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A CASE OF APPENDICITIS IN WHICH THE APPENDIX BECAME PERMANENTLY SOLDERED TO THE BLADDER, LIKE A THIRD URETER, PRODUCING A URINARY FECAL FISTULA.

BY

W. W. KEEN, M.D.,

PROFESSOR OF THE PRINCIPLES OF SURGERY AND OF CLINICAL SURGERY IN THE JEFFERSON MEDICAL COLLEGE; SURGEON TO THE JEFFERSON MEDICAL COLLEGE HOSPITAL, ETC., PHILADELPHIA.

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A CASE OF APPENDICITIS IN WHICH THE APPENDIX BECAME PERMANENTLY SOLDERED TO THE BLADDER, LIKE A THIRD URETER, PRODUCING A URINARY FECAL FISTULA.

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The following very unusual and puzzling case, in which the appendix became adherent to the bladder precisely like a third ureter, and delivered feces constantly into the bladder, is of more than ordinary interest. The difficulty in making a diagnosis, owing not only to the rarity of the case, but also to the obscurity of the symptoms, will, perhaps, excuse the multiple operations, which were regretted, of course, as soon as the real facts became known.

Mr. W., aged twenty-four years, was first seen with Dr. Charles A. Service, of Bala, on November 28, 1896. When he was seven years of age he had a great deal of trouble in passing his water, and when the family physician examined him, a pin was found well down in the urethra. He does not remember that he inserted it and believes that he swallowed it, but the only known fact is that it was found and removed. This is the only thing in his family or personal history of importance.

In March, 1896, before coming under Dr. Service's care, he was said to have had an abscess of the prostate, which burst spontaneously, the result of which was that a fistula was established between the bladder and the rectum. No urine had ever escaped from the bladder into the rectum, but food had frequently been recognized in the urine, such as fragments of spinach, cranberry skins, strawberry seeds, etc. In addition to this, air sputtered out with the urine, and

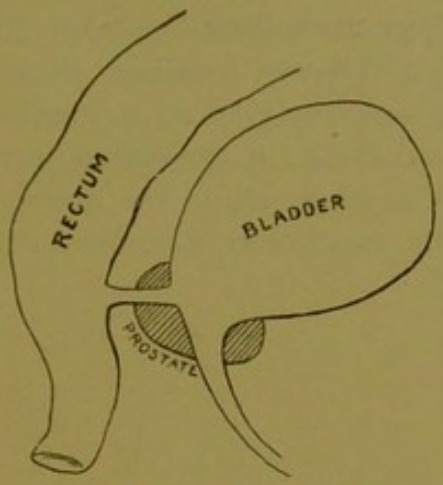
on many occasions the urine had a distinctly fecal odor, in consequence of which he had suffered from several severe attacks of cystitis. When he used an enema or when the bowels were very loose, the discharge of fecal matter was very considerable, and when the feces were solid much less escaped into the bladder. Some time ago, one or more fragments of a calculus were said to have been passed, but there is no evidence as to whether they were fragments of a vesical or a renal calculus.

My first object was to find the two ends of the supposed fistula. He had already been seen by Dr. John B. Deaver, of this city, who, later, throughout the case, was in consultation with Dr. Service, Dr. W. J. Taylor, and myself. Examination by the cystoscope did not reveal any opening into the bladder, nor was any stone found in the bladder. Rectal touch revealed nothing abnormal. The bladder was next filled with milk, when, by the use of Kelly's tubes and the speculum of Martin, of Cleveland, I endeavored to find the rectal end of the supposed fistula by the escape of the milk while he was in the knee-chest position, but without success. On December 2, 1896, another equally fruitless examination was made with cochineal, and on December 5 he was etherized, and renewed examinations were made. The bladder was then injected with air, and the moment that this was done the perineum bulged to a considerable extent, like a cornet-player's cheek, which immediately subsided, however, and with its subsidence the air could be easily heard escaping, presumably into the rectum. This injection was made repeatedly, both in the dorsal, Trendelenburg, and knee-chest postures. While in the latter posture the rectum was filled with water, as I hoped that the point where the air escaped from the bladder into the rectum could be detected by the small bubbles, but none were seen. Our conclusion was that a recto-vesical fistula existed (Fig. 1), and (in view of the bulging of the perineum) that in that part of its winding course it was probably not very far from the surface. We decided, therefore, upon an operation, as follows:

First operation, February 9, 1897, Drs. Deaver, Taylor, Service, Spencer, and myself being present. An incision was made nearly from one tuberosity of the ischium to the other, with a slight convexity forward, about an inch in front of the anus, a steel bougie being inserted into the urethra as a guide. The rectum was then separated from the bladder, until finally the dissection reached to the upper end

of the prostate, a depth of about ten centimetres; but at no point was the sinus discovered. During the dissection the bladder was distended with air several times, but none escaped into the operation wound. The lower border of this wound was then elevated by forceps and the wound filled with sterilized water, as we hoped to find bubbles of air in the water when air was injected into the bladder, but

FIG. 1.



Supposed recto-vesical fistula.

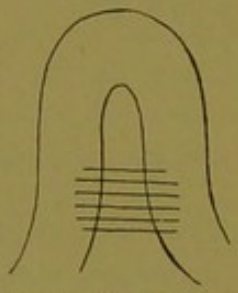
none were seen. Finally, a perineal section was done and the finger introduced into the bladder, but nothing abnormal could be found by touch or sight. The wound was then packed with iodoform gauze and a T bandage applied. He made an excellent recovery, but the passage of gas from the urethra, heard by the nurse as well as himself, and of a considerable amount of fecal matter in the urine, which was recognized as parts of his food, showed that the fecal fistula still existed. On one occasion a small, worm-like mass passed, about one-third of an inch long and a little larger in diameter than a knitting-needle, which naturally confirmed our view of a moderately long, narrow fistula. About the first of March, a sharp attack of epididymitis occurred on the right side.

After discussing all the particulars of the case, we deemed the existence of a recto-vesical fistula quite certain. It seemed to us most probable that the fistula passed from the bladder to the rectum at a point somewhat higher than ten centimetres from the perineum, but that it was so low that it would scarcely be within reasonable reach by abdominal section. On the other hand, if we opened from the perineum and opened the peritoneum, as seemed to be unavoidable,

there would be the greatest danger from fecal infection. We determined, therefore, first to divert the fecal stream by a temporary artificial anus in the left side by Maydl's operation. When this had diverted the fecal stream it was determined to reopen the perineal wound and open the peritoneum, if need be, resecting the coccyx and a part of the sacrum.

Second operation, March 18. Left lateral colostomy was done. Before attempting to draw out the bowel we endeavored to see whether we could obtain any information as to the fistula through the abdominal wound, but this was fruitless. A new complication was found in doing the colostomy, viz., a number of strong, tough, slender, fibrous bands which, at several points, passing from one part of the colon to another, made the colon assume the form of loops. (Fig. 2.) The mesocolon was also so short that the colon

FIG. 2.



Colon thrown into loop by bands.

could not be well drawn out of the abdominal cavity to any considerable extent. The bowel was then sutured after Bodine's method (*Medical News*, January 9, 1897) for three and one-half centimetres, and the loop secured in the wound by a continuous silk suture.

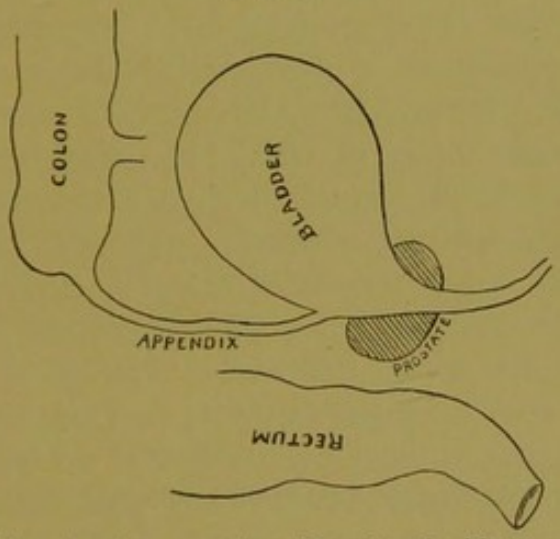
The result of the operation was not altogether satisfactory, as the short mesocolon retracted the spur between the upper and lower bowel so that feces continued to pass into the lower bowel. He went to the seashore on March 31, 1897. On April 8 a second sharp attack of epididymitis occurred on the left side, and the temperature rose as high as 104° F. When he returned, on April 25, he mentioned two facts which immediately arrested my attention: First, that he had repeatedly observed that he could *feel* fecal matter passing into the bladder *before any passed out at the artificial anus*, and, second, that lately, on eating some strawberries, he had *seen* strawberry seeds in the urine *before any seeds had escaped from the artificial anus*. These

two facts seemed to indicate very clearly that the fistula was not between the bladder and the rectum, but between the bladder and some point in the intestinal tract considerably above the site of the artificial anus in the descending colon. This great service was rendered by the artificial anus.

I decided, therefore, to open the abdomen in order to discover at what point the fistula existed.

Third operation, April 26, 1897. A median incision was made and the patient placed in an extreme Trendelenburg position. After considerable search we finally detected a very long appendix dipping down into the pelvis, the tip lying just behind the prostate, and solidly incorporated into the wall of the bladder. (Fig. 3.) That the

FIG. 3.



Showing the appendix soldered to the bladder.

length of the appendix and its position behind the bladder were congenital seemed to be proved by the fact that there was a normal mesoappendix dipping down into the pelvis. In order to determine whether the lumen of the appendix opened into the bladder, I distended the bladder with air; but there was a difference of opinion among us as to whether the air escaped into the appendix. It only occurred to me afterward that if we had stripped the colon downward we should have been able to empty the air it contained into the bladder. A fecal concretion lay at the middle of the appendix. Half an inch from the bladder, and with the greatest difficulty, owing to its depth, I dissected back a cuff of peritoneum from the appendix, severed the appendix from the bladder, and covered the stump of the

appendix with the cuff. The meso-appendix was divided, when, owing largely to its length, it was found to be so vascular that five ligatures had to be used to arrest the hemorrhage. The cæcal end of the appendix was next treated in the same way. The belly was then thoroughly flushed out with salt solution and the abdominal wall closed in four layers. Before closing it we inspected the posterior wall of the bladder with the greatest care, to discover whether there was any other possible point of connection between the bladder and the bowel, but found none. His temperature never rose above 100° F. For three days after the operation he suffered so severely from colic that, in spite of the normal temperature and the free opening of the bowels, I was afraid of peritonitis, but after that he recovered very nicely. I kept him in bed for three weeks, and he left the hospital

FIG. 4.

Showing the spur and the artificial anus.

May 15 entirely well. After spending the summer at the seashore and in Europe, he re-entered my hospital in the early part of October, 1897, when the artificial anus had contracted so that it admitted nothing larger than a No. 20 catheter. He had had recurring symptoms of intestinal obstruction on several occasions, which I was afraid was due to the spur at the site of the artificial anus, and, while this had retracted enough to interfere with my purpose in making it, it had not retracted enough to leave the calibre of the bowel free. I therefore determined, he being otherwise in good health, to close the artificial anus and destroy the spur at the same time.

Fourth operation, October 7, 1897. I considered several different plans of closing the artificial anus and safely destroying the spur (Fig. 4) so as to restore the entire calibre of the bowel. I feared to divide

the spur with the scissors through the small fistula, lest I might open the peritoneal cavity or have dangerous hemorrhage. I also rejected Dupuytren's enterotome, and finally decided upon the following plan: An elliptical incision was made around the artificial anus, and the abdominal wall was dissected back from the bowel about two and one-half centimetres away without opening the peritoneal cavity. The bowel was then slit enough to get my forefinger readily into its calibre, when the spur was drawn out through the opening and an operation identical with the Heineke-Mikulicz operation of pyloroplasty was done on the spur, the incision being made longitudinally and then converted into a transverse one and sutured with a continuous catgut suture. Several vessels bled quite freely and were ligated. I was able in this manner to determine by touch that not a vestige of the spur was left, and therefore that no obstacle to the passage of feces remained. The artificial anus itself was now closed, first by a silk suture passed through all of the coats of the bowel and then by a continuous Cushing right-angle suture. The skin was then sutured by silkworm-gut. He made an uninterrupted recovery, the highest temperature being 99.8° F., and he left the hospital October 25 entirely well. The very afternoon that he left the hospital he began to have recurring pains in the abdomen, accompanied with constipation, but Dr. Service was not in the least alarmed about him till the evening of the 28th. I saw him on the morning of the 29th, and found that he had had repeated attacks of vomiting for two or hree days and that the bowels had not been opened, but that gas had passed freely. The belly was not distended or tympanitic, but his general condition was bad. There was more or less pain everywhere, but not at any one special point. Possibly, had he not already had so many operations done, I might have decided to do an abdominal section at once, but I confess that in the case of a man who had just got out of the hospital after four operations I hesitated greatly before recommending another operation, especially in view of the fact of the free passage of flatus and that the vomitus was distinctly not fecal. On the 30th there was practically no change in his condition. Early in the morning of the 31st I had an urgent call to see him immediately, and when I got there he was in collapse. Dr. Deaver kindly saw him with Dr. Service and myself, but we concluded that the only thing to be done was to give him a saline intravenous transfusion, in the hope that his condition would improve sufficiently to allow of a

celiotomy. That morning he had a free passage from the bowels. He died at about 1.30 P.M. on the 31st.

Necropsy: Twenty-seven Hours after Death. The abdomen was collapsed. The moment that the abdominal cavity was opened a few small areas of lymph, about five to ten millimetres in diameter, were noticed on the surface of the intestine in the epigastrium and the hypochondrium. The one striking fact, however, was the absolutely black color of the small intestines in the lower part of the abdomen. On examining the condition carefully, I found that seven or eight feet of the ileum had been rotated to the right in one vast volvulus. Its mesentery formed a band about six centimetres in width stretched across the ileum just before it joined the cæcum. This had evidently obstructed the blood supply of the ileum sufficiently to cause gangrene of all the intestine involved in the volvulus, but the pressure was not sufficiently complete to prevent the passage of flatus or of feces. This accounted for the fact that there was neither fecal vomiting nor any distention of the abdomen and that he passed flatus constantly. From the cæcum to the bladder there stretched apparently a reproduction of the appendix which had been removed. It was impervious and had nothing to do with the volvulus which we found. The closure of the artificial anus was complete and the lumen of the bowel entirely re-established.

REMARKS. The original diagnosis of his first medical attendant, of a prostatic abscess, seems to me to have been a very reasonable one. No one could anticipate so long an appendix dipping into the pelvis and anchored by its meso-appendix immediately behind the bladder; and a terminal appendical abscess so close to the prostate might well be mistaken, I think, for a prostatic abscess. When he came to me, I confess I never once thought of the possibility of the appendix being involved, nor did it occur to Drs. Service, Deaver, or Taylor. Appendicular abscesses bursting into the bladder are not at all uncommon, but I know of no case in which the appendix has been so thoroughly united to the wall of the bladder as to form, as it were, a third ureter, delivering feces, however, instead of urine, into the bladder. Possibly such cases exist, but I have never come across them. Looking back over the case, I regret very much the perineal operation and the artificial anus. It is

perfectly clear now that the first operation ought to have been an abdominal section, but in view of the symptoms, which I have detailed at considerable length, I do not think the decision reached was unwarranted.

A volvulus such as has been described I have never seen the like of. Unfortunately, it was not so complete as to cause entire obstruction of the bowels. If it had, I should undoubtedly have done an immediate abdominal section, but its very incompleteness misled us as to the exact state of affairs. Whether the bands alluded to as discovered at the second operation, which were certainly very unusual in my experience, had any causative relation to the volvulus, I am unable to say, but the apparent symptoms of repeated intestinal obstruction for months are worthy of note. It is, of course, easy to say, as more than once I have said to myself, that I ought at least to have done an exploratory abdominal section, but in view of the uncertainty of the diagnosis, of the absence of fecal vomiting and other symptoms of complete intestinal obstruction, and of the fact that the poor fellow had already suffered so much in the way of operations, I think that any one of us would have hesitated to recommend a fifth operation.