APPENDICOSTOMY AND CECOSTOMY FOR THE RELIEF OF CHRONIC DIARRHEA: REPORT OF NINE CASES.*

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CHRONIC diarrhea is an affection encountered in all parts of the United States, more frequently, however, in the extreme south than in the north. The varieties of diarrhea are so numerous and its causes so varied that no attempt will be made to enumerate or describe all. It is generally conceded that diarrhea, in the vast majority of cases, is caused by pathologic conditions situated at some point along the alimentary canal. The opinion seems to prevail that the condition inducing chronic diarrhea is, in the majority of instances, located in the stomach or small intestines, sometimes in the colon, rarely in the sigmoid flexure or rectum.

Perhaps it is true, in most instances, that the original cause of the frequent evacuations is situated in the stomach or small intestine; be this as it may, it is the writer's opinion that in a large percentage of cases chronic diarrhea is directly traceable to disease in the colon, sigmoid rectum, or at the anus. That the exciting cause of the frequent stools is located at some point in the large intestine or rectum is a matter easily demonstrated by means of a proctoscopic or colonoscopic examination or by discontinuing internal medication and substituting a local treatment, which will be followed by rapid improvement if the diseased part of the bowel is reached. Certainly, the original or continuing cause of chronic diarrhea is found located in the lower bowel sufficiently often to warrant the assertion that in all of these cases the sigmoid and rectum should be thoroughly examined by means of the proctoscope or sigmoidoscope.

In some instances the pathologic conditions of the lower bowel inducing chronic diarrhea are the result of irritating discharges from disease higher up in the alimentary canal. The lesions in the colon, sigmoid and rectum thus produced not infrequently remain as an independent and continuing cause of the diarrhea long after the original ailment and consequent discharge which brought them about have been relieved or cured.

Chronic diarrhea is very common, its progress is insidious, and its importance and far-reaching effects are not infrequently lost sight of by the family physician. Unfortunately for this class of sufferers practitioners generally do not make a sufficient effort to determine the cause or causes of the frequent stools, consequently they fall into a routine practice in treating these cases, prescribing bismuth, opium, chalk, charcoal, mild astringents, intestinal antiseptics, etc., which serve *temporarily* to diminish the number and fluidity of the evacuations, but which do nothing, in many cases, toward a permanent eradication of the disease.

Chronic diarrhea is primarily the result of disease located in the colon, especially the sigmoid and rectum, very much more frequently than is supposed by the profession at large. The following are the pathologic conditions of the lower bowel which most frequently cause chronic diarrhea: carcinoma and other tumors within and without the bowel which obstruct its lumen; stricture, procidentia, invagination, polyps, fecal impaction; deviated coccyx, foreign bodies, colitis and ulceration. Of these the most common cause of the diarrhea is colitis, and the inflamed and ulcerated condition of the mucosa may be the result of a simple inflammation of the membrane, or it may be due to trauma, gonorrhea, syphilis, tuberculosis or amebic dysentery, the latter proving quite common in this country since our recent war with Spain.

It is not the purpose of the writer at this time to outline the treatment of the above-named diseases except that of colitis. The medical and surgical treatment of colitis has been given elsewhere¹ by the writer and will not be discussed further except in so far as it relates to appendicostomy and cecostomy. When diet, internal medication and irrigations have failed to arrest the progress of the disease it is time to resort to such surgical procedures as colostomy, cecostomy (valvular) and appendicostomy.

Mayo Robson, 1893, and Hale White, in 1895, reported cases of colitis cured by establishing an artificial anus in the colon, and advised this method of treatment in persistent cases. Colostomy for this purpose has not become popular, however, because of the universal objection to this operation owing to the frequent and involuntary escape of gas and feces, and further because of the difficulties and dangers of the operation necessary to close the opening after the colitis has been relieved.

Later, Gibson described his operation, "Valvular Cecostomy," which is preferable to colostomy. At the present writing, however, the operation known as appendicostomy, suggested by Weir and so named by Willy Meyer, is more popular than either colostomy or cecostomy.

The object of this paper is to give the personal experience of the writer in the treatment of nine cases of persistent ulcerative colitis and chronic diarrhea by means of appendicostomy or cecostomy. In eight of these cases the appendix was brought up, attached to the skin and opened in order to permit through-and-through irrigation. In the remaining case the cecum was opened and a catheter introduced, after the method of Gibson for the same purpose. The experience of the writer with these operations has been most gratifying, and he has no more hesitation in advising these procedures for the relief of ulcerative colitis than he would of advising appendicostomy for the relief of appendicitis.

The operation of appendicostomy is comparatively simple, can be quickly performed and is no more dangerous than is the interval operation

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¹ Gant: Diseases of the Rectum and Anus, third edition. T. A. Davis Company, Philadelphia, Pa.

for appendicitis. In performing this operation the different operators vary the technique but little. In brief, the following is the technique as practised by the writer: The abdomen is opened by a short intermuscular or gridiron incision such as is made for appendectomy. The appendix is located, freed if adherent, brought outside the abdomen, opened and a probe inserted to make sure of its patency. If found to be too short, strictured or otherwise unsuitable, it should be removed and a cecostomy substituted. If, however, the appendix is sufficiently long and patent, it is ligated and cauterized. The cecum at its base is sutured to the abdominal wall and the parietal peritoneum, muscles and skin closed with plain catgut sutures. The appendix is anchored to the skin by one or two sutures and the wound covered with protective tissue and gauze held in place by adhesive plaster. In some cases the meso-appendix was left intact, while in others the artery was ligated and the peritoneum stripped off, but apparently neither method had any advantage over the other. Usually the part of the appendix external to the ligature sloughed about the fourth or fifth day, leaving the open stump projecting about one fourth of an inch above the skin.

The irrigations are begun immediately, using saline solution, ice water or solutions of boracic acid, potassium permanganate, carbolic acid, krameria, ichthyol, bichloride of mercury, or nitrate of silver.

In practically all cases the abdominal discomfort and frequent evacuations ceased immediately after the operation or after the first irrigation, and within a few days the stools became almost normal, containing but little blood or mucus. It appears to make but very little difference what irrigating fluid is employed, provided that it is used daily and in sufficient quantity to thoroughly cleanse the bowel.

The operation has not been followed in any case by serious shock or great discomfort and in only one case was there nausea, due in this instance to the inclusion of a portion of the cecum within the wound. Primary union occurred in all except two or three cases, where there were stitch abscesses. Only when the opening was small or showed a tendency to close was a catheter found necessary to enlarge the opening and allow free irrigation. The appendix was kept open for periods varying from three to twelve months, closing spontaneously in some cases, while in others it was necessary to cauterize the mucosa in order to close it. The only unpleasant sequela in the writer's series of cases was a small ventral hernia. In one attempted appendicostomy the appendix was found short and completely occluded, necessitating its removal and the performance of cecostomy. In another case the operation of appendicostomy was successful but through-and-through irrigations were impossible because of a stricture of the transverse colon which was detected at a second operation, when the appendix was removed and the abdomen closed.

The following eight cases of appendicostomy and one of cecostomy, performed by the writer, demonstrate the value of these operations in ulcerative and inflammatory conditions of the colon, sigmoid and rectum.

CASE I. G. M., male, age forty-two; Mexican; married; family history negative; markedly anemic; appetite and digestion poor; tenderness and pain over colon, almost constant; had suffered from mucous colitis for several years and from chronic diarrhea for past two years. Number of stools varied from three to six daily and contained abundant mucus and some blood.

Proctoscopic and colonoscopic examination showed a highly congested and thickened mucosa with a few superficial ulcers. Microscopic examination of the warm stool revealed motile *amæba dysenteriae*, and the diagnosis of amebic dysentery was made.

Internal medication and irrigations having been previously tried and proved unsatisfactory, immediate operation was advised.

Appendicostomy through intermuscular incision performed; appendix freed with difficulty, opened, probed and ligated with silk; cecum attached to parietal peritoneum; peritoneum and wound closed by layer method, and appendix anchored to the skin. Ligated portion of stump sloughed on sixth day, but repeated attempts at through-and-through irrigation, using boracic acid solution, failed. Only a small quantity of the solution could be introduced and this caused great discomfort, being retained by a stricture of the transverse colon discovered at the second operation, at which time the appendix was removed and the abdomen closed. Patient still under observation, but future treatment for stricture not yet decided upon.

CASE II. C. F., female, age eighteen; American; unmarried; family history of tuberculosis. Anemic, loss of weight considerable, lungs sound. Diarrhea of three years' duration; daily number of stools three to eight, offensive and containing pus, blood and mucus, and upon microscopical examination, tubercle bacilli were found.

Proctoscopic and sigmoidoscopic examination showed mucosa pale and smeared over with a thin mucopurulent discharge and presenting here and there deep, irregular ulcers with undermined edges, but not sensitive to touch. She also suffered from simple fistula in ano. Diagnosis, tubercular colitis and ulceration.

Appendicostomy and operation for fistula performed. Gridiron incision at McBurney's point, appendix easily brought out, denuded of meso-appendix and anchored without opening, the abdomen being closed by layer method. On the fourth day the end of the appendix was removed one fourth of an inch from the skin, and irrigations of weak silver solution were begun. Abdominal wound healed by primary union and fistula wound healed kindly. Patient left the hospital on twentieth day, much improved. Irrigations continued for six months. She rapidly gained in weight and appeared entirely well at this time, when the appendical opening was closed by cauterization with galvano-cautery.

CASE III. H. W., age thirty-eight; single; liveryman. Family history negative. Persistent diarrhea of several years' duration. From fifteen to thirty evacuations daily, consisting principally of mucus and blood. Bacteriologic examination of stools negative. Rectal and colonic examination revealed a highly inflamed, thickened mucosa, extensively ulcerated as high up as could be seen.

Diagnosis, ulcerative colitis.

Appendicostomy through incision carried directly

down through the skin, muscles and peritoneum. Appendix long, freed with great difficulty, opened, probed and ligated. Cecum attached to parietal peritoneum, incision closed by layer method and appendix anchored to skin.

Irrigations of saline solution begun on fourth day and from this time on he never passed more than one or two stools daily, which appeared nearly normal and only rarely contained a slight amount of mucus and blood. He resumed his occupation in four weeks and at the end of four months, when the opening closed spontaneously, the stools were normal, he had gained fifty-two pounds in weight and considered himself well.

Now, at the end of fourteen months, he is perfectly well except for a small ventral hernia, which may have been the result of slight suppuration which occurred in the wound or the straight through incision made in this case.

CASE IV. J. R., male, age twenty-eight; painter; married; tertiary syphilis; chronic diarrhea, fifteen to twenty stools each day. Bacteriologic examination negative.

Extensive, deep, irregular ulceration of upper rectum and sigmoid. Diagnosis, syphilitic ulceration.

Cecostomy by Gibson's valvular method, the appendix being very short, completely occluded and not suitable for appendicostomy. Through-and-through irrigations of weak solutions of potassium permanganate were easily carried through the catheter left in the cecum. The wound healed by primary union and at the end of three weeks the patient left the hospital very greatly improved. Now, eight weeks after the operation, the stools are normal in number and appearance, the ulceration is practically healed and he has gained fifteen pounds, but the irrigations are still continued.

CASE V. D. R., male, age thirty-two; painter; married; family history negative. Had been in Manila several years and was treated repeatedly in the hospitals there for dysentery. Bacteriologic examination revealed motile *amœba dysenteriae*. Stools frequent with much blood and mucus. Numerous ulcers of rectum and sigmoid found.

Appendicostomy through intermuscular incision, appendix freed, brought into the wound and anchored. Peritoneum, muscles and skin closed snugly about appendix. End of appendix amputated on third day and bowel irrigated with solution of quinine. There was a small stitch abscess which healed quickly and at the end of the third week the patient left the hospital, the diarrhea and bloody stools having ceased. Irrigations were kept up for several weeks and resumed at intervals of one year, when he was entirely well and the appendix was closed by cauterization.

CASE VI. B. G., male, age thirty-eight, single, United States army captain. Had served in Philippines several months.

Diagnosis, amebic dysentery, confirmed by bacteriologic examination.

Appendicostomy, intermuscular incision; appendix opened, probed and ligated. Cecum fastened to abdomen, appendix anchored in wound and latter closed by layer method. Irrigations with boracic acid solution begun on fifth day. Wound healed by primary union and patient discharged from hospital on eighteenth day. From the day the irrigations were begun, improvement was rapid and eight months after the operation he was entirely well.

CASE VII. Mrs. E. S., age forty-one, family history negative. Diarrhea of several years' standing, fifteen to twenty stools daily, containing mucus, casts and blood.

Diagnosis, ulcerative colitis.

Appendicostomy, intermuscular incision over McBurney's point; appendix freed with difficulty, opened, probed, cauterized and ligated with silk. Cecum stitched to inner abdominal wall, wound closed by layer method, and appendix anchored to skin. Stump sloughed and irrigations of boracic acid begun on fourth day. Wound healed by primary union. Patient left hospital at end of third week greatly improved. Eight months after the operation patient is well, but occasional irrigations are kept up as a matter of precaution.

CASE VIII. H. W., male, age thirty-one; soldier; family history negative. Contracted dysentery while at Manila. Repeatedly in the hospitals there where irrigations of silver and quinine were tried but gave only temporary relief. Patient had from ten to twenty bloody stools daily, was anemic and had lost considerable in weight.

Repeated examination of the evacuations showed the presence of *amœba dysenteriae*. Sigmoidoscopic examination revealed extensive ulcers of the sigmoid and rectum.

Diagnosis, amebic dysentery.

Appendicostomy; intermuscular incision; appendix opened, probed, ligated and cauterized. Cecum fixed to abdominal wall and wound closed by layer method. End of appendix dropped off on fifth day, and irrigations of ice water were begun.

Evacuations reduced to two daily at end of the first week, were nearly normal in appearance and contained but a slight amount of blood and mucus. The wound healed nicely by primary union. In ten weeks from the time of operation he had gained thirty pounds, passed only one well-formed stool daily, and his general health had improved greatly.

Patient still under observation and the irrigations are continued.

CASE IX. H. W., male, age forty-five, traveling salesman; family history negative. Colitis for ten years, had suffered from chronic diarrhea for past three years, passing from three to six stools daily containing a great deal of mucus and some blood. Bacteriologic examination negative.

Proctoscopic and sigmoidoscopic examination showed a congested and thickened mucosa covered with mucus, with here and there superficial ulcers. The sigmoid flexure could be seen prolapsing into the rectum.

Diagnosis, ulcerative colitis and invagination of the sigmoid into the rectum.

Operation, appendicostomy and suspension of the sigmoid flexure to the abdominal wall. Appendix located and freed from abdominal adhesions through an intermuscular incision. It was long and very small, but when opened and probed it was patent. Stump cauterized before the appendix was ligated. Wound closed by layer method. Abdomen opened in left inguinal region, the sigmoid drawn up out of the pelvis and attached to the inner abdominal wall and the wound closed.

Patient did well for three days when he began running a temperature and the pulse beat became rapid. This continued until the fifth day, when he was anesthetized and sloughing of the appendix and a large part of the cecum around its base was detected. Patient died shortly after the second operation.

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