

ACCIDENTAL WOUNDS OF THE FEMALE BLADDER.

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Accidental opening of the bladder has, for many years, been considered one of the most serious accidents that could occur in the course of the complicated work which gynecic surgeons are often called on to do. It was not until 1886 that a successful case of intraperitoneal suture of the bladder was recorded by Sir William MacCormac and Mr. George Heaton, while White, in the course of an article in Dennis' "Surgery," states his belief that sutures placed in the wall of the bladder for the purpose of closing extraperitoneal wounds of the viscus are useless. This, coupled with the fact that there are on record comparatively few cases of injuries to the bladder successfully treated by suture, while accidents of this nature must be of common occurrence, makes it important that all individual experience bearing on this subject should be recorded.

Injuries to the inferior surfaces of the bladder generally occur in the course of the separation of the uterus from this wall, when the peritoneal cavity is entered by means of an incision made in the anterior vaginal wall. The accidental opening of the bladder in this situation is, however, less common than might be supposed, close as is the relation between the organs and the frequency of this procedure.

The following case is offered in illustration of this type of injury:

M. M., 37 years of age, was admitted to the gynecic division of the New York City Hospital, Nov. 1, 1897, suffering from ovarian disease, chronic endometritis and interstitial myomata, for which a vaginal hysterectomy was performed by means of an incision along the anterior vaginal wall, beginning about one inch below the meatus urinarius, and carrying it down to, and around the cervix. During the dissection of the right vaginal flap from the bladder, such persistent oozing of blood was encountered as to render the proceeding extremely difficult. On nearing its junction with the cervix, the bladder was opened, but the accident was immediately discovered. The wound was forthwith closed by means of three Lembert sutures of fine silk, which were introduced through the muscular coat only. The wound was together by means of catgut sutures; iodoform gauze was disinfected, and the operation completed in the ordinary manner. The wound in the vaginal wall was brought placed in the vagina, and suitable dressings were applied. The bladder was catheterized every three hours for several days, after which the patient was able to urinate naturally.

Accidents are also so likely to occur to the posterior wall of the bladder, while the operator is breaking up old adhesions to the intestine and omentum, to diseased pelvic organs or to tumors. In separating such adhesions, unless great care be taken, the bladder will often suffer injury. In cases of this kind the wound rarely extends through the mucous membrane, and a few interrupted Lembert sutures will ordinarily suffice.

The following case is an illustration of intra-abdominal bladder injuries:

M. H., a single woman, 41 years of age, was admitted to the gynecic service of the New York City Hospital, Sept. 30, 1898, suffering from a large myoma, which extended above the umbilicus. On Oct. 3, after the usual preparation, and under ether narcosis, the abdomen was opened by means of an incision six inches in length, and to the right of the median line, beginning about two inches above the pubes. The tumor, which weighed seventeen pounds, was drawn through this incision, freed from its attachments and removed, together with the body of the uterus, which was amputated at the internal os. This tumor proved to have sprung from the anterior uterine wall. During the operation hemorrhage occurred from some sinuses on the surface of the tumor, which having rigid walls could not be clamped, therefore it was necessary to remove the mass very rapidly. To accomplish this the anterior attachment of the tumor was clamped and cut, when it was discovered, from the escape of urine, that the bladder had been opened at the fundus. At the beginning of the operation, the general cavity had been shut off with gauze pads, and the parts had been thoroughly irrigated, and the bladder walls, including the wounded part, drawn well up. The irrigation of the pelvic cavity was followed by the use of hydrozone in half strength, and this, in turn, by saline solution. The gauze pads were next changed, and the opening in the bladder, which proved to be about four inches in length, was closed by means of two layers of chromicized cat-gut sutures. The first row was introduced from within the bladder, and included the mucous and muscular coats, the knots being in the interior of the bladder. These sutures were thus placed on account of the extensive wound, which made it impossible to get the parts properly joined together in any other way. The second

row was introduced from the outer side, after the manner of the mattress sutures, and included only the muscular and peritoneal coat. The wound was disinfected, and there being a large peritoneal flap, it was attached to the bladder, and made to cover the line of sutures, thus making the bladder wound extraperitoneal. After further washing out of the abdominal cavity the abdominal wound was closed without drainage, and the usual dressings applied. As the operation was prolonged, and the patient feeble, it was not thought advisable to make a vesicovaginal fistula for the purpose of draining the bladder, but instead a self-retaining catheter was introduced. For about ten days the convalescence was uneventful, except that occasionally the catheter would become blocked by a knot of one or other of the catgut sutures, which began to come away by the end of the third day. At the end of this time tumefaction occurred over the lower angle of the abdominal wound, and, on opening it, urine began to escape. A vesicovaginal fistula was made, and the mucous lining of the bladder attached on either side to the mucous lining of the vagina, by means of silk sutures. This was done for the purpose of keeping the fistula open, and to afford adequate drainage. The sinus in the abdominal wall was curetted and, after being thoroughly disinfected with hydrozone, its walls were sutured. The abdominal sinus having closed, the sutures which kept open the vesicovaginal fistula were removed, and this fistula closed quickly without any further operative interference.

The most dangerous and least often injured portion of the bladder is in the region of the trigone. It is here, when an injury does occur, more than in any other place, in gynecic operations, that a cool head, and a good knowledge of anatomy and surgical technic are

necessary, but with these requisites and a knowledge of the work accomplished by Kelly, Van Hook, Krug, Penrose and others, in the management of the vesical ends of the ureters, we may almost invariably look for a successful result.

Percival¹ reports a case of ruptured bladder on which he had operated. The rent was in the middle of the posterior bladder wall, about four inches in length. It was closed by means of a double wall of Lembert silk sutures. The wound in the abdominal wall was closed, after the peritoneal cavity had been flushed out with boric acid solution and a large quantity of clots and urinous fluids had been removed. For a few days the patient did well, and then died from peritonitis. But the necropsy proved that the bladder wound had completely healed. It is the writer's opinion that had saline solution and hydrozone had been used, instead of boric acid, and the wound been kept open, patient would possibly have recovered.

Wyeth² in the course of a paper entitled "Suprapubic Cystotomy," says, in describing the operation, that when the bladder is not inflamed, as after the removal of a small tumor, stone or foreign body, the operator may close the bladder by immediate suture. This is a very desirable method of dealing with the wound, for the reason that it does away with the necessity of drainage, and of the slow healing process. Two successful cases of immediate suture of the bladder wound are also reported by the same author.

The writer of this paper believes that with the technic at present at our command, wounds of the bladder made in the course of operating, whether extra peritoneal or intraperitoneal, should be closed immediately, and

¹ British Medical Journal, 1897, Vol. i, p. 1282.

² N. Y. Polyclinic, Vol. x, No. 1.

the operation continued as if the accident had not occurred, and notwithstanding the fact that drainage is not used, there will be little or no danger of peritonitis, extravasation of urine, or hemorrhage. It is of great importance when breaking up adhesions and removing tumors, or separating the bladder from the anterior vaginal wall and uterus, to be certain whether or not the bladder has been injured, and it has been the writer's custom to test this by the injection of saline solution, or by the uterine sound. Catgut is undoubtedly the best material for suturing the bladder wall, and no harm will result in case the suture is passed through the mucous lining of the bladder. A large proportion of all fatal cases of rupture of the bladder that have been operated on die from faulty stitching. In injuries of the posterior wall of the bladder, the sewing process is facilitated by the use of the Trendelenburg posture. In extensive intraperitoneal wounds of the bladder, where the vaginal wall is intact, it is best in the after-treatment to drain by means of a vesicovaginal fistula, which promptly heals, in the majority of instances, without operative interference, as soon as the sutures which hold its edges apart are removed. These fistulæ differ from those occurring during childbirth in that there is no loss of substance. When the damage is not extensive, or when it occurs in the inferior wall, the peritoneal cavity having been opened, the bladder wound should be sutured, and the viscus drained by means of a self-retaining catheter, or by having a catheter passed every two to three hours. The healing of the wound may also be aided by the position of the patient in the bed.

While accidental wounds of the bladder occurring in the course of operations are to be deplored and guarded against by every possible means, when they do occur, the

knowledge of their existence is of the utmost importance, for, as soon as discovered, they may be treated much in the same manner as simple incisions in any other part of the body. The fear of septic peritonitis has prevented a general appreciation of this fact, but the labors of American gynecologists in proving the safety of closure of abdominal wounds without drainage, even where infection is known to exist, has done much to establish on a firm basis immediate suture of wounds of the bladder. The operation advocated by Rydgier, of opening the bladder for the removal of tumors and calculi from its peritoneal side, has been followed by a lower rate of mortality than the older extraperitoneal, suprapubic or perineal operations.

Before operations on the pelvic organs are begun, and after the administration of the anesthetic, the surgeon should himself empty the patient's bladder by means of the catheter, instead of, as is usually done, leaving this for the nurse to do, before placing the patient on the operating-table. Attention to this detail would lessen the danger of the injuries to the bladder, and when they did occur would lessen the danger of septic infection.

It is the writer's belief, based on many years' experience in abdominal surgery, that where care is taken there is no more reason why a recent intra-abdominal wound of the bladder should not be sutured and the abdomen closed without drainage than in the case of a wound occurring in the bowel. We must recognize the fact that, in the course of operations on the female genital organs, injury to the bladder is occasionally inevitable, but fortunately for all concerned when this accident does happen, our patient's life is not necessarily endangered, or her recovery retarded thereby.

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