

Prostatic urethral lift (UroLift)

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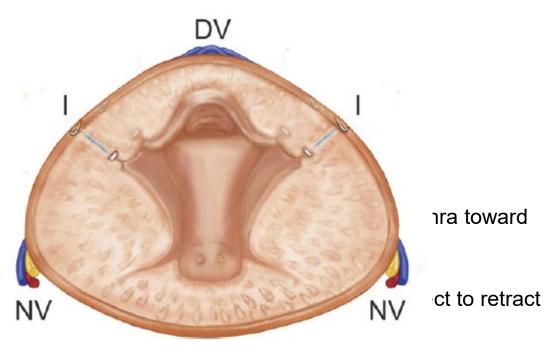
Transurethral resection of the prostate (TURP)

- The gold standard treatment of the patients with moderate-severe voiding symptoms attributed to BPH that are refractory to medical therapy
- Disadvantages
 - Needed to general or spinal anesthesia
 - Keep the urinary catheter for 1~2 days
 - Perioperative and long-term complications: About 20%
 - Ejaculatory dysfunction (65%)
 - Erectile dysfunction (10%)
 - Urethral stricture (7%)
 - Urinary incontinence (3%)



Prostatic urethral lift (PUL) therapy

- Marketed name: UroLift[®] (NeoTract, Inc., Pleasanton, CA, USA)
- A new less invasive technique for LUTS second.
- Theory
 - Altering prostate anatomy without tissue ablation
 - Urethra is compliant, the glandular tissue is compress
 - Thus, applying a tissue-retracting implant between the the capsule, thereby expanding the urethral lumen.
 - Implant placement at approximately 2 and 10 o'clock the obstructive lobes anterolaterally.



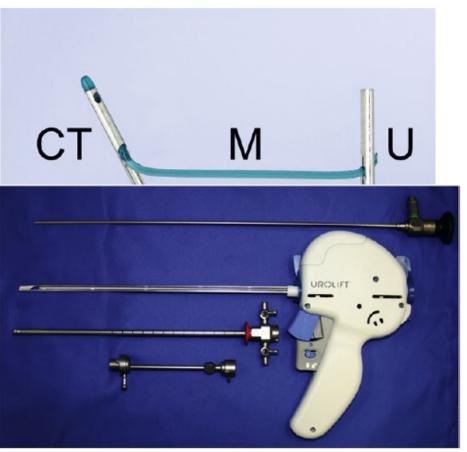
Eur Urol 2013;64:292-299



Equipment of PUL

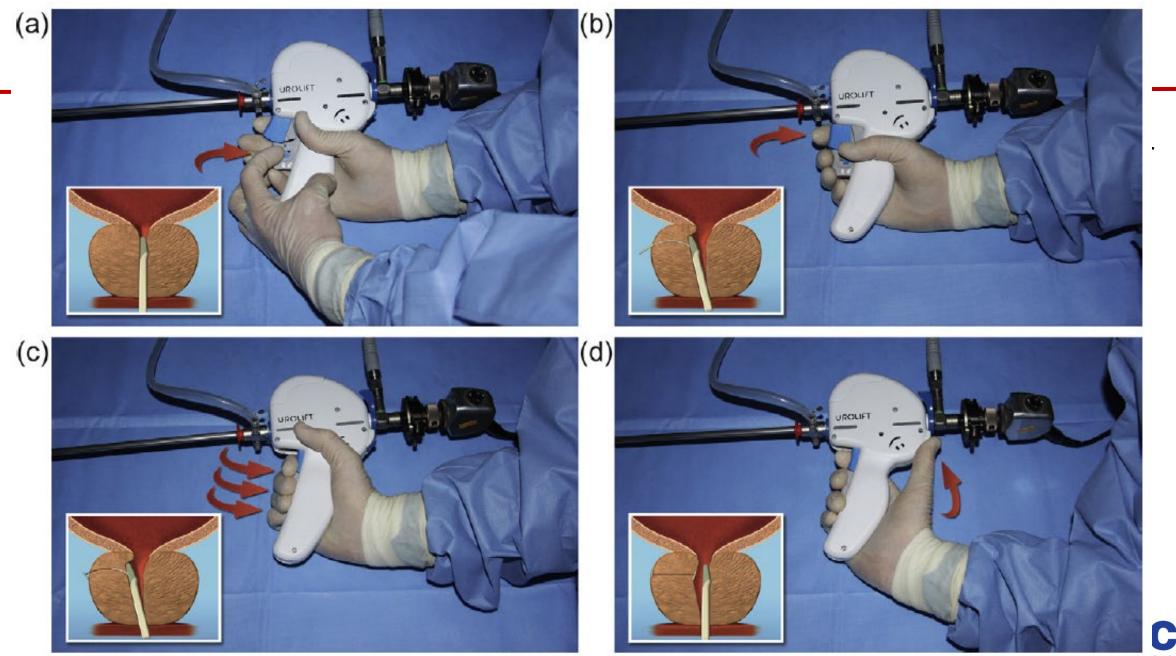
The permanent implant

- A nitinol capsular tab : 0.6 mm diameter x 8 mm long
 - Spring-driven 19-gauge needle : traverse the prostatic lobe.
 - Attach to capsular surface.
- A stainless-steel urethral end piece : 8 mm x 1 mm x 0.5 n
 - Invaginate into the urothelium.
 - Minimizing foreign material exposure to the urine stream and promoting
- A polyethylene teraphthalate (PET) monofilament (0.4 mm
 - Allows future interventions including TURP and laser treatments if nece
- Direct visualization
 - A smaller 2.9-mm 0° telescope.
 - The UroLift system.
 - 20Fr. cystoscopy sheath.

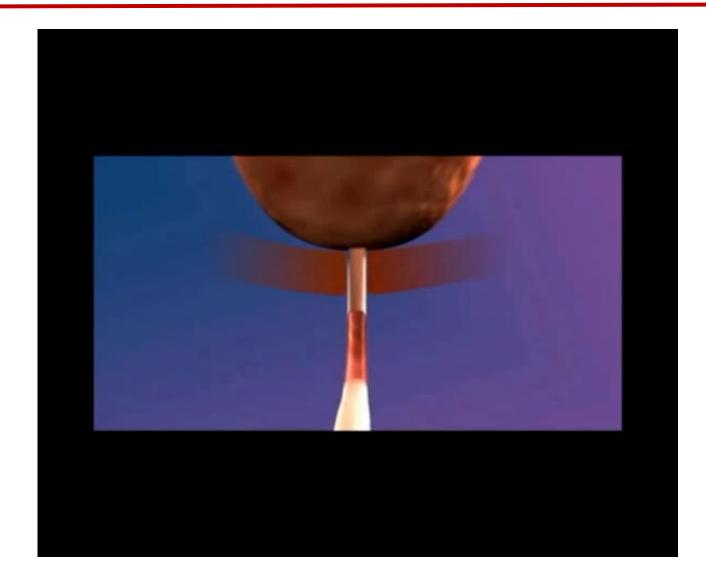


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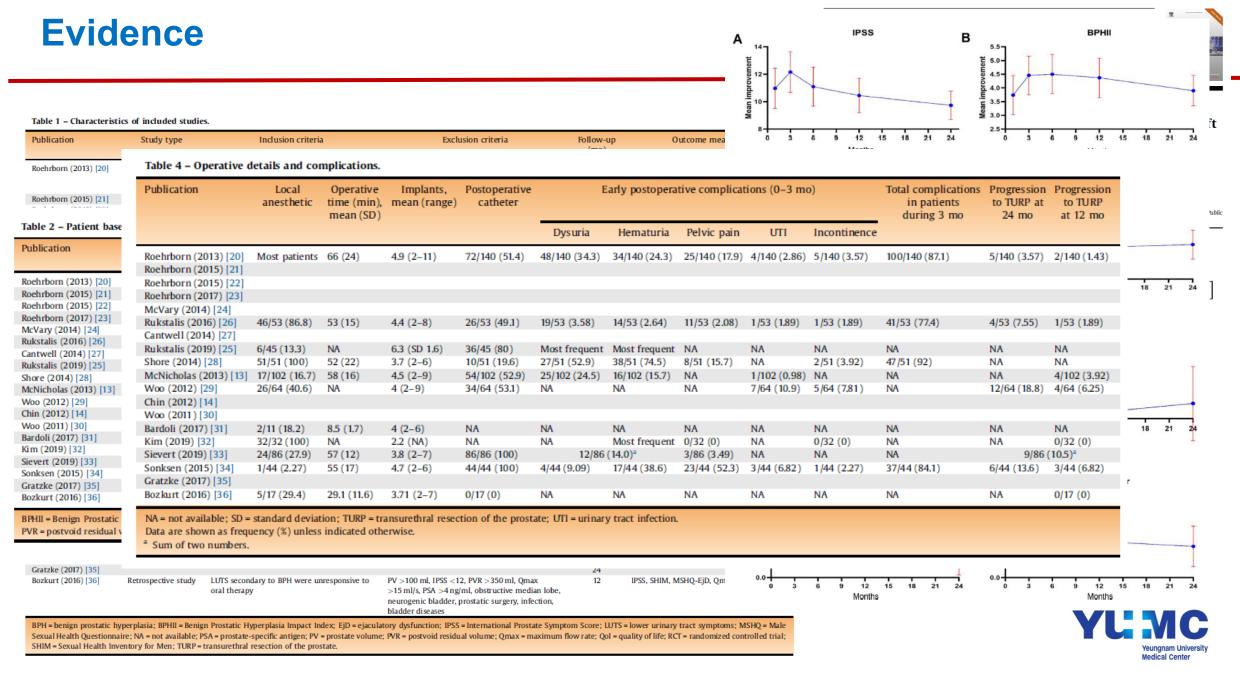




Surgical technique (VOD)







Considerations

The patients` selection

The number of PUL implants



Patients`selection

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Patients`selection

- Inclusion criteria
 - Refractory LUTS with BPO.
 - Prostate volume: 30 ~ 80 cc
 - Want to preserve sexual function.
 - Concerned about complications of TURP or laser therapy.
 - Want to be more rapid return to daily life.



Patients` selection

- Exclusion criteria
 - Previous prostate surgery
 - Infection
 - Obstructive median lobe
 - High bladder neck



The number of PUL implant

Table 4 - Operative details and complications.

Publication	Local anesthetic	Operative time (min), mean (SD)	Implants, mean (range)	Postoperative catheter	Early postoperative complications (0–3 mo)					Total complications in patients during 3 mo	Progression to TURP at 24 mo	Progression to TURP at 12 mo
					Dysuria	Hematuria	Pelvic pain	UTI	Incontinence			
Roehrborn (2013) [20]	Most patients	66 (24)	4.9 (2-11)	72/140 (51.4)	48/140 (34,3)	34/140 (24.3)	25/140 (17.9)	4/140 (2.86)	5/140 (3.57)	100/140 (87.1)	5/140 (3.57)	2/140 (1.43)
Roehrborn (2015) [21]												
Roehrborn (2015) [22]												
Roehrborn (2017) [23]												
McVary (2014) [24]												
Rukstalis (2016) [26]	46/53 (86.8)	53 (15)	4.4 (2-8)	26/53 (49.1)	19/53 (3.58)	14/53 (2.64)	11/53 (2.08)	1/53 (1.89)	1/53 (1.89)	41/53 (77.4)	4/53 (7.55)	1/53 (1.89)
Cantwell (2014) [27]												
Rukstalis (2019) [25]	6/45 (13.3)	NA	6.3 (SD 1.6)	36/45 (80)	Most frequent	Most frequent	NA	NA	NA	NA	NA	NA
Shore (2014) [28]	51/51 (100)	52 (22)	3.7 (2-6)	10/51 (19.6)	27/51 (52.9)	38/51 (74.5)	8/51 (15.7)	NA	2/51 (3.92)	47/51 (92)	NA	NA
McNicholas (2013) [13]	17/102 (16.7)	58 (16)	4.5 (2-9)	54/102 (52.9)	25/102 (24.5)	16/102 (15.7)	NA	1/102 (0.98)	NA	NA	NA	4/102 (3.92)
Woo (2012) [29]	26/64 (40.6)	NA	4 (2-9)	34/64 (53.1)	NA	NA	NA	7/64 (10.9)	5/64 (7.81)	NA	12/64 (18.8)	4/64 (6.25)
Chin (2012) [14]												
Woo (2011) [30]												
Bardoli (2017) [31]	2/11 (18.2)	8.5 (1.7)	4 (2-6)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Kim (2019) [32]	32/32 (100)	NA	2.2 (NA)	NA	NA	Most frequent	0/32 (0)	NA	0/32 (0)	NA	NA	0/32 (0)
Sievert (2019) [33]	24/86 (27.9)	57 (12)	3.8 (2-7)	86/86 (100)	12/86	(14.0) ^a	3/86 (3.49)	NA	NA	NA	9/86 ((10.5) ^a
Sonksen (2015) [34]	1/44 (2.27)	55 (17)	4.7 (2-6)	44/44 (100)	4/44 (9.09)	17/44 (38.6)	23/44 (52.3)	3/44 (6.82)	1/44 (2.27)	37/44 (84.1)	6/44 (13.6)	3/44 (6.82)
Gratzke (2017) [35]												
Bozkurt (2016) [36]	5/17 (29.4)	29.1 (11.6)	3.71 (2-7)	0/17 (0)	NA	NA	NA	NA	NA	NA	NA	0/17 (0)

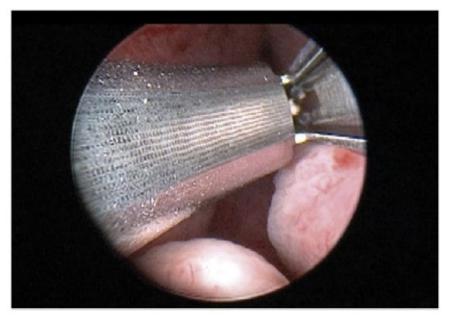
Data are shown as frequency (%) unless indicated otherwise.

^a Sum of two numbers.

About 1 implant per 10cc of prostate volume.



- The prostatic urethra should be assessed from the viewpoint of the verumontanum.
- For larger prostates, the next implants should be placed at the distal-most location. With the verumontanum in view, angle the device tip to the anterior level of the initial implants.





- The amount of opening achieved in the prostatic urethra is thus dictated by the amount of compression applied by the urologist with the delivery device tip.
 - The length of monofilament delivered at any one location is self-adjusted in situ by the tension.
 - It is possible for the urologist to first test the opening effect of the urethra cystoscopically to choose the best location for the implant before deployment.

Eur Urol 2013;64:292–299



Re-treatment after PUL

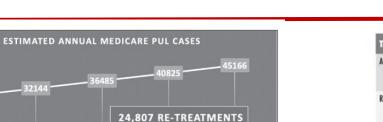
TABLE 1. Adverse events over 5 year contraction	urse of study	7				
Time period [months]	0-3	4-12	13-24	25-36	37-48	49-60
Total available subjects	140	139	130	118	108	96
Total subject-months (SM)	413.6	1210.3	1463.8	1324.9	1186.6	1056.3
Related adverse events [total events]	162	15	6	4	2	1
Related adverse events [subjects]	100	12	6	2	2	1
% SM with adverse event per total SM:						
Abdominal pain	0.3%					
Bladder spasm	0.3%	0.09%				
Chills (rigors)				< 0.01%		
Diarrhea	0.2%					
Dizziness	0.2%					
Fever (pyrexia)	0.06%					
Vomiting	0.02%					
Hypotension	0.04%					
Orchitis/epididymo-orchitis	0.3%					
Painful erection	0.2%					
Urinary retention	0.4%					
Urethral stenosis (stricture)	< 0.01%	< 0.01%				
Prostatitis	0.4%	< 0.01%	0.06%			
Urinary tract infection	0.1%	0.03%	0.03%	0.03%		
Pelvic pain	6%	1%				
Hematuria	4%	0.2%	0.3%		0.07%	0.07%
Dysuria	9%	1%	1%	1%		
Urinary urge incontinence	3%	3%	2%	1%	1%	1%
Other	4%	3%	5%	4%	3%	3%

- Surgical re-treatment for failure to cure was 13.6% at 5 years.
- Removal of encrusted implants: 10/140 (7.14%).
- Often resolving within 2 weeks postoperatively.

Can J Urol 2017;24:8802-8813



Re-treatment after PUL



2019 2020 2021 2022 2023

Figure 1 Estimated total annual Medicare-reimburged prostatic urathral lift (PIII) cases

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KEY MESSAGES

Despite an increasing number of patients expected to require surgical re-treatment after PUL, there is limited evidence and a lack of recommendations to guide the management of these patients.

■ HoLEP is associated with the strongest evidence to support its use after PUL.

PVP and RWT have no peer-reviewed evidence to support their use in the post-PUL setting.

There is no peer-reviewed evidence examining the durability, cost, or sexual impact of PUL retreatment modalities.

Benign prostatic hyperplasia surgical re-treatment after prostatic urethral lift

A narrativa raviaw

Author	Year	Country	Study type	n	Prostate size (cm ³)	Time from PUL (months)	LOS (days)	Complications (%)	EBL (mL)	ER visit (%)	PVR ∆ (mL)	AUASS A	Peak flow ∆ (mL/s)
Repeat PUL													
Roehrborn ²	2017	USA	RCT	6	NR	NR	NR	NR	NR	NR	NR	NR	NR
Page ⁶	2021	UK	Retrospective	57	NR	NR	NR	NR	NR	NR	NR	NR	NR
TURP													
Roehrborn ²	2017	USA	RCT	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Gratzke*	2016	Germany	RCT	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
wπ													
Gauhar ¹⁹	2022	Singapore	Retrospective	5	64	20	NR	0	NR	NR	NR	NR	NR
SP													
Pathak ³⁰	2022	USA	Retrospective	2	NR	NR	NR	NR	NR	NR	NR	NR	NR
RWT	-												
None													
HoLEP													
McAdoms ¹⁰	2017	USA	Retrospective	7	80	8	NR	0	59	NR	NR	NR	NR
Das ⁴	2022	USA	Retrospective	22	90	14.4	NR	18.2	NR	9.1	-124	-5	8.3
Duront ²³	2022	USA	Retrospective	24	NR	NR	NR	NR	NR	NR	NR	NR	NR
Assmus ⁷	2022	USA	Retrospective	22	104.8	NR	NR	7.7	NR	13.3	NR	-4.3	NR
David ¹⁴	2022	USA	Retrospective	1	84	NR	NR	0	NR	NR	NR	NR	NR
Parikh ²¹	2019	USA	Retrospective	3	NR	NR	NR	NR	NR	NR	NR	NR	NR
Igbal ²²	2018	UK	Retrospective	1	NR	0.25	NR	0	NR	NR	NR	NR	NR
TFL					0.040					Salaces.			
Smith ²⁴	2021	USA	Retrospective	1	198	24	1	NR	NR	NR	NR	-10	43.9
PVP													
None													
PAE													
Topping ³⁶	2017	UK	Retrospective	1	99	1	NR	NR	NR	NR	NR	-6	10

AUASS: American Urological Association Symptom Score; EBL: estimated blood loss; ER: emergency room; HoLEP: holmium laser enucleation of the prostate; LOS: length of stay; PAE: prostatic artery embolization; PUL: prostatic urethral lift; PVP: photo-selective vaporization of the prostate; PVR: postvoid residual; RCT: randomized controlled trial; RWT: robotic waterjet treatment; SP: simple prostatectomy; TFL: thulium fiber laser enucleation; TURP: transurethral resection of prostate; WVTT: water vapor thermal therapy. Can Urol Assoc J 2023;17:353–9.



- First case: 2015.12.
- A total of 59 cases from 2016 to 2023.
- Under general or local anesthesia.
- Exclusion criteria : high bladder neck & median lobe hypertrophy.
- Follow-up: 1, 3, 6, and 12 months after PUL.
 - Assessment : UFM and IPSS
 - Not evaluated sexual function questionnaire.



Table 1. Baseline characteristics of patients.

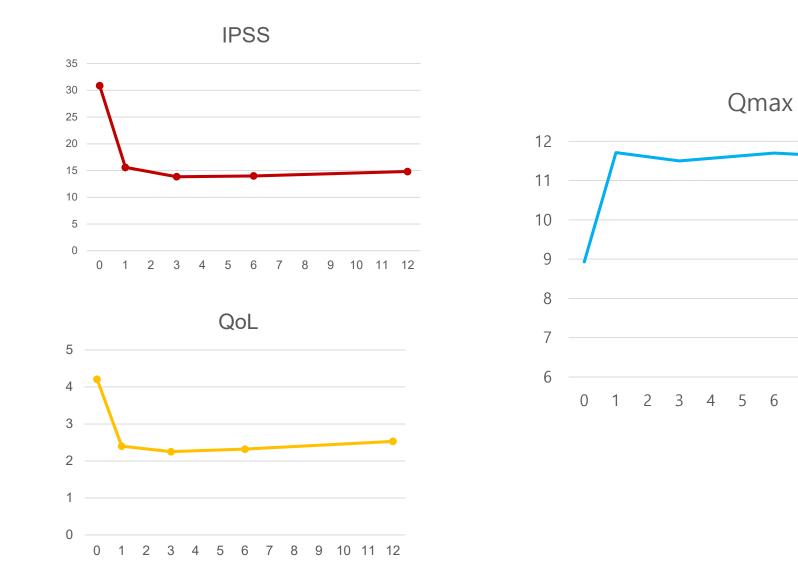
Characteristics	Mean ± SD
Age (yrs)	66.8 ± 8.9
PSA (ng/mL)	3.12 ± 2.79
Prostate volume (cc)	34.09 ± 13.00
IPSS	30.89 ± 3.30
QoL	4.21 ± 1.06
Qmax (mL/sec)	8.93 ± 4.18
Residual urine (cc)	57.93 ± 57.25
OP time (mins)	18.27 ± 9.47
PUL implants	2.12 ± 0.49



Table 2. outcome measures following PUL procedure.

	1 mo	3 mo	6 mo	12 mo
IPSS	15.60±4.36	13.85±4.30	14.00 ± 5.60	14.82±5.35
QoL	2.40±1.72	2.25±1.69	2.32±1.71	2.53±1.64
Qmax	11.71±5.03	11.50±4.85	11.70±4.58	11.45±4.72
PVR	47.85±40.81	45.45±43.58	31.91±24.56	36.12±32.98







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7

10 11 12

Table 3. Postoperative complications after PUL procedure.

Complications	N (%)
Dysuria	9/59 (15.2)
Pelvic pain	7/59 (11.8)
Hematuria	2/59 (3.4)
UTI	0/59 (0)
Urinary incontinence	0/59 (0)
Urgency	10/59 (16.9)
Encrusted implant	4/59 (6.8)
Progression to TURP	12/59 (20.3)



Conclusions

Prostatic urethral lift (UroLift[®]) procedure may be offered as an option for patients with LUTS

م ۱۱۰۰ ام	Recommendation	Strength rating	4:1-
attrip	Offer Prostatic urethral lift (Urolift [®]) to men with LUTS interested in preserving ejaculatory	Strong	;tile
funct	function, with prostates < 70 mL and no middle lobe.	5	

- To offer rapid recovery without the need for urinary catheter.
- High bladder neck and obstructive median lobe cannot be effectively treated.

Long prostatic urethral lift (pul)

- techr ^{15.} PUL may be offered as an option for patients with LUTS attributed to BPH provided prostate volume <80g and verified absence of an obstructive middle lobe. (Moderate Recommendation; Evidence Level: Grade C)
 - 16. PUL may be offered to eligible patients who desire preservation of erectile and ejaculatory function. (Conditional Recommendation; Evidence Level: Grade C)



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Thank you for your attention