POSTERIOR URETHROVESICAL MYOTOMY—AN OPERATION FOR BLADDER NECK OBSTRUCTION

by

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Introduction

The syndrome of bladder neck obstruction (B.N.O.) is characterised by progressively increasing difficulty in voiding urine ultimately leading to trabeculation of bladder, hydroureter and hydronephrosis and all the inevitable complications of such changes. The diagnosis is usually arrived at by painstaking search for detecting organic lesions in the lower urinary tract and differentiating from the pseudobladder neck obstruction due to cystocele and other pelvic space occupying lesion. It is only when one fails to find out any organic cause, the diagnosis of B.N.O. is admissible.

Treatment of such a condition is notoriously difficult. Usually patients with similar clinical features are handed over to urologists and repeated dilatation of urethra associated with treatment of urinary tract infection are usually carried out. Recurrence of symptoms after such treatment is only too common. Ultimately operations like transurethral resection or plastic operations like Young's V-Y plasty with or without sphincterectomy are performed. These operations are of severe magnitude and the plastic operation may lead to stress incontinence, vesicovaginal fistulae along with the complications of open bladder operation, viz., fibrosis and diminished capacity of bladder.

The idea of urethrovesical myotomy has emerged from the concept that urethral resistance in such cases is actually very high or relatively higher than the intravesical pressure because of interference with the detrusor mechanism of opening the bladder outlet at the onset of micturition resulting in obstructive features.

A brief discussion of the anatomy and function of bladder neck will help to clarify this concept.

Urethral resistance: The factors that lead to the urethral resistance are:—

(a) *structural peculiarities:* The urethra is lined by an inner longitudinal layer of muscle which is only a continuation of its counterpart in the bladder and outer spiral muscles continuous above with the outer longitudinal layer of the detrusor (Tanagho and Smith 1966—Fig. I). In addition, the voluntary external sphincter and elevation effect of levatores add to the urethral resistance.

(b) *Functional:* The lumen of the urethra being very narrow and ten-

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sion of muscles high, the intra-urethral pressure tends to be high.

(c) *Pathological:* Infection of the lower urinary tract leads to high urethral resistance (Essenhigh *et al* 1968). The same authors differentiated idiopathic obstruction from obvious pathological ones, viz., urethral diverticulum and stenosis. In idiopathic group even milder congenital obstruction may manifest later in life. But in general the obstructive features are accentuated by infection. Roberts and Smith (1968) consider the menopausal atrophic changes of distal urethra to be of importance.

B. Failure of the detrusor mechanism to open the bladder outlet

This may be due to dysfunction of the trigonal muscles which are the initiators of the whole process of micturition (Tanagho and Smith 1966). Tanagho and Smith (1966) while studying the musculature of bladder neck described the following components:

(a) *Trigonal muscles:* These are in fact continuous with the sheath and muscles of ureter (superficial and deep trigonal muscles). These muscles converge towards the urethra at the internal orifice. (Fig. 2).

(b) *Inner longitudinal Detrusor:* In the plane of superficial trigone these can be seen running in various directions, again converging towards the urethra to be continuous with inner longitudinal layer of the latter. (Fig. 3).

(c) *Middle circular layer:* This muscle is thick ventrally but is deficient dorsally in the plane of deep trigonal muscles. (Fig. 4).

(d) *Outer longitudinal detrusor:* This layer comprising of ventral, lateral and dorsal components cross the bladder neck to the opposite sides in the form loops. (Fig. 5).

Function of bladder neck musculature: Tanagho and Smith (1966) believe that the trigonal muscles initiate micturition by pulling up the posterior segment of internal orifice to be followed by contraction of the inner longitudinal layer that elongates the internal meatus and obliterates the posterior urethrovesical angle. The middle circular layer pulls the bladder base forwards reducing the constriction effect of outer longitudinal loops which in resting position remain horizontal and keep the outlet closed. The outer longitudinal layers draw the fundus downwards acting from the caudal poles as fixed points and raise the intravesical pressure above the urethral resistance.

Pathological: The trigonal muscles are the only mesodermal elements in the endodermal bladder. It is also known that mesodermal elements are hormone dependent. It is quite, possible that menopausal atrophic change may lead to ineffective trigonal muscular action and the whole coordinated mechanism described above may be thrown out of gear leading to relative dominance of the outer loops and urethral resistance. Mukherjee and Banerjee (1967) consider repeated cystitis and fibrosis to be the cause of dysfunction.

Summarily, the difficulty or failure to micturate is because of relative or absolute dominance of urethral resistance and outer detrusor.

Principle of operation: Posterior urethro-vesical myotomy aims at

dividing the muscles at back of proximal urethra and bladder neck (only the outer longitudinal dorsal loop at this site) and reducing the urethral resistance.

Selection of patients: Only those patients who present with recurrent obstructive symptoms, progressive narrowing of urinary stream in absence of organic lesions either in pelvis or in the urethra and showing trabeculation in cystoscopic findings should be submitted to this operation.

Pre-operative management: In acute retention, bladder should be drained by an in-dwelling catheter. Bacteriology of the urinary tract should be properly determined and adequate antibiotics selected. Dilatation of urethra should be tried in every case. Essenhigh *et al* (1968) obtained more prolonged relief by dilating up to 1.5 c.m. (15 Hegar's). Roberts and Smith (1968) obtained relief in two thirds of cases in reproductive life by dilatation but have not used the very radical dilatation of Essenhigh *et al.* In a small series of six cases in Tata Main Hospital dilatation of urethra has produced disappointing results.

Technique: With the patient in lithotomy position the anterior vaginal wall is exposed. A Foley's catheter inserted earlier through urethra will help in identifying the bladder neck. The urethra should be steadied by an Alli's forceps. A vertical incision is made in the midline over the proximal urethra and bladder neck posteriorly cutting through the vaginal, wall, vesical fascia, muscles up to the mucosa. After adequate haemostasis the margins of the cut muscles are further separated by eversion stitches on either side and vaginal incision is closed (Fig. 6).

No.	Age	Parity	Menstrual status	Duration of symptoms	No. of Dilatations	Cystoscopy	Cystography
1	65	Nine	Menopause 15 yrs.	5 years	5 times	Trabeculation	Multiple diverticuli (Fig VII).
2	55	Four	Menopause 3 yrs.	3 months	5 times	Trabeculation. Hillocks at the internal meatus.	Multiple diverticuli.
3	34	Four	Regular cycles	4 years	Twice	Trabeculation	Not done.
4	23	One abortion.	Irregular cycles	10 months	Once	Bullae at the Trigone and Trabeculation.	Coarse trabeculae pattern and irregularity of bladder wall.

Results

The first case was done only one year back and last one 3 months ago. The immediate results have been highly satisfactory in all cases. We are aware that the follow-up period is short and series is small. But the immediate results have been so gratifying and the basis of this operation so rational, simple and safe, that we considered it worthwhile presenting this preliminary communication.

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See Figs. on Art Paper I-II