

INVESTIGATION AND TREATMENT OF FEMALE URINARY INCONTINENCE

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ABSTRACT

There are four main types of urinary incontinence in the female namely stress incontinence, urge incontinence, overflow incontinence due to retention of urine and total incontinence. It is important to differentiate them to institute proper treatment.

It is the aim of this paper to present a simple clinical evaluation of an incontinent woman. The different methods of surgical correction of stress incontinence are discussed. The latest trend is the paraurethral suspension of the bladder neck.

39 cases of Grade II stress incontinence were treated by paraurethral suspension of the bladder neck at "A" Unit, Kandang Kerbau Hospital and Dept. of Urology, SGH. 33 cases were cured. 4 improved with occasional stress incontinence, frequency and urgency. Of these, 3 were cured with imipramine. One failed because of a fixed, "lead pipe" rigid urethra from previous multiple operations to the bladder neck.

Key Words: Female Incontinence, Stress, Urge, Overflow, Total.

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INTRODUCTION

Incontinence of urine is defined as the involuntary loss of urine giving rise to social and hygienic embarrassment.

4 types of urinary incontinence may occur in women. They are:-

- I Stress incontinence
- II Urge incontinence
- III Overflow incontinence due to retention of urine
- IV Total incontinence

I STRESS INCONTINENCE

This commonly occurs in women when there is an increased intra-abdominal pressure eg on coughing, sneezing, laughing. There is a loss of the posterior urethro-vesical angle (1, 2) in a lateral urethrocytogram.

According to Stamey (3) it can be divided into 3 grades:

- Grade I has leakage of urine on severe stress ie with coughing/laughing
- Grade II has leakage of urine on minimal stress eg walking, running, aerobics
- Grade III incontinence at the slightest provocation

In post-menopausal women some degree of stress incontinence may exist due to decrease estrogen leading to loss of vascularity and pliability of the urethra.

II URGE INCONTINENCE

The patient has to void when she has the urge to micturate. This will lead to incontinence if a toilet is not nearby. Urge incontinence without any neuropathic cause is due to detrusor instability.

III OVERFLOW INCONTINENCE

Is due to retention of urine. This may be the result of obstruction at the outlet caused by large fibroids, haematocolpos from an imperforate hymen or neurological bladder as a result of diabetes mellitus.

IV TOTAL INCONTINENCE

Leakage of urine from an ectopic ureter in children or fistula formation as a result of gynaecological surgery or rarely radiotherapy will give rise to total incontinence. In ectopic ureter or unilateral uretero-vaginal fistula, a patient can still pass urine normally inspite of continous leakage of urine.

CLINICAL EVALUATION OF AN INCONTINENT WOMAN

HISTORY

In the history, it is vital to distinguish the loss of small amount of urine on coughing from that of large amount due to unstable detrusor contraction in urge continence. Also in urge incontinence, there is the sensation to pass urine before incontinence occurs.

Overflow incontinence is associated with a distended bladder. Sometimes enuresis occurs as the sphincter relaxes during sleep.

Incontinence of urine since young suggests congenital abnormality such as ectopic ureter or neurogenic bladder from myelo-meningocele. History of recent pelvic surgery would suggest the possibility of uretero-vaginal or vesico-vaginal fistula.

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PHYSICAL EXAMINATION AND INVESTIGATIONS

Examine the abdomen for a distended bladder. In an obese patient, sometimes it is difficult to feel for the bladder. Patient is asked to empty her bladder. She is then catheterised. The residual urine is then measured.

A high residual urine volume is suggestive of overflow incontinence from a neuropathic bladder or bladder outlet obstruction. In the normal, the residual urine should be less than 50 mls. The residual urine should be sent for urinalysis and culture.

DEMONSTRATION OF INCONTINENCE

It is important to demonstrate stress incontinence before contemplating surgery. In stress incontinence the urine loss is characteristically in "spurts" synchronous with the "cough". In detrusor instability, the loss of urine occurs 5 to 15 seconds after the cough and it comes out in a small stream.

In total incontinence from fistula, there is a continuous leakage of urine. The common fistulae are:-

- I) Vesico-vaginal
- II) Uretero-vaginal
- III) Urethro-vaginal

The 3 swabs test is employed to differentiate these. 3 swabs are put into the vagina. Diluted methylene blue is then introduced into the bladder via a catheter. If the outmost swab stains blue the leakage is due to urethro-vaginal fistula or overflow incontinence. If the middle swab stains blue, the fistula is vesico-vaginal. If the top swab is wet but does not stain blue, the fistula is uretero-vaginal.

EXAMINE FOR COEXISTING CYSTOCELE AND RECTOCELE

Using a vaginal speculum, the existing cystocele and rectocele can be exposed. A small cystocele can be corrected when the bladder neck is elevated surgically. A large one needs a formal repair. Otherwise the presence of a large cystocele may cause retention of urine after the elevation of the bladder neck.

URODYNAMIC STUDIES

Ideally, urodynamic studies should be done to differentiate pure detrusor instability from stress incontinence. However the clinical evaluation will suffice in most cases. In those with previous failed surgery and in equivocal cases urodynamics and lateral urethrocytograms are useful to differentiate the precise cause of incontinence.

IVU

Intravenous urogram is essential if uretero-vaginal or vesical vaginal fistula is suspected. In ureterovaginal fistula usually there is an associated obstruction to the affected ureter.

TREATMENT OF INCONTINENCE

I STRESS INCONTINENCE:

Conservative treatment

Many pregnant women especially multipara have some degree of stress incontinence during the third trimester. After delivery they are advised to do some pelvic floor exercises to improve levator tone. Often this cures the stress incontinence.

In post-menopausal women who develop stress incontinence, estrogen therapy often improves the vascularity and pliability of the urethra with improvement of continence.

Surgical treatment

Many surgical procedures are available for correction of stress incontinence. The method chosen (4) should be tailored to the women's degree of disability. All operative methods aim at elevating the bladder neck behind the pubic symphysis.

A) Vaginal approach

Using chromic catgut, the Kelly (5) stitch plicates the pubo-cervical fascia to buttress the bladder neck.

This procedure is suitable for a Grade I stress incontinence and is chosen for its simplicity and low morbidity.

B) Paraurethral suspension

Paraurethral suspension of the bladder neck using methods like the modified Pereyra (6) and Stamey (7) are relatively simple compared to the "sling" or abdominal procedures. The morbidity is less, with a cure rate of over 90% (8).

In modified Pereyra Operation, an inverted "U" Shape incision is made over the anterior vaginal wall. A prolene suture is placed in a helical fashion in each paraurethral space to incorporate the endopelvic fascia and anterior vaginal wall. Through a small suprapubic incision, a ligature carrier needle is transferred under finger tip guidance into the vagina. The prolene suture is threaded into the eye of the needle, then transferred suprapubically.

Cystoscopy is done to ensure (i) there is no inadvertent puncture of the bladder (ii) the sutures are correctly placed at the bladder neck. If so, upward pull of the sutures would show a corresponding closure of bladder neck.

From 1984-87, 38 cases of Grade II stress incontinence were operated on using the modified Pereyra method at "A" Unit, Kandang Kerbau Hospital and Urology Department, SGH (9). 33 cases were cured. 4 improved with occasional stress incontinence, frequency and urgency. Of these 4 cases, 3 were cured with imipramine. One failed because of a "fixed lead pipe" rigid urethra due to multiple previous operations on the bladder neck. She was offered a sling operation but declined.

Stamey's method (3) is similar to the modified Pereyra but involves less dissection. Dacron graft is used to act as a buttress for the prolene suspension stitch.

C) Abdominal Approach

1) Marshall Marchetti Krantz (10, 11) method

Through a low suprapubic incision, the bladder neck and proximal urethra are freed. Non-absorbable sutures are placed in the paraurethral tissue at the bladder neck to the periosteum behind the symphysis pubis. Osteitis pubis occurs in 5-10% of cases. This method is preferred if an abdominal hysterectomy has to be done at the same time.

2) Burch Colposuspension (12)

For this operation there should be a normal vaginal capacity and mobility to elevate the vaginal fornices. It requires more extensive dissection than the Marshall-Marchetti procedure. The edge of the bladder base is dissected off the paravaginal fascia. About 3 sutures are inserted bilaterally into the para-vaginal fascia and ileo-pectineal ligament. Bladder and ureteric injury can easily occur.

3) Sling Operations

For patients with Grade III incontinence, the urethra is fibrotic after multiple failed surgery at the bladder neck. Mere elevation of the rigid bladder neck cannot cure the stress incontinence. In the Aldrige sling (fascia sling), 2 strips of external oblique aponeurosis are transferred to the vagina to form a "sling" at the bladder neck. With sudden increase in intra-abdominal pressure, the sling kinks the proximal urethra and therefore no leakage can occur. Nowadays, a silastic sling is also available. Zacharin (13) in a 10-year review reported 72% cure with a fascial sling.

D) Artificial Urinary Sphincter (14)

This should only be used as a last resort. The device is made of silicone rubber. The cuff is placed around the bladder neck with the pressure balloon in the retropubic space and the control pump in the labium majus. The disadvantage is that it may erode into the urethra.

II URGE INCONTINENCE: responds well to medical treatment. Commonly used drugs include Ditropan or propantheline bromide and imipramine. Any intercurrent urinary tract infection must be treated. Urge incontinence may occur in patients with stress incontinence. In such cases, after surgery for the stress incontinence, additional medication may be necessary.

III OVERFLOW INCONTINENCE: due to retention of urine. The aim is to treat the cause. The common causes of acute retention of urine are uterine fibroids which become impacted in the Pouch of Douglas, pregnant retroverted uterus in the first trimester, haematocolpos in the young and neuropathic bladder in the diabetics and patients with myelo-meningocele.

Fibroids can be removed. Hymenectomy cures the retention caused by haematocolpos. Patients with

neurogenic bladder may need to be taught intermittent self catheterisation.

In the pregnant retroverted uterus, correction by Hodge pessary may suffice, until the uterus is large enough to become an abdominal organ.

IV TOTAL INCONTINENCE:

A) VESICO-VAGINAL FISTULA

Vesico-Vaginal Fistula (15) may undergo spontaneous closure on continuous drainage. However it may take so long as to cause psychological trauma to both patient and surgeon. Operative closure of the fistula may be by vaginal or abdominal approach. In simple case, the vaginal route is preferred. Cystoscopy is done at the same time. The fistula site is located by introducing milk into the bladder. It can then be seen coming out through the opening and has the advantage of not staining the adjacent tissue, hence easy detection during surgery. The anatomical layers around the fistula are dissected out. The bladder is closed with interrupted 2 "O" polyglycolic acid suture. A vaginal flap is used to cover it and the bladder put on continuous drainage for ten days.

The abdominal route may be used for case of previous failed surgery. The advantage is that omentum can be used to "plug" the defect.

B) UTERO-VAGINAL FISTULA

Reimplantation of the ureter by the extra-peritoneal approach is usually done by urologists. Such fistulae which result from Wertheim hysterectomy are more complicated. If the ureter is partially nicked, a double "J" ureteric stent may be used as a splint until it heals.

CONCLUSION

Urinary incontinence in the female can be assessed by simple clinical evaluation in the office. More expensive investigations such as urodynamic studies and lateral cystourethrogram can be done in special centres especially for equivocal cases. With proper diagnosis, conservative or operative methods can be instituted to achieve a cure for most patients.

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