



Category No.

5

Video
Demonstration

Ref. No.

206

Abstract Reproduction Form B-1

Author(s):

KH Moon, SJ Oh, EK Ji, KS Cho, JW Kim, MS Choo

Institution
City
CountryDepartment of Urology, Asan medical Center, University of Ulsan
College of Medicine, Seoul, KoreaTitle (type in
CAPITAL
LETTERS)THE SIGNIFICANCE OF INVERTED TEARDROP SIGN IN
CYSTOGRAPHY OF WOMEN WITH STRESS URINARY INCONTINENCE**AIMS OF STUDY**

It is generally accepted that bladder neck and proximal urethra are related to the primary continence mechanism. Bladder neck is normally maintained in the closed position by intrinsic continence mechanism of neurally modulated muscular activity combined with sealing effect of urethral supporting structures. Intrinsic sphincter deficiency (ISD) of the female urethra constitutes type III stress urinary incontinence (SUI) and its management is different from incontinence solely by urethral hypermobility (1). A finding of subtle open bladder neck without leakage at resting state, otherwise there are no symptoms suggesting overt ISD, is commonly observed during cystographic evaluation for SUI women. However, there are few literatures related to the meaning of this finding (2,3). We tried to define whether this sign has any urodynamic or clinical significance.

METHODS

Retrospective study was undertaken in a series of women who were diagnosed as genuine SUI from Jan. 1995 to Dec. 1998 in our hospital. The evaluations consisted of history, physical examination, urine testing for microscopy and culture, cystography and urodynamics. Fluoroscopic cystography was obtained when the bladder was filled with contrast medium to the capacity of full sense of voiding in erect position without and with valsalva. The appearance of contrast medium below the bladder base at resting state without overt leakage was named as inverted teardrop sign. Quantification was made by measuring vertical and anterior-posterior (AP) distances of this area (Fig. 1). The bladder volume at the time of cystography was set at a point where patients felt sense of fullness since preliminary investigations in 10 patients showed there was no difference in shape and location of this sign according to the bladder volume (200, 300, 400ml). To overcome measurement bias, interpretation was made by the consensus of two urologists. Various clinical and urodynamic parameters were compared between the patients who showed inverted teardrop sign (TD group) and those not (non-TD group).

RESULTS

A total of 453 women underwent fluoroscopic cystography and inverted TD sign was observed in 273 (60.2%). Analyses were performed in a total of 290 women (TD group 186, non-TD group 104) whose chart records and urodynamic results were available. There was a significant difference in mean age between non-TD population (47.0 ± 9.4 years) and TD group (51.7 ± 9.5) (t-test, $p=0.00082$). Average dimension of TD area was 0.74 ± 0.03 cm in vertical length and 1.5 ± 0.07 cm in AP length. Several clinical factors such as frequency, urgency, urge incontinence, duration of symptoms, parity, previous pelvic surgery, previous anti-incontinence surgery, urine leakage volume by 1 hour pad test were not significantly different between two groups. However, inverted TD sign was statistically more likely to be in postmenopausal (Chi-square test, $p=0.016$) and low VLPP (Mantel-Haenszel Chi-square test, $P=0.001$) patients. VLPP was significantly lower in TD group (87.1 ± 2.7 cmH₂O) than in non-TD group (99.0 ± 4.1 cmH₂O) (t-test, $p=0.01$). VLPP in TD group has a negative correlation with vertical ($p=0.0001$, $r = -0.498$) and AP length ($p=0.0014$, $r = -0.23$) of TD area. MUCP was significantly lower in TD group (48.2 ± 1.4 cmH₂O) than in non-TD group (56.2 ± 2.0 cmH₂O) (t-test, $p=0.0009$). TD group has more advanced types by Blaivas classification than non-TD group (Table 1.)

CONCLUSIONS

Our results suggest that cystographic inverted TD sign at rest might reflect some loss of intrinsic sphincter function although there are no clinical evidences suggesting overt type III SUI. This phenomenon is thought as a kind of aging process and change of hormonal milieu. When surgeons are planning to operate SUI patients, TD sign may be considered as an additional parameter in choosing operation method.



Category No. 5

Video Demonstration

Ref. No. (Page 2) 206 -

Abstract Reproduction Form B-2

Author(s): KH Moon, SJ Oh, EK Ji, KS Cho, JW Kim, MS Choo

Table 1. Relationship between TD sign and Blaivas types

	Type 0	Type I	Type IIa	Type IIb
TD Sign (+)	12 (6.2%)	106 (57.1%)	43 (23.0%)	25 (13.7%)
TD Sign (-)	19 (18.4%)	63 (60.2%)	18 (17.5%)	4 (3.9%)

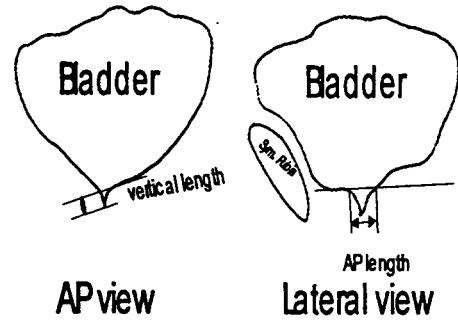


Fig. 1. Measurement of vertical and A-P lengths of inverted teardrop area

REFERENCES

1. Neurologic implications of pathologically open bladder neck. J Urol 1983;129:780-782.
2. The significance of an open bladder neck in women. Br J Urol 1991;68:42-43.
3. Asymptomatic bladder neck incompetence in nulliparous females. Br J Urol 1989;64:357-359.