RECENT TRENDS IN TREATMENT OF PROSTATIC OBSTRUCTION*

BY

ARTHUR JACOBS, F.R.F.P.S.*Surgeon, Urological Department, Glasgow Royal Infirmary*

The term "prostatic obstruction" implies a wide variety of underlying pathology. It is now generally accepted that the enlargement, whether due to a hyperplasia of pre-existing acinar tissue with an increase of fibrous tissue or to an adenomatous growth, occurs at the expense of the rest of the prostate, which is compressed into a false capsule of fibro-muscular tissue. A benign enlargement arises from the lateral lobes, the median lobe, or, as is most common, from the three lobes in combination, and thus may assume a variety of forms. A normal prostate weighs about 8 g., an obstructing prostate anything up to 200 g. and occasionally more. The so-called median-bar obstruction is not a true prostatic enlargement. It is a thickening of the posterior lip of the vesical outlet, frequently associated with a sclerotic internal sphincter. Another pathological variety is the calculous prostate. The calculi are generally in clusters, the collections varying greatly in size. Sometimes their total dimensions are such as to replace the glandular tissue completely. Finally, there is the malignant prostate, the characteristics of which vary from a small hard gland to that of an immense nodular enlargement.

Symptoms

With these varying types of prostatic pathology in mind, let us consider briefly the symptoms for which they are responsible and which cause the patients to seek advice. These symptoms are as variable as the pathology, but not very much related to it. All types tend to obstruct the outflow of urine. The bladder at first responds to this by a hypertrophy of its musculature, but, sooner or later, as a result of persistence or increase in the degree of obstruction, the hypertrophy is followed by a dilatation, the bladder is unable to empty itself, and a residual urine of variable quantity results. This in turn causes impairment in the renal function with subsequent dilatation in the ureters and renal pelvis, as can often be demonstrated by intravenous pyelography. Into this picture infection is readily introduced—a complication with serious potentialities. It is these consequences of bladder-neck obstruction which are responsible for the symptoms. Increased frequency of micturition is a common but by no means constant symptom. For example, it is often absent in one of the most serious types of case—that of the man with an atonic distended bladder. When the obstruction is well established the frequency is due to the presence of a residual urine, which causes a diminished bladder capacity. In early cases, however, there may be frequency with little or no residual urine, and this is explained by the enlarged gland interfering with the mechanism of the internal sphincter—urine, in consequence, being constantly present in the posterior urethra; or the trigone may be elevated as a result of the increased size of the prostate and thereby under constant stimulation to initiate the act. Frequency may also be due to a coincident cystitis resulting from a urinary infection. It is noticed chiefly at night, interrupting sleep perhaps two or three times, and in advanced cases much oftener.

Difficulty of micturition is a variable symptom, and is in no way related to the size of the enlargement. There is often delay in starting the act, particularly at the initial morning effort or when the call to micturate has been too

long neglected. Such neglect may precipitate acute retention. Thus it is common to hear of attacks of retention following a motor run, particularly when the presence of ladies has prevented a self-conscious sufferer from seeking relief. Excessive drinking and exposure to a cold or wet atmosphere are other predisposing causes of retention, the superadded congestion of the already enlarged prostate resulting from these conditions being sufficient to bring about a complete hold-up. In the absence of retention, pain is not a prominent symptom unless a bladder calculus is complicating the picture, in which event interruption of the stream may be a feature. Such an interruption may also occur when a middle-lobe enlargement projects over the internal meatus. Haematuria, when present, is often associated with a massive soft, friable type of gland.

These symptoms are well known and make a potential diagnosis of prostatic obstruction fairly easy. There is, however, a syndrome that may easily be missed though the life of the patient affected is often in jeopardy. I refer to the man who has slowly developed an increasing degree of chronic retention. The process may have been so gradual that no alteration in the bladder function is complained of. Direct questioning may elicit the admission that there has been a loss of projectile force in the stream. There may be little or no nocturnal disturbance, but involuntary leakage during sleep is sometimes experienced. Advice is sought because of a persistently dry tongue and a constant thirst. There has been inability to concentrate, loss of weight, a poor appetite, increasing constipation, and the skin has a dry, yellowish colouring. These are uraemic manifestations, due to back-pressure effects of long standing from the distended bladder; but the symptoms are so suggestive of a gastric lesion or of chronic intestinal obstruction that the underlying cause is easily overlooked and time is wasted in referring the patient for investigation of his gastro-intestinal tract. When complaints of this nature are made by a man in the prostatic age group—and remember this may occasionally include those under 50 years of age—the abdomen should at once be examined for evidence of vesical distension.

Indications for Operation

Operations on the prostate are required not because of enlargement of the gland but on account of the necessity for relieving obstruction at the vesical outlet. The pathological conditions of the prostate might in themselves be regarded as trivial, but the effects on the urinary tract may prove disastrous. It follows, therefore, that it is the degree of obstruction present and not the size of the prostate that constitutes the chief indication for operation. In many, the need for operation is self-evident. Thus the patient who is subject to recurring attacks of retention, who has a persistent complete retention, or who has a chronic vesical distension obviously requires operation. So also does the man who experiences a delay in initiating the act of voiding and accomplishes it with difficulty and with diminished volume. It is less easy to dogmatize about the treatment of a patient with minor prostatic symptoms.

Men who have reached the prostatic age often seek advice because of some disturbance in micturition. They are aware of the prostate and the possibilities which may ensue from it. They wonder whether something needs to be done, as they are rising once or occasionally twice during the night and are experiencing a slight hesitancy in starting micturition. Rectal examination reveals a slight enlargement of the gland, but the bladder is being emptied except for an ounce or so of residual urine, which amount is obtained on catheterization immediately after voiding. It is quite unjustifiable to advise operation for these patients. They do not, and may never, require it. With all our

*A B.M.A. Lecture delivered to the North Staffordshire Division at Stoke-on-Trent on Dec. 4, 1947.

advances in technique, prostatectomy by any method is not indicated as a prophylactic measure.

On the other hand, a patient in the early sixties with a diminished force in the urinary stream, a residual urine of 3 or 4 oz. (85–115 ml.), and well-defined enlargement of the gland, should have operation, though one in the late seventies with similar findings might best be left alone. The probable longevity with the younger age group is such that, the obstruction having established itself, it is likely to be progressive, and as operation is almost certain to be necessary sooner or later it is best that it should be done whilst he is a "good risk." The patients in the older age group should be kept under observation, and if an increasing degree of bladder distension takes place operation will be indicated irrespective of age. It is impossible to lay down hard-and-fast rules for these patients, and each must be judged individually. Some to whom I have recommended operation and who declined have, to my knowledge, carried on without added discomfort for years. Others whom I have advised that operation was not indicated have subsequently come under my care with retention. There is really no way of definitely predicting the future course of events following the commencement of early prostatic symptoms. A delay of six months or more before forming a conclusion will result in no harm to the patient, provided that damage to the kidneys is not occurring as a result of back pressure from an increasingly distended bladder.

Recent Innovations in Operative Treatment

The normal prostate is an extravascular structure. One that is enlarged is still so, though it may intrude into the bladder to a greater or lesser degree. In the case of the prostatic bar, the site of the obstruction is at the bladder neck. It is therefore not surprising that an extravascular approach through the perineum has vied for many years with an intravesical approach by way of the suprapubic route as a method of choice in operating for the relief of prostatic obstruction. It is also natural that instruments for excising the small amount of tissue which constitutes a prostatic bar should have been devised to give access to the obstruction by way of the urethra and that from these original prostatic-bar excisors an armamentarium has been developed which in trained and skilled hands makes possible the removal of a prostatic enlargement or a substantial portion of it. Thus during the past fifteen years or so the transurethral route has become a third recognized method of approach to the prostate.

The underlying motif that has stimulated differing operative efforts has been the need for a procedure which will give relief to a group of patients who, as a rule, are not ideal subjects for operation because of their age and the coincident cardiovascular, pulmonary, and renal pathology that frequently accompanies the prostatic lesion. It is an unfortunate circumstance that major surgical intervention requires to be carried out when degenerative changes have become established. I have never practised perineal prostatectomy, but have been an active exponent of the suprapubic operations, using the techniques of Freyer, Thomson-Walker, and Harris as these succeeded each other. I have also employed the transurethral method since its inception, but have tended to restrict its use to the smaller types of enlargement. One felt that every possible mode of access to the prostate had been explored and that good results depended on careful timing of operation after adequate preparation of the patient, particularly in regard to improvement of renal function; on selecting the approach most suitable to the variety of prostatic obstruction present; on perfecting one's operative technique and planning a careful regime of post-operative care. In latter years judicious use of the sulphonamides and penicillin has given further

aid. Of great importance also has been the help we have had from some of the newer methods of anaesthesia.

But urology, as an American colleague has stated, is a dynamic specialty, and the search for still further improvements stimulated the ingenuity of Terence Millin (1945, 1947) to devise yet a fourth approach. Two years ago he published his method of prostatectomy, for which he claimed not only a low mortality but also an absence of the variable difficulties, complications, and post-operative discomforts that may beset the other three methods, as well as a short confinement to bed and a rapid convalescence. Briefly, the technique is as follows.

The retropubic space behind the symphysis is exposed through a low abdominal incision, either transverse or vertical in direction. The prostate gland within its capsular coverings is defined below the bladder, cleared of overlying fat, and the capsule then opened by a transverse incision immediately distal to the bladder neck. The lower extremities of the lateral lobes are freed with scissors and the separation is continued with the finger, working from below upwards until both lateral lobes and the middle lobe, when present, are delivered into the wound, when the complete adenomatous mass can be readily detached. A wedge from the posterior lip of the vesical neck is now excised, this being an essential step in the operation to obviate against stricture subsequently occurring at the vesico-urethral outlet. The cavity is carefully inspected, spurting vessels are caught in forceps and coagulated with the diathermy, and any small residual adenomata or loose tags removed with scissors so that a smooth surface remains. A catheter is then passed along the urethra into the bladder and the prostatic capsule is closed by catgut suture. Sulphanilamide powder is inserted into the retropubic space and the wound closed, a small drain of corrugated rubber being delivered through it. The drainage from the catheter must be carefully watched, particularly during the first six hours, to ensure that there is no blockage from clots. The patient is generally able to get up on the third or fourth day and to void urine on the fourth or fifth day, when the catheter is removed. The majority of patients are ready to go home within about a fortnight from the time of operation.

I can comment on this operation with some knowledge, for I have personally employed it on 205 patients. Its execution is a more difficult technical undertaking than the suprapubic operation, but with experience it can be accomplished within 30 minutes and with little blood loss. The patient should have a painless convalescence with, in the majority of instances, no suprapubic seepage of urine at all. Included in my series are patients with serious cardiovascular lesions and permanent renal damage who would formerly have been regarded as unsuitable for prostatectomy. Seventy-five had passed their 70th birthday, 23 being between 75 and 83 years of age. In spite of including this "bad-risk" type of case, my overall post-operative mortality has been 7.2%.

Another new mode of procedure has been described by Wilson Hey (1945). His advocacy is startling, not so much because of his method of operation, which is through the suprapubic route, but because of the principles he enunciates, principles which condemn that which for many years has been regarded as dogma in the treatment of the prostatic. He advocates immediate prostatectomy on a patient with acute retention, and prostatectomy without preliminary drainage on the patient with chronic retention even if he be uraemic. Now, this latter group of patients is generally regarded with the greatest anxiety, as it is believed that in the presence of renal impairment prostatectomy will aggravate the kidney failure. The renal function, it is considered, must first of all be adequately restored by a preliminary period of bladder drainage, the indwelling catheter being employed for this if a week or two of drainage will suffice, a suprapubic tube if more prolonged drainage is required. Hey, however, considers that these measures are potent means of introducing infection into the urinary tract or

adding a new infection, and it is this, and consequent pyelonephritis, that is responsible for the mortality. He therefore condemns the preliminary use of the catheter or suprapubic tube and, following such supportive and anti-septic treatment as the timing of his operation will permit, carries out a bimanual enucleation of the prostate by the suprapubic route, removing at the same time a substantial segment of the bladder trigone. The large cavity which is thereby left permits visualization of bleeding points, and meticulous haemostasis is obtained by diathermy of these. It is thus possible to close the bladder completely, after passing a tube down the urethra in a retrograde direction. Hey claims a low mortality, early ambulation, and a short stay in hospital for his method also. I have used his operation on 43 patients, selecting for the most part those suffering from chronic distension and consequent marked renal impairment. There were three post-operative deaths.

Hey has, I consider, certainly produced a strong case for his contention that the introduction of sepsis into the urinary tract and subsequent renal infection is a chief source of danger in prostatectomy. It is, however, difficult to admit his claim that it is, for example, safer to perform a prostatectomy on a man with uraemia, a gross urinary infection, and a severe secondary anaemia than to carry out the operation after these conditions have been righted, even though the time required to bring about the necessary improvements will call for preliminary drainage of the bladder.

Suprapubic Cystostomy

The establishment of permanent suprapubic drainage as a method of relieving prostatic obstruction is highly undesirable, and indeed must be regarded as a confession of failure. As a temporary measure to relieve acute or chronic retention, however, I consider the procedure still has a useful role to fulfil, particularly when there is gross renal impairment associated with severe secondary anaemia, or when a serious cardiac lesion is present which time and supportive treatment might improve. The drainage, by relieving the upper urinary tract of back pressure, will generally be followed by a betterment of the renal function. When this preparatory measure has resulted in the maximum improvement that can be achieved, the surgical attack on the prostate can be proceeded with. In some instances little or no improvement in the kidney function takes place. This may be because the kidney damage is so advanced as to be irreversible, or it may be due to compression of the lower ends of the ureters by the enlarged prostate. That this can happen may be demonstrated at operation, when, following removal of the gland—usually one that is markedly enlarged—through the suprapubic route, urine can sometimes be observed gushing out of the ureteral mouths.

The optimum improvement likely to follow in those on whom cystostomy has been deemed expedient will occur in from one to three months. After that time there are but few who should not be offered operation. Some may be content to carry on with a permanent tube, but most will gladly accept operation, even if this is not without hazard, in preference to being relegated to that unhappy group of men, "the permanent cystostomized and abandoned prostatic." There are, of course, those who develop urinary obstruction, who are already in a stage of terminal physical and mental dissolution, or who suffer from some other lesion of a mortal nature. The insertion of a suprapubic tube under local analgesia is all that is indicated as a means of easing their remaining days. Out of 310 operations for prostatic obstruction that I have carried out during the past two years, cystostomy was the sole procedure in 11. One patient with congestive cardiac failure died within 48 hours.

Eight lived for periods of one to six months and two still survive.

Treatment of Prostatic Carcinoma

The incidence of the malignant prostate is high, accounting for about 16% of all prostatic obstructions. Now, there are several ways of carrying out a radical operation for prostatic carcinoma, the perineal, retropubic, and suprapubic routes each offering an alternative method. Only, however, in the earliest cases will such operations hold out the prospect of cure. When the gland by its asymmetry, hardness, nodularity, or fixation is clinically recognizable as being malignant no radical operation can be offered. Into this group fall the large majority of patients suffering from prostatic carcinoma. The late Hugh Young (1945), of Baltimore, before his death published the results of his radical operation for the malignant prostate. These were on the whole excellent, the operative mortality being around 6% and a cure claimed for nearly 50%. One noted, however, that in the 40 years during which he had been carrying out the operation he had been able to employ it on only 184 patients.

I think the fact must be squarely faced that at the present time palliative treatment only is possible for the large majority. The outlook is brighter than formerly, however, as a result of oestrogen therapy, which is based on the knowledge that the cells of a prostatic cancer will atrophy if the supply of androgens is cut off. This process is achieved either by castration, which eliminates the main source of androgen, or by the administration of oestrogens or their synthetic equivalent, stilboestrol. The effect of oestrogen is to arrest the androgen output from the testicles by inhibiting the supply of gonadotrophin from the pituitary. Those of us who have been engaged in the clinical application of this treatment since its introduction recognize that it does not cure. From experience gained during the past five years I am not even prepared to state that it prolongs life, but it certainly eases it in a large proportion of sufferers. In those who are responsive to the treatment the nodularity and induration disappear in a matter of weeks, and micturition becomes easier and frequency less. Lumbar and sciatic pains, from which many suffer, disappear, and the patient generally has a new feeling of well-being. One patient, whom I saw for the first time after he had lost all power in both legs as a result of a metastatic deposit in the lumbar spine, was able to be up and about within two weeks of starting treatment, and now, after the elapse of a year, remains well enough to travel to his office daily. I have not obtained by the use of stilboestrol any measure of success in restoring normal micturition in cases with retention or severe obstructive symptoms, but a transurethral resection generally accomplishes this and obviates the necessity for a permanent cystostomy in the majority. Orchidectomy, the surgical method of reducing male hormone, is of proved value in the treatment of prostatic carcinoma and is probably quicker in action than the administration of oestrogens. The testicular substance from the body of each testicle can be readily shelled out through an incision in the tunica after delivering the testicles in turn through a small single incision made at the lower extremity of the scrotum. I generally employ the method if I require to carry out a resection for the relief of obstruction, performing the orchidectomy at the same time.

Thus my treatment at present for an established prostatic carcinoma is on the following lines. In the absence of obstructive symptoms, reliance is placed on stilboestrol therapy alone. The initial dosage is 5 mg. four times daily, this being continued until an adequate response occurs, when the amount is reduced to a level which appears to be adequate for control. About 3 mg. a day will generally

prove sufficient for this purpose. The optimum dosage has not yet been determined, but continuity of treatment is considered essential. When retention or severe obstructive symptoms necessitate a transurethral resection the opportunity is taken of removing the testicular substance and stilboestrol is withheld, to be used as a final measure if signs of reactivity manifest themselves.

Conclusion

The following table shows the different methods I have employed in a personal series of 310 consecutive operations for prostatic obstruction during the past two years:

Operations for Prostatic Obstruction, December, 1945, to November, 1947

Method of Operation	No.	Mortality
Retropubic prostatectomy	205 (7 2-stage)	15 (7.2%)
Prostatectomy by Wilson Hey technique	43	3 (6.9%)
Suprapubic prostatectomy	10 (9 2-stage)	0 (0%)
Transurethral resection	41 (19 malignant)	1 (2.4%)
Suprapubic cystostomy	11	1 (9.0%)

It may seem strange that no single operation has been universally accepted as a standard method for the relief of prostatic obstruction. The variety of operative measures is, however, not so surprising if the varied prostatic pathology and the differing physical status of the individual patients is borne in mind. Because of this, I believe it is undesirable that one should be exclusively devoted to a single operation which all our prostatic patients must submit to.

Having served an apprenticeship in the surgery of the prostate, extending over a period in which many fundamental changes have been introduced in the surgical approach to this problem, I have learnt that one must not be reluctant to admit the necessity for change. Suggestions which do not accord with established ideas should be viewed critically, but not with distrust. If a new technique seems indicated the change must be made, even though a major effort is required to alter course and master its accomplishment.

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LOWER-SEGMENT CAESAREAN SECTION

A NEW HEAD EXTRACTOR

BY

BRYAN C. MURLESS, M.B., F.R.C.S., M.R.C.O.G.

Assistant Visiting Obstetrician and Gynaecologist, King Edward VIII Hospital, Durban

Incision of the lower uterine segment for delivery was first proposed by Frank as long ago as 1907. It was not until many years later that it became a recognized procedure and its true advantages were realized. To-day these advantages have been proved. The lower-segment section, with its decreased maternal mortality and morbidity rates, has come to stay. Few classical operations are now performed in the world's great clinics, and some authorities have not performed one for many years. It may almost be said that, except in special cases, classical caesarean section should be regarded as malpractice. It seems surprising, therefore, that the technique of delivering the head in the so-called lower-segment operation is still far from perfect. This is shown by the many different methods in use to-day,

for in a tour of operation theatres each surgeon may be seen to use his own pet manœuvres.

To my mind, delivery of the head has always been the most difficult part of the operation, especially for inexperienced surgeons. I have therefore tried to devise an instrument to simplify this procedure.

Methods for Delivering the Head

Several methods have been used for delivering the head—e.g., Willett's forceps, a single blade of the large obstetric forceps, Wrigley's forceps, small straight forceps, the operator's hand. I submit that each of them has its disadvantage.

Willett's Forceps.—The obvious disadvantage of scalp traction with Willett's forceps is damage to the foetal scalp. This may not be severe, but it is a circumstance to be avoided if better methods are at hand. Sepsis of the scalp may follow, and cases of *Clostridium welchii* infection with serious results have been reported. Furthermore, the lifting power on the foetal head, through the scalp, is not all that could be desired, and haemorrhage from the uterine incision cannot always be controlled by the upward pressure of the foetal head. Most operators have abandoned the use of Willett's forceps in favour of other methods.

Single Blade of Large Obstetric Forceps.—A single forceps blade is sometimes used as a lever to deliver the head. This method is unsatisfactory, as the lack of curve of the blade makes it extremely hard to introduce if the head is engaged. Again, if it can be introduced successfully the leverage is in the wrong direction, with resulting tears of the lower segment.

Wrigley's Forceps.—These are used by many surgeons at the present time. They are not completely satisfactory and are sometimes difficult to apply. The chief disadvantage is that, haemorrhage may take place while the head is being manœuvred into position and the forceps are being applied—a procedure that can take a considerable time even with an expert operator.

Small Straight Forceps.—Straight forceps are generally easier to apply than Wrigley's forceps, but the disadvantage mentioned above still applies. Small straight forceps are perhaps the best method of delivery in use at present, but they are still far from the ideal.

Operator's Hand.—Many operators use their hand to scoop the head out of the uterine incision. In my experience it is always necessary to introduce four fingers and the whole of the palm of the hand into the uterus to get below the foetal head. It is a "blind" method of delivery and serious tearing of the lower segment may result, endangering the uterine vessels, no matter how carefully the manipulation is done. To onlookers the method appears clumsy, and the unnecessary introduction of the whole hand into what may be the infected area offends the principles of surgery.

The Extractor

An instrument fashioned like a forceps blade, which curves round the foetal head just above the symphysis pubis and gently lifts the head out of the uterus, would, it seemed, be ideal. It was soon found that a blade with the correct curve and a fixed handle was impossible to introduce owing to contact of the handle with the anterior abdominal wall thrown forward by the pregnant uterus. A blade with a detachable handle was therefore made and it worked successfully. Finally, the instrument described below with a handle that folds back on a double hinge was designed.

The instrument consists of a single fenestrated blade the shape of which is very similar to that in the ordinary midwifery forceps, except for an exaggerated cephalic curve. Immediately at the base of the blade is a double hinge built into the normal diameter of the shaft connecting the blade to the handle. The shaft carries a sliding sleeve which by a simple movement covers and locks the double hinge, thus