

## A CASE OF INJURY TO THE URETER, AND A CASE OF INJURY TO THE BLADDER, EACH COMPLICATING LAPAROTOMY FOR REMOVAL OF BILATERAL PUS-TUBES.

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INJURIES to the bladder or ureter, during operation upon the female pelvic organs, while perhaps not common, are occasional complications with which the gynecologist has to deal. The close relationship between the genital and urinary apparatus under normal anatomic conditions renders the utmost caution necessary in pelvic surgical procedures, but when the natural difficulties are enhanced by pathologic encroachment upon available operating space, or by the distortion of the normal relationship due to inflammatory involvement and adhesions, the danger of accident is increased many fold. The number of cases of injury to the urinary apparatus reported in the literature is comparatively small, and the majority have occurred during panhysterectomy for malignant disease. The reason for this is evident. It is in panhysterectomy that the neighborhood of the ureter is approached and it is for malignant disease that this operation is most frequently attempted.

A recent French journal presents statistics drawn from observation of six hundred and thirty hysterectomies for carcinoma of the cervix or uterus. In this series there occurred:

- Nineteen wounds of the bladder,
- Ten wounds of a single ureter,
- Three wounds of both bladder and a ureter,
- One wound of both ureters.

Of twenty-two injuries to the bladder thirteen were cured by immediate suture. Of fifteen wounds of the ureter, but three were cured. From these figures it is seen that trauma of the ureter offers a less favorable prognosis than trauma of the bladder. The writer urges the importance of immediate repair in either case, and in event of failure advises secondary operation at the earliest possible moment.

In the two cases which I present the injuries to bladder

and ureter occurred during operation for pelvic inflammatory conditions.

**Case I.**—The patient was a woman, aged forty-three, married nineteen years, two children, elder seventeen, younger eleven, who entered University Hospital November 22, 1901. She presented all the signs and symptoms of pelvic inflammatory disease of long standing. Profuse and long continued bleeding at her menstrual periods for several months had rendered the patient very weak and anemic. She had been in bed for some weeks prior to entering the hospital. A diagnosis of bilateral pus-tubes was made. The patient was operated upon the day following admittance. At the time of operating, the patient's temperature was 98.6°, and her pulse 116. The blood count showed 2,820,660 reds, 26,288 whites, and fifty per cent hemoglobin.

On opening the abdomen DOCTOR PETERSON found a large fluctuating mass springing from the left appendages, extending from the left pelvic wall to the median line and overlying the uterus which was carried downward and backward. A similar mass somewhat smaller was found on the right side. The uterus was atrophied and adherent to the abscess sacs and the rectum. The masses were firmly adherent to the pelvic walls, to the rectum and neighboring coils of intestines. The peritoneal cavity was walled off by gauze packs, the adhesions were broken up and the diseased appendages were removed according to the usual method. In loosening adhesions the pus sacs ruptured and pus was discharged into the pelvic cavity. After removing the diseased structures, the pelvis was wiped thoroughly with gauze and washed with saline solution. On account of the soiling of the peritoneum it was deemed advisable to open the posterior cul-de-sac for the purpose of securing drainage through the vagina. On account of firm adhesions between the uterus and rectum it was impossible to open in the median line without grave danger of wounding the bowel. Consequently an incision was made to the right and close to the cervix, an assistant placing a finger in the vagina as a guide. On cutting through the vaginal vault the uterine artery was divided. This was clamped as close to the uterus as possible. A second clamp was necessary before the bleeding was controlled. Ligatures were then applied. The tissue included in the second ligature invited inspection, and on tracing the ureter from above, it was found included in the ligated tissues. The ureter was promptly freed and inspected. No serious lesion could be discovered, and there was no leakage of urine. The pelvis was washed and the wound

The patient was profoundly shocked by the operation, but rallied promptly to subcutaneous injections of salt solution. Five quarts of hot normal salt solution were given during the first twenty-four hours, and the patient rallied well. The urinary symptoms resulting from the ureteral injury, due to crushing by the clamp, rather than the ligature, were the only unusual features of the convalescence. The first twenty-four hours the patient passed but seven ounces of urine and the next day but three ounces, notwithstanding the large amount of saline solution retained. On the third day urine was discovered on the vulval pads. At the end of the first week the amount of urine both by the urethra and by the vagina increased. From the tenth to the sixteenth day the amount by the vagina reached its maximum. The amount passed by the urethra could not be estimated accurately, on account of the amount lost at stool. From the seventeenth to the thirty-ninth day, the amount passed by the urethra steadily increased, and that by the vagina correspondingly diminished.

The patient left the hospital on the fifty-sixth day. The urine had almost ceased to pass from the vagina, and was hardly a source of annoyance. At no time was there any excoriation of the vagina, vulva or adjacent structures. The patient was seen two months after leaving the hospital, and stated that absolutely no urine had escaped from the vagina for some time.

In summing up the case I would emphasize the following points:

(1) The necessity at times for drainage when the peritoneum has been soiled by escape of pus in operations upon pus-tubes.

(2) The advisability of opening laterally when the uterus and rectum are so firmly adherent that separation of the structures would endanger the bowel.

(3) The possible decrease of space between cervix and ureter as a result of inflammatory adhesion and contractions.

(4) The importance of establishing the identity of the ureter in cases of doubt as to its position.

(5) The possibility of ureteral fistula following bruising of the ureter wall, though there may be no actual solution of continuity at the time.

(6) The recuperative power of the ureter after the occurrence of fistula.

*Case II.*—The patient, a married woman, was admitted to the University Hospital November 28, 1901. She gave a history similar to that in the case just cited, and presented similar signs and symptoms. The diagnosis was bilateral pus-tubes. In

addition, the cervix had been lacerated, and was large and eroded. Six months before, the posterior cul-de-sac had been opened and tube drainage established. The tube was still in place when the patient was admitted. The patient was operated upon December 6. Dilatation and curettage were first performed. It was found to be impossible to reach the diseased appendages from below, so laparotomy was performed.

On opening the abdomen bilateral pus-tubes were found bound to adjacent structures by numerous firm adhesions. In separating these the pus cavities were ruptured and the pelvic peritoneum became soiled. After removing the pus-tubes, it was thought best to remove the uterus which was found to be enlarged and very friable. A supravaginal amputation was first made after securing the vessels and dissecting away anterior and posterior peritoneal flaps. On account of the possibility of future disease arising from the enlarged and eroded cervix and to secure more thorough vaginal drainage, the cervix was then removed. In stripping down the peritoneum from the anterior surface of the uterus very firm adhesions were encountered. In separating these by as gentle manipulation as possible, a rent an inch in length was made in the posterior bladder wall low down. The wound was immediately repaired, A layer of catgut sutures extending to but not through the mucosa was first passed. These were reinforced by a row of Lembert sutures and a layer of peritoneum was brought up over the whole. The bladder was filled with salt solution and no leakage was noted. The pelvis was packed with gauze, the wound closed and dressed as usual. A retention catheter was not employed.

For the first ten days the patient was catheterized at intervals of three or four hours to prevent distention of the bladder with urine. Saline solution was given freely for the first twenty-four hours. Seven quarts in all were retained during this time. At no time did urine escape from the vagina and at no time was the odor of urine detected upon the pads.

In summing up this case, I would emphasize:

- (1) The thinning of the bladder wall as a result of inflammatory adhesions.
- (2) The possibility of tears of the viscus in separating adhesions.
- (3) The necessity for immediate repair and testing for leakage by injection of fluid into the bladder.
- (4) The substitution of frequent catheterizing for the retention catheter.