

divided by one or two clips. Immediately the bladder fills with blood, but without stopping to try and control this hemorrhage the surgeon continues to cut down in the median line until he has completely divided the mass that separates the urethra from the bladder, until, in fact, the finger can be passed from the floor of the bladder to the floor of the urethra without riding over any prostatic obstacle. If there are any pedunculated growths, these are then caught and twisted off with the heavy rongeur forceps (Fig. 85). The finger

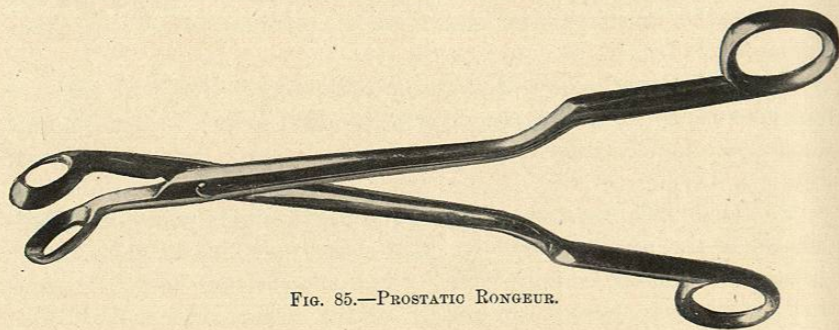


FIG. 85.—PROSTATIC RONGEUR.

is then introduced into the median cut in the prostate, and, working on one side or the other, an endeavour is made to enucleate large encapsulated masses of glandular tissue (Fig. 68). If the prostate is large and glandular, these tumours are easily enucleated, and after their removal it will be found that the projecting masses have disappeared. This work is much facilitated by the firm counterpressure of a fist against the patient's perineum, or by a finger introduced into the prostatic urethra through a perineal cut (Belfield<sup>1</sup>). But if the prostate is fibrous the finger will make no impression upon the tumour. It will then be preferable to remove a wide groove of tissue from the bar with the rongeur, while leaving the lateral lobes untouched.

The hemorrhage all this while is profuse, so that the operation is performed at the bottom of a pool of blood. But a single irrigation with very hot saline solution, followed by an irrigation with nitrate of silver (1:4,000), moderates the oozing. Some years ago I advocated and employed a graduated pad to be held in place by a loop passed through the perineum; but I no longer use this, nor have I lately had any great trouble with hemorrhage after this operation, although the bleeding commonly continues for several days, and clots may obstruct the drainage. By doing much of the work with

<sup>1</sup> Am. J. of Medical Sciences, 1890, c, 439.

the electro-cautery (Chetwood's operation) I hope, in future, to reduce the dangers of hemorrhage to a minimum.

Post-operative drainage is cared for by the double suprapubic tube (p. 465). Urethral drainage I have ceased to employ after this operation, not believing the catheter capable of carrying off large clots. I often use perineal drainage through a large tube if there be much of a hole left in the bottom of the bladder, or if the membranous urethra be fibrotic and constricted, as is quite often the case.

**Perineal Prostatectomy.**—Two kinds of perineal prostatectomy must be clearly distinguished—viz., the extra-vesical and the intra-vesical.

*Extra-vesical prostatectomy* (Dittel<sup>1</sup>) has never appealed to me. It is performed through a curved prerectal or sacral incision, with the avowed object of removing large V-shaped sections from the lateral lobes. The operation is based on the theory that the lateral lobes are the cause of the obstruction. It takes no account of the middle lobe and permits no identification of the obstruction. I can see no reason for employing it.

*Intra-vesical perineal prostatectomy* is an admirable operation. I first employed it in 1874, and have used it often since. The names of Thompson,<sup>2</sup> Watson,<sup>3</sup> Nicoll,<sup>4</sup> and Alexander<sup>5</sup> may be mentioned in connection with this operation. The chief difficulty of the operation is in reaching the prostate. A simple prostatotomy, or the seizure and removal of a pedunculated median lobe, is very readily accomplished through the perineal incision; but the removal of larger masses, or the excision of a bar is rendered most difficult by the depth at which the prostate lies from the surface and its tendency to slip even farther away when attacked. Counterpressure through the rectum or upon the hypogastrium having been found inadequate, except in a very few cases, two methods of bringing the prostate into view have been adopted. Some have followed the suggestion of Dittel and exposed the prostate through a transverse perineal incision similar to that employed in attacking the seminal vesicles (p. 204), while others, following Alexander, Bryson, and Nicoll, have employed pressure through a small counter opening above the pubes to bring the prostate down into the perineum.

The modifications of Dittel's method have never been very enthusiastically received. They involve very considerable dissection and leave deep *culs-de-sac* more or less impossible to drain. Though many operators have endeavoured to keep out of the bladder, any

<sup>1</sup> Wien. klin. Wochenschr., 1890, iii, 364.

<sup>4</sup> Lancet, 1894, i, 926.

<sup>2</sup> *Op. cit.*, p. 114.

<sup>5</sup> Med. Record, 1896, l, 841.

<sup>3</sup> Operative Treatment of the Hypertrophied Prostate, 1888.

notable exsection of prostatic tissue always ends by tearing into the prostatic urethra.

**Alexander's Operation.**—Alexander's operation of intra-vesical perineal prostatectomy has gained a merited popularity in this country. Dr. Alexander's technic is the following: "The patient being prepared as usual, the bladder is washed with nitrate of silver (1:6,000), and suprapubic cystotomy is performed. Through this opening the bladder and prostate are thoroughly palpated.

"The suprapubic opening is then covered with gauze, and the patient placed in the lithotomy posture. A broad median-grooved staff is passed into the bladder through the urethra and held by an assistant. The membranous urethra is then opened by a median perineal section, the floor of the urethra being thoroughly cut from just behind the bulb back to the apex of the prostate. This must be done thoroughly. The staff is then withdrawn and the gauze removed from the suprapubic wound. The surgeon now washes and disinfects his hands. Two fingers of the left hand are then passed into the bladder through the suprapubic wound, and by these the prostate is pressed downward into the perineum. With the forefinger of the right hand the surgeon begins the enucleation, which is performed entirely through the perineal opening. The fibrous sheath of the prostate covering its posterior and inferior surface is broken into by the finger, and the capsule entered; the entire prostate is shelled out from within its sheath by digital dissection. The inferior and posterior surfaces of the prostate should be first separated from the capsule. The mucous membrane of the bladder and prostatic urethra covering the enlargement, with the underlying muscular tissue, is stripped up from the part to be removed, but is not opened. The lateral lobes are first removed, after which, if there is a middle enlargement or a projecting tumour or tumours, these can be pressed downward into the perineal wound and enucleated in the same manner. During the enucleation the prostate can be drawn down into the perineum by forceps, and for this purpose I use an ordinary ring sponge-holder with a strong lock in the handle.

"After the removal of all the prostatic growths, the lower wound is flushed with a 1:5,000 bichlorid solution, a perineal tube is inserted into the bladder, and a rubber drainage-tube of moderate size is placed in the bladder above the pubes. The retraction sutures are removed, and the bladder is allowed to drop back behind the pubes. The upper part of the suprapubic wound is then closed by sutures, and a dressing of gauze pads applied, which is perforated to permit the drainage-tube to pass."

**Syms's Operation.**—Dr. Parker Syms<sup>1</sup> has suggested a modification of the Alexander procedure. He does away with the suprapubic opening and performs the enucleation aided by an inflatable rubber bulb, a sort of colpeurynter, which is inserted into the bladder through the perineal wound, is inflated with air, and is then dragged down, pulling the prostate with it. This elimination of the suprapubic wound spares the patient a good deal of post-operative inconvenience and only sacrifices the suprapubic search, which may be replaced by a digital examination through the perineal wound or by a cystoscopy. Dr. Syms's own results have been excellent. He has operated 14 times without a death.<sup>2</sup>

**After-treatment of Prostatectomy.**—The after-treatment of prostatectomy differs little from that of simple cystotomy (p. 206). The patient is often old and feeble and much stimulation may be needed. Urotropin in moderation is resumed as soon as the stomach will retain it and the kidneys are flushed. The drainage-tubes are retained for a week or more. The bladder is washed once a day.

**Causes of Death.**—The special dangers of prostatectomy and the usual causes of death are shock, suppression, heart failure, sepsis, embolism, and hemorrhage. If the temperature rises, and there seems to be a progressive *infection*, it must be combated by stimulants and frequent irrigations with antiseptics (I prefer nitrate of silver) as strong as the patient can bear. This failing, the wound is reopened, under primary anesthesia, if necessary, in the hope of finding some pocket or centre of suppuration. Unhappily, if infection gets a hold on an old prostatic he usually succumbs to it in spite of the surgeon's best efforts.

**Embolism.**<sup>3</sup>—Pulmonary or cardiac embolism is a still more desperate matter. This is one cause of death after operations upon the prostate that we cannot hope to eliminate. One of Freudenberg's and one of Meyer's deaths after Bottini's operation are attributed to this cause. One case of obvious embolism, and two others that might possibly be attributed to that cause, have occurred among my prostatectomies. But how great an importance to attach to this danger cannot yet be determined.

**Hemorrhage.**—Hemorrhage has not brought me a death. I have always been able to control it by hot irrigations or by packing. The packing may be placed around the perineal tube in a sac (the so-called shirted catheter), somewhat after the fashion of the abdominal Mikulicz drain, or the wound may be opened and a graduated pad

<sup>1</sup> J. Am. Med. Ass'n, 1901, xxxvii, 1154.

<sup>2</sup> Personal communication.

<sup>3</sup> N. Y. Med. J., 1902, lxxv, 577.

inserted into the neck of the bladder. This latter expedient I have never had to employ. Hemorrhage is, in fact, more often inconvenient than dangerous. The clots that accumulate in the bladder occlude the tubes and distend the viscus, causing a great deal of tenesmus. Repeated irrigations with salt solution at 120° F. will usually break up and carry off these clots. If this device fails the clots may be removed by aspiration through the litholapaxy apparatus. Serious hemorrhage does not occur after Chetwood's operation.

**Early Complications.**—Two other early complications, besides those already noticed, require special mention. Sloughing of the wound may occur as the result of overdosing with urotropin. I have met with only one such case.<sup>1</sup> The perineal tube may cause intense spasm and straining which can only be relieved by its removal.

**Late Complications.**—The four chief late complications of the operation are incontinence of urine, recurrence of the disease, post-operative insanity, and carcinoma. *Incontinence of urine* is often complete for three or four weeks after prostatectomy; but after the wound is healed and the patient up and about the incontinence rapidly diminishes. In many cases it disappears immediately. In some it persists for several months in the form of a dribbling after urination and slight overflow after the bladder has filled to a certain point, so that the patient is obliged to urinate every two or three hours to anticipate this overflow. Among some thirty odd operations for contracted neck of the bladder, I have produced permanent incontinence once or twice. Among my prostatectomies I know of one patient who, five years after the operation, still dribbles a few drops after urinating. The cause of this incontinence of urine is, apparently, the failure of the fibres of the divided internal sphincter to reunite. *Recurrence* of the obstruction is, I believe, always due to inadequate operation. I have never known a prostatic obstruction to recur, though it may well persist. The one such case that I have noted among my prostatectomies was caused by my neglect to attack a contracture of the neck of the bladder when removing a pedunculated middle lobe, and was cured by simple incision. *Post-operative insanity*, apart from uremic dementia, has occurred once in my practice. The patient, sixty-eight years of age, submitted to suprapubic prostatectomy. Three stones and a middle lobe were removed. He made an uninterrupted recovery, but a few weeks later his mind became deranged, and he died, two months after operation, of acute mania. *Cancerous degeneration* may declare itself after operation (p. 321).

<sup>1</sup> Phila. Med. J., 1900, vi, 606.

### POST-OPERATIVE PROGNOSIS

From what has been said in the preceding paragraphs it is clear that the post-operative prognosis depends upon several factors, many of which cannot be expressed by statistics. Thus there are some persons whose bladders are so contracted before the operation that their urinary functions cannot be perfectly restored by any mechanical procedure. Others come to operation in such desperate straits of urinary septicemia that their deaths are almost foregone conclusions. Then, again, those operations which I consider quite unjustifiable, such as castration, vasectomy, Bottini's operation, certainly have a low mortality, and, in certain cases, do benefit the patient. I have endeavoured to express the merits of these operations in the preceding pages, and shall not therefore concern myself with them here; but, from a personal experience extending over many years, I can speak with some authority upon the subjects of suprapubic prostatectomy, perineal prostatectomy, and Chetwood's operation. In the appended table are classified my prostatectomies and the Chetwood operations thus far performed by Dr. Chetwood and by Dr. Keyes, Jr.

I have included all the Chetwood operations in order to show, as well as figures can show, how admirably safe and successful the procedure has been. I have carefully excluded from the prostatic tables all reference to cases of contracture of the neck of the bladder, although such statistics are commonly included, to the great lessening of the operative mortality.

#### SUPRAPUBIC PROSTATECTOMY

1890-1894—12 cases (6 calculous)—5 deaths (3 calculous).

1895-1900—10 cases (4 calculous)—2 deaths (0 calculous).

**Mortality**—1890-1894—41.66%.

(Eight perineal prostatectomies during this time reduce the total mortality to 25%.)

1895-1900—20%.

Total mortality—31.81%.

**Improved**—5 cases.

One (my first case) was relieved of his stone, but his partial retention persisted.

One exchanged total retention with stone for partial retention.

One was relieved of his retention, but still suffers from a urethral stricture and pyelo-nephritis.

One had a recurrence of stone and was permanently cured (for three years) by perineal lithotomy and prostatotomy.

One, who was nearly dead at the time of operation, has clear urine and no subjective symptoms, but still passes a catheter once a day.

**Secondary Mortality**—2 cases—both were entire operative successes.

One of mania at the end of two months.

One of prostatic cancer at the end of two years.

**Cures**—1890-1894—2 cases, 16.66%.

1895-1900—6 cases, 60%.

Total cures—8 cases, 36.36%.

Five of these have been followed for ten, seven, four, three, and two years respectively.

#### PERINEAL PROSTATECTOMY

1874-1895—8 cases—no deaths.

4 improved.

4 cured.

#### CHETWOOD'S GALVANO-PROSTATOTOMY

1900-1902.

**For Chronic Urethritis.**—1 case—cure.

**For Tubercular Contracture of the Neck of the Bladder.**

—3 cases—improved.<sup>1</sup>

**For Contracture of the Neck of the Bladder.**—11 cases.

No deaths.

One patient is still under treatment.

One who had complete retention and stone now has 150 c. c. residuum.

One was lost sight of before his cure was complete.

One who had slight incontinence of urine and a suprapubic fistula still has slight incontinence, but the fistula is closed.

Seven are cured. Two of these have been followed more than one year.

**For Prostatic Obstruction.**—16 cases (18 operations).

One death not attributable to the operation.<sup>2</sup>

One has incontinence of urine.<sup>3</sup>

One passed into the hands of another surgeon, refusing nephro-

<sup>1</sup> It is noteworthy that in these cases the perineal wound healed slowly, but permanently. In each case the frequency of urination was lessened.

<sup>2</sup> This patient died by renal insufficiency five weeks after operation. The drainage afforded allowed him to pass his remaining days in peace. (Cf. Chetwood, Med. Record, 1901, lix, 767.)

<sup>3</sup> This patient was overcut; a second operation failed to relieve him, and two attempts at paraffin injection have been equally unsuccessful.

my for a severe pyelo-nephritis. I understand that his bladder symptoms have entirely abated.

Two are still under treatment, promising well.

One was only partially relieved by a first operation, but was cured by a second.

Eleven are cured (78%<sup>1</sup>), and no relapse has occurred in the five that have been followed for more than a year.

In order to estimate these statistics at their proper value it must be understood that I have never performed prostatectomy except in quite desperate cases—cases upon which every form of medication and instrumentation had been tried, and which, with not more than one or two exceptions, were suffering from pyelo-nephritis at the time of operation. Given these circumstances, the operative mortality is not bad. Two patients died of shock and suppression within forty-eight hours of the operation; 4 died within two weeks of uremia and heart failure, and 1 died of embolism. In spite of the relatively low mortality of perineal prostatectomy, I have never felt willing to prefer this method to the suprapubic in attacking massive enlargement of the prostate, but have reserved it for cases of bar and third lobe.

In comparing these operations with Chetwood's procedure, allowance must be made for the fact that while the latter has usually been employed late in the disease, and often as a last resource, there have been a certain number of cases (and with each success their number should increase) who have been persuaded not to wait until their kidneys had failed and their bladders were so dilated or contracted as to deprive them of the hope of a radical cure by any method. Some three or four have been operated upon *in extremis*; of the remainder all but three were failing under the best available palliative measures and in urgent need of operation; but in the days of prostatectomy this need was rarely acceded to until the stage of desperation had been reached.

On the other hand, I have been astonished to find what a wide range of usefulness there is for this operation. I have seen patients with very considerable prostatic enlargement cured by it. I have known a bar to cease obstructing after being burned at each extremity. I have seen cases of bilateral hypertrophy cured by cutting loose the attachments of the floor of the urethra from these lateral lobes. And I have been more than ever deeply impressed with the fact—which I long ago insisted upon—that "the main object of the operation is to cut away the bar and to depress the bladder open-

<sup>1</sup> Excluding the cases still under treatment.

ing into the prostate, so that the *bas fond* may drain." <sup>1</sup> In order to do this it has seemed proper in 5 cases to remove some prostatic tissue—once an outstanding middle lobe, thrice some portions of the bar, once an adenoma, which was loosened from a lateral lobe by the cautery incision.

I cannot believe that the perineal operation, whether a simple prostatotomy or a prostatectomy, is as suitable for very large prostates as the suprapubic route. But I repeat, an experience with the operation has shown it to be applicable to every case encountered during the past two years and has proved its efficiency to an unexpected degree.

The advantages which I have found attached to the Chetwood operation are, first, the *absence of shock*. The operation can always be performed within fifteen or twenty minutes (in Dr. Chetwood's record case the patient was away from his bed only fifteen minutes in all). Thus even in the gravest cases the shock of the operation has seemed to add nothing to the patient's dangers. <sup>2</sup> In the second place, the *absence of post-operative hemorrhage and urethral spasm* removes one of the greatest sources of annoyance. Any surgeon who has had much experience in operations upon the prostate must recognise the great distress often aroused and the grave danger sometimes incurred by reason of post-operative spasm, hemorrhage, and the filling of the bladder with clots. When I say that none of these immediate complications has been encountered after the Chetwood operation, the striking advantage thus gained can be understood. The patients, instead of straining and having to be irrigated and narcotized, rest peacefully after the operation and know no spasms before the fourth or fifth day, when the lacerated sphincter begins to resume its work. A third advantage, I think, is to be found in the fact that the burned incision is likely to stay open without the retention of the perineal tube any longer than required for purposes of drainage. Yet this permanence of the incision is not without its dangers, as exemplified by the one case of complete incontinence and the one case of partial incontinence resulting from this operation. It is not justifiable to burn completely through the neck of the bladder as it is justifiable to cut completely through, for the cut partially heals in spite of any tube, whereas the burn remains more or less as it is made.

I believe, therefore, that Chetwood's galvano-prostatotomy is the simplest and safest operation yet devised for the cure of prostatic

<sup>1</sup> Med. Record, 1891, vol. xl.

<sup>2</sup> In several desperate cases nitrous oxid has been the anesthetic employed.

hypertrophy; but it may well be inapplicable to the larger hypertrophies. I consider perineal or suprapubic prostatectomy the operation of second choice.

#### CHOICE OF OPERATION

From what has been said of the various operations above, we may briefly conclude that—

1. Castration and the allied operations, while they commonly reduce the congestion of the prostate, afford no permanent relief and fail to justify their statistical mortality.
2. Bottini's operation often gives excellent and apparently permanent results, but its action is entirely uncertain. It has occasioned serious and fatal blunders at the hands of the most experienced operators, and is often followed by annoying complications owing to the lack of proper drainage.
3. Chetwood's operation, while retaining all the advantages of Bottini's operation, except the purely sentimental one of "no cutting," adds to it precision and safety, and is always the operation of choice unless the prostate is enormous.
4. Prostatectomy, in spite of its relatively high mortality, cures certain cases that could not otherwise be cured.

In short, having decided that a sufferer from hypertrophy of the prostate is doing badly under palliative treatment, he should be cut in the perineum in the hope that Chetwood's operation may suffice to cure him, and, if the obstacle is too large to be burned down, prostatectomy—suprapubic or perineal—should be performed forthwith.