

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LX, No. 4

CHICAGO, ILLINOIS

JANUARY 25, 1913

A NEW PROCEDURE (PUNCH OPERATION) FOR SMALL PROSTATIC BARS AND CONTRACTURE OF THE PROS- TATIC ORIFICE*

HUGH HAMPTON YOUNG, M.D.
BALTIMORE

In 1836, Mercier first vigorously called attention to the occasional occurrence of obstructions at the prostatic orifice in cases other than prostatic hypertrophy, and gave them the name of *valvules du col de la vessie*. He described quite accurately the elevation of the median portion of the prostate in the form of a bar, which he said in some cases was due to muscular hypertrophy, and in others to a glandular enlargement in this region.

Mercier devised an instrument somewhat like a lithotrite by means of which he operated in a number of cases with fair success, but his operation was never adopted and soon fell into disuse.

Later French writers, particularly those of the Guyon school, departing from Mercier's teachings, have attributed the condition to lack of bladder tonicity, and the term *prostatisme sans prostate* has been quite generally used to describe this condition, which they believed to be due to an atrophy or paralysis of the vesical musculature, rather than to the obstruction at the prostate.

In America, Keyes, Fuller and Chetwood have recognized the obstructive character of these cases which they have described as contracture at the neck of the bladder or stricture of the posterior urethra. For this condition Fuller devised a deep division of the median portion of the prostate and vesical sphincter, either through a suprapubic or a perineal incision, and Chetwood and Keyes have recommended highly the use of a modified Bottini operation done through the perineum to divide the obstruction at the orifice by means of an electrocautery blade.

By the surgical world, as a whole, however, this condition has been sadly neglected.

In my own work, this condition has been attacked in various ways: at first, through the urethra by means of a Bottini operation; subsequently by means of a perineal prostatectomy, after removal of the lateral lobes of the prostate, and later, through the suprapubic route. The results obtained by means of the Bottini operation were not entirely satisfactory. There were a few cases in which incontinence of urine persisted for quite a pro-

tracted period and the mortality was not negligible. The perineal route was also unsatisfactory because the lateral lobes were sacrificed, frequently when not at all enlarged, and, the patients often being young men, one naturally disliked to do more than was necessary.

January 27, 1909, I saw a patient in whom rectal examination showed a prostate no larger than normal, yet a catheter withdrew 500 c.c. residual urine, and the cystoscope showed a small but definite transverse median bar. There was no intravesical enlargement of the lateral lobes. The patient objected to a prostatectomy and I finally consented to remove the median portion of the prostate through a suprapubic incision. The prostatic orifice was found to be surrounded by an inelastic ring, difficult to dilate, and in the median portion there was a small bar only slightly elevated above the trigon. With forceps and scissors this was excised. The vesical orifice dilated widely, and apparently all obstruction had been removed. The patient convalesced slowly; he remained in the hospital eight weeks before the suprapubic fistula healed, and a month later showed evidences of recurrence of the obstruction. In the course of three months the suprapubic wound had reopened, obstruction of the prostatic orifice being almost complete, and in a short time the patient died of uremia.

A study of this case brought forcibly to my attention the fact that it should be possible to treat such cases by means of excision of the median portion of the prostate through the urethra, and I therefore set about to construct an instrument by means of which this could be done. Figure 1 shows the final outcome of my experimentation. It consists of an outer tube about 18 cm. long with a coude curve at its inner end, and a urethroscopic disk at the other, containing a post on which an external urethroscopic light can be attached. Near the inner end on the under surface a large deep fenestra is provided (Fig. 1). Within the instrument is a second tube which has a sharp-cutting inner end made of steel, which when pushed home can excise anything appearing inside of the outer tube. The object of this instrument is, when pushed through the urethra into the bladder, to engage the median bar in the fenestra and then to excise it by means of the inner cutting tube while observing the operation through the inner tube illumined with the external urethroscopic lamp.

The first operation was performed with this instrument on Feb. 1, 1909, in my office, under local cocaine anesthesia. A piece of tissue about 7 mm. in diameter and 1.3 cm. long was excised almost without pain, with little subsequent hemorrhage, and splendid functional result in a case of small median-bar obstruction of long duration. Since then I have operated on numerous cases, and am now able to report 100 cases of obstruction to urination of the median-bar type, and others with peculiar small enlargements of the lateral or

* Because of lack of space this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

* Read in the Symposium on Obstacles to Evacuation of the Bladder in the Section on Genito-Urinary Diseases of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.

anterior portions of the prostate, which have been operated on with this instrument.

Before detailing these cases it may be well to speak more definitely in regard to the technic of the operation as now performed.

The instrument is usually inserted with the cutting obturator pushed home until the end of the instrument is felt to enter the vesical orifice. The inner tube is then withdrawn about 2 cm., the electric light attached externally and an inspection made. As a rule, the verumontanum will be seen bulging into the fenestra. The instrument is then pushed slowly inward, the verumontanum is seen to disappear, and the median portion of the prostate gradually enters and finally fills the fenestra completely. If the instrument is pushed a little farther inward, urine escapes, showing that the instrument is in the bladder. When it is drawn outward the flow of urine ceases, showing that the inner edge of the fenestra is caught against the median bar, a good view of which is easily obtained after aspirating the fluid from the interior and drying with swabs. The inner cutting tube is then rapidly pushed home, and excises in one piece the tissues caught in the fenestra (Fig. 2). With alligator or rongeur forceps, inserted into the instrument, this piece of tissue is removed and is usually 1.2 to 1.5 cm. long, one-third of its circumfer-

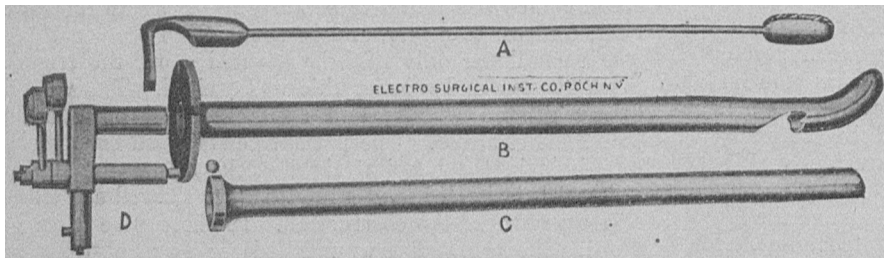


Fig. 1.—The urethroscopic median bar excisor, showing the outer tube with fenestra B and external light-carrier D, obturator A and inner cutting-tube C.

ence being covered with mucous membrane, partly vesical and partly urethral. Experience has shown that one cut is usually not sufficient, and that it is wise next to turn the instrument first to the right and then to the left in order to remove more of the median bar on each side. The lateral cuts never excise as much as the posterior median, generally about one-third as much. The cutting inner tube is then removed; the bladder is washed out through the outer tube, and when apparently clear of clots the obturator is introduced and the instrument withdrawn. Immediately afterward a two-way urethral rubber or gum catheter (Fig. 3) is inserted into the bladder (by means of a stilet if a gum catheter is used), and continuous irrigation at once begun. If clots are present they are evacuated by means of a large hand-syringe, but generally this is not necessary. After the double catheter has been fastened in place by means of adhesive strips around the penis, the patient is returned to the ward, where continuous irrigation is at once resumed. A large porcelain tank, containing about 10 liters of sterile water at a temperature of 115 F., which is allowed to flow through a small tube into the bladder and out through the large tube with sufficient rapidity to remove the blood and prevent clotting, is employed. This irrigation is kept up for twenty-four or forty-eight hours. Sometimes the tubes become plugged, and the large hand-syringe has to be used to evacuate the clots. As a rule, the two-way catheter can be removed in from twenty-four to forty-eight hours. Only rarely is further catheterization necessary. Many of the patients have left

the hospital in two or three days, several have not even gone to the hospital. As a rule, the patient is able to void urine with much greater freedom at once, and the convalescence is generally rapid and satisfactory, no treatment other than hexamethylenamin (urotropin) and water in abundance being required. The use of sounds and dilators has been found unnecessary.

STUDY OF CASES

This punch operation has now been performed in over 100 cases which may be divided as follows:

Simple bars or contracture of the prostatic orifice, fifty-one cases; median bar with diverticula, four cases; bar with vesical calculus, eleven cases; bar or small lobe obstruction after prostatectomy, twenty cases; bar or small lobe with trigonal obstruction, three cases; small bar associated with spinal disease, four cases, and obstruction associated with cancer of the bladder and prostate, etc., nine cases.

CLASS A.—SIMPLE BARS OR CONTRACTURE OF THE VESICAL ORIFICE

There are fifty-one cases in this group. The diagnosis was invariably made by the cystoscope which showed a definite elevation of the median portion of the prostate in the shape of a small bar, either flat or rounded, above the anterior portion of the trigon. With the finger in the rectum and the cystoscope in the urethra this portion of the prostate was felt to be increased in thickness and in most cases considerably harder than normal. Not infrequently the prostate formed a hard ring around the cystoscope, the lateral lobes of the prostate being of a chronic inflammatory character. A contracture of the orifice was not usually to be made out, and, in fact, in

almost all cases no difficulty was experienced in passing an ordinary No. 21 cystoscope with the usual coude curve. In almost all instances the bladder showed the effect of obstruction and increased muscular effort in emptying the bladder, viz., more or less pronounced trabeculation, occasionally cellulæ or even diverticula, and not infrequently a pouch behind a hypertrophied trigon. Complications, such as cystitis, vesical calculus, infection of the kidneys, etc., were occasionally present, but are not included in this group of cases. The ages of the patients in Class A were as follows:

Age	Cases	Age	Cases
Under 30.....	2	From 50-59.....	10
From 30-39.....	4	“ 60-69.....	14
“ 40-49.....	11	“ 70-79.....	5

A further analysis shows that fifteen patients, or 30 per cent., were under 50; the youngest patient in this class was 25. Examination of the records shows that in twenty-two cases the prostate was said to be slightly enlarged, but all but one of these patients were over 50; the single exception was a man aged 40, in whom the prostate was a little larger than normal, but not definitely hypertrophied; nor were any of the other twenty-one cases considered to be definite hypertrophies. The residual urine was as follows:

C.c.	Cases	C.c.	Cases
None.....	8	From 100-149.....	7
Under 30.....	14	“ 100-175.....	1
From 30-40.....	11	“ 100-460.....	1
“ 50-79.....	3	Amount not stated....	2
“ 80-99.....	4		

In the majority of cases gonorrhoea did not play an important rôle, and even in the cases in which it had been present there was often no evidence that it had been responsible for the later symptoms of obstruction, although the irritability which was present in many cases had not infrequently followed soon after gonorrhoeal infection. It cannot be denied, however, that not a few cases occurred in which a gonorrhoeal prostatitis had led to a gradual obstruction to the outflow of urine.

Among the seventeen patients who were under 50, the residual urine was as follows:

None	3 cases
Under 30 c.c.....	6 cases
Between 30 and 49 c.c.....	2 cases
Between 50 and 79 c.c.....	1 case
Between 80 and 99 c.c.....	2 cases
Between 100 and 149 c.c.....	3 cases

Some of the most striking instances of large amounts of residual urine in young men are, however, not included in this class, because they were associated with

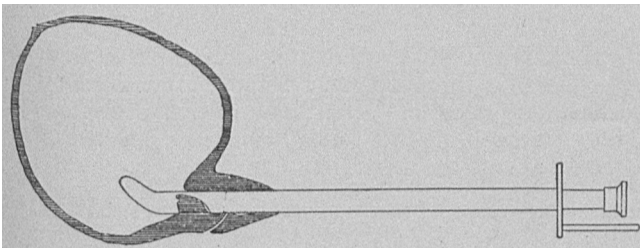


Fig. 2.—Urethroscopic median bar excisor in place, having enucleated the median bar.

complicating conditions, such as vesical diverticula, calculus, or had been operated on by prostatectomy. Several of these patients had from 400 to 500 c.c. of residual urine and led catheter lives, although quite young men. The bladder capacity was as follows:

Under 50 c.c.....	1 case
Between 200 and 249 c.c.....	5 cases
Between 250 and 299 c.c.....	8 cases
Between 300 and 399 c.c.....	12 cases
Between 400 and 499 c.c.....	7 cases
Over 500 c.c.....	14 cases
Not stated	4 cases

An analysis of the above shows that in fourteen cases, or 28 per cent., the bladder capacity was under 300 c.c., and that therefore the bladder was markedly contracted; in only fourteen cases, or 28 per cent., was the bladder as large as normal (500 c.c. capacity).

In those patients in whom there was little or no residual urine, there was generally contracture of the bladder, so that often the frequency of urination in these cases was greater than in some of those with much more residual urine.

The disease may therefore be said to differ from prostatic hypertrophy in that the obstruction to urination is less complete and usually associated with hypertrophy and subsequent contracture of the bladder, and in that for a time there is only a small amount of residual urine; in some instances, however, the amount of residual urine becomes very large or even complete retention may supervene. Pain, local and referred, burning and irritability, often very distressing, are among the most prominent symptoms in about 60 per cent. of the cases.

Pathology.—The specimens obtained by means of the urethroscopic median bar excisor or punch give a splendid opportunity to study the lesion in the median portion of the prostate in these cases, and this, I believe, is the first time that an extensive and comprehensive material of this sort has ever been assembled for study.

In this article, which is necessarily much abbreviated, it is impossible to go into the varied and complex pathology very thoroughly; suffice it to say, that several very distinct types of lesions were discovered.

One of the most common was that of a dense layer of new-formed connective tissue immediately beneath the mucous membrane, evidently forming a firm fibrous ring associated with elevation of the median portion of the prostate. Ten cases of this character were discovered, most of them in men past middle age, the youngest being 44. In these cases the sections showed no prostatitis and no connective-tissue infiltration in the muscle or gland tissue, the lesion consisting essentially of a submucous fibrosis.

The second type of lesions, which occurred with about the same frequency as the fibroid type just described, was one in which, in addition to a submucous connective-tissue layer, there was found a chronic inflammatory condition of the gland tissue, often with marked periacinous fibrous infiltration occasionally extending into the muscle.

The third type of lesion was one in which there was a definite hypertrophy of the submucous gland tissue, involving either the suburethral or subtrigonal groups of glands, or both. One patient, aged 38, showed a very marked hypertrophy of these glands, the lesion being absolutely typical of prostatic hypertrophy, large dilated acini with extensive intra-acinous outgrowths, budding, etc., being seen. Several other cases were found in men under 50. In most cases there was seen an inflammatory infiltration in and around the acini, sometimes well organized, so as to form a well-marked fibrosis. In one case, which was entirely unlike any of the others, there was no inflammatory infiltration, no fibrosis, no prostatitis and no hypertrophy, but the lobule removed showed simply a superabundance or overgrowth of the subcervical group of glands which had been sufficient to cause obstruction and irritation.

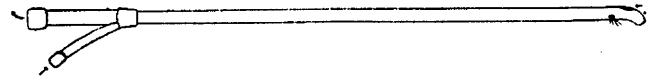


Fig. 3.—Two-way coude gum catheter for continuous irrigation; size 29 French.

A summary of my results shows that inflammatory infiltration, leading to fibrous tissue formation, either in the submucosa or in the glandular layer beneath it, and occasionally in the musculosa, forms a most characteristic lesion; that Mercier was right in saying that the obstruction in many of these cases was glandular in character, but wrong in his assertion that in many of the cases the lesion was due to a muscular hypertrophy, which I have found to be extremely rare.

Results.—The immediate results in all cases were satisfactory. There were no fatalities, no serious complications, and in all cases the patient left the hospital improved. In a few instances trouble was experienced on account of plugging of the catheter with a blood-clot, and it was necessary to use vigorous suction by means of a strong syringe or in some cases to remove the clots with an evacuating catheter. In no case, however, was the hemorrhage alarming or impossible to handle through the urethral catheter.

The ultimate results have been excellent. I have sent out sets of questions every six months, and have received replies within the past six months from all but six patients. In reply to the question as to whether they are entirely cured of all obstruction to urination, twenty-three have replied that they are entirely cured and eleven

that they are almost cured. In several of the latter cases there is only a slight irritation, pain or discomfort which prevents the patient from saying that he is entirely cured. Seven patients report that they are much improved, that is, between 50 and 75 per cent. of the obstruction has been removed. One patient says that he is slightly improved, about 25 per cent. of the obstruction having been removed, and three patients that they are unimproved. In these three cases severe pain was the principal symptom; there was no residual urine present and no apparent obstruction to urination, although a definite bar was seen with the cystoscope. The operation had been done with the hope of curing the pain, and while it has been quite successful in several other similar cases, it has not been successful in these three. All three of these patients have been vigorously treated by myself and others with various means, local and systemic, without relief; they belong to that interesting but distressing class of patients who com-

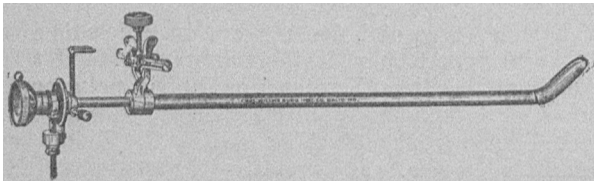


Fig. 4.—Cystoscopic rongeur, closed, in position for introduction.

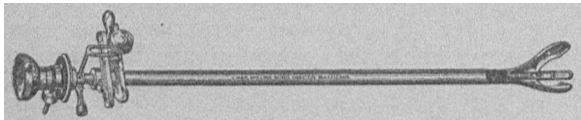


Fig. 5.—Rongeur, open, showing cystoscope pushed out for inspection.

plain of severe irritation, burning or pain in the deep urethra, for which it is often impossible to do anything really curative.

Four patients operated on during the past six months are known to have done well and are not included in the list. Two patients alone have not been heard from.

Among the thirty patients who complained of local pain (in many of whom this formed the most distressing symptom), the answers received indicate that seven have been entirely cured of the pain and irritation, twelve have been almost cured, four are improved, three are unimproved and four have not been heard from.

The results, therefore, may be said to have been extremely satisfactory, both in cure of obstruction and in the relief of pain. Some of the results have indeed been brilliant, effecting cure in cases of very long standing.

CLASS B.—PROSTATIC BAR OR CONTRACTURE WITH DIVERTICULA

There are five cases in this group which are given at length in the Transactions of the Section. The results obtained were excellent.

In reviewing these and other cases of vesical diverticula which I have seen, I am struck with the fact that only occasionally is it necessary or advisable to operate for the diverticula themselves. The simple removal of the obstruction, either by prostatectomy or by the punch operation, is usually sufficient to relieve the patients completely. In some cases in which the diverticulum is pressing on a ureter or has drawn it into its cavity, it is advisable to excise the diverticulum and to bring the ureter into the bladder by plastic procedure, if necessary.

CLASS C.—PROSTATIC BAR OR CONTRACTURE WITH VESICAL CALCULUS

There are eleven cases in this group. One of these patients, aged 22, had had difficulty of urination for many years. Examination revealed a calculus which was easily crushed and the bar was excised with the punch. The patient has been entirely well for almost three years. Two patients, aged 43 and 44, had calculus associated with the bar and were similarly treated with excellent results.

The other eight patients were men over 50, the oldest being 81, in whom an oxalate stone $1\frac{1}{2}$ inches in diameter was crushed and the punch operation subsequently performed. The patient writes that he is now entirely well.

The results in all these cases have been peculiarly gratifying, the symptoms of frequency and difficulty of urination having been often very pronounced and associated with residual urine and vesical contracture. There has been no recurrence of calculus in any case which, I believe, is due to the fact that all obstruction has been removed by the punch operation. One of the most valuable fields for the punch is, I believe, after litholapaxy, for in these cases one often finds an inflammatory bar or contracture of the vesical orifice which has been either the cause or the effect of the calculus.

CLASS D.—PROSTATECTOMY CASES WITH INCOMPLETE RESULTS

There are twenty cases in this group. This has been a very interesting group, representing various operations by various operators. In many cases the obstruction was in the form of a transverse median bar; in other cases a rounded lobule, sometimes in the posterior portion, often in the lateral or anterior portions of the prostatic margin. All of the patients complained of obstruction to urination associated with either pronounced difficulty

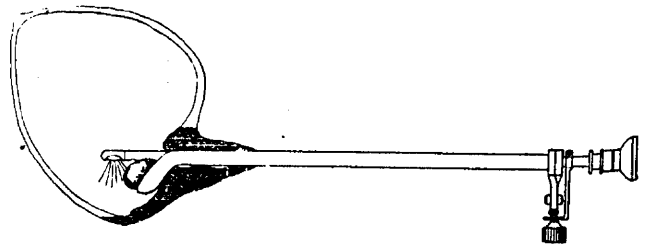


Fig. 6.—Showing removal of pedunculated median lobe with cystoscopic rongeur.

or frequency of urination, sometimes requiring the use of a catheter. In most cases the punch was used alone, several bites being taken to remove the obstruction completely. In a few cases the cystoscopic rongeur was also used to remove pedunculated or rounded lobules (Figs. 4, 5 and 6), the punch being used subsequently to remove the base of such lobules. These intra-urethral procedures have in nearly all cases been entirely successful in removing the obstruction to urination and in obtaining excellent functional results. These cases are described fully in the transactions.

CLASS E.—MEDIAN BAR WITH TRIGONAL ELEVATION AND OBSTRUCTION

There are three cases in this group which are given in full in the transactions.

From these results it may be deduced that not infrequently does the trigon play an important rôle in urinary obstruction which has hitherto been lost sight of.

CLASS F.—SPINAL CASES

Three cases of definite *tabes dorsalis* have been subjected to the punch operation on account of large amounts of residual urine associated with obstruction in the median portion of the prostate which was removed by means of the punch. There was absolutely no result in two cases; the patients continue to lead a catheter life. In the third case the result has been exceptionally good, and now two years after the operation the patient reports that he voids urine only once at night and four times during the day with perfect freedom, and that he has been cured of incontinence in the daytime.

A very interesting case is that of a man aged 65, suffering with extensive carcinoma of the prostate and seminal vesicles. The cystoscope showed a transverse median bar with 100 c.c. of residual urine and also a rounded anterior prostatic bar. The patient was following a catheter life. A punch operation was performed, excising both the anterior and posterior bars. A report thirteen months later says that the patient is entirely cured of obstruction; that he voids urine, 8 ounces at a time, four times during the day and twice at night. There has been no hematuria, and the result obtained in this case would seem to indicate that the punch operation might occasionally be used very effectively in cases of carcinoma of the prostate not associated with pronounced lateral enlargement in which the obstruction seemed to be entirely at the prostatic orifice.

Mention has already been made of the use of the cystoscopic rongeur in association with the punch, which has been done in nine cases. In these the rongeur has been very effectively employed to remove pedunculated lobules, the punch being used to remove their bases or bars in other portions. For the removal of very small sessile or rounded lobules, especially those located at or within the urethral orifice, the punch is often more effective than the rongeur, which is more applicable for intravesical objects, and is particularly valuable in the removal of foreign bodies, calculi, stitches, portions of vesical tumor for microscopic study, or even the radical cure of pedunculated intravesically projecting prostatic lobes of small size (up to 2 cm. in diameter) which can be drawn out through the urethra with ease.

CONCLUSIONS

Including some recent cases which have not been tabulated, the punch operation has now been used in over 100 cases without a death. A great majority of these operations have been performed under local urethral anesthesia, 4 per cent. novocain being employed; the operation usually causes very little more pain than the previous cystoscopy and generally consumes much less time. After evacuation of the blood through the punch instrument, a large two-way urethral catheter usually takes care of the hemorrhage very effectively if immediately connected with a continuous irrigation. Often, however, it is necessary to use a large syringe to dislodge or aspirate an obstructing clot, so that for the first twenty-four hours the convalescence is occasionally interrupted by painful periods due to plugging of the catheter. On this account the operation is only to be advised when all the proper apparatus and very careful attention from nurses and hospital assistants is at hand. The fact that one physician who had essayed to use this operation in two cases without the proper two-way catheters and evacuating apparatus, found it necessary to perform suprapubic cystotomy for drainage may serve as a note of warning, although my experience of 100 cases in which the urethral catheter was

entirely satisfactory shows that such complications may be considered entirely avoidable.

In conclusion, I may say that the results obtained, even in cases of complete retention of urine and catheter life, are entirely satisfactory for the cases in which I have employed it, viz., small bars; contractures or lobules at the prostatic orifice and not associated with lateral hypertrophy; that for such cases the operation, when properly done, is thoroughly radical, does not have to be repeated, does not require subsequent urethral dilatation and gives lasting cures.

As time goes on we may occasionally find cases in which the procedure will have to be repeated, but it is so simple that this should not be considered a great drawback. In those cases associated with marked irritability or pain, complete relief is often afforded, but sometimes the painful symptoms persist despite complete relief of the obstruction. For simple prostatic bars, contracture of the vesical orifice and those cases associated with vesical calculus or diverticula, especially in young or middle-aged men, the operation furnishes, in my opinion, the safest, surest and most radical curative procedure which has yet been offered.

330 North Charles Street.

CONTRACTURE OF THE NECK OF THE
BLADDER *

CHARLES H. CHETWOOD, M.D.

Professor of Genito-Urinary Surgery, New York Polyclinic Medical School and Hospital; Visiting Surgeon to Bellevue Hospital
NEW YORK

The subject of atony of the bladder, its causation and symptoms, has demanded more than an ordinary amount of discussion in recent years, and this fact alone would suggest the existence of some doubtful and unsettled question that has aroused special interest.

The kindred subject of contracture of the neck of the bladder is brought equally to mind because, on the one hand, many cases of atony are dependent on mechanical obstruction of the bladder outlet (under which category "contracture" properly belongs), while, on the other hand, in some cases of bladder retention which have been attributed to a mechanical cause, such cause has been disputed and the explanation thereof ascribed to more vague and indefinite conditions, difficult to explain but certainly not mechanical.

It is not within the scope of this communication to take issue here with those who have investigated and described at length the various etiologic factors in question, lest it might weaken the only stand I care to assume at present on this subject, which is that whatever other cause may exist for the condition of vesical retention outside of prostatic enlargement and lesions of the central nervous system, there certainly does exist one in the nature of circular, sphincteric and prostatic stenosis, causing incomplete and complete retention of urine. This appears in the young as well as in the old, may occur independent of prostatic enlargement or be combined with it, is sometimes a fibroid stenosis, being mostly inflammatory, may be confined entirely to the internal sphincter or encroach on the prostatic orifice and include a large portion of this section of the urethra, and is amenable to surgical relief by complete incision, preferably galvanocautic or by complete extirpation.

* Read in the Symposium on Obstacles to Evacuation of the Bladder in the Section on Genito-Urinary Diseases of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912.