

MANAGEMENT OF BLADDER OUTLET OBSTRUCTION IN FEMALE SUBJECTS

(Role of Posterior Urethral Myotomy)

by

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Bladder outlet obstruction is not an infrequent condition to be seen in female subjects. The presenting symptoms of such patients may be either acute retention of urine or a symptom complex which is varied and quite often misleading. The same urethral syndrome, characterised by frequency, burning micturition, urgency and sense of incomplete voiding may or may not be associated with bladder outlet obstruction. Unless special care is taken to study the urodynamics properly in such population, the results of treatment are bound to be unsatisfactory.

Anatomical considerations of bladder outlet in relationship to pathogenesis of obstruction: The bladder outlet comprises of four components (Fig. 1). Each of these can have a special significance in the causation of the symptoms.

I. Bladder Neck: This consists of the urethrovesical junction and assumes special importance in view of the fact that the outer longitudinal detrusor encircles this part in the form of loops and helps during the resting phase as a sphincter and in micturating phase as an opener and elevator of the urethra. Recent studies on urodynamics have confirmed the view that the detrusor of the bladder

and the urethra are one single functionally integrated unit. Any dissociation of the composite functioning of these two structures leads to inco-ordinate action (Turner *et al* 1973) and may be responsible for various urological problems like bladder neck obstruction.

II. Proximal Midurethra: This part extends from the bladder neck upto the level of voluntary external sphincter. This segment having only spiral muscle coat (Jeffcoate, 1975) and small amount of elastic tissue normally is not prone to dysfunction. But under certain conditions it may be responsible for urethral hypertonus. Paraurethral glands may extend upto and surround this segment. These glands may harbour infection of ascending type aggravated by coitus and child birth resulting in hypertonus.

III. Distal Midurethra: This part of the urethra is surrounded by voluntary compressor urethrae. This segment may be the source of outlet obstruction under circumstances when reflex spasm of this muscle is common viz: episiotomy wound or hysteric functional conditions.

IV. Distal urethra: This component extends from the level of the external sphincter upto the urethral meatus. Richardson and Stonnington (1969) have demonstrated abundance of fibroelastic tissue in this part of urethra. These authors are of the opinion that the elastic tissues encircling the distal urethra are

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capable of exerting pressure on the lumen and produce obstruction.

In Tata Main Hospital, Jamshedpur, India, so far we have managed 28 patients in whom bladder outlet obstruction was diagnosed over a period of 8 years. All these patients had investigations done and the diagnosis confirmed by diminished flow rate, large residual urine volume and detrusor overactivity after having excluded the neurological disorders in all but one, obstruction due to pelvic causes and urethral stricture.

Age: These patients were divided into two age groups:

Group I. 40 years or less: There were 9 patients in this group.

Group II. Above 40 years: Nineteen patients were in this group. The oldest patient's age was 68 years.

Presenting Features

I. Acute retention: Sixteen patients were admitted with acute retention of urine. All patients in this group belonged to Group II. Most of these patients gave history of progressive difficulty in passing urine, narrow stream and transient retention in the past 2-3 years before admission. No gross pathological condition was detected in these patients except one. This patient had disc prolapse proved by myelogram. She was admitted in the surgical unit of another hospital and an indwelling catheter had to be kept for more than two months. Retention persisted inspite of treatment of urinary infection and repeated dilatation of urethra. She was given a gloomy prognosis of a lifelong catheter drainage. After admission to our unit a posterior urethral myotomy was done and she started passing urine freely. Another patient had acute retention not relieved by treatment of urinary tract infection and dilatation of urethra. A suprapubic cystostomy was done in

another hospital. On admission in our unit she was treated by posterior urethral myotomy. Postoperatively she started passing urine from the second day and she was discharged from the hospital after removing the suprapubic catheter. Similar to these cases all patients in this group had initial treatment of urinary tract infection and dilatation of urethra before being surgically treated by posterior urethral myotomy.

II. Urethral Syndrome: Nine patients were in this group. All of them complained of frequency, burning micturition, hesitancy and sense of incomplete voiding. These patients belonged to Group I and were comparatively younger. In line with the usual practice in our unit these patients were investigated for bladder outlet obstruction by measurement of urethral flow rate and residual urine. All of the 9 patients had diminished flow rate and significant residual urine.

III. Incontinence: Three patients came with complaint of dribbling of urine which was in fact overflow incontinence. All of the 3 patients were submitted to thorough neurological examination which failed to detect any lesion.

IV. Pain and Heaviness in Urethra: One patient complained of pain in meatus along with urethral syndrome. Unfortunately the symptom persisted even after surgical treatment although the urethral syndrome was relieved.

V. Recurrent Urinary Tract Infection: One patient from Group I had recurrent urinary tract infection. But satisfactory treatment for the same did not relieve the urethral syndrome. She had markedly diminished flow rate and hypertrophic bladder mucosa in I.V. Urogram. Recurrence of infection continued inspite of urethral dilatation till posterior urethral myotomy was done.

Investigations

1. *Bacteriuria*: All patients with retention of urine with indwelling catheter and 1 from Group I, had significant bacteriuria which was treated with an aggressive work-up.

2. *Urethral Flow Rate* Fig. 2: All patients in Group I had markedly diminished flow rate ranging from 1.5 ml/sec. to 4.5 ml/sec. The flow rate in our control patient normally ranges between 15-25 ml/sec.

3. *Residual Urine*: The average residual urine in patients of Group II was 110 ml.

4. *Renal Function*: Four patients had mild to severe impairment of renal function as indicated by high blood urea. All these patients had retention of urine.

5. *Intravenous Pyelogram*: Three patients showed hydronephrosis with hydroureter in 1.

6. *Cystography*: Most of the patients showed small diverticuli in the bladder indicating obstruction and detrusor decompensation.

7. *Cystometrogram* was normal. Injection of cholinergic drugs did not produce significant rise of intravesical pressure.

Management—The principles are:

- I. To exclude or treat urinary tract infection.
- II. To confirm outlet obstruction.
- III. To localise site of obstruction.
- IV. Dilatation of urethra with or without pudendal block.
- V. Relaxation operation

All these 28 patients who had either acute retention of urine or urethral syndrome with bladder outflow obstruction without any neurological disorder and mechanical obstruction, were initially treated for urinary tract infection wherever present. Dilatation of urethra was

done in every case without any relief.

Five cases had apparent urethral meatal stenosis and slight difficulty in passing a catheter. But dilatation of these urethrae upto Hegar's 10 size did not bring about any relief even though subsequent passage of catheter was easy.

The final definitive treatment in these patients was posterior urethral myotomy.

Posterior Urethral Myotomy

Technique: The author's technique of posterior urethral myotomy has already been reported and described elsewhere. With the patient in lithotomy position the bladder neck is marked externally by passing a Foley's catheter and pulling on the catheter after distending the balloon. A longitudinal incision Fig 3 is made in the anterior vaginal wall overlying the bladder neck and proximal urethra. The vaginal flaps are dissected and urethrovesical area clearly demonstrated. The muscularis over the proximal urethra and bladder neck is carefully divided longitudinally taking care not to damage the mucosa (Fig. 4). This step of operation is helped by inserting a metal dilator in the urethra which is made taut over it. After displaying the pale white urethral mucosa, the divided muscularis is separated further by two lateral fixation stitches (Fig. 5). Postoperatively an indwelling catheter is kept for 24 hours after which the catheter is removed and the patient is encouraged to pass urine.

Results

The results in cases of acute retention have been remarkably good. There has been no failures. 15 out of 16 patients, in whom the conservative management with antibiotic and repeated urethral dilatation failed, passed urine from the second day of operation. One patient required a

second myotomy within three weeks of previous operation which was considered to be inadequate as overcaution was adopted while taking care not to damage the mucosa, resulting in incomplete division of muscularis. She passed urine soon after the second operation.

In Group I, with urethral syndrome the flow rate increased in each patient significantly. The average preoperative flow rate of 3.5 ml/sec. increased to 9 ml/sec. The average preoperative residual urine volume of 110 ml declined to 10 ml. But the symptomatic relief was not as marked as in patients with acute retention of urine. In the latter group, the results were dramatic and very gratifying while in the former the patients were not initially convinced about the good results even though the low rate had improved and residual urine volume came down to nil.

Follow-up: Twenty-four out of 28 patients operated were available for follow up. Only 1 patient from Group II with acute retention of urine had recurrent retention. A subsequent investigation revealed a bladder calculus. The stone was removed by suprapubic cystostomy but the patient died of fulminant ascending infection and renal failure 3 years after myotomy.

Two patients from Group I required further urethral dilatation. One of these 2 required dilatation 5 times and complained of difficulty in passing urine in erect posture even though the flow rate was 5.5 ml/sec. compared to preoperative 2.5 ml/sec. Another patient persistently complaining of dysuria was submitted to urethral dilatation twice within 2 years of the operation without appreciable relief even though her flow rate continued to be in the range of 8-10 ml/sec. A subsequent Richardson's external urethroplasty relieved her finally indicating exis-

tence of bladder outlet obstruction with fibro collagenous blockage of distal urethra. All of the 3 patients with overflow incontinence were relieved. There was no instance of stress incontinence or urinary fistula.

Death: Two patients, who were already in advanced state of renal failure died. One patient with vesical calculus and 1 with marked hydronephrosis and hydro-ureter died later.

Discussion

Bladder outlet obstruction in females requires careful investigation and localisation of the site of obstruction. Of the 4 anatomical sites namely, bladder neck, proximal midurethra, distal midurethra and distal urethra, bladder neck obstruction is the rarest. The distal urethra may be affected by stenosing lesions due to predominance of collagenous tissues, congenital meatal stenosis or menopausal atrophic change. This condition needs to be tackled by repeated dilatation of the meatus, hormone therapy in suitable cases and Richardson's operation of urethroplasty when conservative measures fail. The obstruction at the distal midurethra is usually due to overactivity of the external sphincter. This condition may occur in uninhibited and reflex neurogenic bladder, hysterical retention of urine and habitually infrequent voiding of urine leading to persistently distended bladder and detrusor atrophy. This condition is best treated by repeated pudendal block, sphincterotomy or division of pudendal nerve or by urethral myotomy.

The obstruction at proximal midurethra is usually due to hypertonus of urethral smooth muscles following dissociation of detrusor function or infections harboured in the periurethral glands. Treatment of obstruction at this level may sometimes

be easy with dilatation and judicious use of antimicrobial agents. Occasionally these conservative measures fail and the patient may present with acute retention of urine or pre-retention urethral syndrome. Under these circumstances, the best results are obtained by posterior urethral myotomy. The extremely rare bladder neck obstruction in female subjects can also be satisfactorily dealt with by urethro-vesical myotomy. This operation is safe and technically simple and appears to be superior to other formidable procedures like Y-V plasty or internal urethrotomy.

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See Figs. on Art Paper IV-V