THE TREATMENT OF ACUTE RETENTION OF URINE

With Special Reference to Immediate Prostatectomy

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There appears to exist in the minds of many some confusion as to the correct procedure to adopt when confronted with a case of acute urinary retention. This, though mainly due to difficulty in balancing the benefit of catheterization against the associated risk of introducing infection, springs also from a belief that there are certain forms of retention for which rapid decompression by the natural channel may be dangerous, and some in which the passage of an instrument is actually impracticable. Furthermore, even if such a simple measure should suffice to tide the patient over in his initial discomfort there remains, as will be seen, in practically every case the problem of dealing later with an underlying obstructive cause. An appreciation of the fact that immediate radical surgery may now be undertaken in many cases with a degree of safety formerly unknown, also leads to a desire not to prejudice its success by the adoption of ill-considered preliminary procedures.

The successful management of acute urinary retention, therefore, demands a clear conception of its cause together with a full appraisal of the possible methods applicable for its relief and their consequences. Nor is this sufficient, since in cases with a similar aetiology treatment may sometimes require modification to suit the condition of the patient, or adaptation to meet the needs of attendant circumstances. Measures found satisfactory in straightforward cases due to prostatic obstruction may, for example, prove quite unsuitable when this type of retention complicates the progress of a patient suffering from pneumonia or heart disease. Similarly, immediate operative treatment, though successful in a well-equipped hospital with adequate transport facilities, may be entirely impracticable in remote rural areas. Much may depend also on the individual experience and adroitness of those dealing with the condition as to how far any method is both safe and effective. This applies equally to catheterization and the more specialized operative techniques. There is no doubt that familiarity with a particular procedure leads to a reduction in mortality and morbidity which justifies its employment in a wider field, but this should never invalidate the need for careful selection. The art of surgery lies as much in an individual consideration of each patient's requirements as in the perfection with which the treatment is carried out.

Nowadays the problem of selection has at once been both simplified and complicated by the introduction of new safeguards which permit the extension of early radical treatment to a wider range of patients. Advances in anaesthesia, improved knowledge of fluid balance and blood chemistry, and the availability of antibiotics, to say nothing of better radiological techniques and more comprehensive post-operative care, all combine to increase the scope of surgery in cases of urinary retention. While such improvements certainly diminish the risk of surgical treatment they likewise impose the need for teamwork and a thorough understanding of their use and applicability. In certain hospitals the organization of special units has enabled the adoption of a standard routine for dealing with a high proportion of cases of retention due to prostatic obstruction in which immediate operation plays an integrant, if indispensable, part. The results achieved by this method, when employed with discretion, have shown a remarkably low mortality and a considerable saving of time in hospital. It cannot, however, be too strongly emphasized that success is not wholly dependent on hospital organization. The safety of immediate prostatectomy depends largely on the initial preservation of asepsis, and it is clearly important that the risks of early infection by repeated catheterization under adverse con-
ditions in the home should be avoided. For this reason it is well that a close liaison should be established between the practitioner undertaking the initial arrangements and his neighbouring hospital, so that when it is felt that immediate surgery may be contemplated suitably planned action can be undertaken from the start. It is only in this way that a method which depends essentially on mutual co-operation as much as on the availability of certain technical facilities for its success, can be applied with satisfactory results. Having thus indicated a trend in the surgery of acute urinary retention it is now necessary to consider the subject in a more general light, defining the condition with which we have to deal, reviewing its causes, and deciding how frequently these call for early operative treatment.

**Aetiology**

Acute retention of urine implies a sudden cessation of the ability to micturate, in consequence of which a tense accumulation of urine occurs within the bladder. In contrast to the relatively painless state of the laxly distended bladder in chronic retention, the acute condition is always painful, save when it follows certain forms of spinal injury or, rarely, acute disease of the nervous system. Apart from such instances of trauma and neurological disease, it is generally held that acute retention is usually precipitated by local congestion superimposed on an organic obstructing lesion of the lower urinary tract. Occasionally, however, it may result merely from spasm of the sphincter or inco-ordination of the mechanism of emptying without the presence of a previous obstructive element, as in hysterical or post-operative retention. In most cases admitted to hospital with acute retention, however, it is safe to assume a pre-existing underlying obstruction, confirmation of which is often obtainable from a history of antecedent urinary difficulty. An analysis of 300 consecutive cases of acute urinary retention occurring in the practice of a large general hospital (Table 1) amplifies this statement.

The precipitating factor in acute retention is, on the other hand, rather more indefinite. Apart from relatively uncommon instances in which the urinary outflow is suddenly and completely obstructed by blood clot or the impaction of a calculus, the immediate cause is usually attributed, somewhat vaguely, to congestion. This is sometimes stated to follow exposure to cold or to arise from alcoholic, dietetic or sexual excess, but, in fact, its origin is often problematical. Careful interrogation of patients seldom leads to the direct incrimination of these factors, but alternatively, frequently evokes a history of enforced holding of urine for excessive periods. Thus it is not unusual for acute retention to follow social events where opportunities for micturition are restricted through fear of embarrassment, or where dulling of the sensation of fullness from alcoholic indulgence leads to procrastination. At other times the fear of exposure to cold may deter the elderly subject from rising at night and favour an abnormal accumulation of urine in the bladder. It seems possible, therefore, that in cases where an inflammatory cause can be excluded, local congestion may be mainly secondary to pressure exerted by the already full bladder combined with the turgescent effect of straining to void. The practical bearing of this distinction is that, since such congestive changes tend to undergo rapid resolution after relief of the acutely distended bladder, the performance of an immediate radical operation can be effected in suitable cases with comparatively little subsequent blood loss.

**Factors Influencing Treatment**

No matter in what way the acute state of retention finally arises the conception of a predisposing obstructing cause is of paramount importance. The existence of this in almost every case afflicts the problem of treatment in three ways. In the first place it emphasizes the need for careful clinical examination to ascertain the nature of the obstruction so that appropriate treatment can be selected. Secondly, it draws attention to the possibility of secondary structural or functional changes having already developed in the urinary tract and raises the question as to how far these call for modification of treatment by virtue of an increased susceptibility to infection or liability to renal failure. Thirdly, it implies that the adoption of conservative measures, such as simple catheterization or suprapubic aspiration, can in
most instances bring about only temporary relief. In addition to these considerations resulting directly from the presence of the local obstructive process, it must be remembered that the choice of specific surgical methods may be influenced, as already mentioned, by the general state of the patient and the attendant circumstances. Broadly speaking, it may be said that while the appropriate treatment will be determined by the character of the obstructive process, the optimum time for its adoption turns on the general clinical condition and on the facilities available. From the patient's standpoint, the main considerations are primarily safety, and, secondly, speed of recovery and permanence of result, and the success of any method must ultimately be judged by its fulfilment of these requirements.

The Nature of the Obstructing Lesion

The clinical features of acute retention are well known and, in the majority of cases, easily recognized. The painfully distended bladder presents abdominally as a rounded swelling arising from the pelvis, dull to percussion and cystic to palpation. The presence of the full bladder distinguishes the condition from that of urinary suppression, while its painful nature and sudden onset help to differentiate it from chronic retention. It will be noted, however, from ensuing remarks that the distinction between acute and chronic retention is not always clearly defined, and that intermediate cases occur requiring special assessment based on the results of investigation of the structure and function of the remainder of the urinary tract.

The abdominal findings alone give no indication of the cause of the condition. This can only be gauged by further examination supplemented by a knowledge of the previous history and symptoms. Since early and accurate diagnosis is essential to good treatment it is important that these matters should be attended to expeditiously and with care. In a small number of cases a reason for the retention will be clear from the outset, as in instances following local trauma or spinal injury. In a further number, the external appearances on clinical examination may reveal a cause, such as extreme phimosis (not infrequent in association with balanitis in the senile or diabetic) or impaction of a calculus at the external meatus. Such cases, however, represent but a small proportion of those admitted to hospital with acute retention, the vast majority being due to some form of prostatic obstruction or, less commonly, urethral stricture.

Reference to Table 1 shows an analysis of 300 consecutive cases of acute retention admitted to a large general hospital during 3½ years (1948-mid 1951). Of these approximately two-thirds were found to be due to benign prostatic enlargement which, together with prostatic cancer and urethral stricture, accounted for over 85 per cent. of the cases. When to these are added the few already mentioned as due to obvious causes (trauma, phimosis, etc.) there remains only a small residue of miscellaneous conditions in which, for the most part, diagnosis can be readily established by the history and clinical signs. It transpires, therefore, in practice that, in most instances, a distinction has to be drawn between three conditions, namely benign prostatic enlargement, prostatic carcinoma and urethral stricture. The need for this distinction is emphasized by the fact that the treatment generally advocated for these conditions, when uncomplicated by retention, is essentially different. Any method, therefore, used for the relief of retention should, if possible, be capable of combination with the standard procedures used for dealing with these underlying causes. In most cases differentiation can be readily established by rectal examination in conjunction with a consideration of the previous history. It should be observed, however, that in acute retention from any cause the prostate may become depressed by the full bladder and an erroneous impression obtained of its size. Conversely, absence of prostatic enlargement on rectal examination does not preclude the existence of an intravesical projection. Where retention is due to malignant disease the extent of the neoplastic lesion is usually sufficiently marked to leave little doubt as to its nature. In every instance it is most important to enquire as to any possible cause for stricture and to exclude the presence of a contributory neurological lesion. In doubtful cases where, following the application of these principles, no clearly defined evidence of the cause can be established it may be assumed with a high degree of accuracy that the patient is suffering from benign prostatic obstruction. Whether the retention arises directly from this or from associated changes of the bladder neck is a matter for speculation, but the fact remains that under these circumstances prostatic enucleation combined with trigonecomy produces uniformly satisfactory results.

Secondary Changes in the Urinary Tract

The assessment of secondary changes in the urinary tract during the phase of acute retention cannot be accurately achieved by clinical methods. Fortunately, in intravenous pyelography, we have a method by which these may be estimated with a minimum of disturbance or risk to the patient. In acute, as opposed to chronic retention due to benign prostatic enlargement, the previous obstructive effect is seldom sufficient to have brought about serious or irreversible impairment of renal
function, and, in a majority of cases, structural alterations in the upper urinary tract are slight. In some instances excretion from the kidneys may be delayed, but in most a satisfactory outline of the renal pelvis and calyces can be observed within 30 minutes of injection. Dilatation of the lower thirds of the ureters is sometimes visible, but it is unusual for marked hydronephrotic changes to be apparent. Such changes, however, may be more in evidence in acute retention due to urethral stricture, or where the condition is complicated by the coexistence of organic nervous disease, presumably due to the tardier evolution of the obstructing process. In this respect carcinoma of the prostate occupies an intermediate position in that, where it is associated with adenomatous hypertrophy, structural or functional changes may be slight, whereas if the malignant process has slowly extended to involve the whole gland or infiltrate around the ureters, the resulting disturbance to the upper tract may be considerable.

The urine in cases of acute retention due to benign prostatic enlargement is practically always sterile, a fact which can readily be confirmed by culture of aspirated specimens obtained during ‘immediate’ operation. On the other hand, when due to stricture or advanced prostatic carcinoma the urine has, in many instances, already become infected prior to the onset of acute retention.

The foregoing observations on the condition of the urinary tract in cases of acute retention due to simple prostatic enlargement refer to the majority of cases where antecedent symptoms of obstruction have been relatively slight. Occasionally, however, in senile subjects or those of low intelligence and slovenly habits, the inconvenience of progressive frequency and difficult micturition may be disregarded and the patient, having fortuitously avoided an early episode of retention, ultimately presents with acute urinary obstruction superimposed on an already severely damaged urinary tract. Such cases approximate more closely to those of chronic retention in which, in addition to renal impairment and the presence of structural changes favouring the spread of infection, a detrusor weakness renders prolonged drainage necessary before adequate voluntary evacuation of the bladder can be restored. In this respect, however, it must be remembered that such patients are notoriously uncooperative and that if immediate operation is deferred the alternative period of preliminary catheterization may prove just as troublesome as it would have been when used for routine post-operative drainage.

In general it may be said then, that a high proportion of patients admitted to hospital with acute retention due to simple prostatic enlarge-

ment are in suitable condition, as regards the structure and function of their urinary tracts and the character of their urine, to undergo early radical operative treatment. It is fully established from the results of ‘immediate’ prostatectomy that the sudden relief of pressure in the acutely distended bladder entails little risk of precipitating renal failure provided that infection is avoided and the condition of the upper urinary tract is reasonably satisfactory.

The Effectiveness of Conservative Measures

Excluding resort to the catheter, the diversity of measures employed in the home for the attempted alleviation of retention bears testimony to their usual ineffectiveness. Changes of posture, contrast bathing of the genitals, and procedures varying from the passage of parsley stalks per urethram to squatting over a boiling kettle, merely emphasize the urgency with which relief is sought. The time honoured hot bath following an injection of morphia may temporarily reduce the discomfort, but is rarely successful in re-establishing the urinary flow. It therefore becomes necessary to decide at an early stage what are the prospects of obtaining safe and permanent relief by catheterization. This is a much more difficult question to answer than might be supposed from the views expressed on predisposing obstructing causes in preceding paragraphs. In hospital practice restoration of the normal ability to micturate following catheterization alone can only be achieved in a very small proportion of patients admitted with acute retention, and many of these return subsequently with further urinary symptoms. In general practice, on the other hand, it is rare to meet the practitioner who at some time or another has not had success by this method in a patient reluctant to leave his home. It is impossible to estimate the place of catheterization, however, from such individual experiences, nor do we know sufficient of the after-history to judge the permanence of the result. It is certainly not unusual for cases to be admitted to hospital with advanced prostatic disease who have been previously catheterized with apparent success. It is also clear that the method is frequently unsatisfactory from the outset, infection being introduced which seriously affects the subsequent treatment and progress in hospital. Again, in a few cases, inability to distinguish acute from chronic retention with incipient uraemia, combined with a lack of appreciation of the danger of rapid catheter decompression in the latter, may lead to disaster. The practitioner, however, has a difficult problem since, often unsupported by adequate facilities, he is beset by relatives of the patient urging him to relieve the condition, as seems most natural to
them, by the passage of a catheter, even though it is agreed that the patient should then go to hospital. In adopting this course the opportunity for immediate aseptic prostatectomy is abandoned even though the possibility of radical cure by other operative methods remains. Before condemning catheterization, however, it is necessary to indicate what advantages immediate aseptic prostatectomy has to offer over alternative surgical measures which are, at any rate to some extent, independent of its adoption as a preliminary. With this in mind the following description is based on a personal experience of a comparatively small series of immediate operations undertaken with a view to comparing the results with those obtained by more orthodox methods.

Immediate Aseptic Prostatectomy

The introduction of this operation by Hey of Manchester was based on the belief that the bad results of other methods of prostatectomy for retention were due not to the sudden release of pressure in the bladder, but the introduction of infection at preliminary catheterization. Evidence endorsing this view is available from the fact that the onset of rigors—the so-called catheter fever—after urethral instrumentation, is sometimes noted even after failed catheterization where the intravesical pressure has not been reduced. The most impressive support, however, comes from the operative results of Hey himself and others who have adopted the technique. Several hundred cases have now been treated by immediate operation with rapid decompression of the bladder, and, although judged by ordinary standards, many of the patients were poor risks, the overall mortality has proved extremely small. The figures, in fact, compare favourably with those obtained with elective surgery in cases uncomplicated by retention. Since the method embodies the preservation of asepsis and allows full control of haemorrhage, the bladder may be closed without drainage, thus reducing post-operative morbidity and promoting early ambulation. For all practical purposes the only prerequisites for its adoption in patients whose general condition admits of surgical treatment are, firstly, a reasonable assurance that retention is due to prostatic obstruction and secondly, that there should have been no preliminary attempt at urethral instrumentation. These matters have already been discussed in previous paragraphs.

Assuming that the clinical diagnosis has been made, an intravenous pyelogram is carried out as soon as possible after the patient's arrival at hospital. At the same time a sample of blood is withdrawn for purposes of cross matching and, if desired, for estimation of the blood urea. The object of the pyelogram is two-fold. Firstly, it is of value as an aid to diagnosis, as it will demonstrate opaque calculi either in the prostate or within the bladder or it may reveal the presence of secondary malignant deposits in the bones from an unsuspected prostatic carcinoma. In some cases a large intravesical prostatic projection may be demonstrated. Secondly, the pyelogram is an excellent test of renal function, especially where taken in conjunction with the blood urea values, but, in addition to showing the ability of the kidneys to excrete and concentrate the dye, it also gives information referring to the presence or absence of renal deformity from back pressure.

Immediately following pyelography a further assessment of the patient's general condition is obtained by an X-ray of the chest to exclude unsuspected pulmonary disease or gross enlargement of the cardiac shadow. Provided the results are satisfactory and the pyelogram shows some evidence of renal function the patient is straightforwardly prepared for operation. In a well-organized unit this should be possible within two hours of admission to hospital, but where for any reason investigation is delayed, an injection of morphia may be required to supplement any previous sedation which the patient should have already received before leaving his home. The operation now performed is based on the principles enunciated by Hey, but shows certain modifications suggested largely by the technique employed by Wells at Liverpool. Spinal anaesthesia is employed for preference and preliminary ligation and division of the vasa carried out. The approach to the prostate is across the bladder through the usual midline subumbilical incision; the bladder being, of course, already distended from the retention of urine.

The bladder is explored from within and the diagnosis confirmed. The openings of the ureters into the bladder are demonstrated and a marking cut made with diathermy just to the inner aspect of each orifice and continued around the rim of the projecting prostate. It is usually very easy to identify the ureteric orifices as there is a marked diuresis following the relief of bladder tension. A soft rubber catheter is then induced into the internal urinary meatus and passed down the urethra. As soon as the tip of this catheter has emerged at the external meatus a clamp is placed at each end of the catheter to prevent it being displaced during the subsequent manipulations. Enucleation of the prostate from around the catheter is then commenced, but not completed. As soon as the prostate has been about seven-eighths enucleated a bladder retractor is inserted and the final removal of the prostate and division of the urethra is made by dissection, using the...
ambulation is considered occasionally catheter seven-day while sulphonamide, sufficient to procedure for out and suction undue four to encourage frequent hour, straightforward of which washed rubber citrate blocked the brought out position. catheter and minute tags may period bladder tissue any incisions when cavity, and prostatic shelf area of which damage is considered. By this means damage to the membranous urethra is avoided, a fact of considerable importance in the prevention of post-operative stricture. The area of trigone between the two marking incisions is then excised together with any tissue tending to form a shelf between the bladder and prostatic cavities. The removal of this tissue gives a good view of the prostatic cavity, and enables a high degree of haemostasis to be obtained by diathermy. The relative lack of bleeding may be remarked upon at this point, particularly when compared with that so often encountered in operations performed after a period of indwelling catheterization. All mucosal tags and minute adenomata that may remain are now excised. A 20 F Harris or whistle-tip catheter is then sutured tail-to-tail to the catheter already in place, the latter being then withdrawn outwards, thus pulling the Harris catheter into position. An anchoring suture is placed through the eye of the Harris catheter and each end is brought out through the abdominal wall. The bladder is then closed in two or more layers after the instillation of a few ounces of 5 per cent. sodium citrate solution to prevent the catheter becoming blocked by clot. A small corrugated rubber drain is inserted into the prevesical space and the wound closed. The catheter is then washed through with sodium citrate solution, 2 oz. of which are left in the bladder, and the patient returned to the ward. The after treatment is generally straightforward and demands little more attention than any other abdominal operation. The catheter is allowed to drain freely after one hour, but should it become blocked gentle irrigation and suction may be required. Bladder washouts are not given. The wound drain is removed after 48 hours, at which time the patient is allowed out of bed. The catheter is removed after four to five days, the patient then usually being able to pass urine per urethram. It is advisable to encourage frequent micturition at this stage to avoid undue strain on the bladder sutures, and if any leakage should occur this is usually due to a small clot blocking the urethra. The use of a catheter for a further 24 hours, a comparatively safe procedure at this stage when granulation in the prostatic cavity is well advanced, is generally sufficient to overcome this difficulty.

Following operation the patients are given a seven-day course of penicillin and a suitable sulphonamide, while streptomycin is held in reserve to combat exceptional infection. In a majority of cases the urine remains sterile for the first four or five days, but the mere presence of the catheter occasionally leads to urethritis and a transient mild coliform infection later. Early ambulation is considered important in the prevention of post-operative morbidity in these elderly patients, and in this way facilitates early discharge from hospital. There is no evidence that it interferes with healing of the wound or predisposes to leakage. The morbidity following operation is, in fact, strikingly low and, as familiarity with the technique becomes established it will be found possible to extend its use to ' poor risk ' cases. In these, it must be emphasized, the need for careful post-operative supervision with regard to fluid balance and control of the blood chemistry is most essential. It seems fair to say that, handled in this manner, many will survive who, had they been treated by preliminary catheterization, would have succumbed from infection and uraemia following a delayed one- or two-stage operation.

Results

At this point it may perhaps be opportune to refer to the results observed in a personal experience of 60 cases treated by immediate prostatectomy during the period January 1950-September 1951 (Table 2). These represent slightly less than half of all cases admitted with acute retention from whatever cause during this time, the number being affected by the fact that in the early days many were catheterized before being sent to hospital, and for this reason were not subjected to immediate operation. In this way and, since at the outset only those showing reasonably good cystographic appearances were operated upon, the series must be regarded as selected, but with increasing experience during the past year all but the hopelessly inoperable have been included. The average age of these patients was 68 years, the oldest being 87 years. Estimation of the blood urea value during the phase of acute retention ranged up to 130 mgm. per cent., a level at which many would defer prostatectomy had previous suprapubic drainage been performed. There were three deaths in the series (5 per cent.), one from infection and renal failure in an uncooperative patient who would not tolerate the continued presence of a catheter, the others from cardiac failure under anaesthesia and pulmonary embolism respectively. The average duration of stay in hospital of the remaining 57 patients was 23 days, the shortest being 10 days and the longest 61 days in the case of a patient who developed both a post-operative retention, requiring additional perurethral resection, and also a deep venous thrombosis.

During the same period 36 patients were admitted suffering from acute retention due to prostatic enlargement for whom it is probable, from a consideration of their general condition, that immediate operation would have been advised had not instrumentation previously been carried
The average age of these cases was 69 years, and in most instances treatment took the form of deferred prostatectomy by the retropubic or Freyer technique after indwelling catheter drainage. Five of these patients died (13.9 per cent.)—four from infection and renal failure—while the average duration of stay in hospital of the remainder was just over six weeks. Follow-up records indicate a considerably greater post-operative morbidity from persistent urinary infection in these cases. The results in this group correspond closely to those obtained from similar methods in the years preceding 1950, before the adoption of the immediate operation (see Table 2).

In reviewing these figures it must be remembered that the mortality rates relate not to prostatectomy as an operation, but to the operative treatment of enlargement of the prostate complicated by acute retention. Even when due allowance is made for the initial selection, already referred to, of cases submitted to immediate prostatectomy, it becomes apparent that, with the institution of catheter drainage, the prognosis is adversely affected. The fact that the mortality rate of immediate prostatectomy for acute retention compares favourably with that of elective prostatectomy in cases which are not severely obstructed, indicates that acute retention per se need not be considered a hazard demanding extraordinary pre-operative management. When both the retention and its underlying obstructive cause can be dealt with effectively and expeditiously at a single operation without increasing the risk to the patient, the latter's criteria of safety, speed of recovery and permanence of result are fully satisfied.

**Discussion**

Enough perhaps has been said of the advantages of the immediate operation. Let us now turn to the drawbacks inherent in the method if the principles described are rigidly adhered to. In the first place it imposes the inconvenience of not being able to relieve the patient's acute discomfort by catheterization prior to operation. This difficulty may be surmounted by the employment of adequate sedation and, where delay in transference to hospital is inevitable, by palliative suprapubic aspiration. It is, of course, in this respect necessary to establish a liaison with practitioners participating in the treatment by emphasizing the advantages of immediate radical treatment so that the above measures can be adopted. Secondly, it may be objected that the patient seized with sudden urinary retention may be reluctant to undergo immediate operation. Against this the remote prospect of securing permanent restoration of function by palliative methods has already been referred to, and it is in fact a common experience to find such cases eager for early operative relief. Thirdly, and perhaps most seriously for the successful extension of the technique, the need is imposed for a full-time urological service backed by radiological and pathological facilities for immediate investigations of cases on arrival at hospital throughout the 24 hours. If the basic principles of the method are scrupulously observed there is no means of overcoming this disadvantage, save by continued sedation and repetition of aspiration until a convenient moment arrives. There are, however, many hospitals in which the necessary facilities

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**Table 2**

**Acute Retention of Urine**

| Immediate prostatectomy Compared with Those Obtained by Alternative Methods Embodying Previous Catheterization |
|---------------------------------|-------------------------------------------------|
| Immediate prostatectomy January 1950-September 1951 (21 months) | Prostatectomy following previous catheterization January 1950-September 1951 (21 months) |
| Cases | 60 | Cases | 36 |
| Average age | 68 years | Average age | 69 years |
| Average duration of stay in hospital | 23 days | Average duration of stay in hospital | 45 days |
| Deaths | 3 (5%) | Deaths | 5 (13.9%) |

Prostatectomy following previous catheterization January 1949-January 1950 (12 months) (Prior to adoption of 'immediate' technique)

| Cases | 48 |
| Average age | 68 years |
| Average duration of stay in hospital | 49 days |
| Deaths | 7 (14%) |
already exist for dealing with general emergencies, and the organization of a urological team trained in the performance of what is really a comparatively simple operation should present no outstanding difficulty. Fourthly, it may be objected that in the performance of immediate 'blind' prostatectomy an unsuspected cause for the retention may be encountered which, had preliminary catheterization or cystoscopy been performed, would have been brought to light. In this respect it must be admitted that such a chance exists, but with capable pre-operative clinical and radiological assessment the prospect is remote. From an analysis of the causes of retention (Table 1), the chance of acute retention of obscure origin being due to prostatic obstruction is overwhelmingly great, and if by mischance at operation a stricture should be detected the establishment of temporary suprapubic drainage may well prove beneficial. In a single case, additional to those in the personal series quoted above, an uratic calculus was found impacted at the internal meatus and removed. This was the only case in which an unforeseen cause for obstruction was encountered at immediate operation.

Finally, it may be asked whether immediate operative treatment necessarily restricts the surgeon to the transvesical route. Here the importance of being able to visualize the interior of the bladder at some time, either before or during the performance of the operation, is at issue. There is no question but that this is desirable in order that additional lesions may be detected and dealt with, if possible at the same time as prostatectomy. However, unless the principle of strict avoidance of urethral instrumentation is disregarded exploration can only be conducted by opening the bladder. There is some evidence, on the other hand, that cystoscopy carried out with full asepsis immediately prior to operation may not be grossly harmful, and that, if this is done and the bladder found clear, immediate operation by the retropubic technique may then be performed with good results. One is somewhat hesitant in view of the success of the true aseptic method, however, to allow any further relaxation of the embargo on urethral instrumentation. It certainly seems best that, if pre-operative cystoscopy be regarded as essential to the performance of an alternative operative technique, cases of acute retention should be considered in the same light as those of suspected rupture of the urethra in which instrumentation is only countenanced with strict regard to asepsis as a pre-operative measure in the theatre. The time may possibly come when improvements in antibiotic therapy may allow the earlier introduction of a catheter, without the attendant risk of infection, and this may modify our views on the value of the immediate operation. The fact remains, however, that this would probably only lead to the deferment of radical treatment which the aseptic technique, outlined above, has demonstrated as both effective and safe.

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