

- <sup>66</sup> Roberts, W. O.: A Case of Strangulated Caecal Hernia with a Pin in the Appendix. *Am. Pract. and News.*, 1896, Vol. xxi, pp. 491-493.
- <sup>67</sup> Rolleston, H. D.: Pin Perforating the Vermiform Appendix. *Trans. Path. Soc. of Lond.*, 1898, Vol. xlix, p. 106.
- <sup>68</sup> Ruysch: *Observationum Anatomico-Chirurgicarum*. Anst. 1691, observ. 1, x, p. 71.
- <sup>69</sup> Shoemaker, G. E.: A Common Pin in the Vermiform Appendix, with Secondary Abscess of the Liver. *Trans. Coll. Phys., Phila.*, 1892, third series, Vol. xiv, pp. 214-216.
- <sup>70</sup> Samberger, F.: Zur Aetiologie du Appendicitis. *Wien. med. Wochens.*, 1916, Vol. lxvi, pp. 14-21.
- <sup>71</sup> Southam, F. A.: Cases of Perityphlitic Abscess of Caecal Region. *Brit. Med. Jour.*, Vol. i, 1898, pp. 1130, 1131.
- <sup>72</sup> Syms, P.: Pin in the Appendix Causing Chronic Appendicitis. *Ann. of Surg.*, 1896, Vol. xxiii, pp. 604, 605.
- <sup>73</sup> Thornton, S. C.: Inflammation and Ulceration of the Appendix Caused by an Orange Seed; Fatal Peritonitis. *Am. Med. Weekly*, 1874, Vol. i, pp. 305, 306.
- <sup>74</sup> Thurman: Hernia and Enlargement of the Vermiform Appendix of the Caecum; Faecal Abscess and Fistula; Complete Recovery. *Trans. Path. Soc. of Lond.*, 1848-1850, Vol. i, p. 269.
- <sup>75</sup> Tuvignot: Corps étrangers introduits dans l'appendice caecal; perforation gangreneuse; peritonite; mort neuf jours après. *Bull. Soc. Anat.*, 1840-1841, Vol. xv, pp. 382-384.
- <sup>76</sup> Vander Veer, J. N.: Bird Shot Found in the Appendix. *N. Y. State Jour. Med.*, 1916, Vol. xvi, p. 460.
- <sup>77</sup> Waldon: Case of Abdominal Inflammation with a Foreign Body in the Appendix Vermiformis. *Midland Med. and Surg. Reporter*, 1830-1831, Vol. ii, pp. 463-466.
- <sup>78</sup> Ward, N.: Perforating Ulcer; Sloughing of Part of the Vermiform Appendix; Death. *Trans. Path. Soc. of London.*, 1855, Vol. vi, pp. 197, 198.
- <sup>79</sup> Wheat, A. F.: A Die in the Appendix. *Amer. Med.*, Vol. ii, 1906, p. 308.
- <sup>80</sup> Whipham, T.: Perforation of Appendix Caeci Vermiformis and Caecum by a Pin. *Trans. Clin. Soc. of Lond.*, 1879, Vol. xii, pp. 58-64.
- <sup>81</sup> Willard, F., and Lloyd, J. \*H.: Appendicitis Caused by the Lodgement of a Pin in the Appendix, with Secondary Multiple Abscess of the Liver. *Trans. Path. Soc. of Phila.*, 1874, Vol. xvii, pp. 40, 41.

## SOME INSTANCES OF DIVERTICULITIS OF THE SIGMOID OPENING INTO THE BLADDER.

BY A. L. CHUTE, M.D., BOSTON.

ONE of the relatively rare conditions met in urinary surgery is that in which, due to a diverticulitis of the sigmoid, we find a communication between the sigmoid and the bladder. I have in my records accounts of four such cases, two of which I published some years ago and two of which have not been reported.

The reported cases both came under my observation in 1910 and an account of these cases was presented at the meeting of the American Association of Genito-Urinary Surgeons in 1911.\*

Briefly, the first of these patients was a man of 53, whom I cystoscoped for the late Dr. M. H. Richardson in 1910 and who was operated on by him in March and again in July of that year. Following the first operation there was a period of some months of freedom from symptoms after which the condition recurred and was again operated upon. The patient developed a purulent peritonitis on the fourteenth day after operation and died within 48 hours.

\*Transactions of the American Association of Genito-Urinary Surgeons, 1911, Vol. vi, p. 86.

The second case was a man of 60 that I operated upon in July, 1910. He had passed gas by urethra for eight months and bowel contents for a somewhat shorter time. This man had sugar in his urine, which disappeared under treatment. Operation showed a communication between the sigmoid and the bladder, very low in the pelvis. It was separated and the openings in the sigmoid and the bladder closed. This patient died four days after operation. Autopsy showed a collection of pus deep in the pelvis; a part of the line of suture of the sigmoid had given away.

The third case was that of a woman of 66, whom I saw in 1914. She had been constipated for years. Three weeks before I saw her she took a dose of castor oil and following active catharsis she had pain in her bladder with burning urination. She passed gas by urethra and some bowel contents. As a test she ate some figs and recovered the seeds from her urine. The cystoscope showed a small opening low down in the bladder on her left, into which a ureter catheter could be introduced 1½ inches and from which bowel contents now and then appeared. The patient was unwilling to submit to operation and died in 1915, probably of some intercurrent disease, said to be "septic poisoning and arteriosclerosis."

The last case of this sort that I saw was of especial interest and I shall report it in detail. It concerned a man of 50 whom I saw in March, 1919. He had the history of a urethritis many years before when he was between 20 and 30 years old. Twenty years before he had had an attack of jaundice, likewise another attack of the same sort five years before. He had recovered from both these attacks under no treatment other than the use of a restricted diet. He had always been constipated and had attacks of rather vague abdominal discomfort, the seat of which was the lower part of his abdomen on the left.

From about the time of his urethritis he had had times when it had been difficult for him to urinate and other times when he had suffered from frequency of urination and from discomfort referred to the region of his bladder. He had believed that this discomfort depended upon a stricture, supposedly the result of his urethritis. He had, however, never received any treatment for this condition. For three or four weeks before I saw him he had had increased frequency of urination, as often

as every half hour; also more or less difficulty in emptying his bladder, together with discomfort referred to his left iliac region. Eight days before I saw him he started on a railroad trip of about 100 miles. During the first part of the trip he had great frequency as well as difficulty and before arriving at his destination was absolutely unable to void although he had constant tenesmus and desire. On his arrival he placed himself under the care of one of the well known local medical men who sent him to a hospital. There was difficulty in catheterizing the patient and only a small amount of urine was obtained. That night the patient had a chill. For a week he remained in the hospital with an elevated temperature and rapid pulse; he had occasional chills during this time. Also he passed relatively little urine during this time. When I saw this man, a week after the onset of his attack, he had been moved to his home. His temperature ranged from 100° to 103°, his pulse rate was usually somewhat over 100. He had constant desire to void but considerable straining produced nothing but a little pus. Examination showed that the patient had a dry, brownish tongue; his prostate was negative; I could feel nothing in his loins. There was a little tenderness in the left iliac region as well as a vague resistance there. He was catheterized without difficulty and his bladder found to be empty. I supposed that this patient had a suppression of urine of unknown origin and sent him to a hospital where he was given salt solution under the skin as well as large quantities of water by mouth. Because of the story of difficult urination a retention catheter was placed in his bladder. The next morning it was found that he had passed only a very few ounces of urine. Changing the catheter I got a little puff of gas from his bladder, which also contained some very foul fluid, evidently fecal. Rectal examination with a catheter in place failed to show any opening between the bladder and rectum. The inference was that this man had had a diverticulitis of the sigmoid which, being adherent to his bladder, had given him his urinary symptoms of many years standing, that had been supposed to have depended upon a stricture of his urethra; that on the day he went out of town a rupture of the diverticulitis into the bladder had taken place. The irritation of the bladder with the bowel contents produced the frequency and

tenesmus while his supposed suppression was in reality the emptying of his bladder contents into the sigmoid through the fistula.

This patient was kept under observation for several days, during which time he had occasional chills with a temperature ranging from 101 to 103 and a considerably increased pulse rate. Examination failed to find any cause to satisfactorily account for his temperature other than the possibility of a pus cavity which might exist between the sigmoid and bladder. This man's condition seemed to be getting worse, so on March 10 I did a laparotomy under spinal. I found no collection of pus in the pelvis but I did find a place deep down in the pelvis where the sigmoid was attached to the bladder rather on its left side. This communication was very short, about  $\frac{3}{4}$  inch; it was separated under double clamps. The opening in the sigmoid was sewed up with two layers of catgut as was also the opening in the bladder. This was rather difficult to do, partly from the induration about the opening and partly from the depth at which it was necessary to work. A rubber wick was carried down to the point of suture. In order to prevent any pressure against the line of the bladder suture that might result from a full bladder, the bladder was opened above and a suprapubic tube was placed in position. No focus of suppuration was found and the man's temperature continued elevated and his pulse rate remained rapid. He was evidently profoundly septic though no focus was evident. He was given large amounts of salt solution under the skin. Two or three days later there appeared a bulging in the perineum with swelling of the scrotum. These were incised and considerable pus evacuated. It was evident that this man's temperature had not been due to any suppuration about the diverticulum, not to his pyelonephritis, but to this collection of pus deep in the pelvis. At the time of operation I found a place in his deep urethra which had either ulcerated from the pressure of an inlying catheter or had been perforated by the passage of a catheter; the cause without reasonable doubt of his pelvic suppuration. A considerable portion of the skin of the scrotum sloughed, leaving the testes almost wholly uncovered; during the process of healing, however, they were completely recovered. The wounds closed up slowly but closed completely in some weeks. Two or three weeks

after operation there was a discharge of feces from the abdominal incision. This fecal discharge diminished but reappeared from time to time during the three months he was in the hospital. At the time he left the hospital his urine was perfectly transparent and he was without urinary symptoms; this condition has continued. The man has been at work regularly now for more than a year. When he last telephoned me, some weeks ago, he said there was a little watery discharge from the abdominal sinus but that there had not been any fecal discharge for a good many months.

To me this case is of special interest as it gives us, I believe, a good picture of the behavior of a diverticulitis of the sigmoid, which has become attached to the bladder, at a stage which is rarely if ever recognized and which one would gather from this case, probably takes place long before there is anything like an ulceration through into the bladder. This man for 25 years had had periods of frequency and urgency, combined with difficulty in voiding. His frequency, I assume, was due to the irritation that this condition produced, while his difficulty was probably due to the fact that the mobility of the bladder was interfered with by this diverticulum which attached it to the sigmoid.

Symptoms such as these without any evidence of local disease of the bladder should, I believe, arouse our suspicions as to the possible presence of a diverticulitis of the sigmoid which has become adherent to the bladder. The presence of a constant feeling of discomfort in the left inguinal region, attended with slight tenderness would increase the probability of this condition. It seems to me perfectly possible that in such cases the use of bismuth enemata might allow us to demonstrate by radiographs the presence of a diverticulum of the sigmoid. This I have not, as yet, been able to do.

As regards the etiology of this condition, for the most part diverticula of the sigmoid appear in patients above middle life; a large amount of fat seems to predispose. It is supposed that the formation of diverticula of the sigmoid depends upon fatty infiltration of the intestinal wall, usually under some epiploic appendage and the consequent giving away of the muscular layer. Some are undoubtedly of congenital origin.

From the history of the patient, whose case I have reported in such detail, it seems evident that the condition may exist for a very long time even after the diverticulum has become attached before rupture into the bladder takes place. In this patient we have a history of years of discomfort. In some, as in the first patient described, there is a definite abscess formation which finally breaks into the bladder. In the patient whom I described in detail there was no abscess between the diverticulum and the bladder. Presumably in such cases the tip of the diverticulum adheres to the bladder and ulcerates through without the formation of an abscess cavity. In this individual there was no evidence of any abscess cavity, nothing but a little tube about the size of a slate pencil leading between the sigmoid and the bladder.

As regards the symptoms seen in this condition, the cases have presented the two striking symptoms seen in cases where there is a connection between the bowel and bladder. The first of these is the passage of gas by urethra, which may rarely be simulated by urinary infections with gas producing organisms said to be especially likely to occur in patients whose urine contains sugar. The second and absolutely pathognomonic sign is the passage of bowel contents in the urine. This, of course, is an absolutely definite sign of a connection between the intestine and the bladder but it does not necessarily mean that the connection is the result of a diverticulitis of the sigmoid. The passage of urine from the bladder to the sigmoid, rather marked in this case, varies considerably in different cases, and is hard to estimate. It has relatively little diagnostic value.

In the instances where a vesico-intestinal fistula is due to tuberculosis or malignant disease, the history as well as the cystoscopic appearance is usually sufficient to render the nature of the condition clear. There are instances, however, where one has a tremendous infiltration of the sigmoid, inflammatory in type and due to the presence of multiple diverticula, which may simulate very definitely a carcinoma.

In the instances where a vesico-intestinal fistula is due to tuberculosis or malignant disease, the history as well as the cystoscopic appearance is usually sufficient to render the nature of the condition clear. There are instances, however, where one has a tremendous infiltration of the sigmoid, inflammatory in type and due

to the presence of multiple diverticula, which may simulate very definitely a carcinoma. In the light of the case that I have reported, I hope we may be able in certain instances to make a diagnosis of diverticulitis of the sigmoid before such time as it has opened into the bladder. As I have suggested, the instances of bladder irritation without evident disease of the bladder itself, especially when combined with a certain difficulty in voiding without the presence of stricture, and without any defect in the nerve supply of the bladder should awake in our minds the possibility of a diverticulum of the sigmoid which is adherent to the bladder. It is possible that in a certain number of such cases that a radiograph after a bismuth enema will give us definite evidence of such a condition.

The treatment of the condition is purely surgical. The sinus which is usually slightly to the left of the median line and lies down in the pelvis must be found, tied off and the openings into the sigmoid and the bladder closed. Where there are multiple diverticula of the sigmoid with great thickening of the intestine or where there is an abscess between the intestine and the bladder, this closure will be attended with great difficulty; especially is it difficult if there is thickening of the intestine below the origin of the diverticulum. In all cases "adequate" abdominal drainage should be provided, and I believe the use of suprapubic bladder drainage is desirable. The attempts to treat the condition by closure of the fistula from the bladder side have been, as one would expect, without value. In the operated cases that I have seen there has been some leakage of bowel contents and I think it is probable that in few cases of this type will one be able to get a primary union after suture of the opening into the sigmoid. Most of these openings, however, where the primary suture has not held will probably close in time by granulations. In placing the drainage we should remember that we shall probably have fecal leakage.

### OBSERVATIONS ON CANCER OF THE RECTUM.\*

By ERNEST A. WELLS, M.D., HARTFORD, CONN.

THE writer has undertaken to make a few observations on cancer of the rectum based on the records of 53 cases, for the most part

\* Essentially this same article appeared in *Surgery, Gynecology and Obstetrics* for November, 1920.

treated at the Hartford Hospital in the last twenty years. His interest has been stimulated by the fact that he has personally been able to follow a few of them over a relatively long period of time. Twelve of them have come under his personal care. Being under the observation of many doctors, the records obtainable are variable. For the most part, they are very incomplete and leave much to be desired. They have been taken, however, *in seriatim*. None have intentionally been omitted.

#### SEX.

Of the 53 cases, the sexes are almost equally divided; 26 were males and 27 females. In the Hartwell series 26 were males and 20 females; while in the Cripps series the males outnumbered the females, two to one. In studying the subject of cancer of the rectum, one must constantly think of a possible relation between syphilis of the rectum and subsequent cancer. It has occurred to me to compare data in these 53 cases with similar data in cancer of the tongue, wondering whether it may be possible to demonstrate any similarity in cancers at the two ends of the alimentary canal. One might be led to suppose that there *would* be some similarity because there is much in common in the embryology of the two regions. But in this very first matter of sex, we find a marked difference. In 22 cases of cancer of the tongue, occurring at the Hartford Hospital and recently studied by my brother, Dr. Donald Wells, 20 cases were males and two were females. There must have been just as much syphilis in the rectum as in the mouth and as much in females as in males. These figures seem to argue, therefore, that syphilis is *not* a cause of cancer and the discrepancy in the relative number of the sexes suggests very strongly that the other factor, namely smoking, is the reason for the great preponderance of males in cancer of the tongue. It is interesting in connection with this to remind you that cancer of the tongue does not appear in the literature until about the time of the discovery of tobacco, a date which also coincides closely with the appearance of syphilis in Europe. We should also note here that *benign stricture* of the rectum is very largely confined to women (Cripps 63-7).

#### AGE.

The ages at which these patients entered our observation were as follows: