

Female bladder neck dysfunction- a videourodynamic analysis of female voiding dysfunction

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Introduction

Voiding dysfunction is a common but complex condition affecting at least 1 in every 5 adults. voiding dysfunction in women is often overlooked and under-treated. Female voiding dysfunction is primarily manifested with slow urinary flow and/ or incomplete emptying sensation, and yet, in many cases, storage symptoms may co-exist.

Aims of study

This study analysed women with voiding dysfunction by videourodynamic study (VUDS), in particular, examined the role of bladder neck and the effectiveness of treatment.

Materials and methods

We retrospectively reviewed consecutive women aged ≥ 18 years, who had undergone a video urodynamic study at our institution for investigation of lower urinary tract symptoms from August 1996 to Jan 2014. All patients had at least one voiding symptom (ie. difficult urination, hesitancy, intermittency, slow stream, straining and urinary retention) with or without storage or post-micturition symptoms. The age distribution, presence of detrusor overactivity and treatment modalities in patients diagnosed with BND were analyzed.

Results

Compared with normal tracing group, BND patients had significantly lower first sensation of filling, full sensation and voided volume, maximum flow rate (Qmax); but higher post-void residual volume, voiding detrusor pressure, and bladder outlet obstruction index (all $p < 0.05$).

High pressure BND had a greater bladder outlet obstruction degree but low pressure BND had a lower voiding efficiency (Table 1).

Alpha-blocker improved 62.3% of Qmax whereas transurethral incision of the bladder neck (TUI-BN) improved 63.1% of Qmax in patients who failed medical treatment ($p < 0.05$).

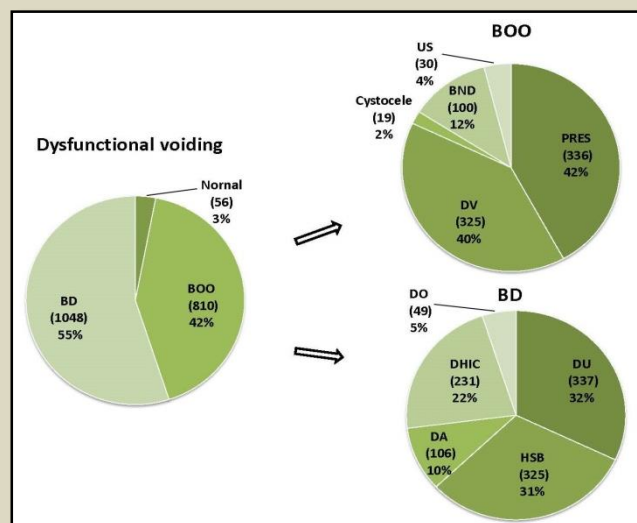


Table 1 The videourodynamic parameters among female patients with normal tracing, bladder neck dysfunction, dysfunctional voiding and other bladder outlet obstruction

	Normal (n=56)	BND (n=100)	DV (n=325)	BOO (n=49)	P value
Age	54.0 \pm 14.3	63.9 \pm 17.1	61.1 \pm 16.5	57.8 \pm 16.7	0.0001
FSF (ml)	167 \pm 71.6	137 \pm 76.9	130 \pm 69.0	141 \pm 57	0.0001
FS (m)	290 \pm 103	208 \pm 101	197 \pm 95.0	214 \pm 80	0.0001
CBC (ml)	508 \pm 120	358 \pm 176	300 \pm 145	297 \pm 109	0.0001
Pdet.Qmax(cmH2O)	17.3 \pm 8.23	39.3 \pm 24.0	46 \pm 18	49 \pm 29	0.0001
Qmax (ml/s)	24.1 \pm 7.82	6.06 \pm 5.64	9.4 \pm 6.1	7.0 \pm 4.6	0.0001
Vol (ml)	489 \pm 114	144 \pm 143	179 \pm 125	166 \pm 120	0.0001
PVR (ml)	19.5 \pm 28.8	213 \pm 186	121 \pm 123	131 \pm 109	0.0001
BOOI	-31.0 \pm 17.5	27.2 \pm 26.3	27 \pm 23	35 \pm 30	0.0001
VE	0.96 \pm 0.05	0.41 \pm 0.37	0.62 \pm 0.31	0.54 \pm 0.30	0.0001
Compliance	84.8 \pm 72.1	60.8 \pm 70.0	63 \pm 77	59 \pm 46	0.0001
DO (%)	0	46 (46.5%)	195 (60%)	22 (45)	0.0001

Table 2 The comparison of videourodynamic parameters between patients with normal tracing and bladder neck dysfunction of different voiding pressure

	Normal (N=56)	LPBND (N=45)	HPBND (N=55)	P-value
Age	53.98 \pm 14.32	63.52 \pm 17.68	64.24 \pm 16.83	0.839
FSF (ml)	166.82 \pm 71.60	135.18 \pm 61.10	138.11 \pm 88.00	0.852
FS (m)	290.30 \pm 103.05	214.36 \pm 88.79	202.20 \pm 110.95	0.556
CBC (ml)	167.68 \pm 39.57	127.66 \pm 63.62	109.93 \pm 52.93	0.133
Pdet.Qmax(cmH2O)	17.32 \pm 8.23	19.00 \pm 10.93	55.55 \pm 18.65	0.000
Qmax (ml/s)	24.14 \pm 7.82	5.48 \pm 6.31	6.53 \pm 5.04	0.362
Vol (ml)	488.64 \pm 114.29	118.09 \pm 127.49	165.07 \pm 152.52	0.105
PVR (ml)	19.48 \pm 28.76	268.75 \pm 208.76	168.05 \pm 153.47	0.007
BOOI	-30.97 \pm 17.52	8.04 \pm 15.09	42.49 \pm 23.12	0.000
VE	0.96 \pm 0.05	0.32 \pm 0.32	0.50 \pm 0.33	0.010
Compliance	84.80 \pm 72.06	68.60 \pm 62.86	54.53 \pm 75.19	0.323
DO (%)	0	12 (27.3%)	34 (61.8%)	0.001

Conclusion

The causes of female voiding dysfunction are heterogeneous. BND comprises 12.3% of women with bladder outlet dysfunction. BND could be high pressure or low pressure in nature. The high pressure BND can cause anatomical BOO, whereas low pressure BND is likely to affect the micturition through inhibitory effect of sympathetic hyperactivity on detrusor contractility. VUDS is the mainstay diagnostic tool to diagnose BND in women. Alpha-blockers and TUI-BN are effective in improving Qmax in BND patients.