

SQUAMOUS OR GLANDULAR METAPLASIA AS A FEATURE OF BLADDER OUTLET OBSTRUCTION IN FEMALE PATIENTS

Hypothesis / aims of study

Bladder outlet obstruction (BOO) was observed in 1% to 39% of women presenting with lower urinary tract symptoms (LUTS). The obstruction may have different pathogeneses, categorizing into anatomical and functional causes. Functional BOO is estimated to be present in 1–16% of women within all cases of BOO [1]. The criteria commonly used for the diagnosis of bladder outlet obstruction were maximum flow (Qmax) <15 ml/s and detrusor pressure at Qmax (PdetQmax) >20 cmH₂O. Perhaps the pressure-flow data during voiding phase in female are more rational than the controversial cutoff values. In female and young male patients BOO may be associated with inflammation of the bladder. In these patients, squamous metaplasia or glandular cystitis-like appearance of the bladder neck were observed. A retrospective analysis was carried out to validate its entity and prevalence. The pressure-flow data were analysed in order to compare with the cutoff values.

Study design, materials and methods

From 2002 to 2012, a total of 2195 female patients with LUTD received conventional urodynamic examination in our institution. Among them, 745 belonged to the population of female patients with symptoms suggestive of BOO. The urodynamic study was performed with the patient in a sitting position. Filling cystometry was performed at a flow rate of 50 ml/min. French 8 transurethral catheters were used to measure intravesical pressure, and Fr 12 rectal catheters were used to measure abdominal pressure. The bladder filling was stopped at cystometric capacity. At full capacity, the patients were asked to void voluntarily, with the detrusor pressure, Qmax, and post-void residual urine (PVR) assessed. EAS EMG was also simultaneously monitored using two needle-guided-wire electrodes inserted at 3 and 9 o'clock of the anus aperture with lateral distance of 0.5 cm. Finally, the urethral pressure profilometry (UPP) in supine position was obtained and the maximum urethral closure pressure (MUCP) and the functional profile length (FPL) were recorded [2, 3].

Results

Of the 745 female patients with symptoms suggestive of BOO, 210 (28.2%) were identified as dysfunctional voiding, and 23 (3%) were validated as primary bladder neck obstruction due to squamous or metaplasia or glandular cystitis-like lesion of the bladder neck. Apart from having cutoff value of BOO, their detrusor/flow plots according to ICS were

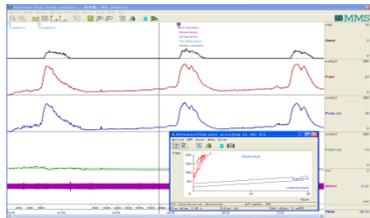


Fig 1



Fig 2

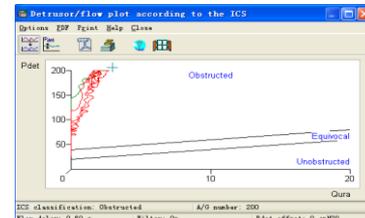


Fig 3

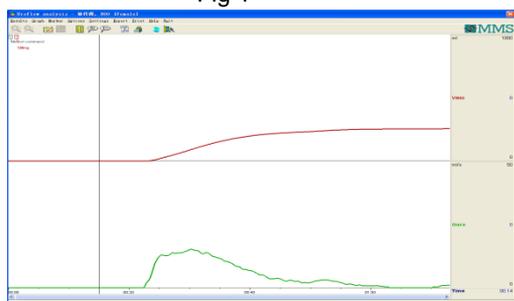


Fig 4

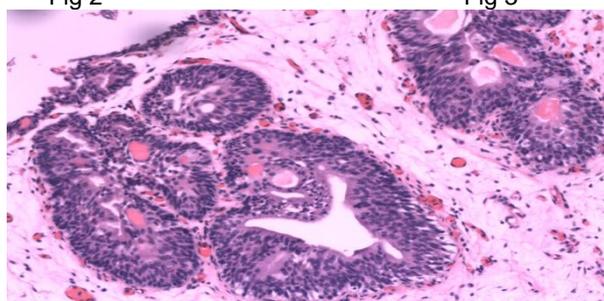


Fig 5

distributed in the obstructed region (Fig 1, 3). As to those with detrusor sphincter synergy (Fig 2), postoperational flowmeter follow-up usually show satisfactory result (Fig 4). The lining of the bladder neck demonstrated a nontransitional epithelial appearance with epidermoid (squamous metaplasia) or glandular (adenomatous metaplasia) development and formation of von Brunn's nests in lamina propria (Fig 5). The parameter data of the two subgroups were listed in Table 1. There were differences in the cutoff value and pressure-flow plots ICS between them (voiding subscore, PdetQmax, and pressure-flow plots ICS).

| Table 1. Clinical and urodynamic data of female BOO due to primary bladder neck obstruction or dysfunctional voiding | | | | |
|--|---------------------------|-------------------------|---------------|---------|
| Parameter | BOO due to PBNO (n=23) | BOO due to DV (n=43) | t or χ^2 | P value |
| Mean (SD) | | | | |
| Age (years) | 45.2 (15.4) | 35.5 (12.4) | 2.62 | 0.01 |
| IPSS | | | | |

| | | | | |
|-------------------------|-------------|-------------|------|--------|
| Storage subscore | 16.1 (3.4) | 14.5 (3.1) | 1.91 | >0.05 |
| Voiding subscore | 14.4 (2.5) | 13.1 (2.1) | 2.20 | 0.05 |
| Cutoff value | | | | |
| PdetQmax (cmH2O) | 35.2 (12.3) | 25.9 (13.8) | 2.73 | 0.01 |
| Qmax (ml/sec) | 13.2 (4.5) | 14.9 (3.5) | 1.62 | >0.05 |
| n (%) | | | | |
| Pressure-flow plots ICS | | | | |
| Obstructed | 17 | 5 | 26.2 | <0.001 |
| Equivocal | 4 | 25 | | |
| Unobstructed | 2 | 13 | | |

Interpretation of results

Although primary female BOO traditionally had been considered uncommon, recent studies suggested that it is an underdiagnosed cause of female LUTS. These patients may have obstructive or irritative symptoms of long duration. While anatomical causes such as primary bladder neck obstruction are often obvious, functional causes such as dysfunctional voiding in non-neurogenic population, require a more precise understanding and examination of the voiding dysfunction. Primary bladder neck obstruction in female or young male patients may be induced by cystic inflammation, such as squamous metaplasia or glandular cystitis-like lesions in the bladder neck. The cutoff value for female BOO is relatively easy to manipulate, however, pressure-flow plots ICS is more reasonable and direct-viewing. The majority of squamous metaplasia or glandular cystitis-like lesions-associated primary bladder neck obstruction was in obstructed region, whereas those of dysfunctional voiding or sphincter overactivity induced were in equivocal or unobstructed regions.

Concluding message

Squamous metaplasia or glandular cystitis-like lesions in the bladder neck may be responsible for primary bladder neck obstruction in female or young male patients. BOO due to the lesion is one form of anatomical BOO, while BOO due to dysfunctional voiding is one form of functional BOO. Pressure-flow plots ICS gained during voiding phase could reveal the nature of obstruction more precisely.

References

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Disclosures

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