chordotomy that complete freedom from pain can be promised, but as the operation is a severe one it should be reserved for exceptional cases. In my own experience the necessity for chordotomy has only arisen once.

Treatment by Radiotherapy

Two alternative lines of treatment are here available: radium and deep x -ray therapy. If the former be selected the radium is applied as needles or as radon seeds, inserted into the substance of the gland, the old methods of application by means of a receptacle in the posterior urethra or rectum having been abandoned. I prefer to insert seeds by means of an introducer thrust through a perineal incision. It must, however, be confessed that the results are disappointing, and Young's comment that "in some cases the duration of life appears to be distinctly lengthened, and it may be that a few cures have been obtained" represents the optimum to be expected.

A more promising line of treatment is by means of deep x -ray therapy. Writing in the *Journal of Radiology* in 1926, Sir John Thomson-Walker published an account of forty-eight cases of malignant prostate treated by means of massive doses of x rays. In five of these cases fairly advanced carcinomata disappeared for a sufficiently long time to encourage the hope that they would not recur. In another fifteen cases a temporary improvement was produced followed by recurrence, making altogether twenty cases, or 41.6 per cent., where the growth was profoundly altered by the x rays. Since the publication of Thomson-Walker's paper great advances have been made in the technique of this form of treatment, and I believe that with these advances there will be an equal improvement in the results obtained. That this opinion is not supported by statistics in the present paper is due to the fact that the number of malignant prostates I have submitted to modern methods of deep x -ray therapy is not yet sufficient (some dozen cases) to justify the publication of statistics, nor can I find reliable figures from other sources with which to supplement these. But although figures are at present lacking it is still possible to draw certain conclusions on the subject.

Conclusions

The first of these is that, if possible, patients should be referred to the radiologist without having been submitted to suprapubic drainage. The presence of a drainage tube and the inevitable infection of the bladder associated with it adds enormously to the discomfort of the reaction provoked by the treatment. If the difficulty in micturition or the amount of residual urine is such that relief of the obstruction is necessary, per-urethral resection is infinitely preferable to suprapubic drainage. Another conclusion that can be drawn is that there exist wide variations in the response of different patients. I have had two advanced cases of malignant disease which when examined two months after the conclusion of a course of deep x -ray therapy appeared to have normal prostates. Other cases treated by the same radiologist, with the same intensive doses, remained exactly as they were, even though some improvement in symptoms had been noted. What determines this difference, and whether it lies in some unknown factor in the patient himself or in some difference in the radio-sensitiveness of the cancer cells, it is impossible to say. Perhaps, as Thomson-Walker has stated in the publication already referred to, some means will be found of estimating the radio-sensitiveness of a patient so that unpromising cases may be spared the disappointment of an ineffectual and irritating treatment. It is indeed to be hoped that closer co-operation

between the urologist and the radiologist will lead not only to a more accurate estimation of the value of radiotherapy in carcinoma of the prostate, but also to an actual improvement in the technique and management of the cases during treatment. In the meantime, I believe that radiotherapy is the most valuable agent at our disposal in the treatment of inoperable carcinoma of the prostate, and is, too, a valuable supplement to surgical removal.

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PROSTATIC RESECTION

A SIMPLIFIED TECHNIQUE

BY

C. DUNDAS MAITLAND, F.R.C.S.

SURGEON TO THE ROYAL SURREY COUNTY HOSPITAL, AND THE SURREY COUNTY COUNCIL HOSPITAL, GUILDFORD

Having performed diathermic resection by the suprapubic route in ten cases, with apparently completely satisfactory results, I feel encouraged, in spite of the small number of cases, to place a short description of this simple method of prostatic resection on record. It has occurred to me that it might prove of interest to those surgeons who, through lack of the requisite type of operating cystoscope or of sufficient opportunities to acquire skill in cystoscopic methods, feel themselves unable to carry out the orthodox operation per urethram. It has been my experience that about 40 per cent. of cases of prostatic obstruction are not fit to stand the shock, sepsis, and loss of blood entailed in the performance of a complete prostatectomy at the time when they first come to a surgeon for advice. Perhaps half of these are unfit as the result of exceptional delay in seeking advice for their urinary difficulty. The remaining half may be unfit from a variety of other morbid conditions which, either alone or in conjunction with the results of prolonged urinary back-pressure, render them definitely unfit for radical operation by any method.

I have found that the use of the diathermic method of partial resection allows about half of these otherwise inoperable cases to receive the benefit of surgical relief without subjecting them to any unduly high risk. The greatly diminished shock, the lessened post-operative pain, the almost complete bloodlessness of this operation, and the very small area of damaged bladder surface are the factors which contribute to the greater safety of diathermic methods in cases presenting high surgical risk. Perhaps the largest single factor contributing to the low mortality of this type of operation is the lessened element of septic absorption resulting from the small area of damaged tissues and the fact that all the vessels and lymphatics are automatically sealed during the process of resection. This is evidenced by the smooth and afebrile convalescence enjoyed by all the cases I have so far dealt with.

Pre-operative Treatment

In preparing the patient for operation, cases requiring preliminary drainage should have this done by the use of a urethral catheter in preference to the employment of a suprapubic tube if they are destined to have their prostates resected by the suprapubic route. My reason

for stressing this point is that I have found in cases where suprapubic drainage has been in operation for more than a few days that the resultant thickening and fibrosis of the abdominal wall and shrinkage of the bladder renders adequate exposure of the prostate at the time of operation much more difficult.

Operative Technique

Having got the patient into the best possible condition the bladder is opened by a 3-inch suprapubic incision and a four-blade bladder retractor is then inserted. An illuminated retractor is advisable, but not essential. The bladder being well spread open, the assistant inserts his right forefinger into the rectum and pushes the prostate up as far as possible. A cone-shaped speculum, cut away on one side, is then inserted into the prostatic urethra, and held in position by means of a clamp, the terminal three inches of which, including the jaws, is set at right angles to the handle. The speculum I have used has been of metal, and about two inches in diameter at the mouth of the cone, but I think that ivory, being a better non-conductor of heat, would be preferable. The terminal half-inch of the speculum is solid, bluntly pointed, and 1 cm. in diameter. This allows the operator to push it well down through the prostatic urethra until the point is felt to enter the membranous urethra.

The operator controls the speculum by means of the clamp in his left hand, while manipulating the diathermic knife in his right. The assistant also has his left hand free to help control the position of the bladder retractor. The speculum effectively protects the anterior and antero-lateral walls of the urethra, while the middle posterior lobe, or median bar, and part of the lateral lobes of the prostate project into the cut-away portion of the speculum. The operator then proceeds to remove all that portion of the prostate uncovered by the speculum by means of the diathermic knife. I have tried two forms of electrode for this purpose: a thin wire loop designed to cut the tissue away in thin, clean slices, and a thin flat spatula-type of electrode similar in shape to a narrow tenotomy knife, but, of course, quite blunt on all edges and at the point. Using this latter type of electrode the process is one of coagulation, the electrode being applied until coagulation to a depth of 3 to 5 mm. is obtained. The coagulated tissue is then removed with a blunt spoon curette and the electrode reapplied to carry the process another 3 to 5 mm. deeper. In the case of a fairly large prostate this sequence of coagulation and curettage will have to be repeated about four times. I have so far found this method more satisfactory than the cutting loop, as, owing to the accumulation of moisture in the cone of the speculum and the fibrous nature of the tissue to be sectioned, cutting has not been very satisfactory.

A fairly accurate idea of depth can be obtained by palpating on to the tip of the assistant's finger in the rectum, through the remaining thickness of prostatic tissue and rectal wall. Another indication that sufficient has been removed, or that the limits of safety are nearly reached, is the appreciation of a distinct feeling of warmth by the finger of the assistant when the electrode is applied to the bed of the resected area. Care must be taken to allow for subsequent sloughing of another layer of tissue after the final curettage. This is likely to take place about six to eight days after the operation. Having completed this resection the speculum is withdrawn, and a large rubber catheter is passed into the bladder through the urethra and secured by a stitch through the preputial skin. The suprapubic wound and bladder are then closed, in separate layers, round a half-inch drainage tube. Drainage of the cave of Retzius is not required.

Post-operative Treatment

During the first post-operative week the bladder is washed out every one or two hours with a solution of 5 per cent. sodium citrate, a glass container of this fluid being hung at the side of the bed and connected by a tube and control clip to the urethral catheter. This solution seems to dissolve coagulated tissue and any small blood clots, and allows of drainage through a comparatively small suprapubic tube. At the end of a week or ten days, if the urine and wash-out fluid have become quite clear, the suprapubic tube is withdrawn and the wound

allowed to heal, the catheter being retained in position until the suprapubic wound no longer discharges any urine.

I have performed this operation on only ten cases to date, but of these every one was a bad surgical risk, and every one has been dry, soundly healed, passing his urine freely and naturally, and ready for discharge from hospital in less than four weeks—several of them in less than three weeks.

Commentary

Failing cystoscopic diathermy, this operation seems to be positively indicated in cases of obstruction due to a small fibrous prostate or median bar, but it also seems quite satisfactory for cases of obstruction due to ordinary adenomatous enlargement which, for any reason, may be considered just too bad a risk for ordinary complete prostatectomy. I have not had any opportunity of trying it in cases of malignant prostate, but it appears possible that it could be employed in some of these cases to relieve the victims from the added miseries of suprapubic drainage during their remaining few months. I do not claim any originality for this simple little operation; it may have been practised and described before, but I have never seen any such description. The operation seems so simple, takes such a short time to do (generally about twenty minutes), is followed by such a comfortable, short, and uneventful convalescence, that I feel that it may have a definite future. Certainly the number of cases is far too small to give any indication of operation mortality, but so far I have not had the misfortune to have to record any fatality; nor have there been any complications in any way attributable to the method of operation during the post-operative period in hospital. In fact, complications of any kind have been conspicuously absent.

The earliest cases were operated on about two years ago, and so far I have not heard of any recurrence of obstruction, although they were all instructed to return and report any subsequent difficulty which might arise after their return to their occupations.

[Since writing the above I have had one case of delayed healing, due to slough formation in the suprapubic wound. This was a case which had been draining by suprapubic tube for several months, and therefore was not an ideal case for this method of treatment.]

E. Meulengracht (*Nord. Med. Tidsskrift*, November 30th, 1935, p. 1961) reports encouraging experiences with a liberal dietary of bread and butter, oatmeal porridge, milk, cocoa, and tea for the lesser meals of the day, and meat, fish, omelettes, fruit, potatoes, and other vegetables for the main meal of the day, from the time of the patient's admission to hospital for haematemesis and malaena, however severe they have been. Since he abandoned the conventional starvation treatment of these conditions in 1931, the author has dealt with 255 cases of severe haematemesis and melaena up to April 1st, 1935. He reduces his 255 cases to 220 cases of uncomplicated ulcer haemorrhage by the elimination of cases of cancer of the digestive tract and of varicose veins of the oesophagus associated with cirrhosis of the liver. Among these 220 cases there were only three which terminated fatally as a sequel to the haemorrhage. The author compares this very low mortality rate with the 10 per cent. figure for the conventional inanition treatment. He remarks that the comparatively high mortality associated with the inanition treatment is largely due to general exhaustion promoted by the anaemia, which is accentuated by an inadequate supply of food and drinks. The author's liberal dietary is supplemented by a teaspoonful three times a day of a mixture containing sodium bicarbonate, magnesium subcarbonate, and extract of hyoscyamus; also by a 0.5 gram tablet of iron lactate taken three times a day. He claims that this treatment reduces the mortality and shortens convalescence.