

IS INTRAVESICAL PROSTATIC PROTRUSION ASSOCIATED WITH PREDOMINANT AND INTRACTABLE STORAGE SYMPTOMS IN BPH PATIENTS WITH OVER 30 G OF PROSTATE VOLUME ?

Hypothesis / aims of study

Intravesical prostatic protrusion (IPP) means a morphological change due to overgrowth of prostatic median and lateral lobes into the bladder. There may be a positive link among IPP, prostate volume (PV) and bladder outlet obstruction (BOO). However, few studies regarding the correlation between IPP and voiding/storage symptoms have been reported. IPP may cause either more voiding symptoms due to ball-valve phenomenon or more storage symptoms due to increased bladder neck irritation. Our previous retrospective study showed that storage symptoms other than voiding symptoms were more correlated with IPP in LUTS/BPH. The aim of this study is to prospectively identify whether more severe IPP cause more storage symptoms following the adjustment of prostate volume, and whether IPP is associated with intractable storage symptoms after 8 weeks of medication in LUTS/BPH patients with big prostates more than 30 g.

Study design, materials and methods

A prospective analysis of 90 LUTS/BPH patients between July 2007 and March 2008 was performed. All the patients were evaluated with International Prostate Symptoms Score (IPSS), uroflowmetry (UroflowTM-1000; Medtronic), postvoid residual urine measurement by bladder scan (Biocon-500TM, Mcube Technology), IPP and PV by TRUS (PROSOUND SSD-3500TM ALOKA). IPP was measured as a vertical distance from the imaginary bladder neck line to the tip of prostate protrusion at midline sagittal view on TRUS. According to the presence of IPP, initial IPSS/QoL including voiding/storage symptom scores was compared. Also treatment response after 8 weeks of combination therapy was assessed with IPSS/QoL, incidence of AUR and need for surgery. We applied combination therapy (doxazosin 4mg and finasteride 5mg) because enrolled patients have big prostates more than 30 g.

Results

Mean age was 68.8 ± 9.4 years, mean total prostate volume was 51.2 ± 24.9 cc and mean transitional zone volume was 30.0 ± 20.0 cc. Fifteen patients (13.9%) showed more than 10mm of IPP. Prostate volume and IPP showed a strong correlation (r=0.708, p<0.001). There was a modest correlation between IPP and total IPSS (r=0.317, p=0.001) including voiding/storage symptom score (p=0.049/p<0.001). Also IPP showed negative correlation with Qmax (r=-0.270, p=0.005) meanwhile post-void residual urine was positively correlated (r=0.220, p=0.022). Patients with IPP showed a higher incidence of TUR surgery (p=0.002) and AUR episode (p=0.016) compared to non-IPP group. The presence of IPP showed a strong association with higher storage symptoms after readjustment of prostate volume by multiple regression analysis (R² = 0.145, β of IPP = 0.247, β of PV = 0.023). Also the presence of IPP was associated with persistent high storage symptoms after 8 weeks of combination therapy (p=0.040).

Table 1. Baseline characteristics and comparison of IPSS/QoL according to the presence of IPP at initial visit, *: p<0.05

	IPP (+)	IPP (-)	p-value
Age (yr)	74.3±7.7	65.1±8.3	<0.001*
Total Prostate Volume (g)	69.6±27.0	39.2±11.5	<0.001*
TRUS			
Transitional Zone Volume (g)	44.5±21.6	20.9±9.8	<0.001*
Transitional Zone Index	0.6±0.1	0.5±0.1	<0.001*
IPSS/QoL			
Total score	21.7±10.3	17.0±8.7	0.021*
QoL	4.1±1.3	3.8±1.4	0.431
Voiding Sx.	12.0±6.2	10.6±5.3	0.191
Storage Sx.	9.4±4.8	6.7±4.4	0.007*

* : Statistical significance was evaluated by paired Student's t-test

Table 2. Comparison of change of IPSS/QoL according to the presence of IPP after 8 weeks of medication, *: p<0.05

	Δ IPSS	Δ QoL	Δ Voiding Sx.	Δ Storage Sx.
IPP (+) (n=44)	4.6 ± 3.9	1.4 ± 1.2	4.7 ± 3.7	1.8 ± 3.6
IPP (-) (n=46)	4.7 ± 3.8	1.7 ± 1.3	4.6 ± 3.9	3.1 ± 3.1
p-value	0.926	0.178	0.926	0.040*

* : Statistical significance was evaluated by paired Student's t-test

Interpretation of results

IPP increased in proportion to PV. IPP has more influence on storage symptoms. Furthermore advanced IPP is associated with intractable storage symptoms following medical treatment in BPH/LUTS patients with over 30 g of prostate volume. Also patients with IPP showed a more clinical progression comparing with non-IPP group regarding TUR surgery and AUR episode.

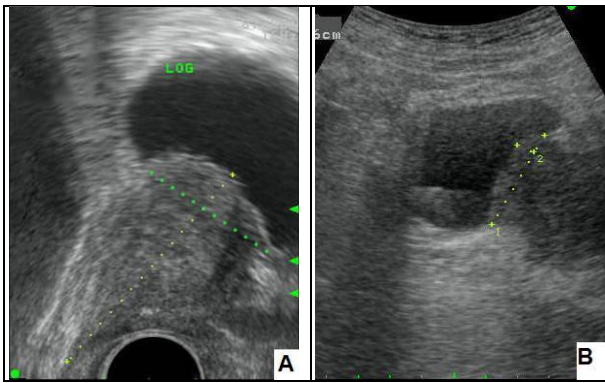


Figure 1. IPP measurement by TRUS (A) and abdomen ultrasound (B). IPP was measured as a vertical distance from the imaginary bladder neck line to the tip of prostate protrusion at midline sagittal view on TRUS. IPP measured by TRUS is not influenced by the amount of bladder volume, whereas IPP measured by abdominal ultrasound can be affected by bladder filling state.

Concluding message

IPP, unique anatomical configuration of prostate, results in more severe storage symptom which may be caused by more irritation of prostate against bladder neck and trigone. The presence of IPP in BPH patients shows less response of storage symptom after 8 weeks of medication. Thus additional medical treatment such as antimuscarinic drug can be considered for better therapeutic response in patients with IPP. More large scaled long-term prospective study is needed to identify the clinical implication of IPP in LUTS/BPH management.

<i>Specify source of funding or grant</i>	FUNDING: NONE DISCLOSURES: NONE
<i>Is this a clinical trial?</i>	Yes
<i>Is this study registered in a public clinical trials registry?</i>	No
<i>What were the subjects in the study?</i>	HUMAN
<i>Was this study approved by an ethics committee?</i>	No
<i>This study did not require ethics committee approval because</i>	This study was proceeded within conventional evaluation and treatment in our real life practice.
<i>Was the Declaration of Helsinki followed?</i>	Yes
<i>Was informed consent obtained from the patients?</i>	Yes