

SIGNIFICANCE OF BLADDER FUNCTION IN CYSTOCELES

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"The repair of cystocele has frequently in the past given satisfactory results from gynaecologic view point only to leave considerable dysuria" (Royston and Rose).

A careful preoperative study of cases of cystocele, and post-operative follow-up will reveal the truth of the above statement. Urinary disturbances constitute the chief complaints in symptomatology in the majority of cases. Indeed it is these distressing complaints, which often compel the woman to seek medical relief. It seems imperative to appreciate these functional disturbances of the bladder before treatment is undertaken. Failure to appreciate this is not uncommonly the cause of many failures after operation, though not always from gynaecological point of view, as the woman is still diseased after the plastic repair and many of her urologic complaints persist.

I studied 104 cases of genital descent with cystocele in Chittaranjan Seva Sadan. A detailed study, with particular interest in the symptomatology and the clinical manifestations, was done.

With an object to study the anatomic disfigurement and the functional derangement therefrom, I made de-

tailed cystoscopic, volumetric and cystometric studies in the above cases.

I will not go into the mechanism of micturition, the last word on which is yet to be told. A few words about trigonalis muscle may be mentioned as I will have occasion to refer to it in the discussion. This muscle is a thin triangular sheet at the base of the bladder, bounded above by Mercier's bar and below by the internal orifice of the urethra and on either side by Bell's ridges. Fibres of the muscle merge with the inner longitudinal fibres of the urethra and extend for a distance of approximately one half of the latter's length. It is believed that the contraction of this powerful muscle, which arches over the circular fibres of the internal sphincter, helps to open the internal sphincter mechanically, the internal sphincter of the bladder being closed by its overtone. Therefore, if there is deficiency of trigonalis function, the mechanism of opening of internal sphincter is likely to be interfered with. As the internal sphincter of the bladder is closed by its own tone, intracystic pressure has to be raised to overcome the resistance of internal sphincter during the act of micturition, i.e. a relative obstruction will be there. Patient has to overcome the resistance of internal sphinc-

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ter by straining efforts, working the accessory muscles of micturition.

The cystoscopic pictures in the majority of cases of cystocele show manifestation of an obstructive syndrome, viz. trabeculation and fasciculation of the vesical musculature, prominent muscle bands as Bell's muscle, Mercier's ridges, sometimes pseudo-diverticulation, in addition to varying degree of manifestations of cystitis due to accumulation of residual urine. Of course no two cases of cystocele are similar so far as their anatomical disfigurement is concerned; the area or areas of bladder base pouches down according to the site of weakness of the bladder support. Such obstructive syndrome will be further aggravated in cystoceles, when bladder as a whole has sagged down, thus altering the vesico-urethral polarity.

Cystometry seems to be very much helpful and significant in knowing the bladder function in general and so also in cystoceles.

In the cystometry in my series when compared to normal, the first desire of voiding (f.d.v.), desire of voiding (d.v.) and urgent desire of voiding (u.d.v.) show a sensory shift to the left in the cystometrogram in one group; while in the other the same is deviated to the right, signifying the marked atony of the bladder musculature (Figs. A and B). The first one obviously is an irritable bladder. Cystoscopy revealed, in these cases, marked hypertrophic changes, the picture of hypertonic myogenic bladder.

In the other, cystoscopy revealed complete lack of demarcation of the different bladder areas. Muscle ridges

were attenuated; these bladders can rarely evacuate completely. In extreme cases bladder is markedly atonic. In my series the maximum amount of residual urine is 150 c.c. It is converted to a flabby atonic sac and a hypotonic myogenic bladder results. Even in this group of cases evidences of previous fasciculation and trabeculations of bladder musculature in cystoscopy can be seen, though they may be gradually waning.

Discussion:

Bladder descent is obviously due to lack of fascial support. The deficiency may affect the post-pubic, vesical or vesico-uterine segment of the supporting fascia, indeed the part underlying the bladder base or trigonalis muscle. Wherever be the rent, it affects the trigonalis muscle either at the two ends or in the middle. Such deficiency in any one of the regions, or in multiple injuries which are not uncommon as studied by the cystoscope, will obviously subluxate trigonalis muscle partially or completely, interfering with one of its main functions of opening the internal sphincter in bladder mechanism. This disturbance has to be compensated by increase in intracystic pressure which the patient can do by straining effort, accessory muscles of micturition come to action, i.e. relative obstruction is established.

This handicap in the anatomical disturbance of the bladder thus brings in the functional defect too. The chronic obstruction thus set in initiates the compensatory mechanism of hypertrophy manifested in the cystometrogram as diminished capa-

city and sensory shift to left, i.e. early sensory perception of the desire of voiding and also seen in the cystoscope by the hypertrophic manifestations as described above.

The early sensory perception in the early stage of obstructive syndrome has been explained as an over-compensated bladder musculature exerting the same intravesical pressure with a lesser volume than with a normal bladder with an increased capacity (Rose).

This hypertrophic myogenic irritability as seen in cystometry will be observed in patients and is not dependent on the clinical degree of her bladder descent. In long standing cases with further weakening of the bladder supports due to birth injuries, malnutrition, asthenia and the sagging and stretching effect on the bladder due to prolonged and continuous straining effects during micturition, result is atrophy of its musculature.

Ultimate effect of chronic obstruction with resultant prolonged and continuous stretching is surely atrophy. Atrophy with decompensation starts in the bladder. Cystoscopy reveals the gradual waning out of prominent demarcation of the bladder areas. The woman is unable to evacuate completely. Residual urine is the rule. Cystometry shows a sensory shift to right, i.e. a bigger volume with small intracystic pressure. Hypotonic myogenic bladder is established. The loss of bladder sensation has been attributed to "pressure anaesthesia" due to constant weight of residual urine on the bladder base as quoted by Rose.

The curative treatment of genital prolapse with cystocele is obviously

surgical. It is customary at the present day to delay the plastic repair until the child-bearing age is passed. Obviously it seems a measure to prevent recurrence due to subsequent birth injury. Hypertonic myogenic changes in the bladder signify the established functional disturbance of the ptosed viscus—an obstructive syndrome, ultimate sequela of which is obviously progressive hypotonia of the bladder musculature.

It is difficult to believe that surgical restoration of her anatomical defect can completely restore the physiological function of the bladder particularly when myogenic hypotonia has been fully established. As such undue delay in surgical intervention does not seem reasonable. Clinical degree of her genital descensus, particularly cystocele, is by no means an index of her functional incapability though they may be inter-related to a certain degree.

Though the descensus of the pelvic viscera is dependent on the musculo-fascial support, the functional defect will obviously depend on the impairment of the action of its musculature, particularly trigonalis muscle, neurogenic lesions being excluded. Rather a small degree of descensus is not uncommonly associated with marked urological complaints which often forces her to seek medical relief.

Hypertrophic myogenic changes seen in the cystoscope or the hypertonic myogenic irritability seen in the cystometrogram seem to be a clear indication for investigation and institution of proper remedy irrespective of her age and the clinical degree of her genital descent.

Operative repair, besides undoing

the descent, must aim at normal anatomical restoration for proper functioning of trigonalis muscle. Otherwise, relative obstruction in bladder mechanism will persist. Patient will have to raise the intracystic pressure during micturition by straining efforts even after repair. This must be at least one of the causes of recurrence after operative repair in some cases. This point was emphasised by Vanduzen in 1937.

Cystoscopy and cystometry seem to be very helpful in the proper assessment of anatomic and physiologic defects in cystoceles before treatment.

Cystometry, of course, is time-consuming and rather a complicated process, the same cannot be said of cystoscopy though similar information could be had on pre-operative examination, and will be very beneficial for proper knowledge of the condition and its treatment.

References:

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