

in searching for the opening into the urethra with a probe is in trying too high up, too near the sub-pubic ligament.

Having now opened a way into the bladder, all fibrous bands in the roof of the urethra¹ must be cut with the knife, and any fibrous material detected in the floor of the canal, at either extremity of the incision, should be freely divided. Finally, a blunt steel sound, as large as the urethra will admit, should be passed through the meatus into the bladder, the meatus being cut if necessary. This sound should be introduced several times, to make certain that it glides easily and without obstruction. If the stricture is an old one, it is always well to search the bladder for stone after the operation, and to remove any that may be found. Venous hæmorrhage may be abundant, but it is easily restrained by plugging the wound with lint or tow, and tying the legs together after the operation. The scrotum should be bandaged up out of the way, to prevent the possible infiltration of its loose tissue by blood or urine. The thighs should be elevated, and a cradle used to keep off the weight of the bed-clothes.

This operation may be greatly simplified by puncturing the dilated urethra in the median line, if it should be found to be distended with urine behind the stricture, as is sometimes the case. Through such an opening, an instrument may be passed to the posterior face of the obstruction, and thus serve to guide the incisions from the grooved staff at the front face of the stricture through the callous mass. A perineal fistula may be utilized for the same purpose.

After external perineal urethrotomy no instrument should be tied into the bladder. Hitherto it has been common to tie in a catheter and leave it during the greater part of the cure, but experience has proved that this practice is dangerous, as being liable to give rise to ulceration at the various points where it makes pressure, both in the urethra and bladder, while it undoubtedly retards the healing of the perineal opening (*see note, p. 127*). Moreover, it is generally a serious additional cause of uneasiness to the patient, and is liable to leave the urethra indurated throughout its whole length, from the inflammation resulting due to its prolonged pressure. Furthermore, the urine, after a time, invariably passes through the urethra alongside of the catheter, thus defeating the object of its introduction, and finally, cystitis at the neck of the bladder is kept up and often permanently established by the pressure of the foreign body. It is very desirable that the first tendency of the perineal wound to heal should not be interrupted; the constant presence of a foreign body at the bottom of the wound inevitably modifies and delays the process of repair. The surgeon must satisfy himself, before the patient recovers from his anæsthesia, that he can introduce a full-sized sound easily into the bladder.

¹ A neglect of this precaution sometimes renders the subsequent introduction of instruments very difficult.

The urine will pass at first through the perineal opening.

The after-treatment consists in the passage of a full-sized steel conical instrument into the bladder, commencing on the fourth day and repeating every three or four days until the wound has healed, thus forcing it, as it were, to heal with a large splice. After the wound has united, to prevent recontraction, the patient must pass dilating instruments at proper intervals, as after any other treatment designed to effect a radical cure of organic stricture. Infiltration and abscess may occur after the operation, and it is not very uncommon for fever to run high; but the results are usually excellent, unless the patient have organic kidney or other disease. Diluent, mucilaginous, alkaline cooling drinks, with quinine, tonics, supporting diet, and rest, complete the treatment.

EXTERNAL PERINEAL URETHROTOMY, WITH A GUIDE.¹

This is an operation much simpler than the one just described. When external section of a stricture is contemplated, no effort should be spared and no amount of time grudged which is given to attempts at introducing a whalebone bougie. Even after the patient has been

¹ Between the years 1847 and 1862, at first at the Bellevue Hospital, and afterward also at the New York Hospital, I devoted much time and labor to the study of old and neglected cases of stricture; numbers of which, some complicated with abscesses and fistulae, others traumatic in character, were found among the patients in the almshouse, then connected with the Bellevue Hospital, and the sailors to whom the New York Hospital at that time afforded aid. At this period surgical operations for the relief of these aggravated and complicated cases of stricture were rarely resorted to except where life was threatened by retention, and catheterism impossible, when the operation known as "the perineal section" was undertaken—generally with the double object of relieving the retention and, at the same time, dividing the stricture longitudinally with the knife from the perinæum so as to afford this chance of permanent cure. But this operation was always undertaken with reluctance, being justly regarded as uncertain in its success, as to the possibility of reaching the bladder, as well as in its ultimate result. Being reserved for desperate cases of retention—often complicated with extravasation, in broken-down subjects, it was not unfrequently followed by death; and when this immediate result was happily escaped, the remoter results of the operation in a curative way were far from satisfactory. It was the uniform practice, after the operation was completed, to introduce a catheter of medium size (No. 9 or 10) through the urethra into the bladder, and to tie it in, replacing it every four or five days, or when it should become incrustated by calcareous salts, by a fresh instrument. The object of this practice avowedly was to afford a channel through which the urine might escape, other than the perineal wound, and to allow the perineal wound as it granulated to heal around the catheter, and thus form a new urethra. I soon found that neither of these results was in fact usually attained; the urine always escaped more or less freely beside the catheter and through the perineal wound; and the perineal wound rarely healed entirely while the catheter was worn—a fistula almost always persisting. I also satisfied myself, by observation, that the prolonged contact of the catheter was usually followed by inflammatory thickening of the urethral walls throughout the whole length of the canal; that in some instances it gave rise to excessive irritation, and in most cases to chronic inflammation of the bladder; and, in exceptional cases, that ulceration was liable to occur, both of the urethra and bladder at certain points, from prolonged pressure of the instrument—from which I have known more than one fatal result. I subsequently searched out and tabulated all the recorded cases of perineal section in the books of the New York Hospital from its foundation, and found that a majority of the patients left the institution with unclosed perineal fistulae after wearing a catheter from one to six months, instances of their returning to the hospital within the year, to seek relief from relapsing urinary obstruction, being not unfrequent. Influenced by this experience, I took the responsibility of deviating from

anæsthetized, the attempts should be renewed, for ether always relaxes urethral spasm, and, if, finally, a whalebone guide enters the bladder, the surgeon may congratulate himself and the patient's friends—for what would have been one of the most difficult operations of surgery (section without a guide) becomes at once one of the easiest.

A whalebone once in the bladder, the catheter-staff, or a tunneled steel staff, is passed over it up to the stricture. An incision through the perinæum in the median line readily exposes the end of the staff, and beyond it the black guide is seen disappearing among the tissues. Avery's threads make it easy to keep the guide in view, and a little

the usual practice, and left no catheter in the bladder after operating by the perineal section. The success which followed was highly satisfactory. The contact of the urine, which now escaped entirely through the perineal wound, was not found to retard the process of repair by its contact with the granulating surfaces. The introduction of a full-sized steel sound through the urethra into the bladder every day, or every other day, was found sufficient to antagonize any tendency to contraction on the part of the recently-divided stricture or strictures, and usually at the end of the sixth week I found the perineal wound closed. After teaching the patient to introduce a steel sound for himself, at proper intervals, I was then able to discharge him with little if any chronic cystitis, and, if true to his own interests, cured of his strictures as far as the disease in its advanced stages is susceptible of cure.

Sir Benjamin Brodie's *dictum*, that a perineal fistula will usually close spontaneously if the normal calibre of the urethra be preserved, was fully vindicated by the results thus obtained.

I had already given much attention to perfecting the shape and finish of steel sounds, and their adaptation to the normal curve of the urethra (*see note 3 p. 30*), and, by constant and laborious efforts with the instrument-makers, had finally succeeded in getting them to make the short-curved instruments now in use in this city. While thus engaged, the Jacksonian Prize Essay, on stricture of the urethra, of Mr. Henry Thompson, first reached New York, and his more formal and complete exposition of this subject confirming my efforts, I gladly accepted it as authority. The short-curved steel instruments, at first made blunt, I had subsequently finished with slightly-conical extremities. The old instruments which they replaced were made of heavy wire, bent into long, ridiculous, and constantly-varying curves, so awkward that they were rarely employed—bougies being generally preferred. These improved steel sounds I found of great service for introduction after perineal sections. Their adaptation to the natural curve of the urethra, and their conicity, made it easy to get sounds of the largest size into the bladder. To facilitate this, it was my habit to search out and remove, at the time of the operation, all strictured points in the urethra anterior to its perineal portions, dividing those at and near the meatus freely with the bistouri or meatotome, and those lying deeper by Civiale's urethrotome, so as to be able to pass the largest possible steel sound through the urethra into the bladder with entire ease, while the patient was still under the influence of the anæsthetic. With this precaution I rarely experienced difficulty in the subsequent introduction of the largest steel sound, without recourse to anæsthesia; and the patient, at the earliest possible moment, was made to introduce the instrument for himself, and taught that his future safety depended upon his honesty to himself in continuing this practice.

Syme, of Edinburgh, who, twenty years ago, was regarded as a very high authority, had declared himself emphatically in favor of dividing old and resilient strictures by the knife, from the perinæum, as a mode of cure preferable to dilatation, even where bougies could be readily introduced. He disputed with Reybard, of Paris, the claim of originating this mode of practice, the only apparent difference between them being that Reybard proposed to operate upon the stricture from within the urethra, whereas Syme advocated incision from without. The operation for the cure of stricture, which bears his name, is simply a modification of the old "perineal section," the stricture being divided from without upon a fine grooved director of steel, which had been previously insinuated through it to serve as a guide to the knife.

I found Syme's delicate grooved director, with its defective flaring curve, a dangerous instrument in hands less skilled than his, and, when filiform bougies were first obtained from Paris, I succeeded, by their aid, in getting through a good many old strictures which had hitherto been to me impassable, and such patients I induced to submit to perineal

careful following up of this conductor soon lets the surgeon into the dilated urethra behind the stricture; the catheter-staff passes on into the bladder, urine flows through it, and the operation is satisfactorily accomplished. The only precaution worth mentioning is the necessary exercise of care not to cut off the whalebone guide in front of the staff by a careless stroke of the knife, as this might at once reduce the surgeon to the necessity of operating without a guide. After-treatment is the same as after the operation without a guide.

The result of external perineal urethrotomy is usually excellent; but death may occur due to shock, pyæmia, septicæmia, erysipelas, hospital-gangrene, infiltration, urethral fever with or without suppuration, etc.

section, upon the *filiform bougie as a guide*. I found the operation sufficiently easy and certain in its accomplishment, and the result, with the aid of the improved steel sounds, prompt and satisfactory. Rejecting Syme's instrument, but retaining the leading idea of his operation for stricture, I employed a full-sized blunt staff, with a groove on its convexity, running off at the middle of its blunt extremity, and large enough to lodge a filiform bougie (Fig. 48, p. 124). This I used instead of Syme's instrument, of which, indeed, it was a modification—his delicate grooved director, of steel, being replaced by a filiform bougie (Fig. 49, p. 124), the "shoulder" of his instrument being represented by the blunt end of my staff, which was placed as nearly as possible in contact with the stricture to be divided.

I was in the habit of teaching students the advantages, in the way of prompt and permanent cure, of this method of operating in bad cases of stricture, especially in hospital cases where patients could not always be induced to await the more slowly-obtained results of treatment by dilatation. To distinguish cases in which a bougie could be introduced as a guide from those of more serious character, which were impassable, I was in the habit of designating the operation in the former case as "perineal urethrotomy with a guide;" and I did all in my power to popularize the operation, believing it to offer better chances of cure than dilatation to a large class of cases.

Finding it not always easy to pass my grooved staff down to the perineal stricture, and, at the same time, to keep the filiform bougie (which had been already introduced through the stricture) from slipping out of its groove, I bridged over the groove of the staff for its last two inches, and, threading the tubular portion over the filiform bougie, passed it in this manner down to the stricture. The extreme flexibility and adhesive surface of the filiform bougie of that day interfering with the full success of this device, I diminished the extent of the bridged or tunneled portion of the staff, at first to an inch, and afterward to less than the third of an inch, for the purpose of diminishing friction. In dealing with cases requiring perineal section, I found a certain proportion of them were rendered so by the presence of false passages, which prevented the introduction of instruments for dilatation. On one occasion, after getting a filiform bougie into the bladder in one of these cases, the ease with which the "tunneled" staff could be glided over it suggested to me the advantage of this mode of dilating strictures where false passages interfered with the use of ordinary bougies, as well as of getting into the bladder, in cases of difficult catheterism.¹ I discussed this point with Dr. Gouley, who at that time was my assistant, and, at a later date (1865), having brought with me from Europe some improved filiform bougies finished with whalebone, I suggested to Dr. Gouley (who had frequently had instruments made for me by the cutlers) to have the beak of Thompson's dilator drilled or perforated, so that it could be threaded over one of these smoother and more rigid filiform bougies; so as, by this device, to get command of a stricture complicated with false passages. This he did (for me), and subsequently, following out the idea on his own account, he had, by the assistance of a mechanic, the principle brought to the perfection in which it is now found in the shops, adapted to all styles of urethral instruments—these so-called "tunneled" instruments being employed over filiform bougies.

I have introduced these facts of personal history because my agency in these matters has been ignored.—VAN BUREN.

¹The idea of using a guide in difficult catheterism was already old in surgery. Civiale (*Nouvelles Considérations sur les Rétentions d'Urine*, 1823, p. 41) speaks of it as a valuable resource, and says that he found it in a work by Nauche (*Nouvelles Recherches sur les Rétentions d'Urine*, third edition, 1806). The sliding tubes of Wakley acted on this principle; and the catheter open at both ends, passed into the bladder on a conductor over half a yard long, and having a whalebone in its centre, described by Phillips (*Traité des Maladies des Voies urinaires*, Paris, 1860), affords another example.

Certain other operations on stricture must be mentioned to be condemned. Cutting out strictures is absurd, for the circular wound leaves traumatic stricture behind. Dupuytren's vital dilatation, which consists in tying in a large instrument pressed against the front of the stricture in the hope that it may pass after many hours, is unsurgical and has been superseded by better methods. Wakley's sliding tubes are clumsy, and Arnold's fluid pressure less good than any other pressure. Time has judged the internal use of caustics and condemned them, while the same fate awaits electrolysis, lately revived. It has been weighed in the balance, and found wanting.¹

PUNCTURE OF THE BLADDER THROUGH THE RECTUM.

Only one instrument is necessary for this operation, a small, long (seven or eight inch), curved trocar with silver canula.

After the action of a full enema, the patient is placed in the lithotomy position (an anæsthetic is unnecessary), and the fore-finger of the left hand is introduced into the rectum. If the tip of the finger cannot distinctly make out the distended bladder beyond the prostate, and feel the impulse of pressure made over the hypogastrium, the operation should be abandoned. If the distended bladder is felt, an assistant presses down the hypogastrium, the trocar and canula are oiled, and gently carried into the rectum, guided by the finger of the left hand to the point of puncture. The puncture is made by a quick stroke, and should be exactly in the median line. The trocar is now withdrawn, and a portion or all of the urine drawn off, after which a cork is fitted and the tube tied in place with a **T**-bandage.

The contraindications of the operation are a large prostate, a small bladder, no fluctuation—and cases where there is no prospect of a speedy reëstablishment of the natural passage. The peritonæum is pulled out of the way by the distended bladder, and is in no danger of being wounded in ordinary cases. If the puncture is not in the median line, and a seminal vesicle be wounded, epididymitis may follow. A good deal of care is necessary to prevent the canula from slipping out. The operation is not a dangerous one. Out of forty cases reported by Cock,² there were seven deaths, but in none of these could the fatal issue be attributed to the operation. If an aspirator is at hand, its use should be preferred to rectal puncture.

PUNCTURE OF THE BLADDER ABOVE THE PUBIS.

This operation may be resorted to where the prospect of reëstablishment of the natural passage within twenty-four or forty-eight hours is

¹ "Practical Electrotherapeutics, Ten Cases of Organic Stricture treated by Electrolysis," Keyes, *New York Medical Journal*, December, 1871, p. 569.

² "Medico-Chir. Trans.," vol. xxxv., 1852, p. 153.

not promising. No special instrument is required; a simple gum-elastic catheter will do, but a long (six inch), slightly-curved double silver tube (Fig. 51), modeled exactly like a modern tracheotomy-tube, into which a suitable trocar can be fitted, is most convenient. The inner tube should project beyond the outer, and be furnished with eyes near its point,

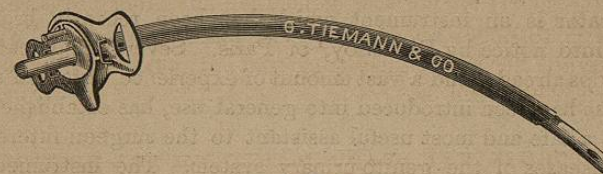


FIG. 51.

which latter should be rounded, the size of the whole not being more than No. 10. The inner tube should be withdrawn and cleaned every forty-eight hours, the bladder washed out, and the external tube kept constantly in place.

The operation is not a difficult one. The mons veneris is shaved, and an incision made down to and through the linea alba. Then, with the handle of a scalpel, the fat and connective tissue are separated until the fluctuating bladder can be felt. An assistant now makes gentle pressure upon the abdominal walls, while the surgeon, with his finger on the bladder close above the symphysis pubis, forces the tube above described, armed with a well-fitting trocar, quickly into its cavity. The tube is snugly tied in with tape, and the wound stitched around it. A piece of yellow English elastic catheter may be used instead of the tube, but it is kept in place with more difficulty. On account of the possibility of infiltration, the outer tube should not be removed until the walls of the new route have become consolidated throughout, which is accomplished in three or four days.

CASE XVII.—A patient was brought to the New York Hospital upon whom this operation had been performed some weeks before, but who had carelessly allowed his instrument to become displaced. Retention recurred, and the urine, finding an outlet through a breach in the walls of the new route, followed the extra-peritoneal layer of connective tissue through the external abdominal ring, and into the walls of an old hernial protrusion. This caused the latter to present such an equivocal appearance as to call for an exploratory operation in view of the possibility of strangulated or inflamed hernia. Through the incision, made for this purpose, the extravasated urine escaped so freely as to efface the swelling, and render the opening of the hernial sac unnecessary.

In case of any necessity to change the instrument before consolidation of the tissues has taken place around it, it is necessary first to pass a probe-pointed stylet through the tube, to the floor of the bladder; over this the tube is withdrawn, and the one destined to replace it is passed carefully upon the stylet to its place. With care there is very little danger of wounding the peritonæum in supra-pubic puncture, as its

