

## Original Articles.

### THE PRESENT STATUS OF THE SURGERY OF THE PROSTATE GLAND.<sup>1</sup>

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THE reader has been asked to give a short *résumé* of the present condition of prostatic surgery. It becomes evident at once that to do this in the fifteen minutes' time allotted for the purpose makes a detailed account of technical procedures quite impossible, and little more can be attempted than to mention briefly the various steps which have brought prostatic surgery where it is to-day, and to consider with equal brevity the class of cases best adapted to each of the operative procedures which are in use at the present time. If this paper serves to help the practitioner of medicine to formulate and arrange his ideas as to the treatment of cases of obstructive enlargement of the prostate which are so common in every physician's practice, its object will have been attained.

Bottini performed his first cautery operation over thirty years ago and continued the use of his instrument up to the time of his very recent death, but the operation never gained an extensive repute until within the last few years. Belfield of Chicago performed the first prostatectomy in 1885, but it was not until the publication of a series of cases of prostatectomy, by McGill of Leeds in 1888, and the communication of Mr. McGill and his colleagues of the Leeds Infirmary, at the meeting of the British Medical Association in 1889, that the surgical world realized the practicability of a radical operation for the removal of obstructing prostatic masses.

Even during the last fifteen years hypertrophy of the prostate gland has been a condition to palliate and not to cure in the hands of most surgeons, and the men who have added radical operations upon the prostate to their list of routine procedures have been few indeed. How is all this changed! Almost every surgeon has done his few prostatectomies, and has his own ideas regarding the Bottini operation, even if he has not had actual experience in the performance of it. The surgical literature of the last two years amply demonstrates the fact that the surgery of the prostate is one of the burning topics of the moment and shows that the surgeon who contents himself with guiding all the patients who come to him for relief from this obstruction through years of more or less painful and dangerous catheter life, without offering them the relief which a prostatectomy or a galvano-cautery operation has to offer, is often indeed remiss in his duty.

In the earlier prostatectomies the organ was approached through a suprapubic incision into the bladder, and its removal was attempted piecemeal by instruments made for the purpose. The operation was a prolonged and bloody one, and no surgeon acquired large experience in its

performance. Its mortality was something like 15%, and it was looked upon with enough dread by the profession at large to lead them to resort to a variety of other procedures of a less severe kind, all aiming at palliation without attempting the actual removal of the obstructing portions of the gland. Supra-pubic drainage, both temporary and permanent, incisions into and removals of portions of the gland through the urethra or through suprapubic or perineal incisions, castration, ligation of the vasa deferentia without castration, the galvano-cautery operation of Bottini and its modifications as instituted by Young of Baltimore and Chetwood of New York (the latter of whom performs the cauterization through a perineal incision with an instrument devised by himself), all will serve as examples of such procedures. Many of these palliative operations were so unsuccessful and others were so uncertain in their benefits that when it was realized that obstructing prostatic masses can be quickly and easily enucleated by the finger through a suprapubic incision, prostatectomy began to assume a real place in technical surgery, and a good many men acquired a considerable experience and skill with this suprapubic enucleation. In 1895 Nicoll of Glasgow, and in 1896 Alexander of New York, with a slightly different technique, demonstrated series of cases to show what Zuckerkandl in Vienna and Watson of Boston (1888) had pointed out as possible years before—that the prostate could be approached through a perineal incision. And as you all know, the perineal operation has become of late the one of choice in the minds of many surgeons. This fact has led to a very rapid improvement in the technique of the operation, an improvement which has been especially noticeable during the last year or two. Nicoll's perineal operation approached the prostate by a careful dissection between the urethra and rectum and opened the prostatic capsule from behind, thus making the operation a long and technically a difficult one. Alexander, while approaching the gland through a median perineal incision which opens the urethra but gives a quick and easy access to the organ, felt obliged to make a preliminary suprapubic cut into the bladder in order to push down the prostate from above into the perineal wound with a finger in the bladder. This involved two cuts instead of one, and the serious complication of opening the bladder, with the risks of suprapubic sepsis attendant upon that procedure. Guiteras endeavored to avoid this complication by making the suprapubic incision only into the prevesical space (and not into the bladder cavity), pushing down the prostate from there by introducing a finger between the bladder and symphysis pubis. At this time it became very evident that the future improvement in the technique of the perineal operation depended upon the omission of the suprapubic cut, and the accomplishment of the entire operation through the perineal incision. At the same time the difficulty of reaching the prostate

<sup>1</sup> Read before The Massachusetts Medical Society, June 9, 1903.

through a perineal wound without making large and extensive dissections became so apparent that various instruments were constructed to serve as tractors to pull down the prostate into the perineal wound, where it would be more easily accessible. Guiteras of New York devised an instrument of this kind, shaped a good deal like a sponge forceps with fenestrated blades, and designed to grasp the prostatic tissue through an opening in the prostatic capsule made for the purpose of enucleation through it. Syme of New York made an ingenious tractor of a different sort, which consisted of a rubber bulb on the end of a strong rubber tube. This bulb was passed into the bladder through the perineal wound and then inflated with air so that traction upon it served to bring the prostate down within easy reach. Ferguson of Chicago has devised retractors which he inserts into an incision into the posterior aspect of the prostatic capsule through a perineal wound, and so drags the prostate down within reach by traction upon its capsule and without passing any traction instrument into the bladder. Murphy of Chicago has devised similar tractors shaped like rakes; and finally Young of Baltimore has constructed what is perhaps the best of all these tractors, in the shape of a steel instrument with two fenestrated blades which can be readily inserted into the bladder and then opened out into a figure of eight behind the prostate. He thinks this instrument gives him firmer and better traction than he can get in any other way.

The last year or two, then, has demonstrated clearly the fact that the prostate can be readily approached through a perineal incision, and can be as readily brought within the reach of the surgeon without the necessity of a suprapubic incision. And now comes from Young of Baltimore the last development of the technique of the perineal operation. This consists in bringing the prostate well into reach and sight by traction made with his tractor just mentioned, and then removing the bulk of the obstructing glandular tissue through two lateral incisions in the prostatic capsule, leaving an intact urethra and also a narrow median zone of tissue just above the urethra, and containing the ducts from the seminal vesicles. So this operation aims to be a conservative procedure which leaves the generative powers of the individual unimpaired. This operation was described by Young at the last meeting of the American Association of Genito-Urinary Surgeons, held at Washington last May, but his paper has not yet been published. He has operated upon several cases recently and believes that he has succeeded in saving the generative apparatus unimpaired in a number of these cases.

During these years of the development of prostatectomy there have been always so many cases demanding relief which the catheter could not give, and yet cases which were obviously too infirm to be fit subjects for any severe surgical procedure such as is prostatectomy, that the need of other less severe and perhaps also

less radical measures has been almost as great as ever. This need was accentuated by the fact that castration failed to give the permanent relief to such cases which was claimed and expected from it, and also proved, as clearly shown by Cabot in his report to the American Surgical Association, to be almost as dangerous as the more radical operations attacking the prostate itself. These conditions led many surgeons to turn back to the Bottini operation, which now for the first time is having a widespread trial. It is proving so satisfactory as a palliative operation, and its attendant risks are so much less than those which prostatectomy offers, that when it became certain that this operation can be performed when necessary without the aid of a general anesthetic, it was small wonder that it acquired so many adherents. The operation consists, as you know, in burning grooves through the obstructing portions of the prostate by means of a galvano-cautery constructed for the purpose. It has always been claimed by the believers in prostatectomy that the Bottini operation is too uncertain in its results, and that it was often performed in the dark and for conditions of which too little accurate information could be obtained to be safe for general use; that if, on the one hand, the cauterizing blade be too superficially used, the results are bad, while if, on the other hand, they are made deeper, there is great danger of burning through into the periprostatic tissues and rectum. The reader has always shared these beliefs, and has never until recently employed this procedure; but when Young of Baltimore obviated this uncertainty of operation to a large extent by modifying the instrument in such a way as to provide different-sized blades for different-sized prostates, the accuracy of the operation was greatly increased; and now the reader believes firmly that with the knowledge which can be obtained by examination, and measurements with urethral instruments, by palpation (suprapubic and rectal) and by the cystoscope, which, when its use is feasible, will always give a fair idea of the conditions at the bladder outlet, the Bottini operation, as modified by Young's instrument, is sufficiently accurate to be safe in the hands of those familiar with its use; that it is applicable to perhaps a larger class of cases than any other single operative procedure; and that it can be performed without the use of an anesthetic other than cocaine should the necessities of the case require it. [Young's instrument shown.] The reader's own cases are too few in number to be worthy of tabulation, but they have encouraged him in his belief in the operation, and it is his hope to report before long a series of such cases to this society.

Now let us consider very briefly the class of cases in which these different procedures, both palliative and operative, are to be advocated:

*Catheter.* — The systematic use of the catheter has always been the chief means of palliating cases of prostatic obstruction. There are as

many, or more, cases to-day as ever when such palliation is possible and is to be advocated. Many of these go on throughout their lives in comparative comfort, and the danger from such a catheter life comes not during its proper continuance but through the hopeful efforts to continue it after its proper sphere of usefulness is past. Just at the moment when this becomes true, when, either through a lack of intelligence or a lack of proper surroundings on the part of the patient, or by reason of mechanical difficulties which prevent the easy and systematic use of the instrument such a catheter life becomes no longer easily feasible, then is the time for operative interference. The reader has operated in a few instances upon patients without advocating a catheter life at all, because in these individual cases, even though relief was sought early in the development of symptoms, the difficulties in the way of a proper catheter life were so manifest and so apparently insurmountable.

*Prostatectomy.* — A year ago the reader stated at a meeting in this hall that prostatectomy was *always* the choice for all cases which could no longer be palliated, and which were fair subjects for operation. This statement holds good to-day, and is based upon the fact that this operation is the only one which offers a cure for the condition with any considerable degree of certainty. It is, however, by no means proper to offer prostatectomy to all patients who have passed the stage of possible palliation, so long as other less dangerous expedients are at our command. Prostatectomy is an operation of considerable severity, and, when performed upon men past the prime of life, will always be attended with danger to life, no matter what improvements in its technique have taken or still may take place. Therefore, although its results are surest, it is adapted only to cases which are fair surgical risks, that is, to patients with fair heart and arteries, fair kidneys and a bladder which can be made clean and kept so. These conditions are not often present in patients over sixty to sixty-five years of age.

As to which operation shall be performed in cases where a prostatectomy has been decided upon this may be said: In spite of the great technical improvements which have lately been made in the perineal operation, improvements which have made the operation easier and more accurate of performance, and correspondingly less severe upon the patient, there is still a place for the suprapubic operation. This procedure offers and always will offer, as its great advantage, a visual inspection of the parts about to be attacked, which cannot be obtained in any other way. The cases especially adapted to its use are those of great enlargement, which involve the removal of enormous masses of glandular tissue. Such masses are always within easy reach of the enucleating finger, and their removal drops the bladder outlet, so that good drainage can usually be obtained through a catheter tied into the bladder through the ure-

thra, and a perineal incision for drainage can usually be dispensed with. The disadvantages of the operation are a slightly longer convalescence, the possibility of sepsis in the suprapubic and prevesical tissues, and occasionally a tendency to hernial protrusion through the suprapubic scar. Up to the present time it has always proved a shorter, less severe and less dangerous operation in the reader's hands than the perineal operation; but the constantly improving technique of the latter and its ever-increasing ease and accuracy of performance will probably change all that. The perineal operation should probably be done in most cases when a good idea of the existing conditions to be attacked can be had prior to operation, and especially when a successful use of the cystoscope has rendered the intravesical conditions a known quantity. Now that the perineal route is developing conservative possibilities, and also is making the operation less traumatic and more accurate in character, it will become the operation of choice for most cases in the hands of the average surgeon.

*The Bottini Operation* stands proven beyond dispute a less dangerous procedure than prostatectomy, and as it can always be performed without a general anesthetic, and as it has a very short period of convalescence, the reasons for this fact can be readily understood. Its results, though not so certain as those of prostatectomy, are sufficiently good to gain for it a constantly increasing confidence, and the reader believes that this procedure should be offered to all cases which can no longer be made comfortable by palliative means and which are too infirm to make the risks of prostatectomy justifiable. Such cases will be found to comprise a very large percentage of all prostates who present themselves to the surgeon for relief, and they are probably greater in number than any other one class of cases. The instrument as modified by Young unquestionably increases the accuracy of the cauterization and is, in the reader's belief, the best one to use.

*Résumé.* — To conclude, then, we may say:

- (1) That no prostatic should be allowed to suffer for lack of proper treatment.
- (2) That there is still a place for the catheter in such treatment, and that many patients can be made comfortable and can be kept so by its systematic and proper use.
- (3) That all those patients who cannot be kept comfortable by palliative means are fit subjects for some operation.
- (4) That the time for such an operation is just as soon as the inadequacy of palliative treatment is demonstrated.
- (5) That the operation of choice is always prostatectomy, but that this operation can be properly offered to those patients only whose general conditions make them fair surgical risks, and that such is rarely the case after sixty to sixty-five years of age.
- (6) That to all other patients the Bottini operation can be fairly offered as one attended

with little risk to life, a short convalescence, and a good prospect of such a degree of improvement as will at least do away with any further necessity for the systematic use of the catheter.

#### DISCUSSION.

DR. F. S. WATSON of Boston: I can add very little, I think, if anything, to what Dr. Thorndike has said. I want to join most heartily in commendation of Dr. Thorndike's paper. It seems to me that it very fully covers the ground and is admirably well balanced, and weighs the value of different proceedings in very just light. Practically all that I can do is to emphasize some few points already spoken of. The most essential point is that of the selection of the patients for whom the prostatic operations are desirable and of applying the method best suited to each individual case. There is no hard-and-fast line to be drawn in this respect according to the patient's age. The question turns upon the condition of the kidneys, and in this respect some men of seventy-five are quite as young as others of fifty-five.

We are better able to estimate the condition of the renal function, owing to the introduction of some of the recent methods, such as cryoscopy and the phloridzin test, etc., than we were formerly. But even without their aid, the renal capability of sustaining the shock of such operations as are the radical ones upon the prostate was sufficiently well shown by the usual methods of urinary analysis, and especially by one of its features which is peculiarly significant in these particular cases,—I mean the specific gravity of the urine. If this is found to be constantly low—1012 or so—radical measures upon the prostate are fairly sure to be followed by serious or fatal consequences. The large majority of these patients die after operations of that sort from renal insufficiency, sepsis and other conditions playing but a relatively unimportant rôle in this respect.

But even in the absence of such danger signals all precautions should be taken against the occurrence of these fatal or alarming states in connection with operative procedures, and something may be done to avert them.

There is little that can be done with respect to guarding against the dangers arising from renal insufficiency. A suggestion made by Dr. MacGowan of California seems well worth following. He says that his dread of renal insufficiency in connection with operations upon the urinary organs has been greatly lessened owing to the employment of abundant subcutaneous injection of saline solution, which he employs as a routine measure at the beginning of every such operation, and which he credits with the power to avert subsequent failure of the renal function. Other than this and the usual precautions, such as guarding the patient from exposure to cold, etc., there is little to be done to ward off the danger from the defective renal action.

The risk from sepsis is very much less than

from the other element just referred to, and more may be done to minimize it.

The most important thing to be done in this connection is, of course, to reduce—to cure is rarely possible—the cystitis if present beforehand, and to keep the bladder and operative field clean subsequently. The agents which I have found most useful for the former object have been urotropin, and for local application solutions of methylene blue and argyrol as bladder irrigations.

The most essential point in connection with these prostatic operations is the proper selection of the time at which to perform them. The longer my experience of these cases the more do I incline toward early operation, and the greater my disinclination to postpone surgical intervention until the use of the catheter has become inadequate.

When the latter point has been reached, the patient is already in a condition unfavorable for operation, and it will be performed in the face of dangers which, had it been done prior to this time, would not have been incurred, or at any rate, when they would have been very much less. In fact, the risk attending the performance of Bottini's operation in the early stages of this disease is very little indeed, and one which I am confident I shall incline to advise patients to assume more frequently, and at an earlier stage of the malady in the future, than has been my custom in the past.

My position as to the choice of methods is practically the same as expressed by Dr. Thorndike.

The performance of the perineal enucleation of the gland is, in cases in which it is appropriate, usually very easy. The essential factors in the readiness with which it is done are fixation of the gland and the bringing of it as far down as possible on to the perineum. These may be secured by downward pressure from above the symphysis by the hand of an assistant upon the empty bladder, and by drawing it in the same direction by the tips of two fingers resting upon its upper border in the rectum, or probably better by means of such an instrument as that of Dr. Young, which Dr. Thorndike has just shown. I have not used the latter, and am therefore unable to speak more positively of it.

It is remarkable how easy the perineal operation may be in some cases—in one case I removed the whole gland in four minutes—and how difficult in others.

The choice of methods seems to me to be easily divided. In cases in which the cystoscope has shown it to be appropriate and adequate, the Bottini operation, though my personal experience with it is limited, is, upon the evidence in our possession, that of choice. In other cases the best plan to follow is, I believe, as I have frequently stated before, to open the perineal urethra by the usual incision, explore the condition of the gland with the finger, and then to remove it or its obstructing portions through the perineal incision when that is feasible, and

when it is not to proceed at once to the suprapubic operation.

One word with regard to the use of the cystoscope in these cases. It has one undoubted and great value, which is that it is capable of determining beforehand, as a rule, whether the case is appropriate for a Bottini operation or not, although it is possible to be misled even in this respect because of the inability to gauge the extent of the parts of the gland, and the degree of obstruction for which they may be responsible, which are not visible from within the bladder.

#### PRELIMINARY REPORT OF FIVE CASES OF RENAL DECAPSULATION.<sup>1</sup>

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The following cases have been operated during the past nine months on the First Service of the Boston City Hospital. Three of them are reported through the courtesy of Drs. H. L. Burrell and J. C. Munro.

It has seemed advisable to record the progress in these five patients at this time, reserving a final and more complete statement for a period of about two years after operation. What might be called the immediate results and sequelæ are available now. The ultimate results, however, cannot yet be fully prognosticated.

Two of the five are, for the practical purposes of business and occupation, well. Two have died, at intervals of four days and six months after the operation. One is not relieved.

All of the cases were operated by two surgeons simultaneously, one decapsulating the right, the other the left kidney. The assistants have usually stood next the operator and not opposite him; with previous planning and a little practice, the members of this double team need not necessarily interfere materially with one another. The time of the double operation is thus reduced by nearly one half, and it does not appear that the patient is subjected to a noticeably increased amount of shock.

The patient has been placed prone, face downward, the head projecting beyond the end of the table, the shoulders protected (and slightly raised) by sheets, the neck being, of course, absolutely shielded from pressure. This seems to be best accomplished by having the etherizer support the head, placing a hand under the forehead. If large pads, thick sand bags or the wide rubber bag be used, care must be taken that the action of the diaphragm be not interfered with. If the bags are placed high in the epigastrium this result followed in several instances, and was made evident by cyanosis and even threatened collapse; these symptoms began to disappear almost immediately after the removal of the bags. If, on the other hand, the bags be placed too low, the angle between pelvis

and thorax is not so well opened, and the kidneys may actually be displaced upwards. In a fat and edematous person, this may complicate the operation distinctly.

The technique of the operation is simple and sufficiently well known to render a detailed description unnecessary. We have endeavored to preserve the lumbar nerves; arteries have been secured before opening the retro-peritoneal space. Occasionally one of the larger branches of a lumbar artery, cut and retracting into the muscle fibers, has caused an annoying hemorrhage. In thin patients it was sometimes possible to complete the operation without tying an artery. In fat and edematous patients the depth of the incision was surprising; and in such patients it was sometimes thought advisable to mark the outer edge of the erector spinae muscle before operation, for it is at times difficult, in the presence of much edema, to accurately fix this outer margin when the patient is in position on the operating table. If the incision is too far out, the colon may bulge in the field; if too far in, the sheath of the erector spinae may be opened, or the fibers of the quadratus lumborum encountered. It is better to avoid both of these things.

The lower pole of the kidney is usually reached easily, but at times it was difficult to bring the upper pole well up into the wound. Sterile tape slipped around and under this upper end, acting like a lasso, facilitates this part of the operation, and was, I believe, suggested by Dr. Arthur Cabot. The incisions have been closed either in layers or by the through and through silk-worm gut sutures. In two incisions rubber dam or a bit of gauze was placed in the lower angle of the wound.

The actual decapsulation was usually done by splitting the capsule longitudinally with a scalpel and then peeling it off gently with forceps and fingers. In at least one case the capsule was found to consist of two distinct layers, and when the kidney had been apparently decapsulated, another complete layer was discovered and removed from it. This second layer would have escaped if attention had not been directly called to it. If it remained behind, at least part of the aim of the operation would have been lost.

As a rule the capsule separated without much difficulty. In contracted kidneys it is much more adherent, and occasionally carries with it morsels of the cortex. As it was separated it curled back towards the pelvis, and was removed with scissors. In one case where there was much difficulty in reaching the upper end of the kidney the capsule was simply pushed back over the upper pole, and left curled up beyond it. Small wedge-shaped bits of the cortex were taken at the operation from each case for pathological diagnosis. If there was persistent hemorrhage from the kidney wound it was closed by a carefully applied mattress suture of catgut.

In two cases patients were cyanotic and more or less collapsed on the table. As before stated

<sup>1</sup> Read at the Annual Meeting of the Suffolk District Medical Society, April 25, 1903.