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of certain Lesions of the
Female Urethra

BY

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NEW YORK



REPRINT FROM VOLUME VII.

Gynecological Transactions

1883





ANNUAL ADDRESS OF THE PRESIDENT.



A NEW METHOD OF EXPLORATION, WITH THE PATHOLOGY AND TREATMENT OF CERTAIN LESIONS OF THE FEMALE URETHRA.

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New York.

FELLOW MEMBERS, — As your President, it is expected that I should address you in some form of greeting. In doing so it would seem in keeping with a time-honored custom for the presiding officer to present, in an annual address, a digest of special medical progress. But with the existing facility for rapid transmission of medical events to every reading member of the profession, this is deemed no longer necessary. Yet were the observance the more called for, I should hesitate, after looking over the "Transactions," where it is made evident that at each meeting a large number of papers have been read by title only and not discussed. As a rule, the discussion, if properly conducted, is of greater value than the paper itself, for it becomes the means of recording a more extended experience and of reflecting the ideas of others from different stand-points.

We have been heartily welcomed by our Boston friends, and we may well congratulate ourselves that this, our seventh meeting, bids as fair as any previous one to bring forth good fruit.

The presence of all at any one meeting could scarcely be expected under the most favorable circumstances. But while we note with regret the absent, we should be thank-

ful that death has exacted from us but a single tribute since our last meeting. It is a sad duty incumbent on me to announce officially the death of Dr. James P. White, of Buffalo, N. Y. Dr. White was one of the founders of the Society, and has attended each meeting from the beginning, with the exception of the last, at which time his health had become already impaired. The volumes of "Transactions" contain several articles from his pen, and bear full witness to the interest he took in the discussions of almost every subject presented. He occupied too prominent a position for his professional career to be summed up by me in a few words. It would be appropriate that some member, more familiar with his earlier professional course, should prepare a suitable memoir for our next volume of "Transactions."

Contrary to custom, but with the object to economize time, I shall postpone the presentation of all other matters pertaining to the business or welfare of the Society until we meet in executive session, where they will come up for discussion. And that you may be fittingly occupied during the time allotted for the usual annual address, I will offer as a substitute a more strictly professional subject. But I must crave your indulgence as to its length, for I have found it impossible to treat the matter in detail within the space I had first contemplated.

A NEW METHOD OF EXPLORATION, WITH THE PATHOLOGY AND TREATMENT PERTAINING TO CERTAIN LESIONS OF THE FEMALE URETHRA.

The general practitioner has yet gained but little accurate knowledge of the diseases connected with the female urethra. In fact, we may hold that the subject has remained to this day in as much obscurity, for the profession at large, as existed regarding uterine disease some forty years ago, and before the introduction of Sims' speculum. Individuals have doubtless attained dexterity in the use of certain instruments, and have been fairly successful in the treatment; but the existence of a profound degree of igno-

rance has been the rule, and consequently much damage has resulted from the frequent confusion of cause and effect.

We could scarcely credit the fact that the bladder has been heroically treated for disease when the cause of irritation has been due to a fissure of the anus. I have known of several instances where, with a pertinacity of purpose worthy of a better cause, the bladder has been injected with solutions of the nitrate of silver, week after week, until at length cystitis became established.

Many of you, and I, have fruitlessly treated a supposed diseased condition of the bladder, or urethra, when the seat of irritation lay in an unsuspected inflammation about the folds of the utero-sacral ligaments.

I have opened the bladder for supposed disease, by making a vesico-vaginal fistula, and have thus subjected the patient to months of annoyance from the escape of urine. Then, after a certain time, when by rest the disease had been removed, as I supposed, I have closed the opening, but with no relief to the patient. I have reopened the fistula, and have allowed the urine to escape freely for months longer, with the hope that the bladder might yet recover a healthy condition by a more prolonged rest, in the end to find that the cause of irritation lay in a urethral polypus, which the use of the endoscope, in the hands of an expert, had failed to discover.

Several patients have been admitted to the Woman's Hospital, that the fistula which had been made for the relief of a supposed cystitis might be closed, where the primary cause of irritation, at the neck of the bladder, had been due to a prolapse of the uterus from a want of support at the vaginal outlet. We now know that when the uterus settles below a certain point, or is carried above its natural position, so that traction is exerted in a direct line from the subpubic ligament, we have the symptoms attributed to irritation of the bladder.

A moderate degree of inflammation in any portion of the connective tissue of the pelvis, but more especially in the

utero-sacral ligaments, or on either side of the vagina, in front of the broad ligament, will also cause much irritation, and a frequent desire to empty the bladder.

We have growths in the urethra; thickening from inflammation of its mucous and submucous tissues; the canal may be dilated from before backward, and with more or less prolapse of the mucous membrane along the urethra from the bladder; its lining membrane may be diseased in part or throughout; or fissures may exist at the neck of the bladder; and we have had no efficient means to aid in forming a diagnosis. The true condition was likely to be overlooked entirely, and too frequently we have been misled, as I have stated, by reflex symptoms in locating the supposed disease in the uterus or in the ovaries.

It will be unnecessary to consider the various means that have been proposed, from time to time, for examining the urethral tract, for they have all proved inadequate for the purpose and of little practical value, even in the hands of those most experienced in their use.

It is now some six years since I first devised the plan of making a button-hole-like opening in the female urethra for the purpose of forming a diagnosis, or for facilitating any operative procedure.

In the first edition of my work on the "Principles and Practice of Gynecology," published in March, 1879, I simply referred to the procedure as an advisable one, but did not feel myself justified in placing on record the experience which had been gained, even at that time. In the second edition the subject was entered into at greater length, but since, or during the past two years, I have given it very careful study.

I have been told by my friends that I hold a fair reputation with the profession for being reliable and moderate in my statements. With the greatest desire to ever maintain such a reputation, I do not hesitate to announce the fact that the method I shall describe is the only one within our knowledge to-day which fulfills every indication, is safe, simple, and within the scope of any one possessing the least degree of surgical dexterity.

It is necessary to administer an anesthetic for the operation and then place the patient on the left side, using a moderate size Sims' speculum to bring into view the vaginal surface covering the urethral tract. An instrument has been devised by me for making an opening into the urethra. It is formed somewhat on the principle of the scissors used for cutting a button-hole, with the exception that the portion entering the urethra is made round and like the extremity of a large-size uterine sound. The vaginal blade has a portion removed, as in the button-hole scissors, so as to begin the incision about a quarter of an inch from the urethral entrance, from which point the opening is to be extended, in the median line, nearly to the neck of the bladder. This instrument answers the purpose, but has not yet been perfected to my satisfaction.

When the knife or scissors is to be used, the execution of the operation will be greatly facilitated by first introducing into the urethra a block-tin sound, of a sufficient size to put the tissues within the canal somewhat on the stretch. The instrument may be given the same short curve employed for entering the male bladder. Then, to dispense with the aid of an assistant, the curved portion should occupy the urethra and pass for a short distance beyond into the bladder, while the staff is supported by resting on the lower thigh and between the legs of the patient, which are to be properly flexed. The operation is begun by catching up with a tenaculum the tissues on the vaginal surface, about midway between the mouth of the urethra and the neck of the bladder, and dividing them through to the sound. After thus entering the canal the incision is to be extended, with a pair of straight-pointed scissors, in the median line backward, towards the neck of the bladder, and forward to within a short distance of the mouth of the urethra. It is necessary to avoid dividing the urethral outlet, as it would then be more difficult to close the opening properly at a future day. And it is still more important that the incision shall stop short of the neck of the bladder, without involving it, as the patient would then continue, after the operation, with

control over the escape of urine. I wish particularly to impress the importance of this precaution, not to extend the incision through the urethral surface too far backward. For if the consequences were no worse even than the temporary loss of control, this would prove a serious inconvenience and an objection to the operation. The line along the vaginal surface should be made nearly a third more in length than the one through the urethral mucous membrane, and it is important that the chief difference should be at the end of the line over the neck of the bladder. We thus gain, with the beveled angles, a great advantage for examining the urethral tract. Moreover, from the greater length of line being on the vaginal surface, we free the lower angle of the incision at the neck of the bladder, so that, if necessary, the finger, or a small speculum, can be passed into the vesical cavity with little fear of laceration or loss of control. So long as the vaginal surface is intact, the parts about the neck of the bladder remain bound down and unyielding, from the direct connection of these tissues with the sub-pubic ligament and pelvic fascia. Hereafter it will be shown that it is just at this point, in front of the neck of the bladder, that injury by laceration is sustained when incontinence of urine follows dilatation of the urethra.

Should we wish simply to make, by the operation, an exploration of the canal, we can, after doing so, unite the line of incision without delay by bringing the recently divided edges in contact with interrupted silver sutures, as is done when closing a vesico-vaginal fistula. But to unite these properly the urethral edges must be turned out, by means of a tenaculum, that the sutures may be passed so as to include the mucous membrane and bring its divided edges in a close line of contact. To insure this the sutures are to be introduced at some distance from the edge and entirely through the flap down to the block-tin sound, then across and through the other side to correspond, thus bringing the sides firmly together. In this respect we do not follow the rule observed in closing a vesico-vaginal fistula,

where the suture should only pass to the edge, without entering the bladder, through fear of establishing a sinus along its course for the escape of urine. But the condition is very different in the urethra, where the urine is only in the canal for a short time, in transit, and would necessarily escape easier through the natural outlet, with the certainty that each sinus would soon disappear by contraction, after removing the silver sutures.

The after-treatment is simple. It consists in the patient remaining quiet in bed for a week, until the sutures have been removed, and in being careful for a few days longer. While in bed she should be allowed to empty the bladder at will, using the bed-pan when possible, and avoiding the passage of a catheter, except under the most urgent circumstances.

When it is desirable to leave the opening patulous, to facilitate the after-treatment, we are to complete the operation by uniting the edges of the divided urethral mucous membrane to the vaginal surface. This is done by means of interrupted sutures, and the best material for the purpose is properly prepared catgut, or a small silk ligature which has been thoroughly carbolized. As the mucous membrane of the urethra is free, with loose connective tissue beneath, it can be easily drawn out and brought in contact with the vaginal surface. By covering the raw edges in this manner, union soon takes place, and the parts are protected from the contact of urine. When these surfaces were left to heal by granulation, as was formerly the practice, the patient was subjected to much discomfort in consequence of the irritation excited by the saline deposit left after evaporation of the urine which so frequently bathed the parts.

It is also necessary to keep the patient quiet in bed after this operation, and from assuming the upright position, or the sutures would readily cut out, leaving the surfaces to heal by granulation, and with more or less shortening of the canal afterwards from contraction. This of course could not take place to any serious extent, as after a slough, yet could do so to a degree sufficient to make the subse-

quent operation for closure the more difficult. Until union has taken place it is essential that the parts should be kept clean, and the swelling in check, by placing the patient on a bed-pan, and then allowing warm water to flow over the parts, several times a day. This may be done by the jet from a syringe, delivered without force, or by separating the labia with one hand, while the patient's hips are elevated on the bed-pan, so that a stream of water could fall upon the parts by compressing a saturated sponge. The surfaces should afterwards be carefully dried with a piece of soft linen, and kept smeared with Turner's cerate or with that made from the impure carbonate of zinc. Its use not only aids in keeping the parts cool, but serves also as a protection from the urine. In the application, the patient must be instructed to pass, by means of the index finger, a portion of this cerate into the button-hole-like opening before emptying the bladder, as the urine in its passage must necessarily escape from the urethra through this slit. Even after the parts have thoroughly healed, the continued use of the cerate is advisable, to protect the surfaces from excoriation. If, during the healing process, granulations should spring up at any point along the line of union formed by the edges of the two mucous membranes, it will be necessary to apply the solid stick of nitrate of silver to cicatrize the surfaces rapidly. Its free use can do no damage by causing induration, even if it be extensively employed, for the whole line must be removed afterwards, when the edges are denuded, preparatory to closing the artificial opening.

As a rule, these cases require but little additional treatment after the edges have once healed. A vaginal injection of several quarts of warm water, administered night and morning, is essential, and should be continued in use until the opening has been finally closed. These injections may be accepted as part of the routine treatment in every case, as it would be an exception to the rule not to find, at some point in the pelvis, cellulitis existing to a greater or less extent. We shall at least discover the product of some previous attack of inflammation, which may have been the

original source of irritation, and may yet be an obstruction to the circulation. Whenever the operation is done to relieve an existing inflammation in the urethral tract, or to improve nutrition in the surrounding tissues, rest to the parts and the simple revulsive effect attending the operation, after dividing the tissues, will be sufficient, as a rule, to restore the parts to a healthy condition within the space of a few months. But if more should be required, in the way of local applications, they can be administered at any time, with the greatest facility, through this opening, and equally well to every portion of the urethral tract.

In the last edition of my work on gynecology I classified in a general way the diseases of the urethra under the following heads : —

1. Inflammation of the mucous membrane, or urethritis.
2. Pedunculated, vascular, and neuromatoid growths.
3. Prolapse of the mucous and sub-mucous tissues.
4. Fissures at the neck of the bladder.
5. Urethrocele.
6. Laceration of the urethra from dilatation.

It is advisable that I should still adopt this classification, as the object of this paper is rather to supplement, by a record of additional experience, what I have already written, than to go again over the whole subject.

The first section, that of urethritis or inflammation of the mucous membrane from any cause, may be dismissed almost without further consideration. Already sufficient has been advanced to show that the free division of the swollen tissues, as made in the operation for opening the urethra, would be beneficial. And this opening would afford, in a serious case, the most efficient means for the application of the needed treatment directly to the seat of inflammation, thus arresting its progress not only in the canal but also its advance into the bladder.

The second, treating of pedunculated, vascular, and neuromatoid growths, has been considered at a greater length than any other division. I can only add, my more recent experience has but confirmed the opinion that no other

means gives the same facility for either diagnosis or treatment. Unless the operation had been resorted to in each individual case which has passed under observation, we should have remained in ignorance of both the seat and cause of irritation. The case of urethral polypus, to which I have already referred, would have demonstrated the necessity for the operation, even if we had no other instance.

This patient was sent to the Woman's Hospital by Dr. Foster Jenkins, of Yonkers, N. Y., and had suffered for several years while being treated for supposed inflammation of the bladder. During this time she had been under the charge of several physicians who had gained a large experience in the treatment of such diseases. A number of careful examinations had been made from time to time with the endoscope, and nothing had been detected beyond the existence of a certain amount of inflammation of the mucous membrane about the neck of the bladder. She had been a school-teacher, and it was supposed that her occupation, which would have necessitated being much in the upright position, with the habit of retaining the urine for too long a time, had been instrumental in establishing the inflammation. This diagnosis seemed a rational one, as there existed undue thickening of the urethra and neighboring tissues, with great tenderness when pressure was made up against the arch of the pubes. For some time after her admission to the hospital she was treated for this supposed inflammation by injection and applications to the canal. At length the irritation increased to such a degree that I determined to open the urethra, with the hope of finding some clew to the difficulty. The cause of irritation became evident as soon as the urethra was opened. A small polypus was seen attached just at the neck of the bladder, which had been pushed out of the urethra on the introduction of my instrument into the bladder, and was carried back again into the canal with the first passage of urine. Its presence in the urethra excited constant tenesmus, and this had gradually led to undue thickening of the tissues. It was but a question of time, under the circumstances, before se-

rious disease of the bladder would have been established, to be followed by dilatation of the ureters and death ultimately from some kidney lesion. Nothing could have been more simple than the application of the remedy, in the removal, or more satisfactory than the result.

During the past autumn an elderly woman, about sixty years of age, was sent to me by Dr. M. C. West, of Rome, N. Y., and was treated in my private hospital. The urethra had been previously dilated, and a growth of some description had been successfully removed by Dr. Marion Sims, and she came under my care in consequence of his absence from the city. She had been temporarily relieved after the operation, but in a few months the irritation of the bladder increased, and her general health became much impaired by the loss of sleep, due to being obliged at night to get up so frequently to empty the bladder. As only a moderate degree of thickening existed in the walls of the urethra, I was at first disposed to underrate very much the importance of the case by attributing a great deal to nervousness, and to what I supposed was the effect of being confirmed in the habits of an invalid. The only important feature I could detect in her case was a tenderness on introducing a uterine probe into the urethra, and this was confined to a very circumscribed spot, about half way between the entrance of the urethra and the neck of the bladder. The urethral canal was opened December 3, 1881. I found an elevated mass on the mucous membrane, not larger than the head of a pin, which resembled what might have been the stump or remains of a pedicle, from which a polypus had been removed. This was caught up with a tenaculum, ligated with a strand of fine silk, and cut off. The edges of the urethral and vaginal mucous surfaces were then united together around the button-hole opening, and the case was treated afterwards in the usual manner. She returned home as soon as the parts had healed, having been entirely relieved, after the removal of the mass, from all discomfort connected with the bladder. I subsequently closed the opening February 24, 1882, and she has since

increased in weight, lost all nervousness, and has continued as well in every respect as any woman could be at her age.

The same comments are applicable to this case as to the previous one, for the diagnosis could not have been formed, or any relief afforded, without having resorted to the operation of opening the urethra. Moreover, the consequences attending the cystitis which would have soon supervened would have been as inevitable.

I have operated in several instances for prolapse from the urethral outlet of the mucous and sub-mucous membrane by drawing back the excess of tissue through the button-hole-like slit and then securing it, as shown by an illustration in the last edition of my book. This operation is perfect, as it secures, by adhesion, the mucous membrane along the wall of the urethra in the line of union, so that farther prolapse is impossible. The first operation I ever performed of this kind was done June 17, 1879. The patient has remained under observation and had been free from prolapse to the time of my last examination, June 15, 1882. This is the case detailed on page 732, second edition of my "*Principles and Practice of Gynecology.*"

It seems evident that this condition of prolapse is a consequence of child-bearing, where the tissues have been forced into the urethra from behind, causing dilatation of the canal, which may have been partial or have extended to the outlet; and with this condition splitting, or laceration of the sub-mucous tissues, in the long axis of the passage, is a frequent accident. The tissues being in abundance, and free to a great extent at the neck of the bladder, can be crowded as a plug, under favorable circumstances, into the canal by pressure of the child's head as it advances from behind, and in the same manner as the rectal canal is rolled out from the anus. Laceration through the sphincter ani and perineum is usually caused by the use of forceps, or, to be more explicit, it may be stated that the accident usually occurs where the instruments have not been removed when the head reached the perineum, and when the delivery has been completed by their aid. But this injury also occurs

from the head of the child crowding the tissues in advance through the anus as I have described. During the past twenty-five years I have seen several cases at the Woman's Hospital where the fourchette alone remained intact, while the recto-vaginal septum had been extensively lacerated, with the sphincter ani and the greater part of the perineum. We might naturally suppose that the urethra could sustain but little injury from pressure during the progress of labor, as it is situated so close under the arch of the pubes. But since my attention has been directed to this subject I have found evidence of urethral laceration as common as that of the perineum, and far more so than the injury through the sphincter ani. In fact, I have been surprised at the number met with where the urethral outlet was too patulous, a condition generally due to laceration on each side below, so that the meatus remained somewhat of a triangular shape with the apex above. More or less prolapse of the mucous membrane still existed in all these cases, as was shown by the deeper red color of the urethral surface presenting at the outlet. But as a portion of the canal beyond had also been lacerated, retraction to some extent had occurred as cicatrization took place. The effect, then, was the same in principle, but the prolapse could not be arrested to the same extent, as would be done by the operation already described, where the excess of prolapsed mucous and sub-mucous tissues is drawn out through the button-hole-like slit and secured.

For an indefinite period but little inconvenience may be appreciated after sustaining some such injury, and when realized the symptoms of discomfort may be long attributed to uterine displacement or other cause than injury to the urethral canal. But on close questioning the patient will be able, as a rule, to recall the existence of irritation at the neck of the bladder, coming on after some special labor, from which time more or less difficulty had existed.

Thickening of the mucous membrane and an increase of growth are not confined, however, to over-stretching or laceration of the canal. A patient was sent to me by Dr.

Lewis Fisher, of New York, in October last, where the first prominent symptom had been hemorrhage for several weeks, from the bladder as it was supposed. The urine had not been free from blood during this period, and after emptying the bladder she suffered from tenesmus, with frequent pain over the pubes and about the thighs. It was feared, after the report made from a microscopical examination of the urine, with the rapid development and symptoms of the case, that it would prove one of malignant disease of the bladder. She had given birth to two children, and the last labor had been about twelve years previous to my first examination. The only point in her history which I could obtain with any bearing on the case was regarding the first labor, which had been a very rapid one, and although she got up well, as it was thought, she realized, when questioned, that more or less irritability of the bladder had existed from that time, with tenesmus often coming on after taking any undue amount of exercise.

No stone was found in the bladder, but the presence of the sound in the vesical cavity caused bleeding, contraction of its walls, and much pain. Under the circumstances I determined to administer an anesthetic, that a diagnosis might be established, after exploring the walls of the bladder in search of an encysted stone. Under ether the urethral outlet was found rather smaller than natural, and the canal did not seem to be dilated, but the walls and neighboring tissues were much thickened, so that a urethrocele existed, to an unusual degree, near the neck of the bladder. Finding nothing in the vesical cavity, I determined to make the opening into the urethra. A mass of the thickened mucous membrane crowded up into the opening as soon as the canal had been entered. It had a cock's-comb-like appearance, bled readily on the slightest touch, and was so free that it could be drawn out of the canal to some distance. In fact, the thickened mucous membrane seemed to be detached to a great extent from the sub-mucous tissues. It had been developed to such a degree that it was thrown into long folds, extending in the axis of the hollow cylinder.

This growth had become an exaggeration, to a remarkable degree, of the longitudinal plicæ always found on the posterior wall of the urethra, near the neck of the bladder. Between two of these folds the sound had been passed on its introduction, thus giving no indication that the canal had been at all dilated. It was evident that the use of the endoscope would have proved of no greater value than the detecting of an increased vascularity of the lining membrane. After some difficulty I introduced a No. 12 block-tin sound through the urethral meatus into the bladder. While this was held in position I drew out, through the button-hole-like incision, this excess of tissue from about the neck of the bladder and on each side of the sound. This was cut away with a pair of scissors, and then I united the raw edges of the mucous and sub-mucous surfaces together, using four interrupted sutures on each side. When the operation had been completed, the appearance of the urethra resembled a large quill or tube from which a narrow longitudinal section had been removed, and through which was readily seen the interior of the canal. The deep red color of the lining membrane disappeared in a few days after the operation. An application of the nitrate of silver was made several times to some granular points, but she received no other treatment, except the hot water vaginal injections and the zinc ointment, which she applied herself. She had no bleeding or trouble with the bladder after the operation. On February 18th last I denuded the edges of the opening in the urethra and united them with interrupted silver sutures, secured by means of perforated and compressed shot. The thickening from the urethrocele had by this time entirely disappeared, leaving the edges of the opening so thin that it was even necessary to include a strip of vaginal tissue in the denuded surfaces. The sutures were removed at the end of a week, and the line was united throughout. At the present time she is perfectly well, and it would be difficult to detect the line of the operation, were it not for a small pin-hole-like opening situated near the outlet, which gives no inconvenience. Dr. Fisher

was present at the operation, and followed afterwards each step in the treatment of the case. But he has been the only family physician who could do so, as my other patients were from a distance.

In the classification made of these diseases, urethrocele should have followed properly the consideration of prolapse of the mucous and sub-mucous tissues. For it is but a sequence, where a degree of greater thickening has followed the overstretching of the urethral tissues with laceration of its walls. More or less of a pouch has been formed in all these cases, in which a certain amount of stale urine remained afterwards to add to the irritation. The formation of a urethrocele is frequently attributed to a previous laceration of the perineum, but this is not strictly correct, for the perineum was lacerated at the same time that the urethra was injured. From a want of proper support the condition of the urethra could not improve afterwards, and became exaggerated from the condition of the perineum. In the beginning of every case of urethrocele, I believe more or less laceration had taken place between the longitudinal muscular fibres of the urethra. I can recall one well marked case where I operated, some twelve or fourteen years ago, and found a slit existed through the walls nearly the whole length of the urethra, and to the vaginal tissue, thus forming a pouch in which a drachm at least of stale urine always collected. This condition is easily remedied by removing, with a pair of scissors, the excess of tissue, and by then denuding the sides of the opening in the urethral tract to a sufficient width, so that when the two surfaces are brought together by sutures the urethral canal will be restored to its natural calibre. By this means all prolapse of the urethral mucous membrane can be arrested, and the urethral wall restored to its natural thickness.

In this connection I might state the opposite condition, that of stricture of the female urethra, is rare in my experience, except as the result of violence. It is near the outlet where narrowing usually takes place, and follows the

use of nitric acid, other caustics, and the cautery, or after cutting off prolapsed tissue or a growth from the meatus. Any serious obstruction to the free escape of urine must eventually result in cystitis, and the condition therefore requires prompt relief. Where the outlet is narrowed, there is no remedy but to divide it backward sufficiently to restore it to its natural size. But with any degree of stricture it will be necessary to make a button-hole-like opening directly over the constricted portion, and after the edges have thoroughly healed it will be easy to form the canal of a proper size — an operation simple of execution in the female, but more difficult in the male; yet I succeeded perfectly in one instance in forming a good-sized canal where the urethra in a male subject had, before the days of the aspirator, been laid open through a number of strictures to relieve retention and urinary infiltration.

Where simple hypertrophy has occurred, as a product of inflammatory action; where from a want of proper support, from hemorrhoids, or from long continued attacks of tenesmus, due to some other reflex cause, it is only necessary to cut through the tissues, as I have described, to bring about a change of nutrition in the parts, and no other means can accomplish so much.

My last operation was at the Woman's Hospital. The patient had suffered from cystitis, and had been under treatment for over four years in Bellevue Hospital and other institutions of the city previous to being admitted to the service of Dr. C. C. Lee in the Woman's Hospital. She was then in a most miserable condition, with the urine phosphatic and filled with pus; she suffered greatly from tenesmus; the walls of the bladder were thickened, and in fact all the symptoms of long standing cystitis were present. Dr. Lee made an artificial fistula in the base of the bladder, and treated the case afterwards for a year or more. At the end of that time the cystitis had entirely disappeared, the character of the urine was again normal, and the walls of the bladder had been restored by rest to a healthy condition. The fistula was then closed, but the old irritation of the

bladder at once returned with all its attendant suffering. I believe a fistula was again made, further back towards the cervix uteri, so that the drainage might be more perfect, and shortly after I was asked by Dr. Lee to see the case in consultation. The bladder then seemed to be in a healthy condition, and the only apparent lesion was a large urethrocele, with a general venous congestion of the parts. To study the progress of the case, and to investigate the cause of failure, where so much had been gained, I requested that she might be transferred to my service. The fistula in the base of the bladder was closed, and then an opening was made through the thickened urethral tissues, over which the mucous surfaces were united, as I have described. One of the immediate effects of the operation, after cutting through the tissues and relieving the tension, was a speedy restoration of the circulation to a healthy condition. The parts were allowed to rest for several months until the urethral walls had regained their normal thickness. Early in May last the opening in the urethra was closed, with no return of the bladder trouble, and the result was perfect. Just before her discharge in June I had the pleasure of showing the case to Drs. Garrigues, Lusk, and Lee, members of this Society.

The history of this case is of much clinical value. The first symptoms began with a moderate degree of irritation of the bladder, which developed into a constant tenesmus—symptoms beyond question then due to some lesion in the urethra, which gradually, through a series of years, led to the cystitis and its consequences. So long as the urine in this case had a free escape from the bladder through the fistula, the condition of the urethra could not excite sympathetic irritation. Yet, notwithstanding the bladder had recovered its healthy condition, during its long period of rest, it was made to feel the effects of the original source of irritation in the urethra as soon as the fistula was closed. With the distention, from accumulation of urine, reflex irritation was at once excited in the muscular fibres of the bladder, and the tenesmus thus induced would have soon

reëstablished the cystitis in its worst form. The history of this case points out, in all probability, the unsuspected cause of irritation in a certain number of cases of cystitis of long standing, which are benefited only while the fistula remains open for the free escape of urine, and where it is asserted sometimes, in such cases of failure, that the artificial opening, with rest alone, cannot cure this disease of the bladder.

I can offer nothing more for the treatment of fissures situated at the neck of the bladder. Their exact locality is often difficult to detect, but the opening, when made as I have described, allows of more ready inspection, and by thus freeing so thoroughly the tissues about the neck of the bladder, they often heal without further interference.

We will now consider, as briefly as possible, the last section, that relating to laceration of the urethra from forcible dilatation, an accident which has frequently resulted in a permanent loss of control over the escape of urine. It is not necessary to discuss at any length the propriety of the procedure, for my views, and the experience upon which they have been based, are sufficiently well known. I will, however, state that with more experience I am the more confirmed in the unqualified opinion that the operation of dilating the female urethra is one which should not be practiced under any circumstances. No advantage can be gained by its aid which cannot be obtained by other means free from all danger of injury to the patient. The fact is not questioned, but admitted by all, that, in a certain proportion of cases, permanent incontinence of urine continues after the urethra has been dilated. It is well known also that the occurrence of the injury does not always depend upon a want of dexterity on the part of the surgeon; it cannot be guarded against, and will take place sometimes in the hands of the most careful operator. I have in all probability seen more cases of this injury than any other member of the profession, and I have been many years seeking to relieve the condition through the aid of surgery. For years past my service in the Woman's Hospital has

been seldom without one or more of these unfortunate patients under my care. After fifteen years of study, and after having instituted many operative procedures for the relief of this lesion, I am able to claim a number improved, but with only one patient permanently cured, where I had myself produced the injury. Another, rated as improved, kept dry about seven months after her discharge, and then, according to her statement, she suddenly lost all control over the escape of urine, but by a later account I was informed she could keep dry at night. The supposed failure must, however, be accepted with some allowance, for she retained full control of the urine from April until the following December. At this time she was anxious, I fear, to go into winter quarters by entering the Woman's Hospital, where she had been an inmate several years. From her knowledge of her own case, and with her dexterity, I feel that I am not uncharitable in the belief that she may have opened the urethra, and I believe may have had a hand in some of the previous failures. She lived at a distance, and has not been readmitted, so that I do not know her true condition.

Another patient under observation, with a small opening, may yet be cured, as she has kept dry at night and has done so during several hours in the day. All who have followed my service in the Woman's Hospital during the past three years will be able to recall the case of a young girl, who had a stone dragged through a dilated urethra when she was eight years of age. The result of the operation was splitting open the canal and lacerating the vesico-vaginal septum obliquely along the sulcus, on the right side, beyond the mouth of the ureter, with extensive sloughing afterwards. She has already taken ether thirty-three times, and has submitted to about thirty surgical operations instituted for her relief. I have made the urethral canal some ten times in this case, and have afterwards laid the whole open again, with a pair of scissors, in search of the cause of failure. At length my perseverance has been rewarded by finding the nature and exact seat of injury. As

I have detected the same lesion in two other cases, and the only instance I have seen since of loss of urine after dilatation, we may reasonably hope that the usual cause of difficulty in these cases has at length been ascertained.

There exists a superabundance of loose tissue about the neck of the bladder, which disappears, portion after portion, in the expanse as the viscus becomes distended. At length, when it is put on the stretch, the shape about the neck becomes not unlike that of a funnel, with the walls sloping on all sides towards the nozzle, and with a portion of it bent under the pubes to form the urethra. I once opened freely the vesico-vaginal septum, in a patient suffering from incontinence after dilatation, and in this instance I detected, by means of reflected light and a laryngeal mirror, a cicatricial line extending across several of these folds, at the neck of the bladder, which prevented them from coming together. The parts had evidently been lacerated in this instance at least, and I had supposed, until recently, that this was the usual accident occurring where incontinence had followed dilatation of the urethra.

It is a practice to leave an opening in the base of the bladder for the free escape of urine during the time necessary for forming a new urethra. But after the parts have become firmly united, I usually close temporarily this vesico-vaginal fistula, but without denuding the edges, to test by this means the retentive power and to dilate somewhat the bladder, which may have been long contracted. On one occasion, in the case of the girl who had retentive power for some time, finding that retention had not been gained, although the line of union in the urethra was perfect along the vaginal surface, I removed these temporary sutures, and passed my finger through the fistula into the bladder. During the examination I was struck with the unusual shape of the parts about the entrance into the urethra, which seemed to point or project into the bladder. As the finger was passed down towards the neck, from behind the pubes, the tissues seemed to have rolled out, and felt not unlike the anterior lip of a lacer-

ated cervix, but were much smaller in size. Judging from the passage of the sound along the urethral canal, it seemed to be so much dilated, beyond a certain point, that I supposed absorption had taken place in part of the line, so I again laid open the urethral tract. I then discovered that the expanded state of a portion of the canal was due to a transverse laceration of the urethra, by which a part of the anterior wall of the bladder had been torn away from under the arch, if not, in addition, partially from the inner face of the pubes. Until I had realized the existence of this laceration it was easy to have overlooked quite a concave surface, when only seen from in front, but a condition which would have been at once apparent if presented in profile. The injury was also less likely to have been recognized after the parts had been put on the stretch by the introduction of the speculum, while the depression entirely disappeared when the edges of the canal were held apart for inspection by means of a tenaculum on each side. But as soon as the lesion was suspected, and the tissues at the neck of the bladder were drawn forward to their natural position by means of a tenaculum, an extensive transverse laceration was at once made apparent.

With our knowledge of the manner by which the neck of the bladder is firmly bound down under the arch of the pubes, and with its close connection at this point to the unyielding pelvic fascia, it becomes simply a matter of surprise that laceration does not occur in every case where the attempt is made to dilate the female urethra. The finger must always meet with resistance along the line of the sub-pubic ligament, where dilatation cannot so easily take place as in other portions of the canal, and the parts must here be put on the stretch, as they are pushed away from the pubes. Then if laceration occurs it will naturally take place along the line of least resistance, which would be across the urethra, at the sub-pubic ligament, and in the connective tissue, so as to separate more or less of the bladder wall from the pubes.

I have attempted several times to repair this injury by

denuding the sides of the laceration, and then bringing these surfaces together with a number of interrupted sutures in a line transverse to the axes of the urethral canal. But I have never been able to gain a sufficient union of the sides so as to entirely obliterate this concave surface, and have attributed my failure to the close relation of these parts to the muscular action brought into play with each effort to empty the bladder and bowels. To overcome the difficulty, and to fill up this space, I have made the freshened surfaces, which were to be brought together in forming the urethra, much wider at this point, so that the canal might be of a uniform width, and in profile a convexed line would occupy the concavity. By adopting this plan I fully expected that a certain amount of urine would accumulate before it could escape, and before reaching that point the bladder would rise sufficiently in the pelvis to give retentive power by drawing back the urethra somewhat and compressing its sides under the arch of the pubes.

We should bear in mind that in the case where retention was gained for seven months after the operation, the urethra had been fully developed before being lacerated, and I simply brought together the sides of the urethral canal, which had been previously laid open, through the meatus backward into the bladder, with some object in view unknown to me. It was therefore reasonable to expect that retentive power would be gained under these circumstances, if the operation proved successful in narrowing the canal at the seat of transverse laceration, and that the natural desire to empty the bladder would exist, as was afterwards proved to be the case.

But the accident of the laceration occurred to the young girl while a child, with sloughing afterwards of the whole vaginal portion of the urethra. I therefore expected, if retentive power was established, after forming the urethral canal from the neighboring tissues, that there could be no appreciation of the degree of distention, or desire to empty the bladder; consequently it would be necessary to remove

the urine by aid of a catheter at regular intervals, and frequently to wash out the cavity, to guard against the accumulation of phosphatic urine. These views were not theoretical, however, but based on my previous experience in certain cases where I had formed the urethral canal from distant tissues, after the soft parts under the arch of the pubes had sloughed away to the periosteum. But when I temporarily closed, for a few days, the artificial fistula left after forming the urethra in the case of the young girl, I was surprised to find that the natural desire to empty the bladder, when sufficiently distended, had been but little impaired. I therefore feel more confident that she will be ultimately cured. The appreciative power in this case was evidently due to the preservation of a long narrow strip or surface, which had formed that portion of the urethral canal in close contact with the sub-pubic tissues. And notwithstanding the anterior surface, or two thirds of the whole calibre of the canal, had been destroyed, and a deep laceration had taken place directly across the remaining portion, indirect communication was established between the neck of the bladder and the urethral tissue through some ganglion anterior to the seat of injury.

This case proves an important one, as from it we may draw the inference that the desire to empty the bladder in the female is due to an impression made upon nerve fibres situated in that part of the urethral canal in close contact with the sub-pubic tissues, and between the neck of the bladder and the urethral outlet. It would therefore seem that along this tract the fibres of the sympathetic are chiefly distributed from the neighboring ganglia, and are sparingly given to the vaginal portion of the urethral canal where they would be more exposed to injury.

Moreover, this supposition seems to be confirmed by observation in other instances, for I believe every case, which has passed under my observation, of growth, or other disease of the urethral canal, which has been accompanied with reflex disturbance, has been situated along the distal portion of the canal, or that part in direct relation with the pubes.

I have been assisted in all the operations bearing upon the subject of this paper by my two assistant surgeons at the Woman's Hospital, Dr. George T. Harrison and Dr. Bache Emmet, or by my son, Dr. J. Duncan Emmet.

Before closing I will briefly reiterate certain points which should be made prominent, and which may have been lost sight of in consequence of the various subjects treated of, and from the length of the paper.

I have presented a mode of exploration for the female urethra, the advantages of which are not urged upon theoretical grounds, but from actual experience and close observation extending over several years. I would therefore ask that, in testing the method, the directions given may be first carefully carried out, to gain the necessary experience before judgment can be impartially rendered.

It is claimed that the advantages from the operation for exploration are greater than can be gained by any other method yet known to the profession, as the whole canal can be fully exposed, and any mode of treatment suggested by the condition of the parts can be easily applied.

That the operation is perfectly safe, and can be executed without difficulty by any one possessing an ordinary amount of dexterity. It certainly can be performed with safety by any one fitted to take the responsibility of forcible dilatation.

That if properly performed, and according to the directions given, the control of urine will not be in the slightest degree impaired, and that the bladder can be emptied afterwards at will without difficulty. In this respect the condition is different from where an apparent urethral fistula has occurred in consequence of childbirth, and where, as a rule, the retentive power is lost. In the operation on the urethra the neck of the bladder must never be involved, while sloughing at this point, the one most exposed to pressure, always occurs where the injury has resulted from parturition, and it is only after cicatrization has taken place that the opening would appear to the superficial observer as being confined to the urethra.

That no difficulty has been experienced in closing the urethral opening afterwards, an operation which has been performed by the house surgeons in the Woman's Hospital, and given to them for practice as one of the simplest. Where the fistula has been made, and its closure seems afterwards of too great magnitude, or it may not be convenient to close it, no harm can occur from leaving it open until a favorable opportunity is presented.

That on inquiry all who have been operated on have stated that, after the edges had healed, they were unable to appreciate any difference in the passage of the urine, although the greater portion, if not all the fluid, must naturally have escaped through the opening. More or less urine, however, must pass back into the vagina, and this fact would necessitate the daily use of vaginal injections for cleanliness. It occurred to me that the rolling out of the urethral mucous membrane, from the opening, might expose it in sexual intercourse, but on inquiry I learn this even does not seem to have been the case after the parts have cicatrized.

That it is not intended this opening in the urethra should in any manner supersede the forming of a vesico-vaginal fistula for treating cystitis, or for the removal of stone from the bladder. The opening of the urethra cannot be of the slightest advantage for drainage in the treatment of long standing inflammation of the bladder, unless the canal be also involved. Under such circumstances where the opening is made in the urethra, and one is also needed in the bladder, the incision is to be extended by a continuous line along the vaginal wall, but not through the neck of the bladder. At least half of the thickness of the septum must be left at this point, and then the base of the bladder can be entered beyond to form the fistula, which opening is to be extended by incision, as far as deemed necessary, towards the neck of the uterus. To keep this fistula in the bladder from closing, its mucous membrane must be drawn out and attached by interrupted suture to the vaginal membrane in the same manner as described for covering the edges in the

urethral opening. Not only will the fistula be kept patulous by this procedure, but the patient will be saved from much suffering by thus protecting the raw surfaces from urinary deposits.



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