STEIN (A.W.)

# RETENTION OF URINE

DEPENDING ON

# STRICTURE.

BY

ALEXANDER W. STEIN, M. D.,

PROFESSOR PHYSIOLOGY AND HISTOLOGY IN THE NEW YORK COLLEGE OF DENTISTRY, AND OF COMPARATIVE PHYSIOLOGY AND HISTOLOGY IN THE NEW YORK COLLEGE OF VETERINARY SURGERY; LATE LECTURER ON GENITO-URINARY ORGANS, UNIVERSITY MEDICAL COLLEGE, ETC., ETC.

*THIS PAPER WAS READ BEFORE THE NEW YORK MEDICAL JOURNAL ASSOCIATION, DECEMBER 9TH*, 1870.



NEW YORK:
ROBERT J. JOHNSTON, PRINTER,
No. 59 DUANE STREET.
1870.

# RETENTION OF URINE

DEPENDING ON

# STRICTURE.

BY

ALEXANDER W. STEIN, M. D.,

PROFESSOR OF PHYSIOLOGY AND HISTOLOGY IN THE NEW YORK COLLEGE OF DENTISTRY, AND OF COMPARATIVE PHYSIOLOGY AND HISTOLOGY IN THE NEW YORK COLLEGE OF VETERINARY SURGERY; LATE LECTURER ON GENITO-URINARY ORGANS, UNIVERSITY MEDICAL COLLEGE, ETC., ETC.

*THIS PAPER WAS READ BEFORE THE NEW YORK MEDICAL JOURNAL ASSOCIATION, DECEMBER 9TH,* 1870.



NEW YORK:

ROBERT J. JOHNSTON, PRINTER,

No. 59 DUANE STREET.

1870.

# RETENTION OF URINE

DEPENDING ON

# STRICTURE.

---

Few subjects connected with modern surgery comprehend questions of greater importance than retention of urine, and yet there is hardly a surgical disease upon which so much discrepancy of opinion prevails. The object of these remarks, therefore, is to present those points in the treatment of retention, which careful study and experience has taught me to regard as most important.

The existence of simple spasmodic stricture, independent of structural change, capable of arresting a full-sized catheter, has never, I think, been satisfactorily demonstrated, although a number of such cases have, from time to time, appeared in print. But that a urethra, already much narrowed at some point by an organic stricture, may, by free indulgence in spirituous drinks, exposure to cold, etc., have superadded to it congestion of the mucous membrane or muscular spasm, or both, to an extent sufficient to almost entirely occlude the canal, and produce retention, is a fact of which every experienced surgeon must, at some time or another, have convinced himself. We know that a stricture which at one time is impermeable to a No. 1 bougie, will, under the influence of an anesthetic, or after a few days of rest, warm

baths, diluents, aperients, opium, etc., admit No. 4, 5 or 6. I know from personal observation, that patients with so-called impermeable strictures, are too often made victims of perineal section without a guide, whose strictures would, after judicious treatment, have yielded to gradual dilatation, and have been brought to a successful termination.

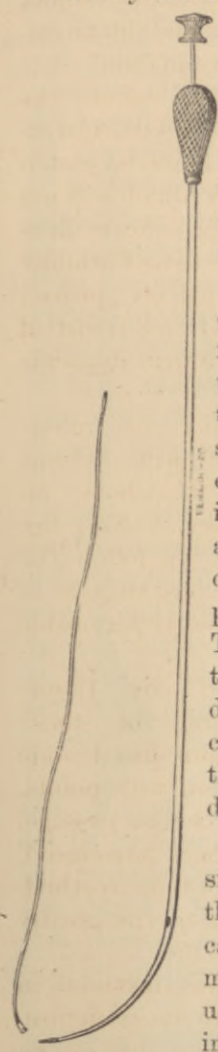
The more skilful the surgeon the more he will endorse the axiom of Professor Syme, "that if urine passes out, instruments may always, through care and perseverance, be gotten beyond the contraction." The cases are few which will not yield to the gentle and persevering use of the delicate, flexible bougie; at least, not until these have been faithfully tried, and the treatment by warm baths, opium, etc., proved unsuccessful, should we ever think of the dernier resort of perineal section, unless, of course, there are urgent demands for the immediate relief of the bladder.

The best instruments for the relief of retention due to light stricture, are the French filiform bougies; these I regard preferable to whalebone on account of their extreme flexibility. They, unlike the whalebone, have no direction of their own, but follow the sinuosities of the canal, and will sometimes engage in a tight tortuous stricture, which would be impermeable to other instruments.

In difficult cases, the plan adopted by Desormeaux is often serviceable. Several of these delicate instruments (whalebone) are introduced side by side, so as to cover the whole obstruction with points, or if one or more of these instruments enter a false passage, they are allowed to remain in situ, and others introduced, until the natural passage is found, and the bladder reached. The introduction of these delicate instruments is greatly facilitated by first injecting the urethra with oil.

The Endoscopic tube is found useful in those instances in which large false passages exist anterior to the stricture. With the aid of good light the orifice of the stricture can be made out, and the point of the bougie (for this purpose those made of whalebone are the best) guided through the contraction.

It is important to remember that not only is the urethra greatly dilated posterior to the stricture, but the lacunae, prostatic and ejaculatory ducts on the floor of the canal are often very much enlarged, readily entangling the point of a fine bougie, and endangering the formation of a very troublesome false passage, one even worse than if it were situated anterior to the stricture. It is not always easy to determine when the instrument has engaged in one of these openings, for in narrow strictures the bougie is grasped so tightly, that its manipulation is often rendered very difficult. Great gentleness is therefore required, even after the obstruction has been fairly passed. Very little force is sufficient to thrust an instrument through the walls of the urethra. If an instrument has gone seven or eight inches, and becomes arrested, it is necessary to ascertain per rectum its precise situation. If it has engaged in a false passage, it must be partially withdrawn, and with a little pressure upon the point of the instrument, slowly reintroduced. This will materially facilitate the passage of the bougie into the bladder. Having introduced the filiform guide, a small silver catheter may now be attached (by means of the screw tips) and followed into the bladder. (Fig. A)



Dr. Bumstead's Catheter, No. 7, (French,) with Guide. [Fig. A.]

Occasionally Thompson's probe pointed silver catheter will enter the bladder, when the filiform instruments fail. But great care is necessary in the use of these small metalic instruments. They are dangerous unless a filiform bougie has been previously introduced, to serve as a guide. These instruments have often made a way for themselves into the bladder, and from the absence of difficulty in micturition, which, for

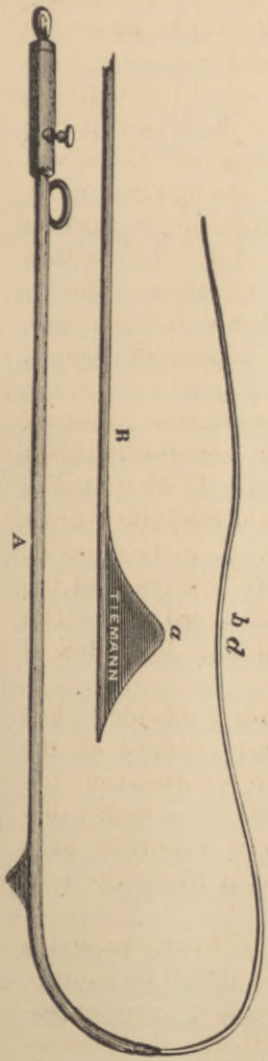
the time obtained, led surgeons to believe that the bladder had been reached, per viam naturale. I will mention one instance out of many which I might cite, in proof of this statement. It was one in which Maisoneuve's urethrotome had been used without a guide. After the operation, free flow of urine ensued, and it was supposed that the stricture, had been thoroughly divided. It was afterwards impossible to get an instrument into the bladder, the patient was extremely irritable and the passage of the sound produced insufferable agony. After waiting for some days, and finding the stream becoming smaller and smaller, an anesthetic was administered, and another unsuccessful attempt was made at catheterism. Finally it was deemed necessary to perform perineal urethrotomy, and it was discovered that the stricture had not been divided, by the previous operation. The instrument had made a false passage beside the stricture, which, not being kept pervious by the passage of sounds, gradually closed.

I have now a gentleman under observation, who, about six or eight years ago, had a small metallic instrument thrust into a false passage, and on to the bladder. This resulted in extensive extravasation of urine, which subjected him to great suffering and jeopardized his life. Very often the mere attempt to pass the obstruction—especially if the point of the instrument has engaged the stricture—will afford relief. The withdrawal of the instrument being followed by a flow of urine.

If retention, with a greatly distended bladder, has existed for some time, it is not prudent to remove all the urine at once. Several deaths have been reported from too sudden evacuation of the entire contents of a highly distended bladder. It is best to withdraw a portion at a time, thus allowing the bladder to gradually regain its normal condition of contraction.

When an instrument has with great difficulty passed a stricture, I believe it to be a safe rule to *leave it in position*. For two reasons: First, If it is removed, we may subsequently find it impossible to reintroduce it, and in consequence of urgent retention, be obliged to perform an opera-

tion, which, owing, perhaps, to extensive renal disease, or some other unfavorable condition of the patient, would be rapidly brought to a fatal termination. Second, The filiform guide in the urethra affords the best means for the subsequent treatment of the stricture. For example: should the general condition of the patient be favorable to an operation, we may at once attach Maisoneuve's urethrotome and divide the stricture from before backwards. This instrument, as recently improved by Dr. Bumstead, is perfectly safe and reliable. (Fig. B)




Or if Voillemier's divulsor can be made to pass, divulsion may be preferred to cutting, especially when the stricture is deep-seated. Again, if it is a case for Syme's method, the grooved staff may be screwed to the filiform guide. This will greatly facilitate the operation of external division. Thus, the filiform guides can be made to fit either of these instruments, so that the character of the operation need not be decided upon, until after the introduction of the guide.*

If, on the other hand, the patient has diabetic, or albuminous urine, a bad constitution, a nervous, irritable temperament, etc., we may resort to the milder method, by gradual dilatation, or if this is not feasible, the continuous plan of Sir H. Thompson may be adopted.

A careful examination of the urine should be regarded as a *sine qua non*,

* The credit of this practical suggestion belongs to my friend, Dr. Bumstead.

in the treatment of all urethral strictures. No man is qualified to undertake the treatment of these bad cases, who neglects to examine into the condition of the renal organs. Not until such examination has been made, can we judiciously decide upon the proper treatment to be adopted in each individual case, or can we duly estimate the danger, that might, in some instances, accrue from too active interference. I am convinced, that if such examinations were made in every instance, and the significance of an abnormal condition of urine duly appreciated, the death per centage of these cases would be materially diminished.

While it is the part of conservative surgery to avoid the knife as long, and whenever, such a course is justifiable, we must keep in view the serious consequences, which will inevitably result from prolonged over-distension of the bladder, not only endangering rupture of the urethra, and extravasation of urine, but also the injurious effect that continued pressure will exert on the structure and function of the renal organs. Structural change of the kidneys is especially to be apprehended, in those who have suffered with repeated attacks of retention. It is further important to bear in mind, that some of the worst forms of retention may co-exist with constant dribbling of urine; a condition which has not unfrequently been mistaken by surgeons for an inability on the part of the bladder to retain urine, instead of recognizing it an *overflow* of surplus urine from the over-distended viscus. We learn through the experience of Mr. Jonathan Hutchinson* that retention may insidiously terminate in fatal disease of the kidneys, *without pain or inconvenience*.

Retention of urine will, in the natural sequence of events, lead to suppression of that secretion. As soon as the bladder becomes distended, the urine accumulates in the ureters, then in the pelvis of the kidneys, and finally in the tubuli uriniferi. Soon the pressure in the uriniferous tubes becomes so great that secretion of urine is more or less arrested, symptoms of suppression manifest themselves, and death frequently ensues.

* London *Lancet*, July 4th, 1868.

When suppression is due to disease of the secreting structure of the kidneys, the character and composition of the urine differs very materially from those cases, in which it is simply due to mechanical obstruction to the outflow of urine. In the first instance the urine, is high colored, concentrated, and contains casts. In the other—the urine being secreted under a high pressure—it is pale, dilute, and free from casts.

If then we have reason to apprehend extravasation or that permanent injury to the urinary organs may result, or the age and suffering of the patient demands immediate relief, external perineal urethrotomy or paracentesis, vesicae must be resorted to.

There are those who believe it wiser to puncture the bladder, on the principle that strictures when once relieved of the irritation of the urine passing over them, spontaneously soften and become amenable to ordinary dilatation. This is true to a certain extent, and puncture of the bladder may in a few instances—as in old, broken-down constitutions, in which it is desirable to save blood and limit incisions—be the only justifiable means of relief.

But the advantage in favor of external perineal urethrotomy is, that it not only affords the necessary relief to the bladder, but aims at once at the cure of the stricture, or the removal of the cause which has induced retention. This operation is preferred by most surgeons to-day, and I believe that traumatic strictures, or strictures complicated with extravasation—even if permeable to instruments—are, by universal consent, regarded as cases for the external operation. I shall not attempt to describe the many ways in which this operation has been performed, but will confine my remarks to the description of those methods which have received most attention. The old operation of perineal section consisted in passing a large instrument down to the obstruction, and opening the urethra upon it. Then—as Sir H. Thompson remarks—"by dint of cutting, a way was made for the instrument to go from the urethra before the stricture, to the urethra behind the stricture." How often

the stricture itself was divided is most uncertain. It is very probable that, in the majority of instances, it remained uncut.

This operation has been greatly improved by Messrs. Arnott & Avery. The patient is prepared and placed in position as if for the operation of lithotomy. A grooved staff (which is preferable to a grooved catheter, because less liable to slip from under the knife) is passed down to the stricture, and held firmly and steadily in position by an assistant, who at the same time supports the scrotum. An incision is now carefully made along the raphe of the perineum, extending from near the scrotum to within half an inch of the anus, involving the skin and connnective tissue. This incision should be sufficiently extensive to afford a full view of the deeper parts. A small external wound not only embarrasses the operation, but afterwards endangers urinary infiltration, or, if this does not occur, retards the healing process. The incision in the superficial tissues should be larger than in the Corpus Spongiosum, and that in the Corpus Spongiosum larger than in the submucous tissue and mucous membrane. The urethra is now opened—where it is distended by the staff—by a few strokes of the knife, and the canal exposed to view. Mr. Avery's plan of holding apart the lips of the wound is now generally adopted. "A loop of thread should be passed through each margin of the urethral incision, including the mucous membrane close to the stricture, so as to open out the passage, and dispense with hooks or fingers, which might intercept the view. The loops serve also to guide the eye to the exact spot at which the stricture commences, during any stage of the dissection which it may be necessary subsequently to make." This having been done, a small grooved probe pointed director is now made to follow the track of the contracted canal, and the stricture divided thereon by a narrow bistonry.

C. G. Wheelhouse, Esq., F. R. C. S., has somewhat modified this operation. Having made his external incision in the usual way, he opens the urethra about a quarter of an inch above the point of the instrument. He next separates the lips of the wound, being careful to include the mucous

membrane. The position of the staff is now reversed, the point turned out through the external opening, and used to draw forward, fix and steady the urethra. The parts are carefully sponged and the interior of the canal brought into view, a fine probe director is guided along the upper wall of the canal, and the stricture divided.

In cases in which it is difficult to distinguish the urethra from a fistulous passage, some assistance may be obtained by pressing upon the hypogastric region, so as to cause the urine to flow away, and thus indicate the true course of the canal. This fact I realized, for the first time, while performing external urethrotomy, as an experiment, upon a dog, that had retention of urine, due to a blow inflicted upon the penis. Not being able to introduce a bougie, I was obliged to cut for the urethra without a guide, and I confidently believe that owing to the extreme tenuity of the urethra in this animal, I should never have found my way into the canal, if it had not been for the distended bladder. Pressing upon the hypogastric region, I was enabled to force urine through the contracted orifice, and thus had indicated to me the true course of the canal.

It is maintained that in certain cases, where—in consequence of much thickening and induration of the perineum from abcess and fistula—it is extremely difficult to follow the course of the urethra from before backwards, the operation of opening the urethra posterior to the stricture, may be advantageously resorted to. The superficial parts having been divided, and the urethra opened, a curved probe or director is passed along the canal anteriorly, so as to meet the grooved sound which has been introduced from the meatus. This accomplished, the strictured part may be divided, either from before backwards, or from behind forwards. The dilatation which often exists behind old strictures—especially if the patient is directed to distend this part by effort at micturition—will afford the operator valuable guide to the urethra. But if this pathological landmark does not exist, the operation becomes much more uncertain. Furthermore, unless the in-

cision into the urethra behind the obstruction, has for its object the division of the stricture, as well as the relief of retention, puncture of the bladder per rectum is preferable and more reliable.

Dr. Gurdon Buck states that in one instance in which an impassable stricture coexisted with extreme distension of the bladder, he made a transverse incision across the raphe of the perineum, one inch anterior to the anus, and continued it on between the urethra and rectum, until he reached the posterior edge of the prostate, when he punctured the bladder through the trigone.

Numerous dissections have shown that strictures originating from urethritis do not commonly involve the mucous membrane.

An examination (Dr. A. G. Miller) of the preparations in the Museum of the Royal College of Surgeons, Edinburg, shows, that in forty-one out of fifty-four strictures, the mucous membrane is free from pathological change. In nineteen out of the forty-one, the membrane is simply thrown into folds or rugae, by the constricting fibres beneath. In four cases only out of the fifty-four, there is an apparent thickening or alteration of the mucous membrane. I have myself made careful examination of several post-mortem specimens of stricture, and in these the mucous membrane was in no way involved. In view of this pathological fact, a modification of Syme's operation was recommended a few years ago for non-traumatic strictures. It consists in cutting down to the stricture, dividing the constricting fibres in the connective tissue, but carefully avoiding injury to the mucous membrane. If this operation were at all feasible its advantages over the ordinary method would be obviously great, but I fear it is more beautiful in theory than practice. To approach the mucous membrane so closely as to divide all the constricting bands and not injure the membrane is—from the inaccessible situation of the urethra in the perineum—practically impossible. On the other hand, it is affirmed, that it is unnecessary to approach the membrane so closely as to endanger its injury; the division of the deeper fibres alone being sufficient to relieve the con-

striction. If this is really so—which I think doubtful—the fact that all the fibres were not divided, would render a rapid recurrence of the stricture extremely probable.

I have said that strictures complicated with extravasation of urine are generally regarded as indicating the external operation. This rule may in certain cases be deviated from, as follows: When extravasation has occurred from distension and ulceration of the urethra posterior to the stricture, the introduction of instruments should be dispensed with, and free incisions made on each side of the perineum, so as to allow the urine to drain off. The fact has already been mentioned that if urine is allowed to pass off by another channel, the stricture will, in a few days, improve to an extent sufficient to admit a fair-sized instrument, and yield to dilatation. The fistula, which results from the opening, will close spontaneously when the urethra is restored to its normal calibre.

When rupture of the canal has been induced by a fall or blow upon the perineum, the patient should avoid making efforts at micturition until a full-sized catheter has been introduced; the object being to prevent extravasation, and to relieve retention. If urinary infiltration has already taken place, external urethrotomy should be performed without delay.

We know that transverse wounds of the urethra rapidly develop into strictures, and when formed are usually very light (so-called impermeable strictures are generally of the traumatic variety), and if dilated have a tendency rapidly to recontract. They are often extremely irritable; the most gentle manipulation exciting disagreeable constitutional disturbances. These are the reasons which render traumatic strictures incapable of cure by dilatation, and why external perineal urethrotomy is often the only reliable procedure. Nothing can be gained, therefore, in waiting. Sooner or later a stricture will form at the site of the injury, which will very probably necessitate external perineal urethrotomy, and perhaps at a time, when the patient will be in a less favorable condition for an operation, than immediately after the accident.

If an abcess exists in the perineum, associated with difficult micturition, the sooner it is opened the better. It should always be evacuated before instruments are introduced into the urethra, otherwise a urethrial communication may be made with the abcess. Furthermore, after the abcess is opened, instruments will not be immediately required. A gentleman, recently under my observation, had a large perineal abcess, associated with considerable difficulty in micturition. He refused to have the abcess incised, but fortunatoly it opened spontaneously the day following my first visit. The difficulty of passing water was at once relieved, and a few days after, a full-sized sound was readily introduced into the bladder. This was one of the rare instances in which perineal abcess exists unassociated with stricture.

Experience has determined that the practice of tying a catheter in the bladder after an operation is not only unncessary, but does not even insure the object for which it was intended. Prof. G. Simon's experiments show that, the action of urine on tissues not protected by epithelium is not as injurious as was at one time supposed. "Unmixed acid urine was injected subcutaneously in dogs; this was absorbed without causing the slightest bad effect. The same result attended similar experiments on man. Operation wounds, also, after they had been mixed with *fresh urine*, still healed by first intention, urine mixed with mucous, and mucous and pus, was injected in animals without damage. In experiments with *ammoniacal* urine, filtered and unfiltered, abcesses were produced, the coverings of which sloughed, leaving slowly healing ulcers." He further adds: "The *causes* of the *sloughing*, which in men occurs rapidly, and to a great extent after infiltration of acid urine, is not to be found in the chemical but in the mechanical action of the fluid which is forced out among the tissues with great violence, by means of the muscular bladder and the abdominal pressure."

Again, tying a catheter in the bladder does not insure the object for which it is intended, as some urine always finds its way from the viscus by the side of the instrument.

It is well known that soon after an operation about the urethra, symptoms closely resembling an attack of chills and fever often manifest themselves. The patient will have severe rigors, often lasting several hours, and afterwards the usual febrile symptoms. That this condition—which has received the appellation of "urethral fever,"—is due to septic absorption from the wounded urethra, experience does not substantiate. Most disagreeable constitutional disturbances often result from the passage of an instrument even along a healthy urethra. While in some cases we may manipulate with comparative freedom, in many others, the utmost gentleness and forbearance is necessary to avoid dangerous if not fatal consequences. Mr. Paget has known death to follow simple sounding for stone in six cases. Sir Henry Thompson has observed on several occasions suppression of urine, rapidly followed by death, to result from the introduction of an instrument larger than the patient was accustomed to. In conjunction with this observation, Mr. Holt makes the interesting statement, that in the operation of splitting the submucous deposit in the treatment of stricture, rigor is the exception, while in those instances in which it is simply *overstretched* rigors will in the majority of instances ensue.

We must attribute these phenomena to the peculiar morbid sympathies of the urethra, and must regard the constitutional irritation, expressed by such symptoms as rigors, muscular pains, loss of appetite, etc., the result of reflex phemomena.

Patients who have never had instruments passed, and who have old or irritable strictures are peculiarly susceptible to constitutional disturbances. Those who have had ague, or who have resided in malarial localities, are more than ordinarily predisposed to urethral fever. It is an observation worthy of note, that when rigors occur, they do so generally after the first act of micturition following an operation. For this reason the bladder should be emptied through a catheter, immediately after the operation. The patient should also avoid passing water as long as he can, without discomfort.

Quinine, adminstered in five grain doses, three or four times a day, for a few days preceding the operation, will often diminish, if not prevent, the occurrence of rigors, a symptom so exhausting to the patient. Opium is a desirable adjuvant, and may be combined with the quinine. Occasionally, however, this drug is inadmissable, especially during the existence of renal disease. I have recently employed Chloral Hydrat with satisfaction in allaying the irritation consequent upon operations about the urethra.

Instruments should not be introduced too soon after the operation, pain and considerable irritation is produced without a corresponding amount of benefit being derived. In most instances it is unnecessary to pass an instrument until all constitutional symptoms have disappeared. In three of my recent operations for internal urethrotomy, no instruments were passed until three weeks after the operation. In one instance, the patient insisted that the introduction of an instrument was unnecessary, and declined to have one passed, in dread of pain, until nearly six weeks had elapsed, when a No. 12 (English) steel sound readily entered the bladder.

That a stricture once formed is never permanently cured, no matter what treatment has been pursued, and that a relapse is inevitable upon the cessation of treatment, is a fact which our patients must be made to realize. An organic stricture has been likened to a cicatrix after a burn ; it may be dilated to its fullest extent, but upon the cessation of treatment will recontract to its original condition. Patients must be instructed to pass an instrument for themselves at stated intervals, to insure a non-recurrence of their trouble.