fifteen million people, more than a third of the whole population, inclusive of the wage earners of the country. These insured persons come to their chosen doctor, frequently and undeterred, at the beginning of sickness, when disease may be most effectually controlled. The scheme provides for medical advice and medicines, for prevention and treatment within the scope of the practitioner's skill, and for rest during incapacity. It actually furnishes these advantages to some seven million persons annually.

For the profession, too, the arrangement has its convenience: no bills, no accounting, no collection of fees, no bad debts, and adequate professional safeguards—a very different situation from the old club practice. In addition to the direct advantages of the scheme, it provides an inducement to the medical practitioner to keep his patient well. It cannot be doubted that such a system is preventive of disease. The early detection of tuberculosis, of infectious disease, of rheumatism, dyspepsia, bronchitis, renal disease, anaemia, and minor maladies in a vast number of persons every year, contributes substantially to prevention; medical advice on personal hygiene operates in a similar way. Of fifty million approved prescriptions many at least ought to be preventive in effect; periods of rest during incapacity are conducive to prevention as well as healing; and the additional benefits for dental and ophthalmic treatment, for appliances, nursing, and convalescence are preventive in purpose and result. I have no doubt that health insurance is one of the most effective instruments of preventive medicine which we possess.

The criticism which is sometimes heard, that a "gulf" exists between preventive medicine and curative medicine, is not, in practice, substantial, nor can it be sustained; the two are not separable. All conditions and forms of healing, whether medical, surgical, or dental, are preventive in educational value and in the avoidance of worse ills; they postpone the event of death. Nor is there a gulf between ordinary clinical practice and State medical services. They are complementary, interdependent, and in a civilized community essential to each other. Public health activities are a natural and inescapable product of the practice of medicine, and began in England after the Black Death in 1349. Of course, there have been misunderstandings, generally due to misapprehension or lack of information, which are now happily disappearing. The British Medical Association itself has declared that "as social systems become more complex, corresponding changes in the conditions in which the medical profession does its work are inevitable."

In conclusion, let me remind you that the Association from 1833 to the present year has been engaged, in ever-increasing degree and volume, in the fundamental work of preventive medicine. In 1833 it began its unflinching adherence to the practice of vaccination and established methods of immunity, and to insistence upon the accurate and universal certification of the cause of death, two far-reaching principles which have exerted profound and enduring influence, not only in England, but throughout the world. In 1835 it gave support to, and furnished safeguards for, the creation of the Poor Law Medical Service, and in 1847 it began its consistent advocacy of a Public Health Service. Since 1858 it has steadily upheld the Medical Act and its amending successors, and has claimed, and assisted in securing, adequate training and fair dealing for the registered medical man, the midwife, and the public health officer. It has been a great thing for England and for English medicine that its principal association of medical practitioners should stand for the high competency and the strict integrity of the medical profession, and be strenuously opposed to every kind of subterfuge. The foundation of any medical

service, private or public, must be the medical practitioner. He is its anchor, its pivot, its instrument. If he be competent and trustworthy, it has its first surety of efficiency; if he be ill-equipped, ineffective, or unreliable, it must fail. In securing and encouraging him, in husbanding his resources, and safeguarding him in the discharge of his public and private duty, the Association renders invaluable aid to preventive medicine.

REMOVAL OF THE PROSTATE

INDICATIONS AND METHODS*

BY

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INDICATIONS FOR PROSTATECTOMY

The most important indication for removal of the prostate is obstruction. In most cases the retained urine is not infected, but occasionally infection is present, therefore these cases must be considered separately.

Operation is indicated for aseptic retention (1) where there is complete permanent retention, (2) where intermittent attacks of retention alternate with periods of being able to pass urine, (3) in cases of chronic vesical distension with overflow dribbling, and (4) in cases in which there is more than fifteen ounces of residual urine. These conditions are always a definite indication for operation irrespective of the age of the patient.

Should the obstruction be in an earlier stage, the patient's age may be considered when discussing the advisability of prostatectomy. A slight but progressive amount of retention would indicate operation in a well-preserved man of 60, but not in a debilitated patient of 75 or 80. If the patient is comparatively young and healthy, one should not wait for the development of serious or dangerous symptoms, but should advise an early operation if the obstruction is progressing. It is far better to operate early on such cases than to wait till their renal function is impaired. At the same time one should be certain that the amount of obstruction is increasing before advising an early operation, and I usually advise the patient to return in about six months to see if his residual urine has increased. I advise prostatectomy in a man of 60 who has more than two ounces of residual urine, or in a man of 70 with more than from four to six ounces. If the patient is over 75, I do not suggest operating for anything less than ten to fifteen ounces of residual urine.

If the urine is infected, the conditions are entirely altered. Infection is usually the result of instrumentation, but occasionally one finds pus and organisms in it before a catheter has been passed. Spontaneous pyuria is, as a rule, due to complication such as stone. It may also be the first sign of a vesical neoplasm. A new growth of the bladder does not bleed so easily where residual urine is present, as the residual urine acts as a cushion, which protects the growth from injury during micturition. Spontaneous pyuria is much more common in malignant than in benign growths of the bladder; it is therefore an urgent indication for cystoscopy.

If the patient has been catheterized and has become infected, it is impossible to cure the cystitis while there is residual urine; also there is always the risk of the infection spreading up to the kidneys. I believe that in most cases the kidneys become involved through a direct convection of infected urine up the ureter. In many cases the vesical orifice of the ureter becomes incompetent and fluid injected

* Read in opening a discussion in the Section of Surgery at the Centenary Meeting of the British Medical Association, London, 1932.

into the bladder finds its way into the ureters. This condition is often observed in cystograms. In extreme cases the opaque fluid injected into the bladder ascends both ureters up to the level of the renal pelves. Even when the vesical orifice of the ureter is competent, one may have this form of ascending infection. A patient with an infected bladder usually has more or less vesical tenesmus and frequently strains to pass water. If a peristaltic wave occurs in the ureter when the intravesical pressure is raised, fluid may regurgitate from the bladder into the ureter at the moment when the orifice of the latter is open. A prostatic patient with cystitis therefore runs a constant risk of ascending renal infection.

If a patient with an enlarged prostate needs an open operation on his bladder, the suprapubic sinus will not close so long as the obstruction persists. One must therefore remove the prostate in order to allow the sinus to close. Hence the presence of a vesical calculus is an indication for prostatectomy. Before this operation was introduced, one crushed the stone in prostatic cases rather than give the patient the discomfort of a permanent suprapubic fistula. The operation was very difficult, as fragments of the calculus became lodged in the post-prostatic pouch, where they could not be grasped by the lithotrite and from which it was impossible to evacuate them. The operation was incomplete, and numerous fragments of the stone were left behind. On looking up the records at St. Peter's Hospital for the closing years of last century, I found that many patients had been operated on repeatedly for vesical calculus, some of them ten or twelve times. After the introduction of prostatectomy these repeated litholopaxies ceased. Before this the surgeon never cared to open the bladder of a prostatic case; now a vesical calculus is considered a definite indication for prostatectomy.

A vesical diverticulum is occasionally found associated with prostatic enlargement. If the gland only is removed the patient still has a considerable amount of residual urine due to the vesical pouch, the contents of which usually become infected and cause the formation of stones. The ideal operation is to remove both the pouch and the prostate at the same time, but should the patient be unfit to stand the double operation, it is best to remove the diverticulum first and drain the bladder until the prostate can be enucleated. The results of this double operation are usually very successful.

If a prostatic patient has a new growth in his bladder, the latter condition is the more serious and urgent. A benign papilloma is best treated by open diathermy. The bladder is drained for about a fortnight and the prostate then enucleated. Occasionally I have destroyed the growth and enucleated the prostate at the same sitting, but there is always a risk that tumour cells may become implanted in the prostatic bed and cause a recurrence there. This complication happened once, and I had great difficulty in treating the recurrent tumour, but was ultimately able to fulgurate it through a posterior urethroscope. When treating these growths by open diathermy I am always careful to destroy the whole growths, and not merely to cut through the pedicle with the diathermy knife. This diminishes the risk of implantation, as all the neoplastic cells are destroyed. If the patient has only a small amount of residual urine the growth should be destroyed by cystoscopic fulguration and his condition then examined to see if prostatectomy is required. In many cases a vesical papilloma gives rise to a certain amount of residual urine, and the surgeon may be doubtful at first as to whether the obstruction is due to the growth or to the prostate.

When an enlarged prostate is complicated by a malignant tumour of the bladder, the latter, of course, takes precedence. If the growth is so extensive that it

cannot be removed, or if a total cystectomy is necessary, the question of prostatectomy does not arise. In the former case the obstruction is relieved by suprapubic drainage, and in the latter the ureters are implanted into the bowel. It is therefore only when a partial cystectomy is indicated that the need of a subsequent prostatectomy comes into question. The growth should always be removed first, unless it is situated near the apex of the bladder, and excision is a comparatively simple matter, when it may be possible to do both operations at the same time. Growths at the base or lateral walls of the bladder require a more prolonged and extensive dissection, and in these cases it is inadvisable to remove the prostate until the wound at the bladder base has completely healed. The bladder must, of course, be kept drained during the intervals between the two procedures.

CONTRAINDICATIONS

There are remarkably few contraindications to prostatectomy. Many patients who at first appear to be unable to survive any surgical intervention improve enormously under catheter drainage. Suprapubic cystotomy may then be performed and the patient watched until he is fit to undergo prostatectomy. It is extraordinary how well these old men stand the operation if they are given time to eliminate the accumulation of nitrogenous waste.

Chronic bronchitis naturally contraindicates inhalation anaesthesia, but many of these patients can be operated on with comparative safety under spinal analgesia. They, however, require a considerable amount of pre-operative treatment. They should do deep breathing exercises, and be shown how to make full use of their intercostal muscles in respiration. The amount of the bronchial secretion should be diminished by small doses of atropine, and, at the same time, the heart should be stimulated with digitalis. After the operation one should stimulate the respiratory centre by inhalation of carbon dioxide in oxygen (5 per cent.). This increases the depth of respiration and helps to get rid of the bronchial secretion. I consider the state of the heart more important than that of the lungs, and would operate on a bronchitic patient, provided that his heart was in good condition.

Cardiac Lesions.—Compensated valvular disease is not a contraindication to prostatectomy, but one would do everything possible to spare the heart muscle in such cases. If signs of circulatory failure, such as oedema and venous congestion, clear up with rest in bed and appropriate treatment, one might operate if the patient's kidneys were in a satisfactory condition. Degeneration or weakness of the heart muscle is by far the most serious complication. It is always necessary to maintain a systolic pressure of at least 100 mg. of mercury during convalescence, and if the pressure falls after operation, it is exceedingly difficult to restore it again. The fall of blood pressure not only affects the whole body, but is specially injurious to the renal function. If we accept the "filtration-absorption" of urinary excretion, it is obvious that the "filtration pressure" is a function of general blood pressure, and is dependent on the work done by the heart. The "kidney filter" cannot act if the blood pressure falls. In this case the amount of urine is diminished, and at the same time the waste products of metabolism accumulate in the blood. The maintenance of the systemic blood pressure is therefore essential to the recovery of the patient. If the heart muscle is considered incapable of keeping up the requisite pressure in the arteries, an operation should not be performed.

Old age by itself is not a contraindication to prostatectomy. I have operated on three patients over 90. However, repair is usually slower in these cases and they are liable to develop complications, especially pulmonary complications. One is often told that it is not worth while operating on extremely old men, and that it would be kinder to put them on catheter life. My experience is that if a patient over 80 is fit to undergo the operation, he will have a comparatively long period of survival after it. The average duration of life after operation in eighteen patients over 80 was four and a half years. If a man over 80 has a sound heart and

lungs, it is probable that he will survive for a considerable time, and if his urinary symptoms are urgent I think one should do the operation.

Renal Failure.—An unrelieved prostatic patient usually dies from renal failure, and patients with symptoms of renal insufficiency require immediate relief from their urinary obstruction. Unfortunately this condition does not cause symptoms until the tissue of the kidneys is damaged or the renal function is severely injured by retained toxins. The clinical signs of impending renal failure are: thirst, dryness of the mouth and fauces, a dry glazed tongue, headache, sleepiness, mental apathy and dullness, a dry harsh skin, distaste for food, and constipation. Persistent hiccup and refusal to take fluids are later signs. At the same time it must be remembered that considerable damage may have been done to the kidneys before any of these signs appear. Renal failure is an indication that the obstruction must be relieved, and it is only a contraindication to prostatectomy when it is obvious that the patient is not in a fit state to stand any operation.

In this discussion of the indications for prostatectomy, there has been no mention of the size of the gland. Provided that it is not malignant, there is no need to do so, as one operates for the relief of obstruction and not because the gland is enlarged. The amount of obstruction is quite independent of the size of the gland. A small prostate should be removed if it is causing marked obstruction, while a large gland may safely be left if there is little or no residual urine.

EXAMINATION OF PATIENT

It is unnecessary to describe the routine examination of the patient; I need only point out that it must be thorough. One not only investigates the state of his urinary organs, but that of his heart and lungs, and digestive and central nervous systems. One watches carefully for weak points unsuspected by the patient or undiagnosed by his doctor.

An over-distended bladder should not be emptied until the patient is put to bed, and one should never draw off more than about fifteen ounces of urine from an ambulatory patient. Cystoscopy is best postponed until the patient is on the operating table, but the bladder should be examined before it is opened in case there is unsuspected carcinoma or diverticulum.

The examination of the renal function can only be carried out when the patient is in a hospital or nursing home. This examination goes hand-in-hand with the preparation of the patient for operation, and I shall describe both together.

When a patient is admitted for operation a catheter is passed and tied in. If the residual urine is less than fifteen ounces the bladder may be emptied completely, but if it is more than this amount, fifteen ounces may be drawn off, and a spigot inserted into the end of the catheter. Five ounces are then drawn off every hour till the bladder is emptied. Once the bladder of a prostatic patient is completely emptied it must never be allowed to fill again. It should be drained continuously until the operation is performed, as this diminishes the risk of an ascending infection. An over-distended bladder may require slow drainage for three or four days before it is completely emptied.

At the same time, the patient is given as much fluid as possible. The intake and the urinary output are both measured, and one endeavours to force the output up to 100 ounces a day. If the excretion of urine closely follows the amount of fluids administered, it is a sign that the kidneys are in a good condition, but any discrepancy between the figures for the intake and output is a danger signal. One occasionally finds that the diuresis is delayed, or does not occur at all. Both these are bad signs, but the latter is worse than the former.

Estimation of the blood urea gives exceedingly valuable information, but in many cases it is of a negative character. A high blood urea indicates retention of nitrogenous waste, but a normal figure does not necessarily show that the kidneys are efficient. The figure may be reduced by keep-

ing the patient on a low protein diet or by washing out the kidneys with large quantities of fluid. On the other hand, a rapid fall in the amount of blood urea under diuretic treatment is a hopeful sign, as it indicates that there is sufficient kidney substance to carry away the waste, provided sufficient liquid is supplied. On the whole, estimation of the blood urea often shows that operation is contraindicated, but it never tells us that the prostate may be safely removed. This information can only be obtained when it is used in conjunction with other tests.

The most useful test applied to the urine is the urea concentration test. The patient is given 15 grams of urea dissolved in 100 c.cm. of water, and the percentage of urea in the urine passed during the second and third hours after the draught is estimated. It is usually stated that a concentration of 2 to 2.5 per cent. of urea in each of these specimens indicates that the kidneys are working efficiently. MacLean and de Wesselow advise that the intake of fluid should be reduced to a minimum for twelve hours preceding the test, as a satisfactory concentration is not obtained if the patient is passing a large quantity of urine. When dealing with cases of prostatic obstruction it is, in my opinion, inadvisable to restrict the intake of fluid too much, as these patients always require a considerable amount of water in order to eliminate the nitrogenous waste. I now place less reliance on the actual percentage of urea in the specimens than on the quantity of this substance that is eliminated during each of the second and third hours after a urea draught. The quantity of urine excreted in each of these hours is therefore measured and the total amount of urea eliminated is calculated. No matter how high the concentration may be, the response to the test must be considered bad unless more than one-tenth of the original dose of urea is eliminated in each hour. A patient who gives a low concentration but eliminates a large quantity of fluid can usually be operated upon with safety, provided the intake of fluid can be maintained during the convalescence. I have not had a death from uraemia following prostatectomy in any case where the elimination of urea was more than 1.5 grams (that is, one-tenth of the dose) in each hour, but I have seen fatal post-operative suppression when the amount of urea eliminated fell below this limit, even though the concentration was over 2 per cent.

For example, I consider the following figures represent a perfectly satisfactory test:

	Quantity	Percentage of urea	Quantity of urea
2nd hour...	165 c.cm.	1.3	2.1 grams
3rd hour...	125 c.cm.	1.6	1.9 grams

Whereas the following is distinctly bad:

	Quantity	Percentage of urea	Quantity of urea
2nd hour...	75 c.cm.	1.7	1.27 grams
3rd hour...	65 c.cm.	2.0	1.3 grams

If the patient is not considered fit to undergo prostatectomy after about ten days' preliminary treatment with catheter drainage and forced fluids, a preliminary cystotomy should be performed. It is also necessary where the bladder is grossly infected. These are the principal indications for a two-stage operation. It should never be performed as a routine. It should be reserved for patients who are badly infected, or who do not recover rapidly from the effects of their urinary obstruction. Catheter drainage cannot be satisfactorily maintained for more than ten days, which is my reason for placing this limit on the duration of the preliminary treatment.

It is often said that infection is less liable to follow suprapubic than catheter drainage. With Dukes's apparatus the risk of infection with an indwelling catheter is greatly diminished, and I believe it is now less than with a suprapubic tube. Shock and haemorrhage are not diminished by operating in two stages, while the duration of the patient's stay in hospital is considerably increased. A two-stage operation is performed in about 15 per cent. of the cases in St. Peter's Hospital, and in about 5 per cent. of my private cases. If, however, it is necessary to

perform a preliminary cystotomy, one should postpone the second stage as long as possible, and, when feasible, send the patient away during the interval, for change of air.

SUPRAPUBIC PROSTATECTOMY: THE OPEN OPERATION

The incision extends in the middle line from the upper border of the pubes to the umbilicus. The recti are separated and the anterior wall of the bladder is exposed and denuded of fat. I try not to disturb the fatty tissue in the space of Retzius, as if it is removed the bladder tends to become adherent to the bone, which prevents the sinus from closing rapidly. The bladder can be opened either when distended with fluid or when empty. If it is distended with fluid the muscular tissue is caught in two pairs of tissue forceps placed one on either side of the middle line. The bladder wall is then opened by a stab about the level of the upper border of the pubes. The wound is immediately closed by the finger, and the fluid is allowed to drain away through a catheter. In this way soiling of the abdominal wound is avoided. As soon as the bladder is completely emptied, the incision is prolonged upwards for about two inches. Some surgeons open the bladder when it is empty. In this case the tissue forceps are applied so as to raise up the transverse ridge of the bladder wall, which is incised layer by layer. A traction suture is then put on either side of the wound and the interior of the bladder is explored with the finger, paying particular attention to the size of the intravesical projection and the condition of the internal meatus.

Freyer commenced the enucleation at the highest point of the intravesical projection, but as this method fails when the prostate lies entirely outside the bladder, I prefer to insert a finger into the internal meatus and to press it forward towards the back of the pubes. The internal sphincter will then be felt as a sharp ridge, and pressure immediately below this tears through the mucous membrane of the urethra and brings one automatically into the plane of cleavage. The finger is swept round the side of the internal meatus next the operator, keeping the pulp that directs it towards the sheath of the gland, but taking care not to penetrate too deeply. By this method the vesical mucous membrane is torn immediately over the line of the internal sphincter. Having accomplished this on one side the surgeon returns to the spot where he commenced enucleation, and proceeds to tear through the mucous membrane of the opposite side of the meatus. He then makes certain that the mucous membrane behind the internal meatus is completely divided, and that he has made a circular trench between the internal sphincter and the prostate. If he does not divide the mucous membrane posteriorly before proceeding with the deeper part of the enucleation, he will find that the prostate still remains attached to the posterior lip of the internal meatus, from which it can only be separated with the scissors.

Having torn a furrow round the internal meatus, the surgeon proceeds to deepen it by sweeping the finger round the prostate first on one side and then on the other. It is important to keep in the same plane of cleavage throughout. An adenomatous prostate enucleates quite easily, and no undue force is required. The enucleation is carried on at equal depth on all sides of the prostate until the lower portion of the prostatic urethra is encountered. This usually gives without difficulty, but if it feels like a strong band holding the prostate in place, it should be cautiously divided by a sawing motion of the finger-tip, keeping as close as possible to the prostate. If one tries to divide the urethra by pulling on the gland, one is liable to tear it too low down, and a cuff of the mucous membrane comes away with the gland. The division of the urethra is the only stage of the enucleation in which it is advisable to press against the prostate itself. The entire enucleation is carried out with the gloved hand. The old idea of scratching through the mucous membrane with the finger-nail has been abandoned.

As soon as the gland is enucleated, the patient is placed in the Trendelenburg position and bladder retractors are inserted. A careful search is made for partially detached

tags or shreds of material which will slough if left in place. A few of these are formed by the mucous membrane surrounding the internal meatus, which may be irregularly torn, but most of them come from outlying portions of the gland. The latter are more numerous and the larger, and as they lie entirely within the cavity from which the prostate has been enucleated they may easily escape notice. Any tags found are removed by means of scissors or forceps. The surgeon next turns to the orifice of communication between the bladder and the prostatic cavity, which should be rendered as wide as possible by cutting out a V-shaped mass of tissue from its posterior margin. The floor of the bladder overhangs the prostatic cavity at this point and forms a "shelf," which it is advisable to destroy. If the gland is very large, the orifice is widely dilated and the "shelf" is faintly marked, but when dealing with smaller glands, and especially when dealing with glands that lie almost entirely outside the bladder, the orifice is small and the greater part of the cavity lies under the floor of the bladder. In these cases it is most important to destroy the continuity of the internal sphincter in order to prevent recontraction. If the internal sphincter contracts again after prostatectomy, it has the effect of making the "shelf" broader. The anterior part of the sheath is fixed in position by the pubo-prostatic ligaments. If the sphincter recontracts it must do so from behind forwards, so that the position of the orifice of communication between the bladder and the prostatic cavity is displaced anteriorly until it lies close under the pubes. The result is that a catheter introduced into the urethra impinges against the under surface of the "shelf" behind the internal meatus, and it may be impossible to guide it into the bladder. At the same time there is increasing difficulty of micturition, which may necessitate another operation for its relief. This is why one cuts a segment out of the internal sphincter during operation.

The control of haemorrhage is the most important part of this stage of the operation. It is very usual to find two small arteries spurting when the internal meatus is examined. They lie on either side of the orifice about its middle, and can occasionally be seen on the free edge, but more often lie immediately under it, so that the vessel itself only becomes visible when the edge is turned back. These vessels should be caught and ligatured or else controlled by means of a stitch. There may also be a certain amount of bleeding from the V that has been cut out of the posterior lip. As a rule, I put a line of haemostatic sutures round the posterior two-thirds of the orifice. I use continuous sutures, placing a "back-stitch" in the middle line posteriorly in order to prevent them acting as a purse string. This line of sutures usually controls all the bleeding from the edge of the orifice. I have never seen any definite haemorrhage from the anterior third of the orifice, but if an abnormally placed vessel is bleeding in this locality it can always be caught up with a stitch. When the sutures have been inserted there may still be a slight amount of oozing from the deeper part of the prostatic cavity. A firm pack is placed in the cavity and held there for about three or four minutes. This stops it completely, and it seldom recurs when the pack is removed. If it does, a light pack is left in the cavity for forty-eight hours. The bladder is swabbed free from blood, the retractor is removed, and the lower two-thirds of the bladder incision is closed by a continuous suture. A Marion's tube is placed in the upper angle, and the bladder is allowed to drop back into the pelvis. The tube should be gripped by the bladder wall so as to reduce the leakage to a minimum. If necessary, one or two stitches can be placed above it. The abdominal wound is then closed in the ordinary manner. I do not think it necessary to drain the space of Retzius, but if the surgeon is anxious about leakage round the tube he may insert a small drain down to the anterior wall of the bladder. When a plug is left in the prostatic cavity, which is only necessary in about 5 per cent. of cases, it comes through the bladder incision immediately below the tube. In these cases there may be a slight amount of leakage when the gauze is removed, but by this time the space of Retzius has become sealed off and urine does not collect in it.

So far I have assumed that the prostate has been of the ordinary adenomatous type, but when dealing with small fibrous glands one has to adopt a slightly different procedure. These glands lie entirely outside the bladder, so that the enucleation must be carried out from the urethra. In addition, the internal meatus is usually fibrous, and it may be difficult or even impossible to dilate it with the finger. In this case the bladder retractor should be inserted and a small incision made through the sphincteric ring with the point of the knife. It is immaterial in which direction this incision is made, but I usually make it anteriorly, as it then leads directly to the point where enucleation is commenced. The incision need not be more than a quarter of an inch deep. The finger is then inserted into the urethra and the plane of cleavage is found immediately under the floor of the bladder. It is usually supposed to be extremely difficult to enucleate prostates of this type, but I have never found it so. The prostate appears to peel off from the inner surface of the sheath and soon is completely detached from it, except in the apex, where it is held by the urethra. It is advisable not to attempt to tear through the urethra, as by so doing one may easily remove too much of it. The patient should be placed in the Trendelenburg position and the bladder retractor reinserted. The prostate is caught in a pair of dissecting forceps and pulled upwards, while the urethra is divided at its apex by means of a long pair of scissors curved on the flat. In removing these small glands it is most important to cut as large a V as possible from the posterior lip of the internal meatus. If this is not done secondary recontraction is very apt to occur. The bleeding is usually slight and easily controlled by a few stitches.

AFTER-TREATMENT

The Marion's tube inserted at the time of the operation is left in the bladder for four days. The urine drains into a bottle placed between the patient's thighs and held in position by a knee pillow. This is, I think, more satisfactory than drainage into a vessel placed on the floor, as the long tube easily becomes kinked by movement. On the fifth day the Marion's tube is replaced by a number 34 to 36 White's pattern de Pezzer tube, which is left in position for a week. When this is removed, about the eleventh or twelfth day, a catheter is tied into the urethra, where it remains until the suprapubic sinus is healed. During the time that the bladder is drained, whether by a tube or a catheter, it is irrigated twice a day with two pints of solution of nitrate of silver (1 in 10,000). The front of the abdomen is painted over with 2 per cent. solution of picric acid in spirit, either every day or every second day.

I believe that frequent irrigation is the only method of keeping the bladder and the prostatic cavity free from infection. Its action is largely mechanical, as blood clots and debris, in which organisms can multiply, are washed away. Suction may keep the wound dry, but it is exceedingly difficult to remove solid particles in this manner. I prefer to keep the suprapubic sinus open for a fortnight after the operation. So long as the bladder is efficiently drained the pressure in it is kept at zero. If the intravesical pressure rises there is a risk of secondary haemorrhage. This usually occurs when the drainage tube is removed early, or when it is allowed to become kinked or blocked. The fistula closes three or four days after the suprapubic tube has been removed, and by this time the risk of secondary haemorrhage has passed.

One rarely finds that the closure of the fistula is delayed beyond the third week. The most common causes for delayed healing are (1) sepsis, (2) adhesions between the bladder and the pubes, (3) recurrent obstruction at the vesical orifice, and (4) hernia of the bladder wall through the fistula. The last condition is more usual since patients have been placed in the Fowler position than when they were kept flat until the wound was healed. If the sinus is not healed at the end of four or five weeks I usually dissect it out, free the bladder from adhesions, and examine the state of the internal meatus. In many cases it shows signs of commencing recontraction. The

opening is enlarged with the finger, a catheter is tied in, and the bladder sutured completely. The abdominal wound is closed round a small tube placed in the space of Retzius. This method undoubtedly saves time, as the delay in healing is evidence that there is something which prevents the bladder from emptying, and which, if unrelieved, may result in a permanent fistula.

OTHER METHODS

The method I have described was introduced by Sir John Thomson-Walker in 1919, and in my opinion gives the best results. The success of suprapubic prostatectomy depends largely on free communication between the bladder and the prostatic cavity; in fact, the latter should be considered as a portion of the former. The patient depends entirely on the compressor urethrae for his sphincteric control, and this muscle is quite sufficient for the purpose.

When a perineal prostatectomy is performed the compressor may be damaged during the operation or its muscular fibres may be entangled in the scar. For this reason surgeons who practise perineal prostatectomy endeavour to restore the function of the internal sphincter in order to prevent incontinence. In this they are rarely successful, because if the prostate is at all large the internal sphincter is so stretched that it cannot recover, and if the prostate is small and fibrous the sphincter itself is transformed into a fibrous ring.

Some operators—for example, Harris—endeavour to narrow the opening between the bladder and the prostatic cavity, and also to cover a portion of the raw area in the latter by bringing down a flap of mucous membrane from the bladder. I agree with Sir John Thomson-Walker that it is advisable to leave the opening between these two cavities as wide as possible, as by this means the best functional results are obtained. About ten years ago I tried to reduce the size of the raw area in the prostatic cavity by bringing down flaps of mucous membrane derived from the covering of the intravesical projection of the prostate, but I gave up doing so. The flap either sloughed or tended to occlude the internal meatus, and the results were not good. The prostatic cavity always becomes infected, and is unsuited for plastic operations. It rapidly contracts after operation, and generally becomes covered with epithelium derived either from the base of the bladder or from the urethra.

THE SEQUELAE OF PROSTATECTOMY*

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In this short time at my disposal, I think it will be best to concentrate on one or two of the various sequelae that may bother the surgeon in the latter stages of a prostatic's convalescence.

NON-CLOSURE OF WOUND

Failure of the suprapubic wound to close may be partial or complete; that is to say, the sinus may remain persistently open, or else, having closed for a period, may again become patent, so that the patient who has tasted the joys of micturating normally suffers the disappointment of seeing himself back again in a state which appears to him little different from that which existed a week or so after his operation. A persistent suprapubic sinus, although it cannot be regarded as a common sequel of prostatectomy, is such an annoying one to doctor and patient alike that it is worthy of our attention.

* Read in opening a discussion in the Section of Surgery at the Centenary Meeting of the British Medical Association, London, 1932.