Conservative, Yet Effectual Treatment of Hypertrophied Prostate by Electro-Incision, Done Through the Urethra; Presentation of Specimens of Hypertrophied Prostate; Demonstration of Bottini-Freudenberg Electro-Incisor.

By BRANSFORD LEWIS, M.D.,

St. Louis, Mo.,

Genito-Urinary Surgeon to the Baptist Hospital—Consultant in Genito-Urinary Surgery to St. Mary's Infirmary, to Missouri Pacific Hospital, City Hospital, Female Hospital, Etc.

ST. LOUIS, MO.:
Reprinted from MEDICAL REVIEW,
February 11, 1899.

Conservative, Yet Effectual Treatment of Hypertrophied Prostate by Electro-Incision, Done Through the Urethra; Presentation of Specimens of Hypertrophied Prostate; Demonstration of the Bottini-Freudenberg Electro-Incisor.[1]

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The treatment of hypertrophied prostate with obstruction has been divided into the palliative and the radical or operative plans. The former, during the many years that the profession has been working on the subject, has embraced pretty nearly everything under the sun that could be applied to the patient or his prostate, either externally or internally, that gave any promise whatever of exercising an alterative or reducing effect on the enlarged gland; while the operative plan, after having been sifted through numberless illusory, though often alluring procedures, of late years has been practically reduced to three modes that have been widely recognized by the profession; they are prostatectomy, castration, and vasectomy. These methods have now

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[1]Read by invitation at the twenty-fourth semi-annual meeting of the Southern Illinois Medical Association, held in Cairo, Illinois, November 17 and 18, 1898.

been on trial for a sufficient length of time to justify some definite conclusions as to their merits.

Prostatectomy, consisting in the removal of the prostatic tissue to re establish the urinary channel, whether it be done through the perineum or by suprapubic incision, or both combined, must be done with the patient under general anesthesia—chloroform or ether; and everyone who has had such cases under observation knows the marked danger of giving them either chloroform or ether. He knows, in the first place, that such patients are the subject of backward urine-pressure on account of the obstruction; which backward pressure has been in effect for months or years before medical assistance is sought; and which has, in the meantime, in a very large proportion of cases, already involved the kidney-pelves in chronic suppuration. So that, aside from any danger coming from prostatectomy itself, a serious danger threatens from the anesthesia which makes the operation possible.

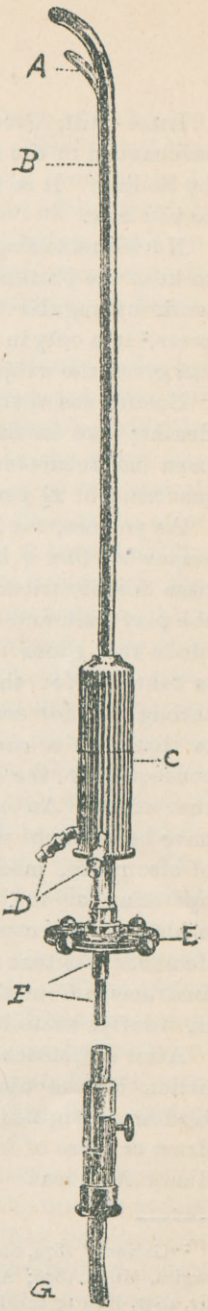
But when we remember that to this danger, in an aged individual, usually already debilitated from the various effects of the disease, in doing prostatectomy we open up the bladder, make entrances for infections, cause hemorrhage sometimes very severe, institute drainage that is never free from objectionable features, often accompanied by leakage, wetting of clothes, etc, even if it is fortunate enough to drain the bladder effectually. Considering these various conditions that are inseparable from this operation, it is no wonder that it has a mortality of from 15 to 20 per cent; and no wonder, also, that the medical world hailed with delight the proposal of another operation, a few years ago, that, it was at first thought, would answer the purpose of prostatectomy without entailing its dangers. Castration was that operation; and from the strong theoretical considerations backing it, as well as the numerous cases of apparent relief or cure reported, it gave promise of being a great acquisition in the surgery of the prostate. Later, when the simple operation of

vasectomy was proposed as a substitute for even the mild operation of castration, it was considered that almost the acme of surgical simplicity had been reached in this connection.

But a few years' collective investigation has taught the profession that very little can be expected from these two procedures; that though their mortality is only 7 or 8 per cent, their promise of cure is so small as to furnish very little temptation to the man to sacrifice his testicles or his sexual ability.

So that, until the advantages of the electro-incision operation were made known to the profession, the choice in the radical treatment of prostatic hypertrophy has lain between prostatectomy with its dangers, and castration or vasectomy (ligation of vasa deferentia, with removal of a portion of the tubes), with their small hope of relief and their attendant sexual mutilation. However small this last consideration may be theoretically or from the medical standpoint, it is of large import from the patient's standpoint.

So the choice has not been an inviting one. The operation I wish to speak of is not a new one; it has twenty-three years of success behind it. In 1875, Bottini, of Italy, first made use of what he called an *electro-cauterizer*. Introduced down the urethra and the current of electricity turned on, it burned the whole prostatic urethra. Later, this instrument was modified so that it burned just at one point—that part with which the platinum blade came in contact; and a cooling channel, through which ice-water ran, prevented the heating of the remainder of the instrument.



A. Iridio-platinum blad
B. Staff.
C. Handle.
D. Water-cooling tubes.
E. Wheel.
F. For battery-attachm't.
G. Electric cord.

Later still, Freudenberg, of Berlin, simplified the mechanism of the instrument and made it sterilizable by boiling. It is this latter instrument that I present to you now.

Notwithstanding the fact that Bottini did his best to keep the profession informed of the progress of his work by regular and numerous reports in the medical press,[2] it is only in the last few years that the profession has given the subject the attention it deserves.

Bottini has operated upon 80 cases, with only two deaths; and in those that obtained relief, there has been no recurrence. That is, to put it statistically, a mortality of 2½ per cent.

As you see, the Freudenberg Bottini incisor is shaped somewhat like a lithotrite, having a handle, staff and base for electrical attachment, with a wheel to control the play back and forth of the irido-platinum cautery-blade that slides in the groove of the staff. The latter is tunneled for the passage of ice water up and back through it, for cooling purposes. The effect desired is that of a *cauterizing incision*, not electrolysis; consequently the blade must be red hot to produce that effect. An ordinary battery will not suffice. I have been using the ordinary alternating street-current of electricity, modified by an Aloe's converter; or, if operating at the office, where the direct current is made, the only converter that has proved equal to the demands was that furnished by the Wilbrandt Surgical Instrument Company. The technique of the operation is, briefly, as follows:

After a cystoscopic examination to determine the location of the obstructing prostatic overgrowth, the bladder is emptied as completely as possible. A half-dram or more of four per cent cocaine solution is introduced by means of a deep urethral syringe into the

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[2] "Galvani," 1874, tome x; La galvano-caustica nella practica chirurgica, Milan, 1876; Arch. f. klin. Chirurgie, Vol. xxi, 1877, and Vol. liv, 1897, Heft 1; and La Clinica Chirurgica, July 31, 1896.

prostatic urethra and vesical neck. While awaiting the five minutes allowed for cocainization, a final test of the electro-incisor is made The blade is brought to a cherry red glow and the current is shut off by opening the switch *of the converter*. The connecting screw on the incisor should not be used for this purpose as it works too slowly for such a strong current as is necessary.

The water-cooling stream working perfectly under an assistant's charge, the incisor is introduced into the bladder. As it enters the bladder its beak is naturally turned upward. The obstruction is, in the great majority of such cases, located at the floor of the vesical neck—the so-called third lobe. This, then, is the principal point of attack. The instrument is turned within the bladder so that the blade points downward; the beak is thereby hooked over the prostatic bar or third lobe and is drawn forward, so as to tightly hug that part of the organ. While it is being held in this position with the right hand, the left forefinger is intro duced into the rectum and feels for the point of the incisor through the posterior wall of the bladder. This maneuver tells much with regard to the thickness of the obstructing part and the extent of incision needed, as well as of the proper adjustment of the incisor. The finger is then withdrawn, to prevent any disarrangement of that adjustment. The assistant turns on the current and the cautery-incision is slowly carried forward through the obstructing bar or nodule. Time given for the advance of the blade insures the thorough searing of the wound surfaces and wards against hemorrhage. Bleeding is practically *nil*—the most that I have seen being merely a slight tinging of the first fluid coming from the bladder after operation.

Since it often occurs that the obstructing outgrowth assumes the shape of a collar around the urethro-vesical opening, it is advised to make more than one incision; and the custom has been to make one incision posteriorly, one anteriorly, and one into the lateral lobe that

is most enlarged. I prefer to make them posteriorly and on both sides, omitting the anterior one, as I believe obstruction seldom arises from that direction.

Having completed the three incisions, the blade is returned into its niche and the current is turned off. This latter was overlooked by one operator, who began to take out the instrument with the blade red hot; the result was embarrassing, to say the least.

Now comes one of the most gratifying features of this operation: The patient gets up and walks to his bed, complaining but little, if any, of pain. No chill, no fever, no hemorrhage! No drainage tubes to clog, to be washed or readjusted. No prolonged confinement to bed and no sogging with dripping or seeping urine. He simply rests for twenty-four hours and then gets out as he likes. After one operation, done at my office, on a patient 75 years of age, he went home on a street car, and was up the whole of the following day; and all he complained of was a little soreness at the vesical neck and an unwonted urgency to urinate when the desire came on.

While there is no especial after-treatment required, I think it best to encourage internal antisepsis by giving urotropin or the salicylates.

Often, for the first few days or a week, the effects of the operation are the opposite of favorable: The swelling of the tissues following the cauterization decreases the size of the outlet, apparently, and the irritation increases the frequency of urination. Sometimes, even, catheterization must be resorted to for withdrawal of the urine. But following that period, just when patient and doctor are beginning to have misgivings about the success of the operation, the good effects begin to make themselves manifest. The stream begins to flow more easily, more freely, and is projected more ably. There is liable to be some burning during the passage of the stream—but the old fellow barely notices this in the reviving memories of bounding boyhood when a tall imagination likened his stream to that of a fire-engine

After a few days a test shows a distinct decrease in the amount of residual urine. Two to four ounces are already knocked off of this barometric signal of backward pressure. And later, corresponding to the increasing completeness of emptying the bladder, there is marked lessening in the frequency of urinations. One of my patients was thus reduced from 15 or 20 urinations in 24 hours, to 8 or 9. And another, whose residual urine had been a bladderful; *i. e.*, all of his urine was passed by catheter, now shows only from one to three drams after voluntary urination.

Of course, even with effectual opening up of the urinary outlet, it is not justifiable to expect immediate restoration of bladder expulsive-power; that organ has been too long subjected to the injnrious influences of backward pressure to admit of that. So that it is on this account, I believe, that there is a considerable variation, from time to time, in the ease and completeness with which urination is carried out. The patient last mentioned, who ordinarily now shows only two or three drams of residual urine, occasionally "stammers" in his urination and there will be several ounces left over, as a result. But even this hesitancy is rapidly being overcome during the present week.

In certain cases it is necessary to repeat the operation because of incompleteness of result after its first application. Freudenberg has performed it twice on two patients, and three times on one, before getting the desired result. But it was obtained, finally, in each case. From an observance of the reports of these repeated operations, as well as from my own experience, I suspect that the repetitions are superinduced by lack, on the part of the beginner, of skill and experience with the technique. My first two cases had to be "done over" a second time. But, as before mentioned, since the operation itself causes so little disturbance and the reaction following it is practically *nil*, this is not a very serious objection. It can be performed two or three times, if necessary, with impunity.

My faith in the efficacy and preponderating advantages of this operation does not, of course, rest solely on my own experience with it. My cases have been too few, and the time since operating too short to make any final deductions from them. But when, in addition to the marked evidences of benefit already achieved in them, I get together and study the statistics of others who have done a considerable number of the operations, I must grant the force of the figures.

In the first place, the father of the method, Bottini, has operated, according to the latest reports accessible to me,[3] upon 80 cases, with 2 deaths. Of these 80 cases, 57 were operated upon with his older instrument (cauterizer), while in 23 the newer one (incisor) was used. Of the first group of 57 cases, 43 were successful (32 cured, 11 improved); and of the second group, 23 cases, all were successful. Percentage of mortality 2.5; of cures 82.5.

Freudenberg has operated 34 times upon 29 patients [4] I have not been able to obtain full reports on all of these, but on the first 13 of the series full reports[5] have been given, af follows: Two of them died; one, from embolic pneumonia, as a result of the operation; the other, twenty-four days after the operation, from an exacerbation of already-present pyelitis, etc. Of the 11 cases remaining, 7 had had complete retention; 4 incomplete. All were markedly benefited by the operation, only 3 having still some residual urine that required occasional catheterization. In one case there had been such a degree of irritation that the patient had been urinating from sixty to seventy times in twenty-four hours; which was reduced to eight or ten times by the electro incision.

Simon[6] reports eight cases operated on in Czerny's

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[3] Berliner klinische Wochenschrift, April 12, 1897.

[4] New Yorker medicinsche Monatsschrift, July, 1898

[5] New York Medical Journal, February 11, 1898.

[6] Centralblatt fuer die Krankheiten der Harn- und Sex.-Organe, Bd. ix, Heft 8, 1898.

clinic at Heidelberg, in 1897. Of these eight cases, two died; one as a result of complicating affections of the heart, lungs and kidneys (nephritis), and the other in connection with co existing arterio sclerosis, severe urethral strictures, and pyelo nephritis. Of the remaining six cases, four were cured, one was benefited and one proved a failure. This last was the first case operated upon in this series. In these cases the instrument as improved by Bottini (not Freudenberg) was used.

Willy Meyer,[7] of New York, was the first to adopt the method in this country. He reported three cases, with one death. Of the two that lived, one was markedly benefited, and one proved a failure (but one operation being done in this case).

Henry H. Morton[8] reports five cases with no death. The results are stated to be as follows: "Reduced frequency of urination in every case, and removal of the obstruction offered by the prostate, so that the patients could entirely and completely evacuate their bladders. In each case the patients were able to dispense with the catheter, which they had formerly depended upon to empty their bladders."

My own cases, in brief, are as follows:

Case I.—Mr. B, referred by Dr. Brokaw, aged 74 years; well preserved and in good general health when he came to me, January 13, 1898. From the history then given, the obstruction to the urinary outflow had evidently been gradually increasing for ten or twelve years. For that length of time he had been required to get up and urinate at least once nightly; for about six years, twice nightly; and for the most of 1897, from three to five times nightly; for the twenty-four hours there were from from fifteen to twenty, sometimes twenty-five urinations. Residual urine 1022, slightly acid, very cloudy, containing much pus; no albumen, no sugar. For eight months he received from me pal

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[7]Medical Record, March 5, 1898.

[8]Medical Record, September 17, 1898.

liative treatment consisting of periodical irrigations of the bladder, nightly catheterization, internal antisepsis, etc. This at first caused some improvement, but later did nothing more than retard the progress of the natural course of the disease and its complications.

At the time of operating, September 14, 1898, the patient was, symptomatically, in about the condition described; and there were from four to six ounces of residual urine. I operated at my office. There was but little pain; no hemorrhage, no fever nor general reaction

Three weeks afterward he was urinating from eight to ten times in twenty-four hours; residual urine from two to three ounces. The patient was taking much pride in the increased size and freedom of the stream. There was less irritation than formerly; but the urine remained cloudy. The improvement was definite and, to the patient, satisfactory; but in view of the fact that I had been ultra conservative in the extent of my incisions, it being my first trial of the method, I considered it probable that a second and more extensive incising would secure even better results. This was done on October 25. At this time I made use of a maneuver that I have not seen mentioned by any writer on the method. In a recent discussion of the technique of the operation,[9] Dr. Freudenberg mentioned that in one of his cases a fold of bladder mucous membrane had become caught and burned by the blade of the incisor; and to prevent such an accident, he advised that the operation be done with the bladder full of boracic acid solution; that the close contact of the instrument with the prostate would express any fluid that might tend to come between them, admitting of uninterrupted activity on the part of the blade. Experience with this suggestion in a late operation as well as an experiment in a cup of water, make me doubt its utility. The blade will not get red hot if in contact with any quantity of

[9] New Yorker medicinische Monatsschrift, July 1, 1898.

water; and if there is only a small amount present, as pre-supposed by Dr. Freudenberg, this would be liable to become superheated and scald the adjacent parts. Therefore, in order to smooth out the bladder folds and at the same time to avoid interference with the action of the blade, I injected air into the bladder from a bulb-syringe. It was satisfatory in every way.

This operation was done too recently (three days ago) to report its results.

Case II.—Mr. J., referred by Dr. H. M. Pierce; aged 47 years; married. Although this patient was of so youthful an age for "senile" hypertrophid prostate, the effects of obstruction had been progressively increasing for a considerable length of time. Nine years ago (that is, at the age of 38 years) he suddenly became un able to pass any urine. This complete retention lasted for the greater part of a day. After it passed off, he noticed a gradually increasing frequency of urination, both by day and night. For ten years, his wife states, he has been getting up once or twice nightly to urinate. In 1897 actual difficulty of expelling the urine was first realized by him, and it became so severe and painful that he called on Dr. Pierce. Boric acid washings and catheterizations gave temporary relief. There was no stricture present, the catheter meeting with obstruction only after reaching the prostatic urethra; and enlargement of the prostate was felt per rectum.

Later, the patient was lost sight of for a time and in mean time consulted other surgeons, receiving vesical irrigations by some, and having one testicle ablated by another—with no relief. On his returning to Dr. Pierce this fall, I was consulted and we found the following: Marked anemia with a cachectic appearance that reminded one strongly of cancer. A large bubo, tender and adherent, in the right groin; right testicle absent; almost entire inability to urinate voluntarily—reliance being placed altogether on the catheter in lieu of that function. Urine 1018, acid, intensely cloudy from pus; non-albuminous. Prostate, felt through the

rectum, was the size of an apple. Soft rubber catheter could be introduced only with great difficulty, and sometimes not at all, whereupon a metal one would be necessary.

The statement of the patient that bladder washings had usually only aggravated the irritation, was borne out by our trial of them. No treatment outside of an operative one appeared to be feasible. I will say that at first I was strongly impressed with the close semblance to malignancy presented by the case; the youthful age (for "senile" hypertrophy), the inguinal adenitis, the cachectic appearance, etc.; but a closer study led me to a confirmation of Dr. Pierce's diagnosis of obstructive prostatic hypertrophy.

Operation October 3; retention practically complete. No reaction; no improvement in the stream until seven days afterward, when he passed a good stream of urine; two days later did this two or three times in one day—and then there was a halt in his progress, the interruption seeming to be connected with an intestinal irritation which caused diarrheic movements, abdominal pain and griping. After awaiting another week or so for more improvement in bladder expulsion, we repeated the operation on October 20. Since then he has become able to empty his bladder at each act, leaving only two or three drams of urine residual. I have often found this much urine remaining in healthy bladders after voluntary urination; so I do not believe so small an amount should be dignified with the term "residual."

Case III was operated on this afternoon, so no report will be made of it at present.

The quettion might be very pertinently raised as to whether, granting the tangible advantages claimed for the Bottini method, it will prove applicable to all cases of prostatic obstruction?

The pathological specimens which I present should throw some light on that question. No 1, you notice, presents the obstruction in the form of a prostatic bar

stretching across the posterior aspect of the urethro-vesical opening. Behind the bar is the *bas fond*, a deep receptacle in which residual urine evidently collected in the person's life-time; and in front of it is an almost equally deep depression formed by the long and deep curve of the prostatic urethra. It seems practically assured that if this bar had been burned through with the incisor, without re uniting afterward, the obstruction would have been done away with. In this second specimen the obstruction is in the form of a jutting nodule that evidently acted in the manner of a ball and-socket valve. If the blade of the cautery should miss the nodule in such a case a good chance of failure would, no doubt, be run. For that reason, as well as others (for the purpose of excluding stone, for instance), it is decidedly of advantage to examine the bladder and prostate as thoroughly as possible with the cystoscope before operating. The same cocainization will serve for both procedures.

It seems reasonable to expect, though, that if such a nodule receive a good searing, either directly through it or on its surface, it will undergo atrophy similar to that noticed in the tonsil after removal of only a portion of it by cauterization.

[627 Century Building]