

# MANAGEMENT OF POST-PARTUM URINARY RETENTION BY INTRAVESICAL APPLICATION OF 15(S) 15 ME PGF<sub>2</sub> ALPHA SUPPOSITORY

by

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## Introduction

Management of urinary retention in women may be a vexing problem when no definite neurological cause is found. Transurethral resection of bladder neck (Emmett *et al* 1945), overdilatation of urethra (Johnston and Farkas 1975) and internal urethrotomy were tried but these operative procedures were associated with complications such as urinary incontinence and the results were disappointing. Clean, intermittent catheterization has been one of the important modes of management of such patients (Perminger, 1983). Pharmacotherapy would be an alternative to the clean intermittent catheterization. Phenoxybenzamine (30-60 mg daily orally) was used but the disadvantages are its side effects such as postural hypotension and need to take it daily for indefinite period of time. Bethenechol alone is not advocated as it causes spasm of internal urethral, sphincter and thus increases outflow resistance. Prostaglandins hold promise in facilitating vesical emptying.

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A case of puerperal retention of urine managed by intravesical application of 15(S) 15 Me PGF<sub>2</sub> alpha suppository is described herein.

## CASE REPORT

Mrs. M, 27 years developed retention of urine following normal vaginal delivery at home. Indwelling catheter was inserted by a general practitioner. Later she was given multiple voiding trials but these were unsuccessful. Therefore, she was referred to P.G.I., Chandigarh on 25-8-1984, nearly two months after delivery.

There was no history of diabetes mellitus, spinal trauma, bronchial asthma, cardiac or liver disease. General physical examination revealed no abnormality. Gynaecological examination revealed normal uterine involution. Neurological examination revealed normal and sphincter tone, bulbo-cavernous reflex, perineal sensation, motor power of lower limbs and gait. Psychiatric evaluation revealed no abnormality. Microscopic examination of urine showed few pus cells. Urine culture yielded bacterial growth of no significance. Blood haemoglobin: 8 gm%; blood urea: 30 mg%; serum creatinine: 1.3 mg%; X-ray Chest and ECG was normal. Intravenous urogram showed normal upper tracts. The urinary bladder was of large capacity and its contour was smooth. She was advised to perform clean, intermittent catheterization every four hours.

She was considered for intravesical application of 15 (S) 15 Me PGF<sub>2</sub> alpha suppository.

Informed consent was obtained. Urodynamic study was performed in the supine position with a multichannel recorder (Urolab-Lifetech International Inc., Houston, Texas, USA). A CYE-12 catheter was introduced and the bladder was emptied. Cystometry was performed with a continuous flow of  $\text{CO}_2$  at the rate of 120 ml/min. Rectal pressure measured with the aid of balloon catheter, was automatically subtracted by the differential pressure transducer and the detrusor pressure was recorded. Simultaneously external sphincter electromyography (EMG) was recorded by using two needle electrodes inserted on either side of external urethral meatus. The position of electrodes was checked by asking the patient cough, to contract sphincter voluntarily and by testing for bulbocavernous reflex. Basal study (CMG) revealed maximum cystometric capacity (MCC) of 388 ml (Fig. 1) and she could appreciate the sensation of bladder fullness. Detrusor pressure at MCC was only 12 Cm  $\text{H}_2\text{O}$ .

After the basal study, the bladder was emptied and the catheter was removed. 15 (S) 15 Me  $\text{PGF}_2$ -alpha suppository, (1.5 mg) was introduced into the bladder per urethra. The suppository was allowed to remain in place for

2 hours. Side effects such as febrile reaction, bronchospasm and abdominal pain were looked for. Solbutamol aerosol inhaler was kept ready to counteract acute bronchospasm should she develop it. After 2 hours, bladder was emptied and CMG alongwith sphincter EMG was performed (Fig. 2). In the post-drug study, MCC showed a decrease to 220 ml. Detrusor pressure at MCC increased to 30 Cm  $\text{H}_2\text{O}$ . Bladder compliance decreased from 32.3 ml/cm  $\text{H}_2\text{O}$  to 7.3 ml/cm  $\text{H}_2\text{O}$ . There was no side effect to intravesical application of prostaglandin suppository. The patient voided urine spontaneously. Residual urine was less than 20 ml. Residual urine was checked daily for one week, every

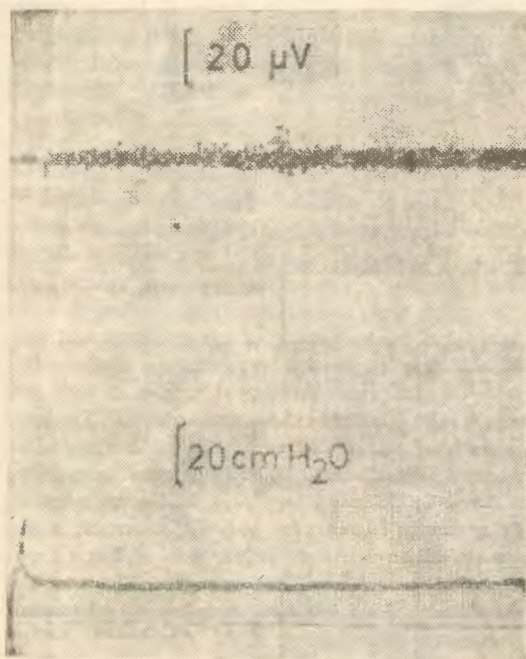


Fig. 1

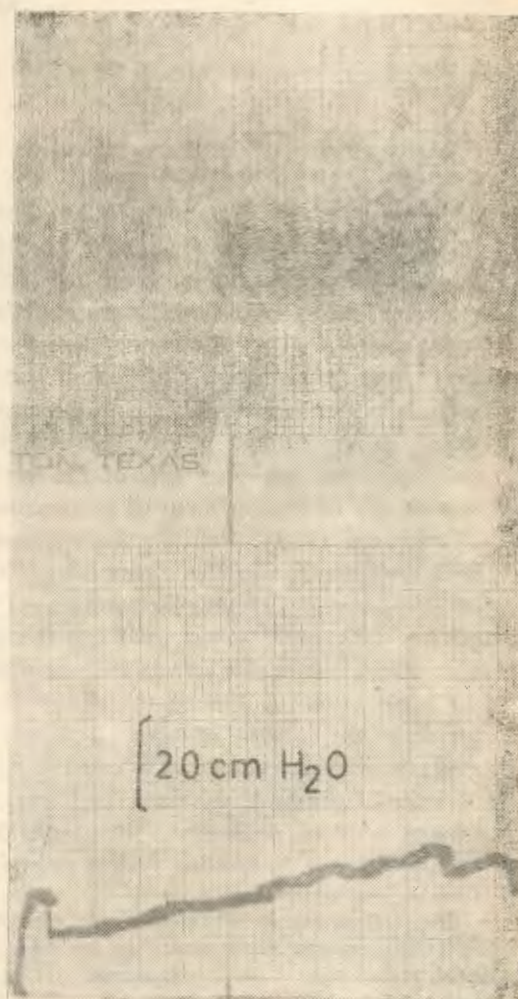


Fig. 2

week for one month and subsequently every two months. Residual urine remained insignificant (5-20 ml) during the follow-up period of 10 months. Urine culture continued to be sterile.

### Discussion

Urinary retention is one of the important problems during puerperium. The possible etiology for urinary retention is edema of bladder mucosa caused by uterine movements during labour (Hunter, 1966). The condition gets worsened when the bladder is overdistended during labour. Various causes for urinary retention in women are: Psychological—30%; inflammatory involvement of spinal cord (Myelitis)—19%; other neurological disorders—11%; diabetes mellitus—11%; post-operative retention—15%; no definite cause—15% (Perminger 1983).

Prostaglandins cause contraction of smooth muscle. PGE<sub>2</sub> and PGF<sub>2</sub> are found in the ratio of 6 : 1 to 8 : 1 in the rabbit urinary bladder (Pogessi and Nicita 1980). Prostaglandins are necessary for the maintenance of normal tone and activity of bladder muscle. PGF<sub>2</sub>-alpha is the most potent of all prostaglandins and the minimum dose needed to produce contraction is 20 ngm (Bultitude and Hills 1976). The action of prostaglandins is not blocked by the addition of antagonists of acetylcholine, 5-HT, histamine, epinephrine and norepinephrine. Therefore, it is suggested that prostaglandins act as facilitatory modular of non-cholinergic, non-adrenergic excitatory transmission in the mammalian urinary bladder (Burnstock, 1978). Potency of primary prostaglandins to induce contractile response is in the order of PGF<sub>2</sub>-alpha > PGE<sub>2</sub> > PGE<sub>1</sub> in both dome and trigone of bladder. The smooth muscle of bladder dome is more sensitive to prostaglandins than the bladder neck area (Shoichi Ueda, 1985).

Intravesical instillation of PGE<sub>2</sub> in

patients with poorly functioning detrusor resulted in satisfactory immediate and long term improvement with coordinated response of increased detrusor pressure and decreased urethral closing pressure (Bultitude, 1976). 15(S) 15 Me PGF<sub>2</sub>-alpha exhibits potent contractile effect on bladder body with minimal or no effect on bladder base and proximal urethra (Khanna and Barbieri 1978). This compound offers additional advantages such as ready availability, stability without need for deep refrigeration as compared to PGE series, greater potency and longer half life than PGF<sub>2</sub>-alpha (Karim and Sharma 1972). Reasonable safety was demonstrated by use of various routes of administration of 15(S) 15 ME PGF<sub>2</sub>-alpha in obstetric practice. Suppository is likely to be effective in smaller doses than solution and the duration of action also may be prolonged with less side effects.

In female patients with urinary retention, clean intermittent catheterization should be the initial treatment. Detailed neurological study may be performed to look for underlying causes for urinary retention. In case no neurological or psychiatric cause is found and the patient continues to have retention of urine as in this case, she may be considered for drug treatment. Those women without cardiac, pulmonary, hepatic, renal or haematological disorder may be suitable for intravesical application of 15 (S) 15 me PGF<sub>2</sub>-alpha. The response to drug therapy is preferably monitored by performing CMG and EMG before and after drug application. Those patients who exhibit an increase in detrusor pressure and a decrease in bladder compliance are likely to show clinical response. However, side effects such as diarrhoea (Jaffe and Condow, 1976), abdominal pain, bronchospasm and febrile reaction may occur. Therefore, prostaglandin administration should be undertaken only in a hospital

where adequate resuscitative measures are available.

**Conclusion**

Proper evaluation for the cause of urinary retention in women is very important for management. Clean, intermittent catheterization should be instituted as soon as possible. Intravesical application of 15 (S) 15 Me PGF<sub>2</sub>-alpha suppository can be an alternative to clean, intermittent catheterization in the management of retention of urine in selected female patients.

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