BOZEMAN (N.G.)

ACCIDENTAL URETERO-VAGINAL FISTULA FOLLOWING HYSTERECTOMY—CURE BY KOLPO-URETERO CYSTOTOMY, GRADUAL PREPARATORY TREATMENT AND BUTTON SUTURE.

BY NATHAN G. BOZEMAN, PH.B., M.D.,
Late Assistant Surgeon Woman's Hospital,
Gynæcologist to St. Francis Hospital,
Jersey City, etc.

Reprinted from
THE NEW YORK JOURNAL
OF GYNÆCOLOGY AND OBSTETRICS,
May, 1892.

NEW YORK:
M. . ROONEY, PRINTER AND STATIONER,
1329 Broadway.

ACCIDENTAL URETERO-VAGINAL FISTULA FOLLOWING HYSTERECTOMY — CURE BY KOLPO-URETERO-CYSTOTOMY, GRADUAL PREPARATORY TREATMENT AND BUTTON-SUTURE.

By Nathan G. Bozeman, Ph.B., M.D.,

Late Assistant Surgeon Woman's Hospital, Gynæcologist to St. Francis Hospital, J.C., etc.

In my paper I shall endeavor as briefly as possible to treat of a procedure for the cure of a surgical affection in women, which when it exists is manifested by an escape of urine into the vagina, there being no direct communication between the latter and the bladder, commonly called uretero-vaginal fistula. Among the causes of this lesion are protracted labor and instrumental delivery; a lack of precautionary measures, to dispose of the mouths of the ureters in operations for closure of large vesico-vaginal fistulæ, thus causing the flow of urine to be directed into the vagina. A pessary by producing ulceration of the vaginal mucous membrane and the ureter has caused it. Pelvic abscesses opening in the vagina in the vicinity of the ureter spontaneously or by incision have resulted in uretero-vaginal fistulæ. In amputating the cervix uteri the ureter has been incised causing a fistula. Silk ligatures after hysterectomy have ulcerated through into the vagina at the point where the ureter enters the vesico-vaginal septum, resulting in injury to it and permanent uretero-vaginal fistula. And as a congenital malformation the ureter in one case has been reported to have opened into the vagina.

Cases of this form of fistula are comparatively rare, and the literature of the subject is recent. The treatment, though, when carried out in the manner which I have been taught by my father, Dr. Nathan Bozeman, is very satisfactory.

I have two cases of uretero-vaginal fistula to report both of which have been cured. One operated on by my father in 1870 was the result of instrumental delivery and was complicated by cicatricial contractions in the vagina which had to be overcome by incisions and graduated intra-vaginal pressure according to his method before the fistula presented itself to view. This case had been seen by several prominent gynæcologists who had not appreciated the exact lesion on account of the complication which I have mentioned. My patient suffering from uretero-vaginal fistula was placed in my care by Dr. F. G. Payn at the Bayonne City Hospital over one year ago. The escape of urine into the vagina

in this case began one month after the operation of supra-vaginal hysterectomy.

The first systematic treatment of an uretero-vaginal fistula was made by Prof. Gustav Simon, July 26, 1856. The patient presented herself to him, November 8, 1854, suffering from two fistulous openings in the vagina, one being a vesico-vaginal fistula which he closed. On examining the other afterwards he was surprised to find no communication through it between the bladder and vagina, as demonstrated by probing. He passed the probe on one occasion six inches, but was not aware at the time that it had entered the ureter. He cauterized the small fistulous opening with nitrate of silver and was unexpectedly called to witness the following results: For two hours the patient kept dry, during which time she had agonizing pain beginning in the left groin extending up to the lumbar region in the neighborhood of the kidney; she also vomited and suffered from severe headache. Then there was a gush of urine from the vagina, when the alarming symptoms gradually subsided, the urine escaping as before. It then dawned upon the surgeon that he had cauterized the end of the ureter, temporarily obstructing the flow of urine. He injected colored fluids into the bladder and noticed that they did not escape into the vagina where only clear urine from the kidney collected, he then made the diagnosis of uretero-vaginal fistula. To cure it he cut through the vesico-vaginal septum at the point where the ureter opened and after denuding around it approximated the scarified mucous membrane of the vagina with interrupted silk sutures. The operation was a failure because the bladder opening healed first. Before attempting closure again he tried for awhile to keep patulous the incision into the bladder with a seton and by passing sounds, but failed. He came to the conclusion then that kolpokleisis should be employed for such fistulæ.

The histories of twenty women who have suffered from uretero-vaginal fistula have been collected after a diligent search. These together with the two I am about to report make a total of 22 cases. The names of the surgeons to whom these cases are accredited and the number which each one has observed are as follows: [1] Simon 2, [2] Alquié 1, [3] Panas 1, [4] Parvin 1, [5] Campbell 1,

[1] Gustav Simon—Deutsche Klinik, June 26, 1856, page 310.
" " Beiträge zur Geburtskunde und Gynäkologie, Würzburg, 1860, vol. iv., page 1.

[2] Alquié—La Presse Medicale Belge, Brussels, 1857, No. 30.

[3] Panas—Gazette des Hôpitaux, 1860, No. 69, page 273.

[4] Theophilus Parvin—Western Journal of Medicine, October 1867, page 603.

[5] Dr. Henry F. Campbell—American Journal Medical Sciences, January, 1880.

[6] Landau 1, [7] Zweifel 1, [8] Bandl 3, [9] Baker 1, [10] Emmet 3, [11] Hahn 1, [12] Max Schede 2, [13] Nicoladoni 1, [14] Kehrer 1, Bozeman 1, the author 1.

URETERO-VAGINAL FISTULÆ.

10 resulted from protracted labor and instrumental delivery.
5 " " unsuccessful operations for closure of pre-existing vesico-vaginal fistulæ.
1 " " ulceration caused by pessary.
3 " " pelvic abscesses.
1 " " suppuration and working out of ligatures into the vagina after hysterectomy.
1 " " amputation of cervix uteri.
1 was congenital.

22

The result of treatment has been: Cured 10, not cured 9, kolpokleisis 2, removal of kidney on affected side 1.

In a recent number of the *Centralblatt für Gynäkologie* I have read a review of Dr. Althen's paper on this subject; he is reported to have collected thirty-five cases of uretero-vaginal fistulæ twenty of which have been operated on, ten of these were cured and ten were not cured.

Dr. Nathan Bozeman[15] was the first to draw the attention of the profession to the fact that when injuries to the vesical ends of the ureters complicated vesico-vaginal fistulæ special precautions should be taken to avoid bringing their lumen into the line of coaptation when operating, or in any way blocking up their calibre by the sutures. He accomplished this, in his first case, July 12, 1856, by slitting the implicated ureters for one-fourth inch inside the bladder, and then straddling them with the sutures to avoid constriction. This was done by placing one suture on either side of the ureter and in a direction parallel with its course, for which purpose his button-

[6] Landau—Gynäk. Arch., 1877, vol. ix., page 426.
[7] Zweifel—Thomas on "Diseases of Women," 1880, page 264.
[8] Ludwig Bandl—Wiener Medicinische Wochenschrift, 1877.
[9] W. H. Baker—New York Medical Journal, December, 1878.
[10] T. A. Emmet—Principles and Practice of Gynæcology, 1884, page 848.
[11] E. Hahn—Berliner Klin. Wochenschrift, 1879, page 397.
[12] Max Schede—Centralblatt für Gynäkologie, 1881, vi., page 547–553.
[13] C. Nicoladoni—Wiener Med. Wochensch., 1882, xxcii., 14, page 389–393.
[14] Kehrer—Centralblatt für Gynäkologie, 1889, No. 32.
[15] North American Med.-Chir. Review, July and November, 1857. Cases viii. and x.

suture was well adapted because the wires stood far apart and but few of them were required. Graduated intra-vaginal pressure and dilatation have a tendency also in large openings to roll in the borders of the fistula and carry the mouths of the ureters away from the possibility of injury. As an illustration of this important point, Dr. Bozeman in his note-book on cases seen before 1857, states that in 1853 he saw a patient with Dr. Sims in Montgom ery, Ala., who had prolapsus of the bladder through the fistulous opening. It presented externally the size of an orange, with the vesical terminations of the ureters visible on the surface of the extruded and inflamed organ. Dr. Sims stated at the time that only Vidal's operation offered a prospect of relief to the woman of her incontinence of urine. When this surgeon left Montgomery for New York the patient fell into my father's hands. He gave her some comfort by brushing over the inflamed bladder with a solution of nitrate of silver, and finally attempted Vidal's operation, but failed in this. The fistulous opening he closed afterwards with the button-suture, but the success of this operation was in a measure due to gradual preparatory treatment which he then instituted, and it consisted in this case of reposition and distention of the bladder in the supported knee-chest position and the daily introduction of cylindrical columns of sponges in oil-silk bags, which held the bladder in place, absorbing a portion of the urine, thus keeping the patient dry for a while and acting as obturators held some of the secretion in the bladder which stimulated its muscular coat to contract. The result was that at the time of the operation for the closure of the fistula the ureters had been put out of sight, but their relative positions being known they were avoided by placing the sutures far apart. I have gone into the details in these cases to show what observations Dr. Bozeman had made on the ureters at that early date, and to indicate his mode of operating for uretero-vesico-vaginal fistula because I believe that every case of uretero-vaginal fistula should be converted into this kind of fistula in order to be cured.

Mrs. E. C., æt. thirty-nine; menstruated at fifteen; had always been regular and had no pain up to eight years ago, when she began to menstruate profusely every three weeks, and suffered from pain in the back and side; she has had no children nor miscarriages. May 12, 1890, uterus and appendages removed for fibroids at the German Hospital; she made a good recovery from the operation, but one month afterwards noticed that some of her urine escaped involuntarily, although she emptied the bladder regularly in the natural way. To be relieved of this trouble she entered the Bay-

onne City Hospital August 3d, when I was called to attend her. On examining her I found the vulva and vagina red and inflamed from escaping urine. The cervix uteri was absent, and high up in the vagina to the left could be felt some incrustations of earthy phosphates, which proved to have been deposited by the urine on a bunch of silk ligatures which were protruding at that point from the vaginal wall. They were easily removed, leaving a small fistulous opening which did not communicate with the bladder. A cicatrix one-half inch long extended out from this fistula. Examination of the abdomen revealed the cicatrix of a median abdominal incision. Bozeman's utero-vesical drainage-support of a suitable size was then introduced and worn by the patient to protect her from the incontinence of urine. It was to be removed twice a day for douching and cleansing. As all the urine escaping into the vagina was collected in this way, it was often compared for a given time with the secretion from the bladder, and in every instance the quantities were equal. This left no doubt as to the diagnosis of uretero-vaginal fistula.

In February, assisted by Drs. Field, Dalas, Luce, Payn and Murray the following operation was performed: The patient having been secured on Bozeman's operating chair and without an anæsthetic, the bladder was filled with warm water. The anterior vaginal wall being exposed and put on the stretch by Bozeman's speculum and retractor, Bozeman's counter-pressure hook was passed through the urethra and the loop made to press against the bladder-wall just in front of the ureteral orifice. Into it a small barbed spear was thrust transfixing the vesico-vaginal septum, this could not be withdrawn and around it incisions were made through the septum; in this manner a good-sized disk was removed. The end of the ureter was in the upper border of the artificial uretero-vesico vaginal fistula. All bleeding was controlled by a continuous catgut suture. The patient was then put to bed, and by means of my continuous irrigator and drain (see Fig. 1.) the urine was conveyed from the vagina as fast as it found its way through the fistula, there was consequently no retention of it and no deposit of earthy phosphates around the opening; the raw edges cicatrized in ten days. After this she was allowed to get up and use the same utero-vesical drainage-support. From time to time during the next few months the ureter was slit up on the bladder-side and dilated with sounds, these could not at any time be introduced further than $1^1/_2$ inches on account of the surrounding plastic exudation, the result of the hysterectomy. It was thought advisable

under these circumstances to wait a considerable time and employ in conjunction with drainage intra-vaginal pressure and dilatation before closing the fistula, for fear that other ligatures might come away. This supposition was strengthened by the fact that pus escaped from the ureteral orifice. It is interesting to state here that the patient was so well protected by the drainage-support from the involuntary escape of urine that she made two trips to the West Indies in the capacity of stewardess and danced at social gatherings several times while wearing it.

On October 18, 1891, the operation for closure of the artificial uretero-vesico-vaginal fistula was performed at St. Francis Hospital.

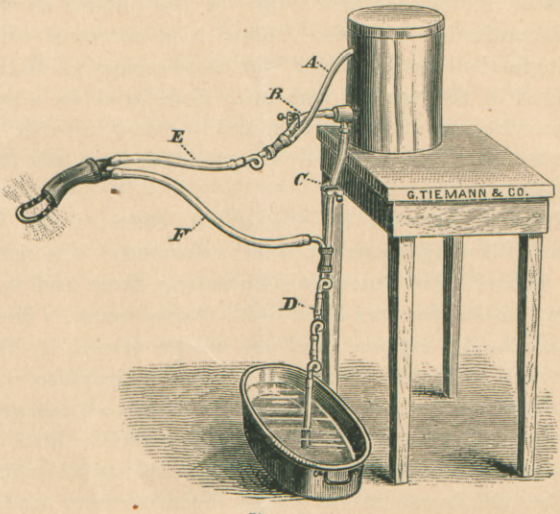

FIG. 1.

I was ably assisted by Dr. Fry of Washington, Drs. Varick, Lampson, McGill, Broderick and Smith of the hospital staff. Ether was administered in the supported knee-chest position on Bozeman's chair. The denudation was difficult and tedious because it had to be done high up in the vagina and to the left side, the scarification was at least 3-8 inch in breadth and extended to the mucous membrane of the bladder. It required great care to pass the sutures because the edge of the fistula in the neighborhood of the ureter was rendered immovable, as I have said before, on account of plastic exudation and was, as well, in close proximity to the rectum. The two first sutures to the left were more than 1-4 inch apart and were introduced parallel to the course of the ureter, one on either side so as to straddle it. Four sutures were employed, the opening being

1 1-4 inches in transverse diameter. No. 24 silver wire was used, the borders were brought together by shouldering the wires with Bozeman's suture adjuster. There was perfect adaptation, and when the button was adjusted and secured with four shot, all the raw surface was covered by it, thus protecting the wound from all septic influences from without. A soft rubber catheter was retained in the bladder. The patient experienced no particular distress after the operation to indicate that there was any interference with the flow of urine into the bladder. The sutures were removed on the seventh day. There was perfect union without a sign of suppuration. The button having protected the edges just as an antiseptic dressing would do. Very little opium was required to quiet the bowels, and on the tenth day they moved voluntarily. On the fourteenth day the patient was allowed to get up. I saw her last four weeks after the operation. There was then a little pus in the bladder, and she was instructed how to wash it out. She passed the urine naturally four or five times during the day.