

EXPERIENCES WITH NO-CATHETER PROSTATECTOMY*

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The challenge of finding the ideal form of prostatectomy has produced a variety of approaches with staunch protagonists of each. No single procedure, however, will prove adequate for the variety of pathology encountered, and the surgeon must be equipped to deal with all types.

The ideal operation¹ must secure complete removal not only of all existing obstruction, but also of all potentially obstructing tissue, minimal mortality, easy convalescence and rapid return to normal health and urinary function. The operation, moreover, should not be outside the scope of any urologist.

We employ the standard retropubic procedure, omitting the use of a catheter. This omission eliminates a potent cause of infection and morbidity that so often accompany catheter drainage.

This procedure is not original and has been described by Debenham and Ward² (81 cases), Hickinbotham *et al.*³ (106 cases), Macalister⁴ (299 cases), and Spencer⁵ (132 cases). In our series of 70 cases selected for no-catheter prostatectomy some modifications have been introduced, the most important of which has been the use of normotensive anaesthesia, in contrast to the hypotensive anaesthesia employed by the previous authors. We are so impressed by the lowered morbidity, minimal demands on postoperative nursing care and easier convalescence, that we wish to report our results.

METHOD

Anaesthesia

Our first case was a patient of 83 years, who was hypertensive with a blood pressure of 210/110 mm.Hg. In accordance with the procedure recommended by the previous authors, we requested our anaesthetist to employ hypotensive anaesthesia. However, the patient instead received a routine Pentothal, gas and oxygen anaesthetic with muscle relaxants, and this has been the pattern in most cases. Choice of anaesthetic has always been left to the discretion of the anaesthetist, and a hypotensive technique has never been employed. We have not encountered any anaesthetic complications, despite the old age (Fig. 1) and the high blood pressure (Fig. 2) of the patients in our series.

Operative Technique

A straightforward retropubic prostatectomy is done. Obvious bleeders in the prostatic fossa are usually accessible and are coagulated. A continuous haemostatic suture approximates the bladder neck down to the prostatic fossa. This usually controls most of the bleeding and avoids undermining the trigone, a point which facilitates passage of a catheter into the bladder should this become necessary in the postoperative period. This suture must carefully avoid the neighbouring ureteric orifices. This ensures that any transient postoperative anuria is not due to occlusion by the suture. A urethral catheter is inserted into the bladder before closure of the anterior prostatic capsule. After closure a thorough bladder wash-out is performed to assess the amount of active bleeding that may be occurring, and the watertightness of the capsular closure. It is then possible to decide whether the catheter should be removed or not. If judgement indicates a suitable case, the catheter is withdrawn after about 40 ml. of water have been instilled. A latex tube drain is left in the retropubic space, the open end of which receives a small rubber suction bulb.

Postoperative Routine

In order to ensure an adequate diuresis, intravenous fluids are administered until such time as the oral fluid intake is adequate. An appropriate antibiotic is administered from the outset. For analgesia, Omnopon or pethidine is prescribed. A blood pressure and pulse chart are recorded half-hourly and then hourly for the first 24 hours, as indicated by the requirements of the situation. A urinal is placed between the thighs and over the penis.

Samples of any voided urine are decanted into test-tubes and labelled with the time of voiding. Observations indicate the degree of haematuria. The rest of the urine can be discarded after measuring.

The patient is encouraged to sit out of bed on the first postoperative day, and to walk around from the second day. The retropubic bulb drain is checked hourly and emptied as necessary. The amount of drainage is also charted and an intake/output chart is kept. The retropubic drain is extracted 24 hours after cessation of drainage, usually by the 3rd postoperative day.

*Date received: 20 August 1968.

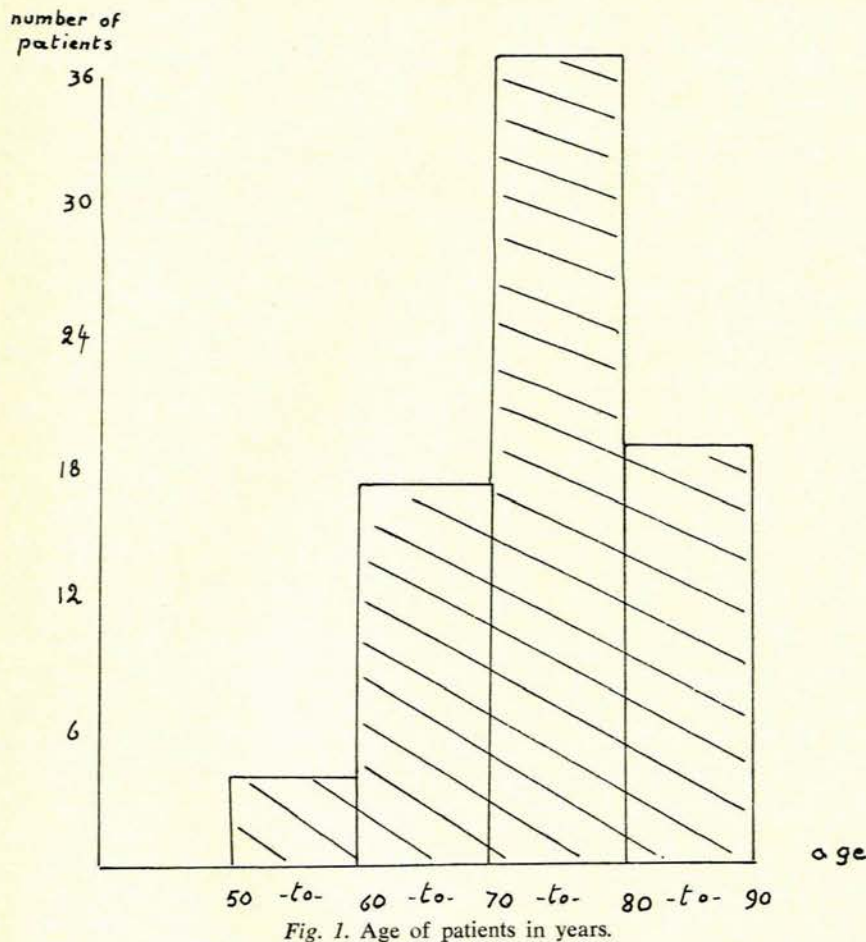


Fig. 1. Age of patients in years.

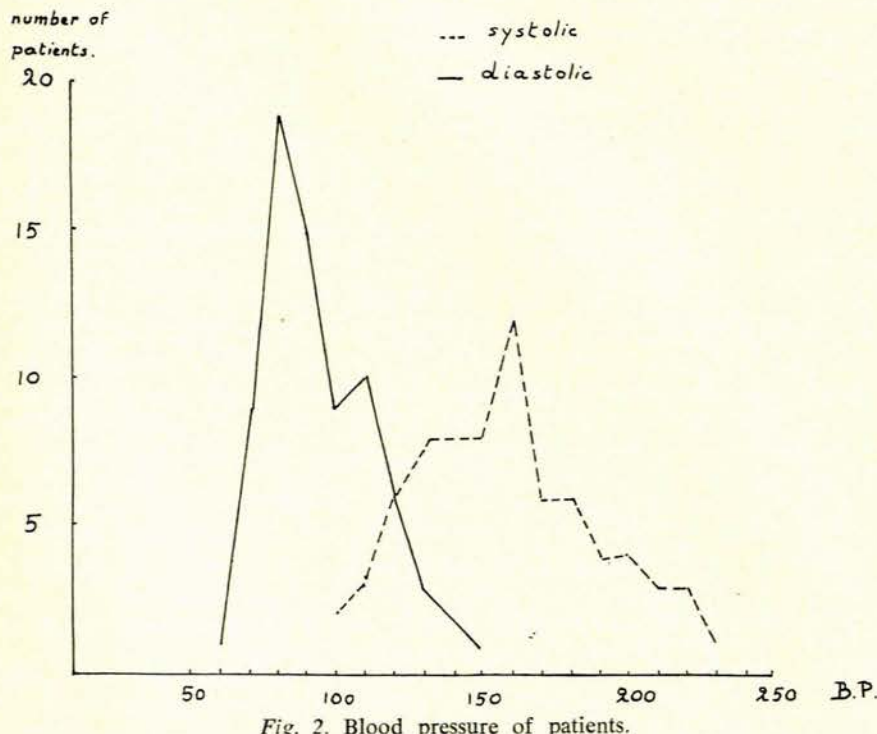


Fig. 2. Blood pressure of patients.

Postoperative Spontaneous Micturition

It was our routine with the first few cases to strongly encourage patients to void into the positioned urinal. This was probably bad policy, as a few of the patients and some of the nursing staff were precipitated into a minor panic. The patients should rather be reassured that everything is fine. Some patients feel a continuous desire to void but are unable to do so. The only help we give these patients is to sit them up over the edge of the bed, which often facilitates urination for the first time. Fig. 3 indicates the range of time elapsing before the first voiding, with a mean of 5½ hours. As long as the patient is not distressed by the continuous pain of a distended bladder, and as long as there are no clinical signs of concealed haemorrhage, we have resisted the temptation to catheterize during the first 24 hours. Ultimately, heavily blood-stained urine will be passed, the urine becoming clear between the 2nd and 3rd postoperative days.

It is noteworthy that a clot retention never supervened in the first postoperative days and that there were only 3 patients who passed some very large blood clots *per urethra*, painlessly and easily without straining. These clots could never have been transmitted through an indwelling catheter. One of these 3 patients had a secondary haemorrhage on the 10th postoperative day, with clot retention due to much smaller clots than described.

Sedation

One of the advantages of this procedure is the almost painless postoperative course. There are no catheters to become plugged with obstructing clots, no painful bladder wash-outs, and no bladder spasms. There is no necessity for distending the prostatic fossa with an inflatable balloon catheter or for leaving such a catheter in the bladder, sometimes on traction. The average requirement of pethidine during the whole postoperative period was only 100 mg., despite the order for sedation whenever necessary.

CATHETERIZATION

At Operation

We have employed a catheter or modified our approach at the operation in certain circumstances. These include cases presenting with severe clot retention (1); technical inability to secure adequate haemostasis (1 case controlled by traction with a Foley-bag catheter); cases with hypotonic bladders; and failure to secure water-tight capsular closure (due to tears, difficult enucleation, and carcinoma with invasion of the capsule). Difficult access to the retropubic space by virtue of previous surgery in the area or anatomical difficulties, and the presence of any other associated bladder pathology (tumour, diverticulum, stone, etc.) have also been indications for changing the plan and employing a catheter.

Postoperative

Urinary retention beyond 24 hours was an indication for catheterization in one patient with a hypotonic bladder and a large amount of residual urine pre-operatively. Two patients developed transitory hypotonic bladders with urinary retention, probably due to the administration of detrusor relaxant drugs. These had been prescribed prophylactically to avoid bladder spasms, but as they have never occurred these drugs have since been omitted.

Primary clot retentions were not encountered but would no doubt be an indication for replacing the catheter. One patient developed a secondary haemorrhage with secondary clot retention on the 10th postoperative day, and another a slough retention 3 weeks later. Failure of water-tight capsular closure with excessive retropubic leakage of urine required a few days of catheter drainage in 3 cases. One patient with postoperative psychosis, hypertension, diabetes, and ultimately fatal uraemia, was more easily managed with a catheter. One patient developed a retropubic abscess and fistula due to imperfect drainage of the retropubic space on the 10th postoperative day, although the urine was sterile. Two patients were catheterized for transient postoperative oliguria in order to monitor their urinary outputs more accurately. Thus 17% of patients required to be catheterized in the postoperative period.

Transitory Oliguria

When catheter prostatectomies with subsequent bladder wash-outs are performed, it is rarely possible to obtain an accurate measure of urinary output during the first 48 hours. A transitory oliguria or anuria can thus be masked; but it becomes readily apparent with the no-catheter technique. We feel that this condition is an indication for catheterization if after 24 hours no urine has been voided and no discomfort is present. It becomes immediately important to be sure that this anuria is not due

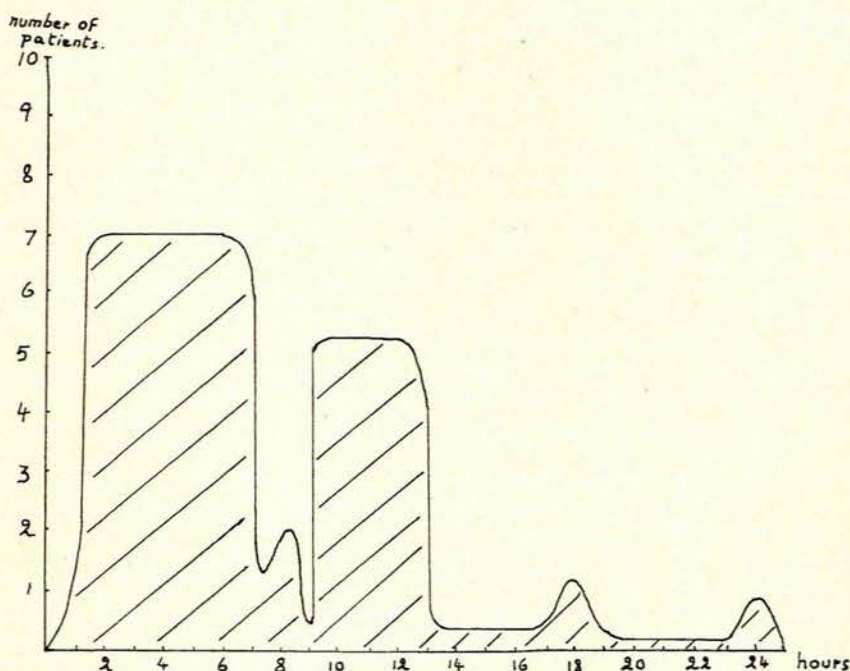


Fig. 3. Time of postoperative micturition.

to occlusion of the ureters by suture ligation. In one patient a catheter recovered only 100 ml., and the retropubic drainage was 100 ml. After 36 hours the total output was 360 ml., but thereafter diuresis occurred. A second patient had complete anuria for 36 hours, with a blood urea rising to 91 mg./100 ml. Thereafter spontaneous diuresis occurred without further complication. We have not been able to investigate this phenomenon further, for by the time it was recognized the problem had resolved. Nevertheless, some anxious moments were endured.

Retropubic Drainage

The average drainage from the retropubic space was 135 ml. in the first 24 hours, with extremes of 0-970 ml. The average drainage during the second 24 hours was 26 ml., with extremes of 0-344 ml. Only when the amount of retropubic drainage exceeded the urethral output after 24 hours was the catheter replaced, as this indicated failure of watertight capsular closure. The retropubic drain was removed 24 hours after cessation of drainage.

BACTERIOLOGY OF URINE

Table I indicates the numbers of patients with sterile urine pre- and postoperatively. It will be seen that 75% of patients with sterile urine pre-operatively, remained sterile postoperatively.

TABLE I. BACTERIOLOGY OF URINE

Urine	Pre-operative	Postoperative
Sterile	39	34
Infected	25	31
Not done	6	5

Of patients with sterile urine pre-operatively, 25% acquired a postoperative urinary infection, probably due to dissemination during enucleation of an already infected

gland. Histology has confirmed the presence of prostatitis in some of these cases. Twelve per cent of patients with pre-operative infection had sterile urine postoperatively, and 88% of patients with pre-operative infection had persistent urinary infection postoperatively.

Thus a total of 52% of patients had sterile urine on discharge. Doubtless these figures could be improved upon as numerous patients with retention were maintained on catheter drainage while awaiting surgery. These delays were due to limitations imposed by theatre availability and other routine ward problems. Postoperative infections eventually disappeared and, apart from 2 patients with late orchitis, one of whom had had prophylactic vasectomy, they did not constitute a cause for prolonged or increased morbidity. It also appears that the presence of pre-operative infection is no contraindication to this procedure.

CONCLUSIONS

It appears to us that the no-catheter operative technique and postoperative management, as described, more closely follow the tenets of the ideal prostatectomy than any of the standard recognized procedures.

In the absence of hypotension, bleeders are not masked, and in almost every case they have been adequately secured. In fact, we have found that the absence of a hypotensive technique does not materially affect the operative procedure. Blood lost during operation is replaced by transfusion as usual. The final decision whether to leave a catheter in or not is made at the operating table and will become more positive as one's personal experience and assessment of the conditions increase. When in doubt, the surgeon must readily accept the requirements of the situation.

The benefits to the patient are striking. Painful bladder

spasms, and urinary drainage tubes and bladder wash-outs—a potent source of infection—are eliminated. Occasional large clots which would no doubt have produced a clot retention have been voided easily *per urethra*. The temptation to catheterize in the early stages is sometimes strong, but our results show that it was only necessary in 17% of cases. Early spontaneous micturition is gratifying to the patient; and in the absence of any restricting tubes and drainage apparatus, the patient is not anchored to his bed and ambulation is possible by the first or second postoperative day. The patient's demands on nursing care are fewer, and the nursing staff are appreciative of the diminished nursing requirements. Convalescence is easier, hospitalization is reduced and expenditure not overstrained.

SUMMARY

Our experiences with 70 cases of no-catheter prostatectomy are described. Certain modifications in the technique have been introduced, notable among which is the absence of necessity for hypotensive anaesthesia. Postoperative management is detailed and the events occurring during this period are observed and analysed. The impression gained thereby indicates that the advantages bestowed by this procedure follow more closely the tenets of the ideal prostatectomy than any other.

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