomited and complained of pain in abdomen, especially on the right. There was frequent vomiting and increasing pain for the following forty-eight hours. When first seen by Dr. E. R. Cutler, fifty-six hours after initial symptoms, the abdomen was distended and exquisitely tender. Examination under anæsthesia developed distinct dulness on percussion and decided resistance on pressure in the right iliac lumbar region. He was at once removed to the hospital for operation.

Incision three inches in the right linea semilunaris. Pus escaped on opening the abdomen. A sloughing friable mass presented, which was found to be of omentum wrapped around the appendix. The peritoneal investment of the cæcum and several inches of the colon on its outer side was sloughing, but the muscular wall of the bowel seemed healthy. The proximal third of the appendix was intensely red and swollen. The distal two-thirds was gangrenous, and at the beginning of this portion were several concretions the size of

a pea, retained in the appendix only by its greatly thinned and probably perforated walls. The appendix was amputated beyond, a cat-gut ligature applied near its base. The sloughing omentum was also amputated, after ligaturing it in several sections. The abdomen was thoroughly flushed out with hot boiled water. A drainage-tube was employed.

Patient rallied well. The next day was very comfortable. There was, however, an offensive discharge from the tube, and on the second day the wound had to be reopened; its surface was black and sloughing. On the fourth day intestines protruded. For three weeks his temperature ranged from 99° to 103°. His abdomen was greatly distended. He suffered great pain. The discharge from the wound was copious and offensive. When this faecal discharge ceased, the boy nearly died of intestinal obstruction, which was finally relieved by dilating the sinus and opening an inflated coil of the intestine. A large evacuation of gas and liquid faeces occurred. The patient's condition greatly improved and natural evacuations of the bowels were re-established. But the constant acrid faecal discharge from the wound irritated it and the surrounding skin most torturingly.

The convalescence was very tedious. An attempt to close the fistula failed. But now at the end of five months, although there is still some faecal discharge from the sinus, the boy is able to walk out of doors and is in very good general health.

CASE V. F. H., a large healthy lad of sixteen years, has had during last few years occasional attacks of "belly-ache." On June 13, 1889, was struck by a base ball in region of umbilicus. He thought little of the blow till the next day, when there developed loss of appetite and nausea. That night and the next day he vomited bile frequently, and when first seen by the writer on the afternoon of the 15th, he complained of the same pain that he had suffered when struck by the ball. He was wandering about out of doors. His pulse was 110, temperature 102°. Abdomen soft and not tender on pressure. June 16th, temperature 101°, vomiting less. June 17th, temperature 100°, slight tenderness in right abdomen. June 18th, temperature 99°, increased tenderness and some pain. During the three days following, his temperature rose steadily to 102°. The pain did not increase; but the tenderness and resistance on pressure, and dulness on percussion in the right iliac lumbar region became more marked. Rectal examination negative. The diagnosis of appendicitis was not assented to by consultants till June 20th, and the operation then advised was not allowed by his parents till June 21st, when he was removed to the hospital.

Incision two and one-half inches in right linea semilunaris. In the iliac fossa was found a dense mass, from which escaped several ounces of foul pus, on pushing into it with the finger. In the abscess cavity (which was poorly defined, and extended upwards alongside the colon into the loin) lay the gangrenous perforated appendix on the inner side of the cæcum and pointing downwards.

In attempting to lift it into view, three inches of it tore off. It was not possible to move the cæcum so as to get at the appendix stump. After amputating some of the gangrenous friable omentum, which had served as part of the abscess wall, and thoroughly washing out the abdomen, a drainage-tube was left in the abscess cavity where the appendix had lain, and a

second tube carried up into the loin. The abdominal wound was sutured with silkworm gut.

During the operation the patient suffered considerable collapse. The next day his temperature was 100°, and pulse 140. There was very little discharge from the drainage-tubes. The second day his temperature was 102°, pulse 160; delirious. The third day he died. There was no autopsy. But on removing the drainage-tubes there escaped thick, dark, foul pus.

CASE VI. J. D., a healthy boy of fifteen years, was taken suddenly sick August 4, 1889, with severe pain in the right abdomen. Six years before was confined to his bed for a month with pain in belly and inability to move his right leg. During the first four days of this attack he was under the care of Dr. Titcomb of Concord, who reported a steady increase of fever and of the rational signs of appendicitis. When first seen by the writer his temperature was 103°, pulse 114. The belly was distended, but not so as to obscure a tumor in the right, which was dull on percussion and very tender. Rectal examination negative. He was removed to the hospital, and operated upon at 9 p. m., August 8th. The incision, two inches long, parallel to the crest of the ilium and one inch removed, most happily avoided a loop of intestine which was found firmly adherent to the abdominal wall only a half inch towards the median line. The cæcum and the ascending colon, packed with faeces, was bound down in the iliac fossa, and pulsated with the iliac artery. To the outside of it, and above the crest of the ilium was found an abscess from which was evacuated about two ounces of very foul pus. No trace of the appendix was discovered. After thorough irrigation with hot boiled water, a drainage-tube was carried into the abscess cavity and the wound otherwise closed with silkworm gut sutures. For some days after there was a slight discharge of serous pus, never foul, from the tube, which was removed on the sixth day. On the second day, there was considerable pain which was entirely relieved on moving the bowels by salts and copious enemata. The highest temperature after the operation was 100.2° on the first day, and never above 99°, thereafter. Discharged from the hospital on the twelfth day. The sinus, where the drainage-tube lay, closed a fortnight afterwards, and at the end of a month the boy was as well as ever.

CASE VII. J. O., a very strong laborer, thirty years old, was in the hospital for a week in December, 1888. He had then every symptom of appendicitis, but was not operated upon because from his entrance he steadily improved under medical treatment. He had had two similar though less severe attacks before. For ten months after he was perfectly well.

Soon after midnight, October 11th, he was seized with intense pain in the right iliac lumbar region. His pulse at 4 a. m. was 88, temperature 98.8°. At 4 p. m. his pulse was 110, temperature 102°. He was then removed to the hospital. The next morning his fever had not abated. There was great tenderness and pain, but little dullness and no tumor, in region above described. Examination per rectum negative.

Operation thirty-six hours after initial symptoms, by Dr. H. A. Wood. Incision two and one-half inches along outer border of right rectus. Purulent fluid escaped on opening the peritoneum. Intestines coated with lymph flakes. The appendix was found fastened down to a mass of inflamed omentum along the outer side of the cæcum and colon. It was probably per-

forated, for a small soft faecal concretion was found near it. On account of the firm adhesions and the proximity of apparently healthy omentum the appendix was not removed. A rubber drainage-tube was placed next it and a second tube left in to drain the pelvis where was found considerable free pus. After flushing out with hot boiled water, the wound was closed with silkworm gut sutures.

Very little shock. No vomiting. The second day after the operation he took liquid nourishment freely. The third day his bowels were moved by salts and enemata. There was very little pain and all went well for six days, when he again became feverish and suffered more pain in the region of the wound. The discharge, which was at first inodorous, became foul. A sub-peritoneal abscess which formed alongside the wound was thought to have been occasioned by infection from the drainage-tubes after shortening them, thus bringing the holes of the tube against the sides of the wound. The tubes and sutures were removed on the eleventh day, and thereafter the convalescence was uninterrupted. Discharged on the twenty-fifth day with only small sinuses where the tubes lay.

A fortnight later was walking about town as usual.

CASE VIII. P. F., previously healthy man, twenty-two years old, was seized with pain in the right iliac lumbar region at noontime October 29, 1889. He vomited frequently. The next morning when first seen by Dr. C. J. McCormick, there was pain, tenderness and dullness in region above described. Pulse 80, temperature 99.6°. The next day his condition was unchanged, but there was more pain that night. The third day his pulse was 100, temperature 103.6°. He was then removed to the hospital for operation.

Incision two and one-half inches along outer border of right rectus. A small amount of pus escaped on opening the peritoneum. The appendix was easily liberated from adhesions binding it to the cæcum. The omentum attached to it was amputated after ligaturing it in sections with catgut. One and one-half inches of the distal portion of the appendix was gangrenous. It was amputated, and the stump ligatured with catgut. After flushing out the abdomen with hot boiled water and laying a drainage-tube from where the appendix had lain the wound was closed with silkworm gut sutures. No shock followed the operation. His pulse the next day was 88, and temperature 99.2°. There was slight discharge of pus from the tube.

The second day he had more fever and vomited frequently. The edges of the wound becoming œdematous several sutures were removed. The discharge of pus was then more free, and his general condition much improved. On the eighth day the remaining sutures and the tube were removed.

Except for the necessity of being catheterized for a week or so, and for a small hard swelling in the abdominal wall below the wound which disappeared spontaneously, his convalescence was uninterrupted. He was discharged entirely well on the twenty-fifth day after the operation.

Dr. W. F. Whitney kindly gives the following description of the amputated appendices in cases III, V, VIII.

CASE III (J. C.) The portion removed was 5.5 cm. (2½ in.) long. The surface was slightly roughened and at about 1 cm. (¾ in.) from the tip was a rounded swelling about 3 cm. (1¼ in.) in extent. At one point

the covering was blackened, thinned, and evidently on the point of rupture.

CASE V (F. II.) The portion was extremely shrunken from the preservative, and measured 5 cm. (2 in.). About half-way was a small hole with ragged edges, from which protruded a small slough.

CASE VIII (P. F.) The portion, which was somewhat shrunken from the alcohol, measured 3.5 cm. ($1\frac{1}{2}$ in.) in length, and 7 mm. ($\frac{1}{4}$ in.) in diameter. The external surface was roughened evidently from inflammation. On section, the lumen was filled with faecal concretion. Microscopic examination showed the mucous membrane eroded and destroyed. The submucous and muscular coats were infiltrated with round cells, and at the point of attachment of the mesentery was a localized accumulation of cells, that could be regarded as a small abscess. There was no indication anywhere of perforation, but a slight extension of the inflammation must have resulted in it.

A REPORT OF EIGHTEEN CASES OF CHRONIC DISEASE OF THE ANKLE AND TARSUS, WITH OBSERVATIONS UPON THE OPERATIVE TREATMENT.¹

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THE operation of excision of the ankle-joint or bones of the tarsus for disease is not a very old one. Moreau, in France, first performed a total excision in 1792. Thomas Welles, of South Carolina, first removed the astragalus for disease in the United States. Dr. Samuel Cabot was the first to remove the astragalus for disease in Boston, in September, 1859. Just ten years later (in 1869), the Children's Hospital, of Boston, began its records; and from that date to this, there have been performed fifty-four operations for diseased bone in the foot, including both partial and complete excisions of the ankle, and removal of portions of the tarsus.²

Many of the fifty-four cases could not be found. In some instances the hospital records were too meagre to be of service. All recent and unhealed cases are purposely omitted. With these exceptions eighteen cases remain in which the *ultimate* results are known.

The number of cases I have to report is few, but relatively it is large. There are in literature, beside isolated cases, those grouped by Hodges³, Culbertson⁴ and Connor.⁵ These tables bring together all reported cases up to 1883. One must be very cautious of conclusions reached from a study of so few cases. For this reason I have prepared the individual histories, that those interested may have the material from which these observations are made.

It is generally believed that chronic disease of the ankle and tarsus, especially in childhood, is of tubercular character. Investigations during the past nine years have demonstrated that the tubercular processes in the body are of parasitic origin, due to the presence and growth of a bacillus.

According to our understanding of the nature of the processes associated with the life-history of this bacil-

lus, will be our treatment of the symptoms arising. Two views are maintained:

(1) The bacillus of tuberculosis is short lived and perishable, and its action may entirely cease. It is dependent for its vitality upon transitory conditions, which can be removed or counteracted. When this is the case, and its products are gotten rid of, the tissues then undergo repair.

(2) Tuberculosis is a malignant process. It tends to the destruction of tissue, and to be disseminated throughout the body, causing a general tuberculosis.

There are likewise two classes of orthopedists, broadly speaking: *the one* uses mechanical means to the exclusion of operative procedures; *the other* considers apparatus as of secondary importance.

In the treatment of chronic disease of the bones of the ankle and tarsus, the methods hitherto in vogue are either mechanical or operative; the so-called expectant and radical methods,—according as the surgeon in charge regards the tubercular process as benign or malignant.

The expectant method proceeds about upon the following plan:

- (1) If the joint is inflamed, let it have complete rest.
- (2) If an abscess forms, open it.
- (3) If loose bone is detected, remove it.
- (4) If the foot has assumed a malposition, rectify it.
- (5) Attend carefully to the general health.

Dr. Gibney, of New York, has reported favorably upon thirty extremely interesting cases of ankle and tarsal disease in children treated by this method, and concludes, judging from Culbertson's statistics collected prior to 1876, that excision is not attended with as good results as has been supposed, and is rarely justifiable; that partial excisions offer no advantages; and that the expectant plan of treatment gets more perfect results, more useful limbs, than any other known method of treatment. These are conclusions reached some ten years ago, and held at the present time by many.

There is to-day a strong and growing tendency in favor of every possible application of the principles of conservative surgery. With the advent and adoption of modern methods of wound treatment the term conservative surgery has come naturally to include procedures hitherto unwarrantable. The older (so-called expectant) methods defined above are now ultra conservative; and the term conservative is found to embrace operative measures once frowned upon.

From a consideration of the cases here reported I feel convinced that the old expectant treatment is not the very best conservative surgery. Its methods are certainly of great value, and hold important places in the treatment of chronic ankle-joint disease. In some instances it accomplishes all that is required; but it is not devoid of danger. The reports of isolated cases seem to demonstrate to some that nothing more is to be desired; but to regard it as a system of treatment, complete and distinct from all other methods, is to sacrifice the well-being of many a patient to an arbitrary and yet unproven theory.

In the light of to-day's improvements a decided advance has been made in the treatment of chronic ankle and tarsal disease. The means enumerated above under the expectant method are to be used; and one other procedure is to be introduced under proper conditions, namely, the removal of *all* the diseased bone, and, if a portion of a small bone is involved, the removal of that

¹ Read at the third annual meeting of the American Orthopedic Association, September, 1889.

² Through the kindness of the visiting surgeons at this hospital, Drs. Bradford and Cabot, I am allowed the use of this material.

³ Excision of the joints.

⁴ Prize Essay, Ann. Med. Assoc., 1876.

⁵ Trans. Am. Surg. Assoc., Vol. I.