



# State of the art: goedaardige prostaatvergroting

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Uroloog  
Urologisch Centrum Noord West-Vlaanderen

2018

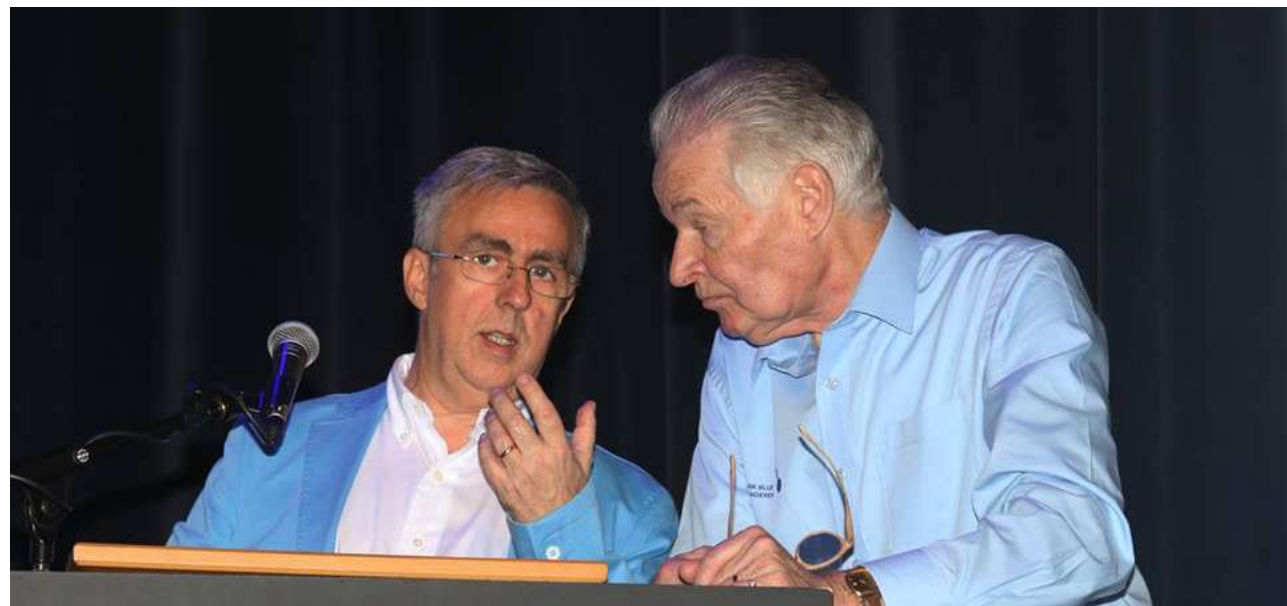


2023





Luc De Laere



## Not everyone knows that women don't have a prostate



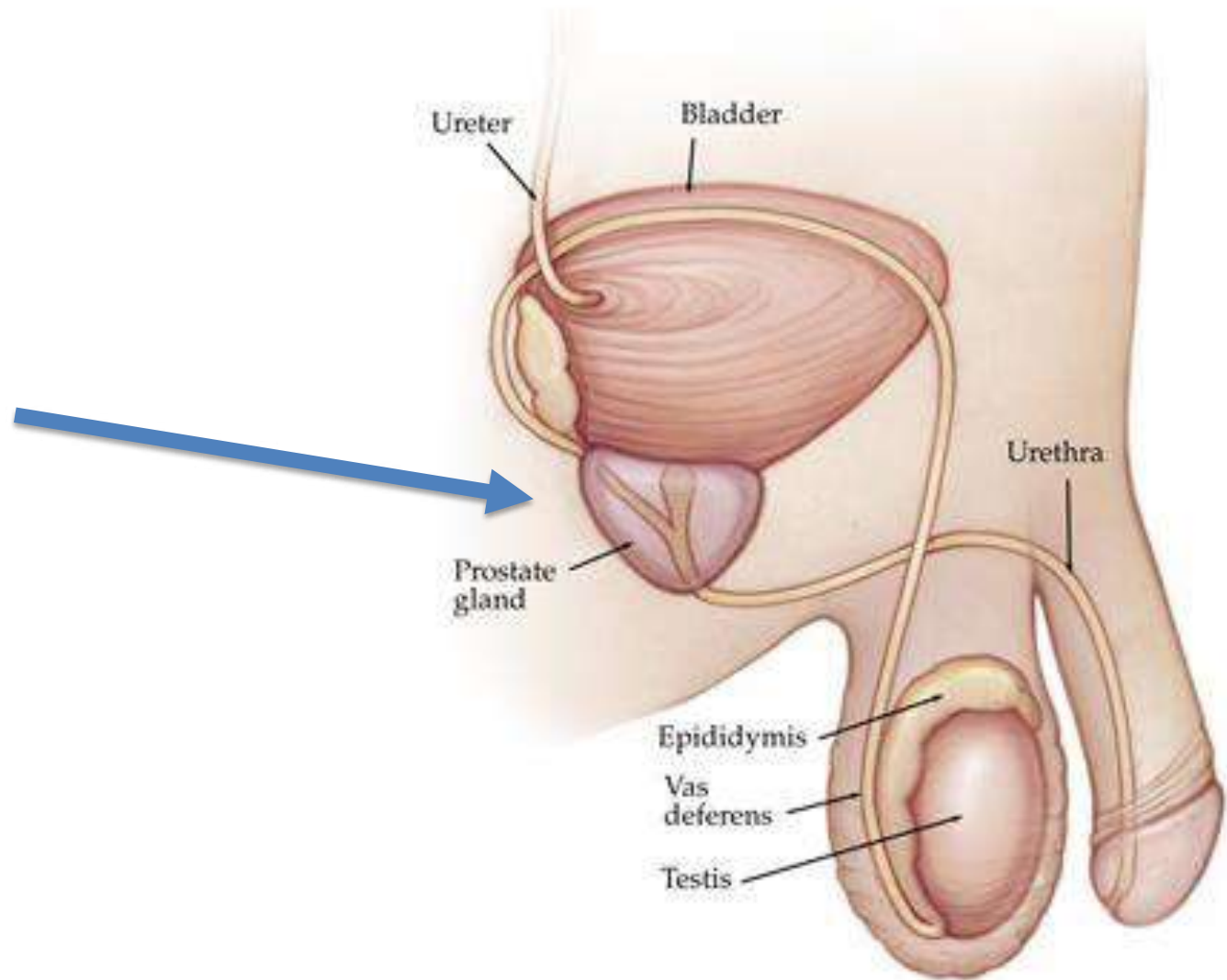
**54%**

of men wrongly think  
that women have a prostate

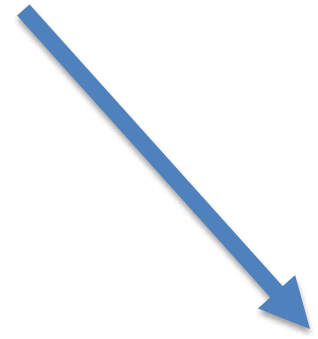
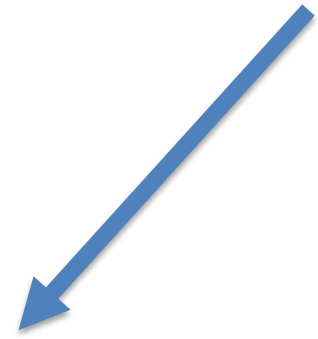
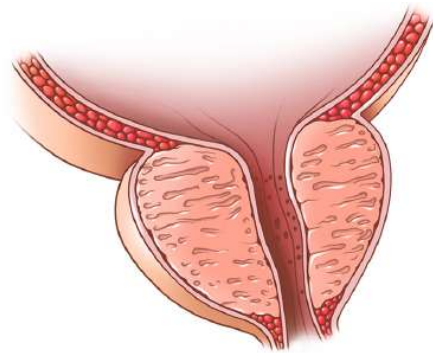


**37%**

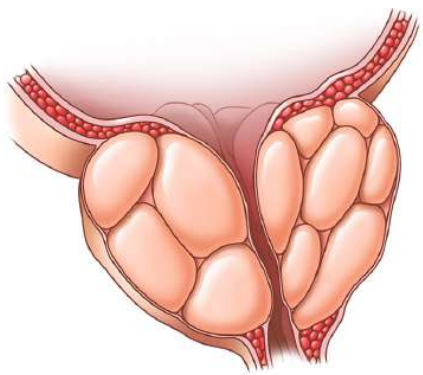
of women wrongly think  
they have a prostate



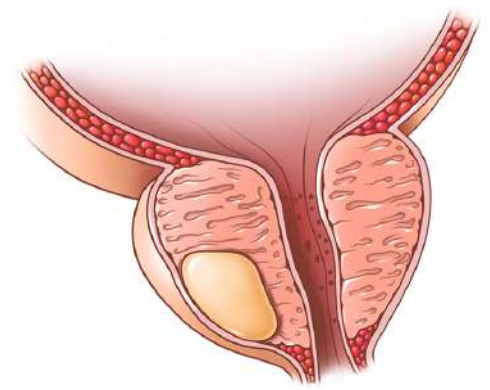
normale prostaat



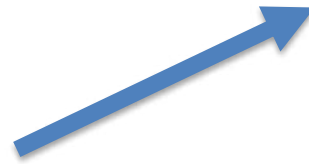
goedaardige prostaatvergroting



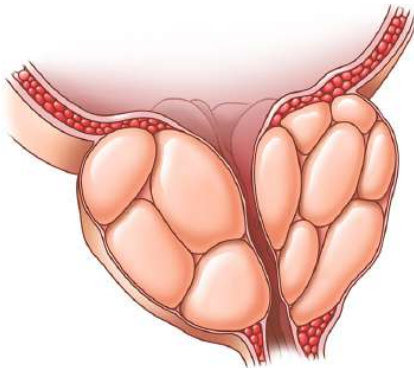
prostaatkanker



Soms geen klachten !



goedaardige prostaatvergroting



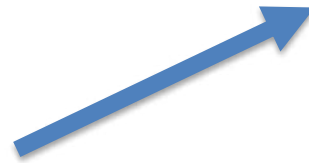
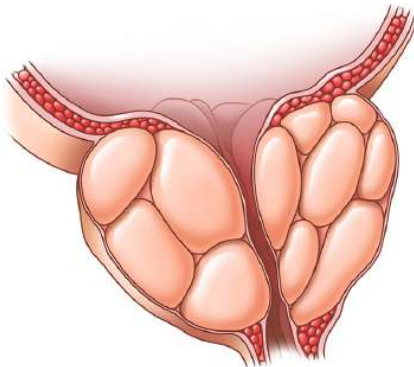


Zwakke straal  
Onderbroken straal  
Residugevoel

Aandrang  
Plasfrequentie ↑

...

goedaardige prostaatvergroting







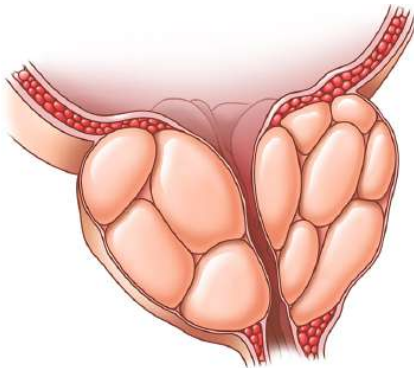
nierfalen



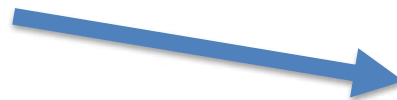
urineretentie



goedaardige prostaatvergroting



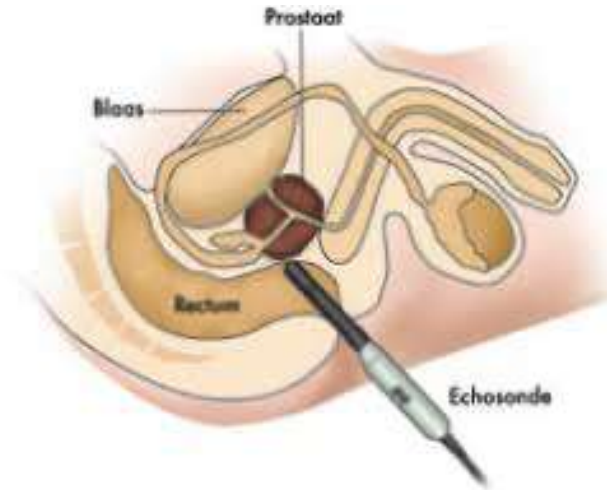
blaasstenen



# Diagnose van goedaardige prostaatvergroting



- Klachten patiënt
- Vragenlijsten (IPSS)
- Rectaal toucher
- Echografie van de prostaat
- Bloed en urine
- Uroflow
- (Urodynamisch onderzoek)



# IPSS

## International Prostate Symptom Score



IPSS	helemaal niet	minder dan 1 van de 5 keer	minder dan de helft van de keren	ongeveer de helft van de keren	meer dan de helft van de keren	bijna altijd
Hoe vaak had u in de afgelopen maand het gevoel dat uw blaas nog niet leeg was nadat u had geplast?	0	1	2	3	4	5
Hoe vaak moest u in de afgelopen maand binnen 2 uur nadat u had geplast weer plassen?	0	1	2	3	4	5
Hoe vaak merkte u in de afgelopen maand dat tijdens het plassen de straal enkele keren stopte en weer begon?	0	1	2	3	4	5
Hoe vaak had u in de afgelopen maand moeite om het plassen uit te stellen?	0	1	2	3	4	5
Hoe vaak had u in de afgelopen maand een zwakke urinestraal?	0	1	2	3	4	5
Hoe vaak moest u in de afgelopen maand persen om de urinestraal op gang te brengen?	0	1	2	3	4	5
Hoe vaak moest u in de afgelopen maand gemiddeld per nacht het bed uit om te plassen?	nooit	1 keer	2 keer	3 keer	4 keer	5 keer

som IPSS-score:

kwaliteit van leven	gelukkig	plezierig	over het algemeen tevreden	gemengde gevoelens (om het even)	over het algemeen ontevreden	ongelukkig	verschrikkelijk
	0	1	2	3	4	5	6

score kwaliteit van leven:

**Score op 35**

1 tot 7 : mild

8 tot 19 : matig

20 tot 35 : ernstig

# Behandeling met medicatie



- Fytotherapie “op plantaardige basis” (bvb serenoa repens)
- Alfa blokkers (bvb tamsulosine, silodosine)
- 5  $\alpha$  reductase remmers (bvb dutasteride, finasteride)

***prostaatontspanner***

***prostaatkrimper***



**Nadelen**

Efficiëntie

Neveneffecten

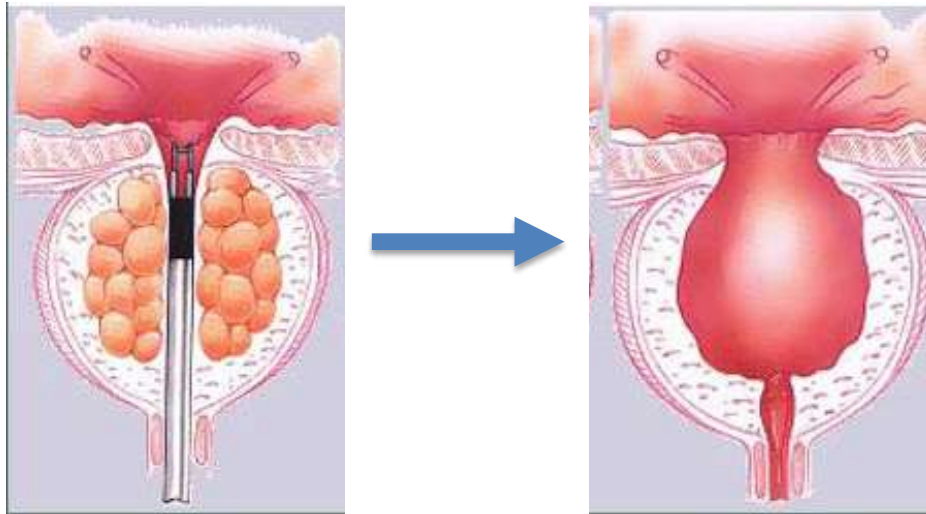
Kostprijs



chirurgie voor goedaardige prostaatvergroting



Doel van chirurgie voor goedaardige prostaatvergroting



De goedaardige prostaatkwabben verwijderen terwijl het kapsel ter plaatse blijft



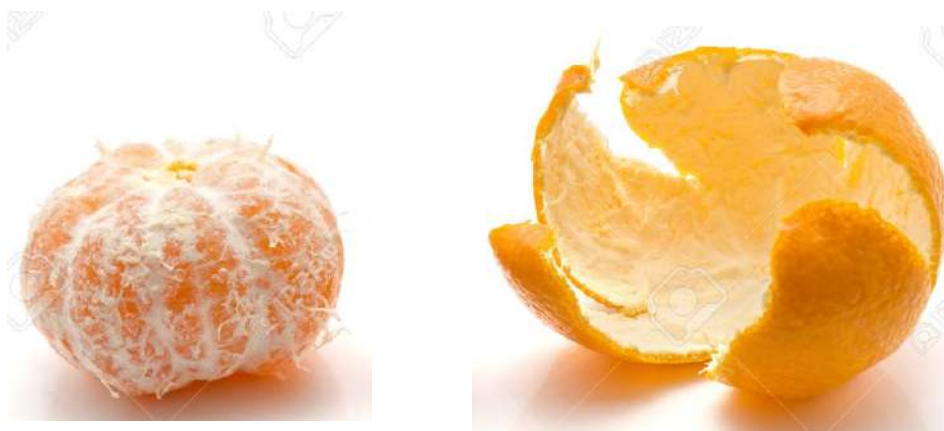
## Doel van chirurgie voor prostaatkanker



De prostaat VOLLEDIG verwijderen



Doel van chirurgie voor goedaardige prostaatvergroting



De goedaardige prostaatkwabben verwijderen terwijl het kapsel ter plaatse blijft





## **Klassieke behandelingen**

Open prostatectomie (>80g)

TURP (< 80g)

## **Innovatieve behandelingen**

HoLEP

Rezum, prostaatembolisatie



## Klassieke behandelingen

## Innovatieve behandelingen

Open prostatectomie (>80g)

HoLEP

TURP (< 80g)

Rezum, prostaatembolisatie

# Open prostatectomie





**Enucleatie**

**Volumereductie**

# Open prostatectomie

## Wanneer:

- prostaten van  $>80\text{g}$

## Pro:

- goed functioneel resultaat



# Open prostatectomie

## Wanneer:

- prostaten van >80g

## Pro:

- goed functioneel resultaat

## Contra:

- bloedverlies (transfusie bij 8%)
- complicatierisico
- hospitalisatieduur
- litteken



## Klassieke behandelingen

Open prostatectomie (>80g)

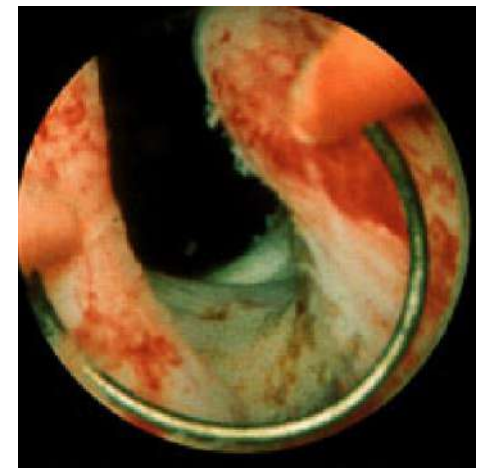
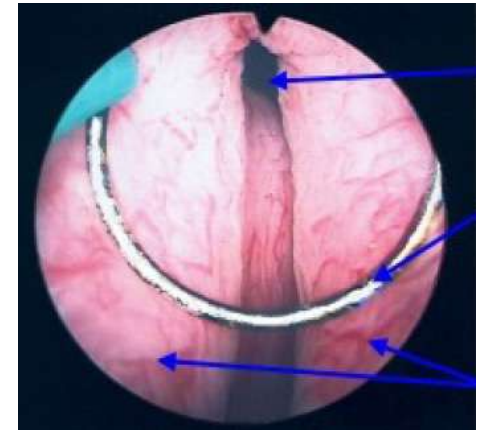
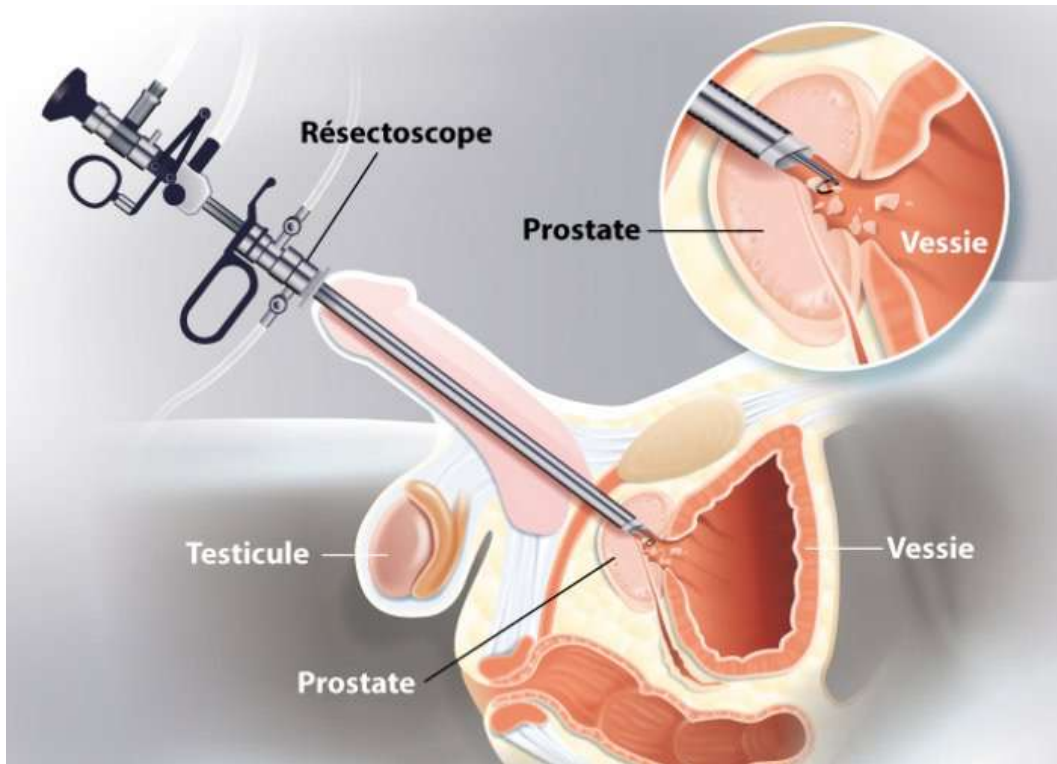
TURP (< 80g)

## Innovatieve behandelingen

HoLEP

Rezum, prostaatembolisatie

# TUR P (=TransUrethrale Resectie Prostaat)







**Enucleatie**

Vinger ("open")

**Volumereductie**

Elektrische energie: TURP

# **TUR P**

## **(=TransUrethrale Resectie Prostaat)**

### **Wanneer:**

- prostaten <80g

### **Pro:**

- kortere hospitalisatieduur
- geen litteken

# TUR P

## (=TransUrethrale Resectie Prostaat)

### Wanneer:

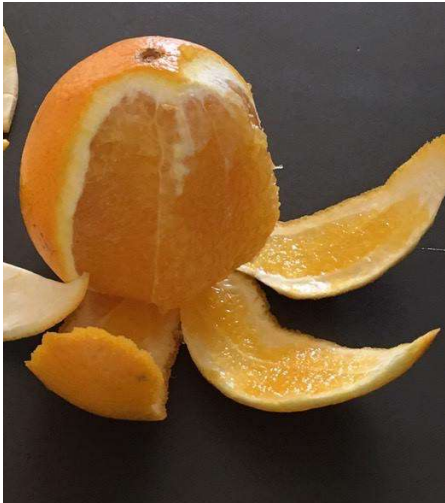
- prostaten <80g

### Pro:

- kortere hospitalisatieduur
- geen litteken

### Contra:

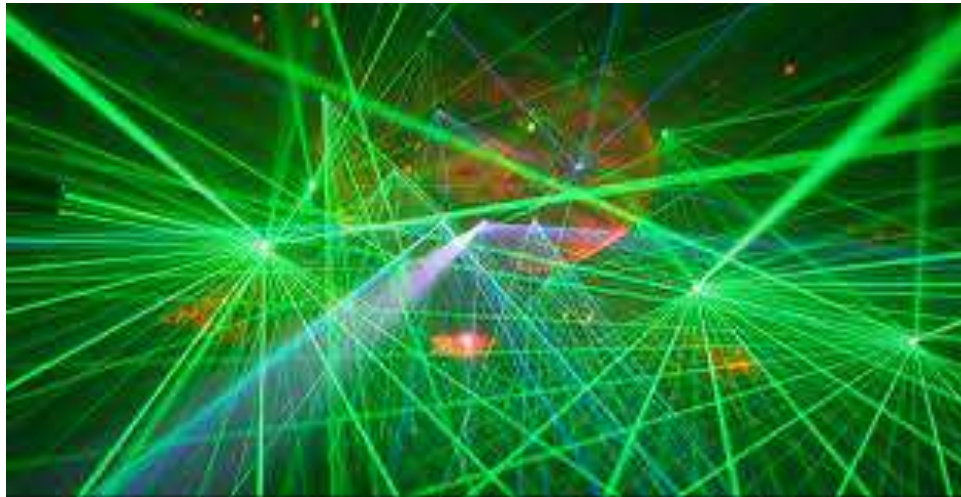
- onvolledige resectie
- geen grote prostaatvolumes
- eerder hoge kans op nabloeding



# Ideale chirurgie voor goedaardige prostaatvergroting ?!

- alle prostaatvolumes
- enucleatie
- korte hospitalisatie
- laag complicatierisico

# Ideale chirurgie voor goedaardige prostaatvergroting ?!





## Klassieke behandelingen

Open prostatectomie (>80g)

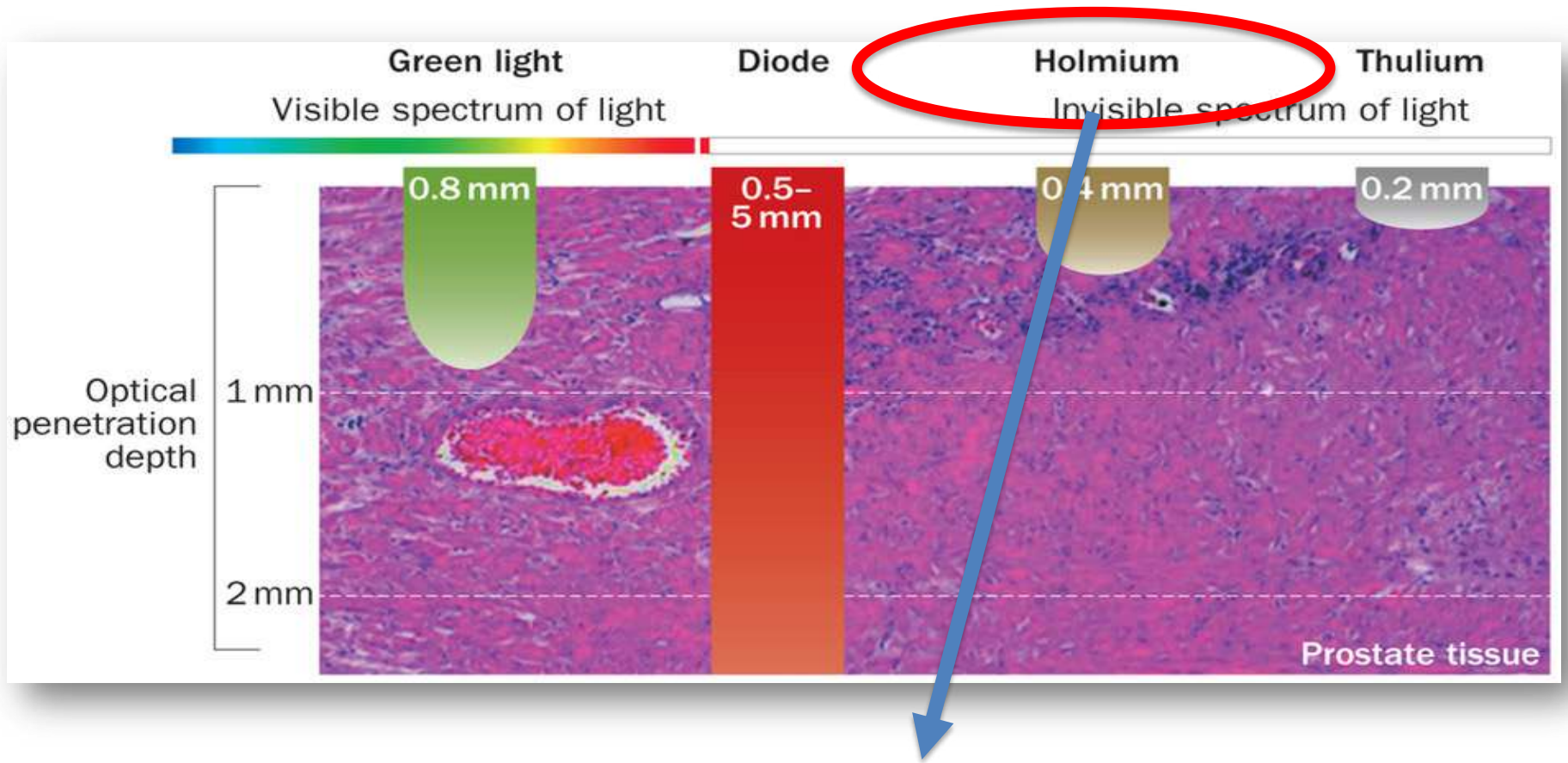
TURP (< 80g)

## Innovatieve behandelingen

HoLEP

Rezum, prostaatembolisatie

# Verschillende soorten lasers



**HoLEP = Holmium Laser Enucleatie van de Prostaat**

# Endoscopic enucleation

World J Urol (2016) 34:1353–1355  
DOI 10.1007/s00345-016-1922-3

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EDITORIAL

## Enucleation is enucleation is enucleation is enucleation

Thomas R. W. Herrmann<sup>1</sup>

*Holmium*  
*Thulium*  
*Greenlight*  
*Bipolar energy*

*HoLEP*  
*ThuLEP*  
*GreenLEP*  
*BipoLEP*



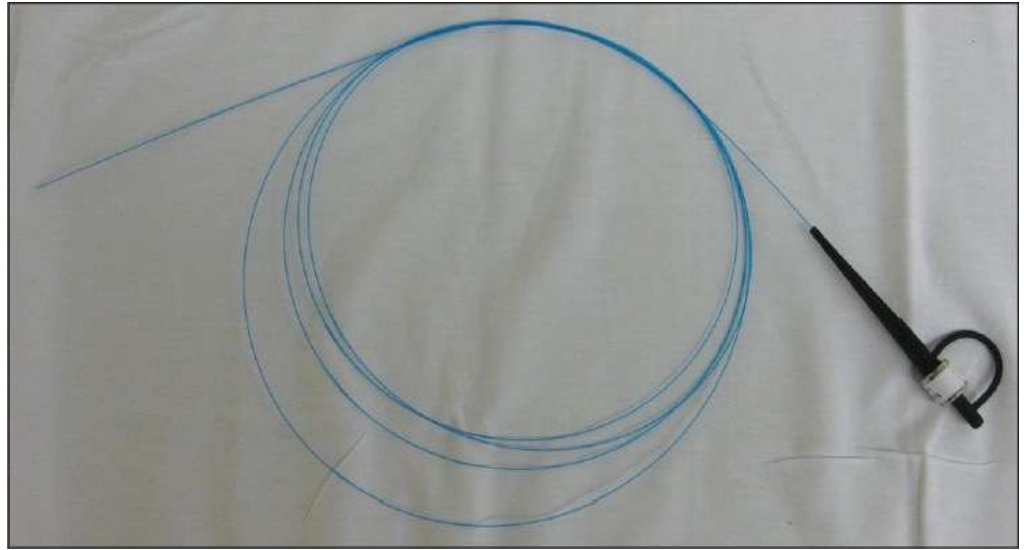
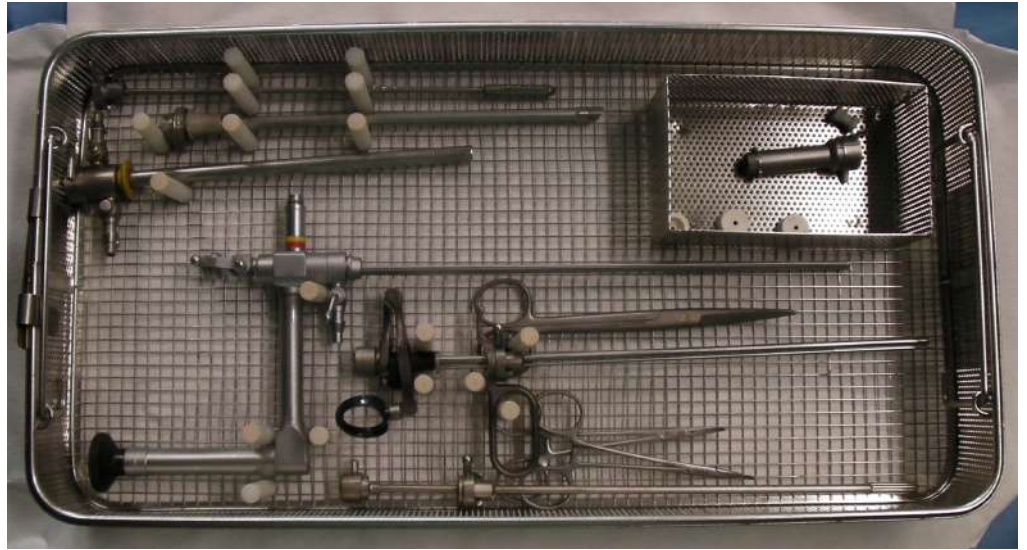
FARLEY







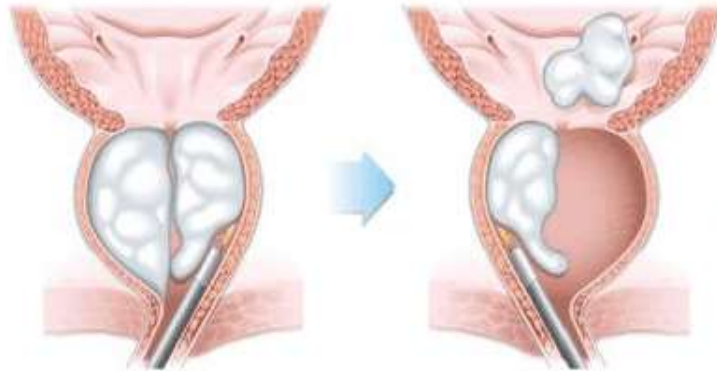




# HoLEP

## Holmium Laser Enucleation van de Prostaat

### I. Enucleatie



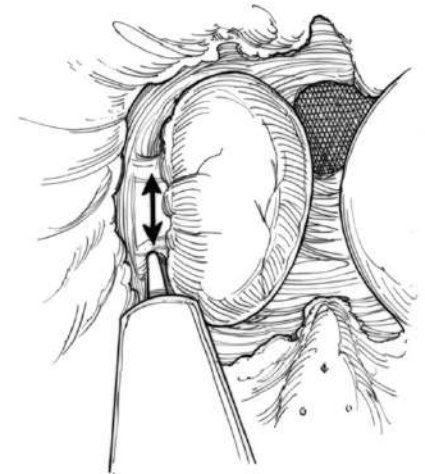
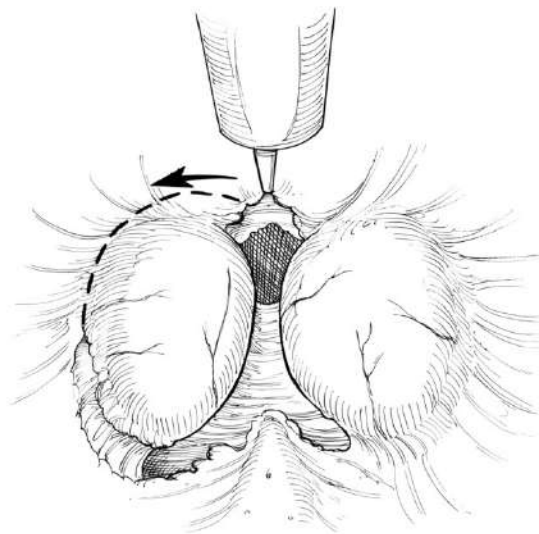
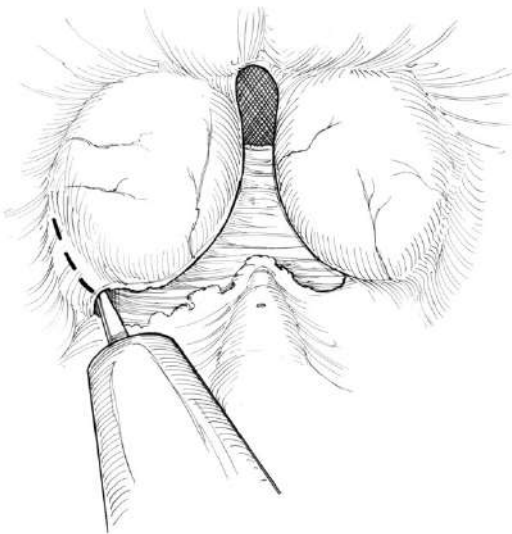
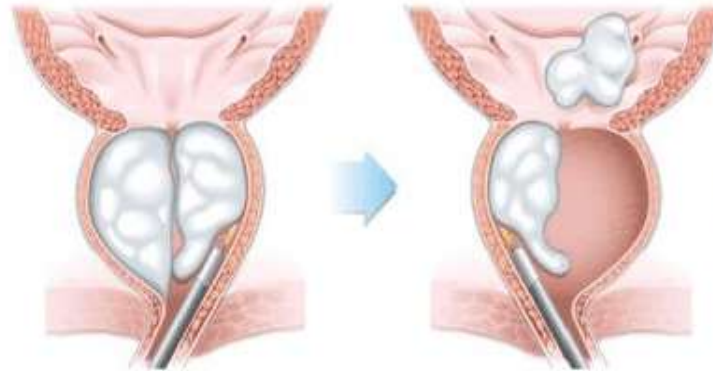
### II. Morcellatie



# HoLEP

## Holmium Laser Enucleation van de Prostaat

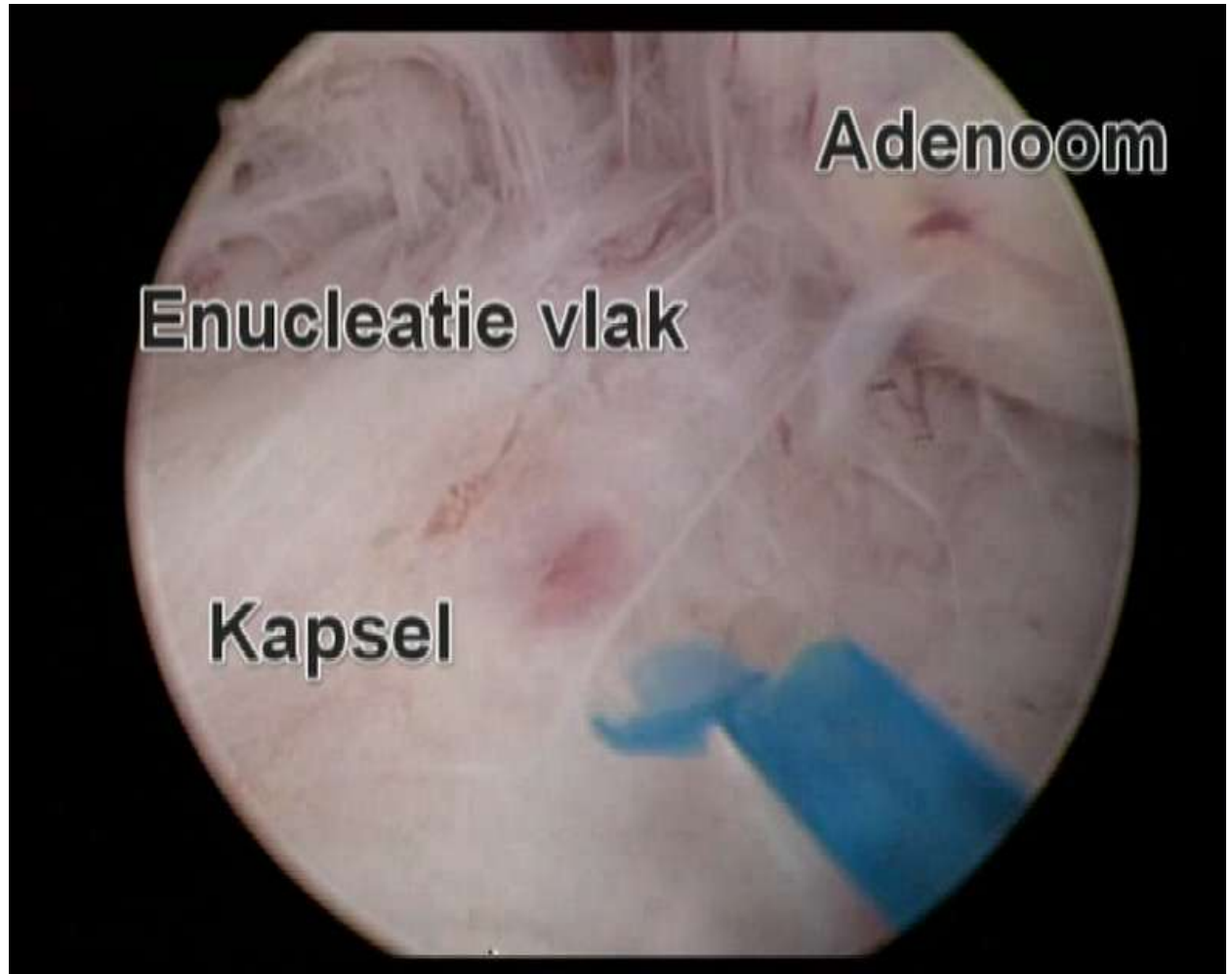
### I. Enucleatie



# HoLEP

Holmium Laser Enucleation van de Prostaat

## I. Enucleatie

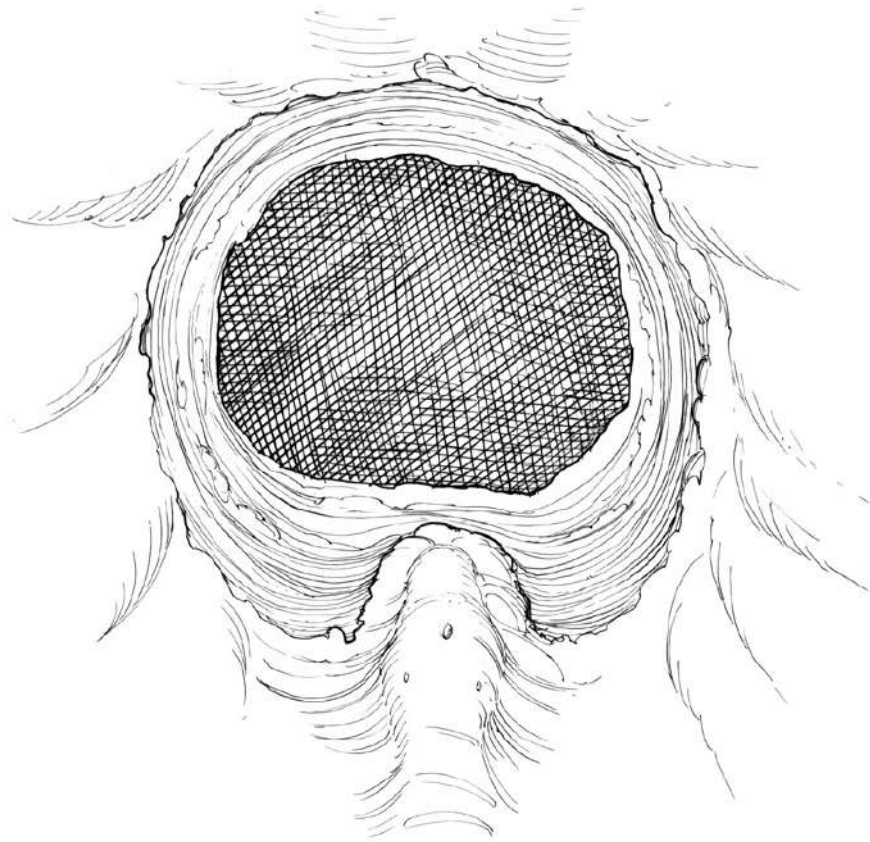




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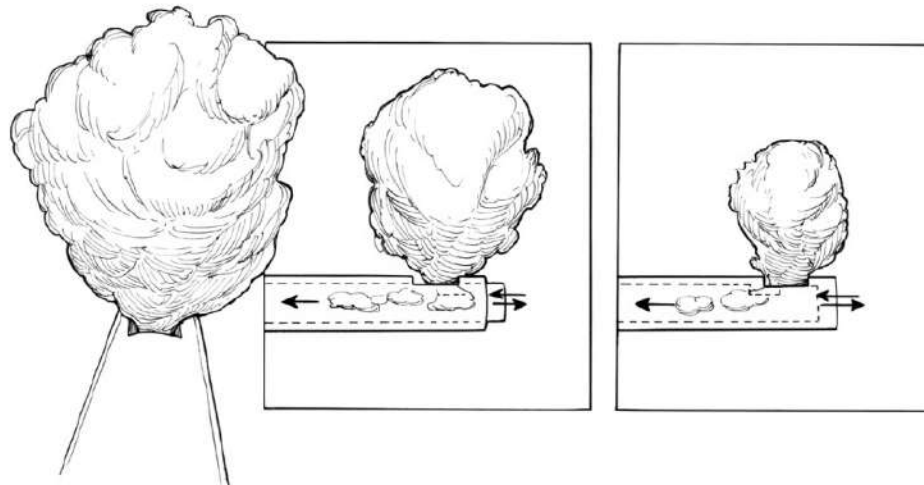
## I. Enucleatie



# HoLEP

Holmium Laser Enucleation van de Prostaat

## II. Morcellatie



# HoLEP

Holmium Laser Enucleation van de Prostaat

## II. Morcellatie



# HoLEP

Holmium Laser Enucleation van de Prostaat

## II. Morcellatie

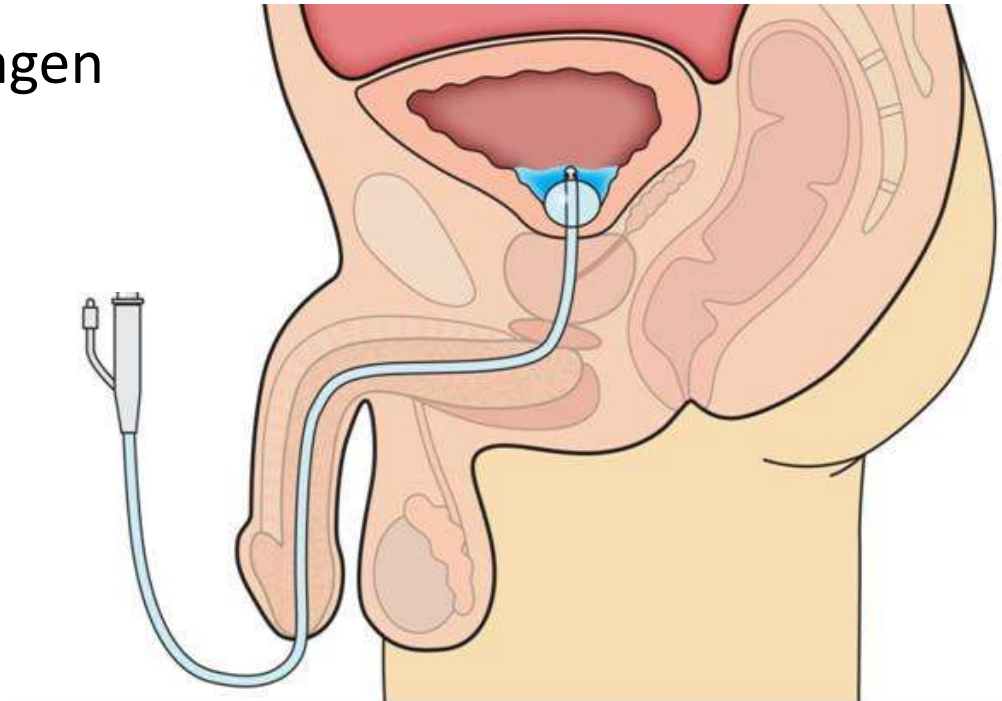


# HoLEP

Holmium Laser Enucleatie van de Prostaat

## Post-operatief

Transurethrale sonde 1 à 2 dagen

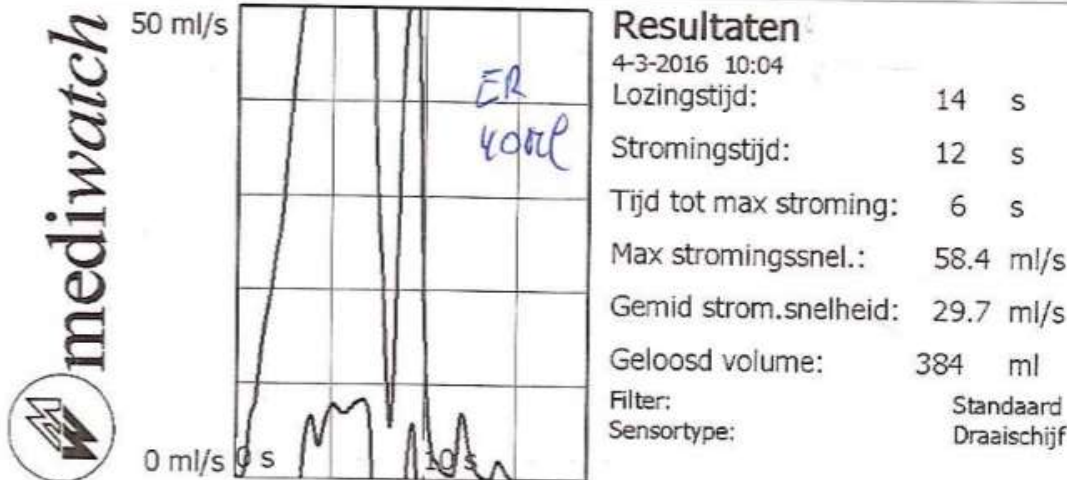


# HoLEP

## Holmium Laser Enucleation van de Prostaat

### Post-operatief

Na zes weken...



**De perfectie???**



# Wat zijn de nadelen van HoLEP ?

I. Complicaties

II. Investering

III. Eerder moeilijke procedure



TABLE 3. PERIOPERATIVE DATA AND ADVERSE EVENTS

	No. of patients		Pooled estimate	p	I <sup>2</sup> (%)	Favors
	HoLEP	TURP				
<b>Perioperative data</b>						
Operative time	272	268	15.91[5.45,26.36] <sup>a</sup>	0.003	93	TURP
Resected weight	272	268	4.12[- 7.26, 15.51] <sup>a</sup>	0.48	97	None
Blood loss	242	238	- 0.46[- 0.81, 0.80] <sup>a</sup>	0.01	58	HoLEP
Catheterization time	272	268	- 1.50[- 2.22, - 0.79] <sup>b</sup>	<0.001	92	HoLEP
Hospital stay	222	218	- 1.92[- 2.91, - 0.93] <sup>b</sup>	<0.001	94	HoLEP
<b>Adverse events</b>						
Urethral stricture	10/251	11/239	0.86[0.38, 1.97] <sup>c</sup>	0.73	0	None
Stress incontinence	7/251	6/239	1.11[0.40, 3.12] <sup>c</sup>	0.84	0	None
Blood transfusion	0/257	8/253	0.23[0.06,0.92] <sup>c</sup>	0.04	0	HoLEP
Dysuria	49/157	25/153	1.87[1.25,2.80] <sup>c</sup>	0.003	40	TURP
Recatheterization	8/195	13/195	0.63[0.28,1.43] <sup>c</sup>	0.38	3	None

<sup>a</sup>Mean difference [95% Confidence interval].

<sup>b</sup>Standard mean difference [95% Confidence interval].

<sup>c</sup>Risk Ratio [95% Confidence interval].

HoLEP=holmium laser enucleation prostatectomy; TURP=transurethral resection of the prostate.

HoLEP

TURP

Dysurie:

1/3

1/6

JOURNAL OF ENDOUROLOGY  
Volume 27, Number 5, May 2013  
© Mary Ann Liebert, Inc.  
Pp. 604-611  
DOI: 10.1089/end.2012.0505

Holmium Laser Enucleation of the Prostate  
Versus Transurethral Resection of the Prostate:  
A Systematic Review and Meta-Analysis  
of Randomized Controlled Trials

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HoLEP=holmium laser enucleation prostatectomy; TURP=transurethral resection of the prostate.

HoLEP

Strictuur: 1/25

Incontinentie: 1/35

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# Wat zijn de nadelen van HoLEP ?

I. Complicaties

II. Investering

III. Eerder moeilijke procedure



*Urology 2006*

 HOLMIUM LASER ENUCLEATION VERSUS OPEN  
 PROSTATECTOMY FOR BENIGN PROSTATIC HYPERPLASIA:  
 AN INPATIENT COST ANALYSIS

 ANDREA SALONIA, NAZARENO SUARDI, RICHARD NASPRO, BRUNO MAZZOCCOLI,  
 GIUSEPPE ZANNI, ANDREA GALLINA, LINA BUA, VINCENZO SCATTONI,  
 PATRIZIO RIGATTI, AND FRANCESCO MONTORSI

**TABLE III. Perioperative cost comparison between two groups**

Variable	Group 1	Group 2
Premedication and prophylaxis	6.0 (7.4)	6.0 (7.4)
Anesthesia (disposables/drugs/sedation)	47.2 (58.5)	48.8 (60.5)
OR surgical setup/disposables/fibers	382.3 (473.6)	690.5 (855.4)
Irrigation fluid	100 (123.9)	57.5 (71.2)
Autologous blood transfusion (€75/U)	75 (92.9)	75 (92.9)
Homologous blood transfusion (€150/U)	66.7 (82.6)	11.4 (14.1)
OR time (€480/hr)	461.3 (571.5)	590.5 (731.5)
Postoperative holding area (€480/hr)	200 (247.8)	120 (148.7)
Perioperative analgesic solution	1.8 (2.2)	1.8 (2.2)
Hospital stay (€280/day)	1530.0 (1895.4)	755.2 (935.5)
Unplanned events	0.4 (0.5)	1.6 (2.0)
<b>Total</b>	<b>2868.9 (3554.0)</b>	<b>2356.5 (2919.4)</b>

Group 1 = Open Prostatectomie

Group 2 = HoLEP

## Systematic review and economic modelling of effectiveness and cost utility of surgical treatments for men with benign prostatic enlargement

T Lourenco,<sup>1</sup> N Armstrong,<sup>2</sup> J N'Dow,<sup>3\*</sup>  
G Nabi,<sup>1</sup> M Deverill,<sup>2</sup> R Pickard,<sup>4</sup> L Vale,<sup>1</sup>  
G MacLennan,<sup>1</sup> C Fraser,<sup>1</sup> S McClinton,<sup>3</sup>  
S Wong,<sup>1</sup> A Coutts,<sup>1</sup> G Mowatt<sup>1</sup>  
and A Grant<sup>1</sup>

<sup>1</sup>Health Services Research Unit, Institute of Applied Health Sciences,  
University of Aberdeen, UK

<sup>2</sup>Health Economics Research Unit, Centre of Health Services Research,  
University of Newcastle, UK

<sup>3</sup>Academic Urology Unit, Department of Surgery, University of  
Aberdeen, UK

<sup>4</sup>Department of Urology, School of Surgical and Reproductive Sciences,  
University of Newcastle, UK

\*Corresponding author



### Executive summary

Health Technology Assessment 2008, Vol. 12, No. 35

Health Technology Assessment  
NIHR HTA Programme  
[www.hta.ac.uk](http://www.hta.ac.uk)



## Results

Of the other ablative procedures, TUVF was less costly than TURP (and also the least costly single treatment considered) but less effective. HoLEP was estimated to be more effective and less costly than a single TURP but less effective than a strategy involving repeating TURP if necessary. However, the base-case analysis suggested an 80% chance that a strategy of TUVF, followed by HoLEP if required, would be the cost-effective strategy at a threshold of £20,000 per quality-adjusted life-year (QALY). At an approximately £50,000 threshold, on average, TUVF, followed by TURP as required, would be cost-effective, although considerable uncertainty surrounds this finding.

# Wat zijn de nadelen van HoLEP ?

- I. Complicaties
- II. Investering
- III. Eerder moeilijke procedure

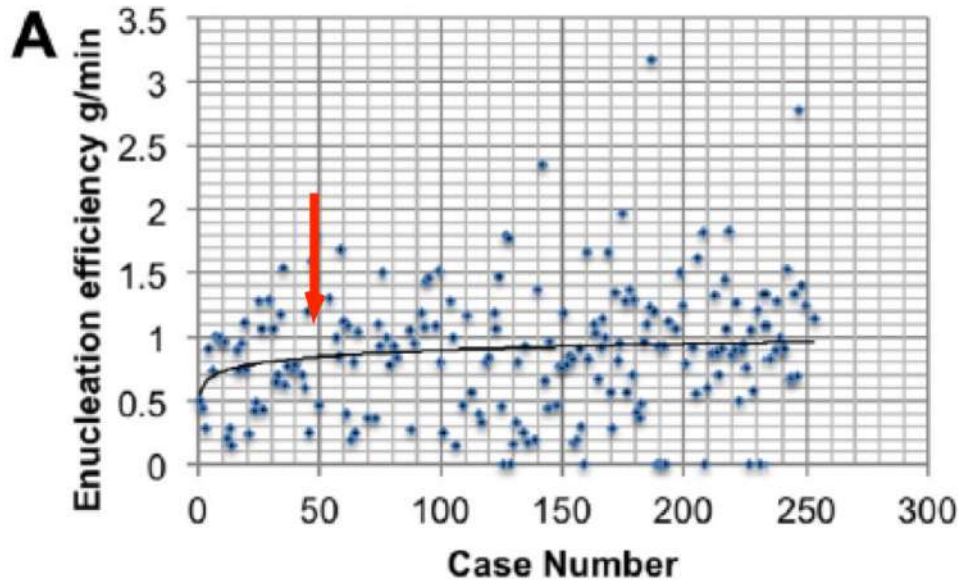
# Wat zijn de nadelen van HoLEP ?

Evaluation of the Learning Curve for Holmium Laser Enucleation of the Prostate Using Multiple Outcome Measures

of THE JOURNAL  
UROLOGY®

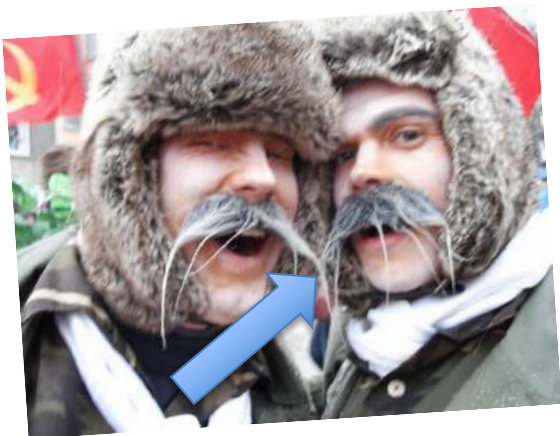
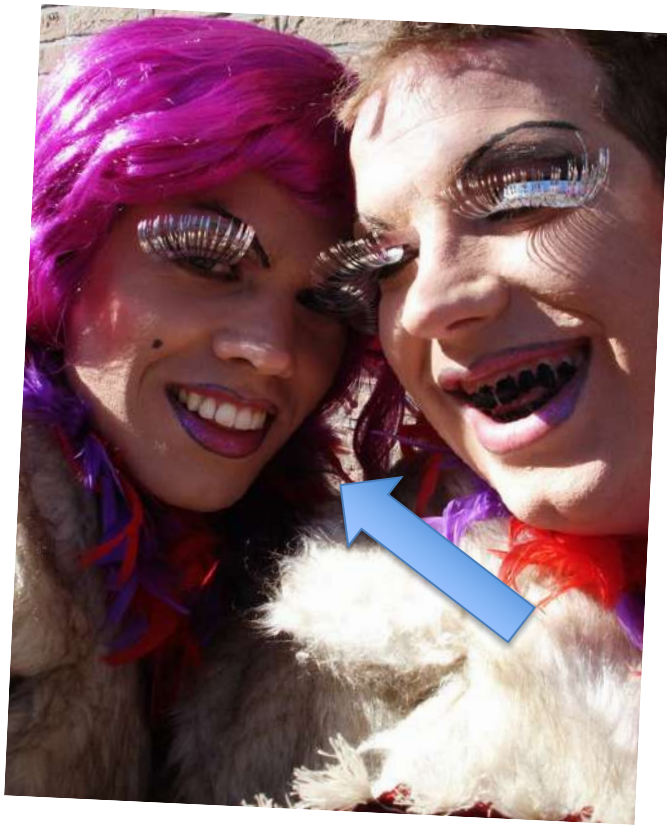


Brunckhorst O et al, 2015



*“Within our single Surgeon cohort, we experienced a **learning curve of 40-60 cases** for the HoLEP procedure”*





Terug naar Aalst...



Dr Rappe

*ASZ Aalst*



Dr Schatteman  
Dr De Naeyer

*OLV Aalst*



Dr Lehrich  
Dr Böhme

*Auguste-Viktoria-Krankenhaus  
Berlijn*



**Wegen de nadelen op tegen de voordelen?**

**JA**



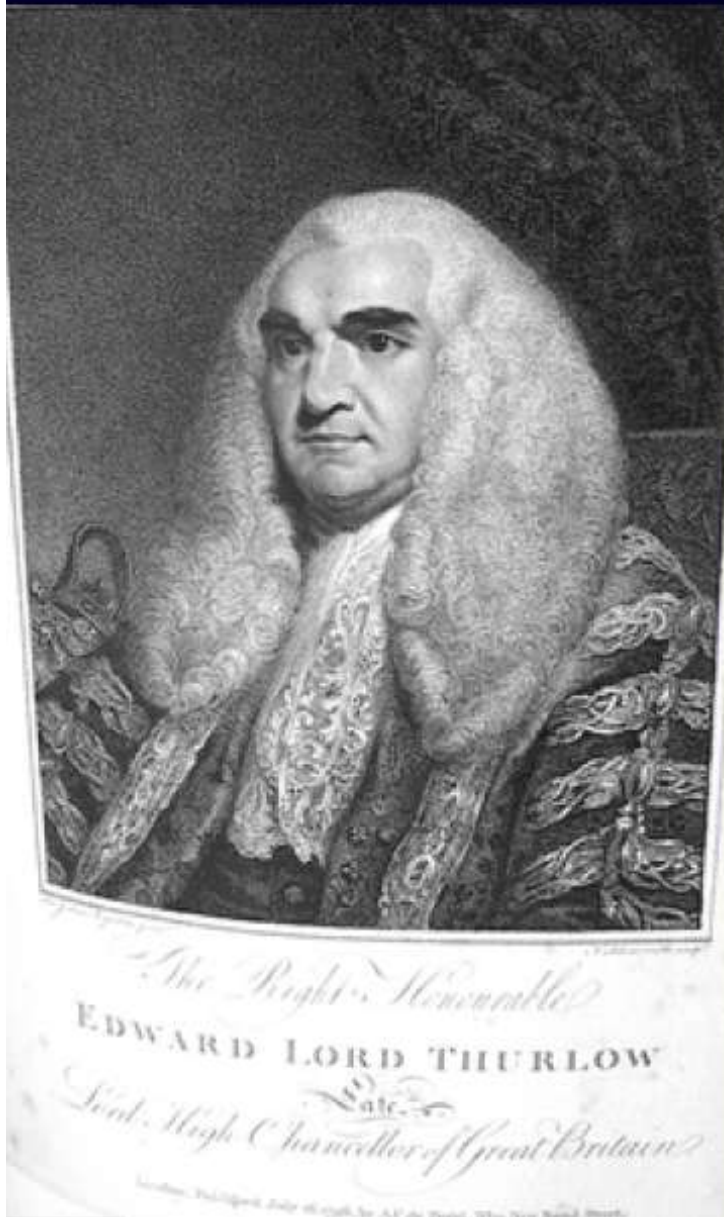
[uroweb.org](http://uroweb.org)

Recommendation	Strength rating
Offer laser enucleation of the prostate using Ho:YAG laser (HoLEP) to men with moderate-to-severe LUTS as an alternative to transurethral resection of the prostate or open prostatectomy.	Strong

## EAU richtlijnen 2023

Bied HoLEP aan als alternatief voor TURP en open prostatectomie :

- Minder bloedverlies
- Kortere hospitalisatieduur
- Goede functionele resultaten



“There is no more science in surgery than in butchering,”

- *Lord Thurlow*

Parliamentary debate on the establishment of a Royal College of Surgeons in 1811

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EUROPEAN UROLOGY 50 (2006) 563-568



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available at [www.sciencedirect.com](http://www.sciencedirect.com)  
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European Association of Urology

## Benign Prostatic Obstruction

# Holmium Laser Enucleation of the Prostate Versus Open Prostatectomy for Prostates >70 g: 24-Month Follow-up

Richard Naspro\*, Nazareno Suardi, Andrea Salonia, Vincenzo Scattoni, Giorgio Guazzoni, Renzo Colombo, Andrea Cestari, Alberto Briganti, Bruno Mazzoccoli, Patrizio Rigatti, Francesco Montorsi

Department of Urology, University "Vita-Salute", Scientific Institute H. San Raffaele, Milan, Italy

# HOLMIUM LASER RESECTION OF THE PROSTATE: PRELIMINARY RESULTS OF A NEW METHOD FOR THE TREATMENT OF BENIGN PROSTATIC HYPERPLASIA

PETER J. GILLING, CAROL B. CASS, MICHAEL D. CRESSWELL, AND MARK R. FRAUNDORFER



**1996 !**

Gilling et al. Urology 1996;47: 48-51





## Klassieke behandelingen

Open prostatectomie (>80g)

TURP (< 80g)

## Laser enucleatie

HoLEP

ThuLEP, Greenlight,...

## Benign Prostatic Obstruction

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	Preoperatively	Postop 1-year mean ± SD (range)	Postop 2-year mean ± SD (range)	Postop 3-year mean ± SD (range)	Postop 4-year mean ± SD (range)	Postop 5-yr mean ± SD (range)
No. of patients	120	105	99	88	81	74
HoLEP group	60	56	53	48	45	42
OP group	60	49	46	40	36	32
<b>AUA symptom score</b>						
HoLEP group	22.1 ± 3.3 (11–30)	2.3 ± 2.0 (0–11)	2.3 ± 2.2 (0–12)	3.0 ± 3.1 (0–16)	3.0 ± 3.1 (0–10)	3.0 ± 3.2 (0–10)
OP group	21.0 ± 3.6 (13–28)	2.3 ± 1.7 (0–7)	2.4 ± 1.6 (0–8)	2.8 ± 1.6 (0–9)	2.8 ± 1.9 (0–9)	3.0 ± 1.7 (1–9)
p value	0.09	0.94	0.89	0.82	0.68	0.98
<b>Peak flow (ml/s)</b>						
HoLEP group	3.8 ± 3.6 (0–10)	27.4 ± 9.7 (11–49)	26.7 ± 8.3 (14–57)	27.0 ± 9.8 (8–50)	27.7 ± 9.6 (8–53)	24.3 ± 10.1 (8–54)
OP group	3.6 ± 3.8 (0–12)	28.2 ± 7.5 (12–49)	27.4 ± 6.8 (12–51)	25.2 ± 6.9 (11–47)	25.0 ± 8.2 (11–54)	24.4 ± 7.4 (11–49)
p value	0.60	0.86	0.65	0.32	0.20	0.97
<b>Residual volume (ml)</b>						
HoLEP group	280 ± 273 (50–1000)	5.8 ± 16.7 (0–90)	1.7 ± 6.5 (0–33)	6.1 ± 12.1 (0–40)	8.6 ± 13.5 (0–40)	10.6 ± 24.4 (0–138)
OP group	292 ± 191 (50–1000)	6.4 ± 12.3 (0–40)	2.4 ± 6.8 (0–30)	4.4 ± 10.5 (0–40)	6.5 ± 12.1 (0–40)	5.3 ± 11.2 (0–40)
p value	0.43	0.83	0.61	0.50	0.48	0.25

Postop, postoperative; SD, standard deviation; HoLEP, holmium laser enucleation of the prostate; OP, open prostatectomy; AUA, American Urological Association.

Functionele resultaten : geen verschil

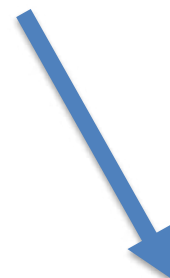
Table 2 – Perioperative data

	HoLEP	OP	p value
Total operative time, min	72.09 ± 21.22	58.31 ± 11.95	p < 0.0001
Specimen weight, g	59.33 ± 34.77	87.90 ± 41.11	p = 0.0046
Hb levels drop, g/dl	2.12 ± 1.48	3.15 ± 1.33	p = 0.0073
Autologous blood transfusion	2 (4%)	5 (12.8%)	p < 0.001
Homologous blood transfusion	0	2 (5.1%)	p < 0.007
Catheterisation time, d	1.5 ± 1.07	4.1 ± 0.5	p < 0.0001
Hospital stay, d	2.7 ± 1.1	5.43 ± 1.05	p < 0.0001

Data shown as mean ± standard deviation of the mean.  
HoLEP = holmium laser enucleation of the prostate; OP = open prostatectomy.

HoLEP

Open Prostatectomie



## Klassieke behandelingen

Open prostatectomie (>80g)

TURP (< 80g)

## Laser enucleatie

HoLEP

ThuLEP, Greenlight,...

## HOLMIUM LASER ENUCLEATION VERSUS TRANSURETHRAL RESECTION OF THE PROSTATE: RESULTS FROM A 2-CENTER, PROSPECTIVE, RANDOMIZED TRIAL IN PATIENTS WITH OBSTRUCTIVE BENIGN PROSTATIC HYPERPLASIA

FRANCESCO MONTORSI,\* RICHARD NASPRO, ANDREA SALONIA, NAZARENO SUARDI,  
ALBERTO BRIGANTI, MATTEO ZANONI, SERGIO VALENTI, IVANO VAVASSORI  
AND PATRIZIO RIGATTI

*From the Departments of Urology, University "Vita-Salute," Scientific Institute Hospital San Raffaele, Milan and Cliniche Gavazzeni (SV, IV), Bergamo, Italy*

	Mean HoLEP ± SD	Mean TURP ± SD	p Value
Operative time (mins):			
Total	74 ± 19.5	57 ± 15	<0.05
Enucleation	38.57 ± 19.8		
Morcellation	12.09 ± 10		
Resected wt (gm)	36.08 ± 27.03	25.4 ± 13.9	<0.05
Retrieval rate (gm/min)	0.48	0.44	Not significant
Hemoglobin (gm/dl):			
Preop	14.57 ± 1.35	15.1 ± 1.43	Not significant
Postop	13.22 ± 1.45	13.7 ± 1.42	Not significant
Blood loss (gm/dl)	1.32 ± 1.8	1.29 ± 2.1	Not significant
Catheterization time (hrs)	31 ± 13	57.78 ± 17.5	<0.001
Hospital stay (hrs)	59 ± 19.9	85.8 ± 18.9	<0.001

THE CANADIAN JOURNAL OF  
**UROLOGY**<sup>TM</sup>

EDITORIAL - Doctor Google and the Internet Prescription

LEGENDS IN UROLOGY

Feasibility of using guidelines to choose treatment for prostate cancer

Accuracy of ultrasound in estimation of prostate weight: comparison of urologists and radiologists

Increased nerve growth factor in autogenic overactive bladder and interstitial cystitis

Defining success following sling surgery: association of satisfaction with patient reported outcomes

MINIMALLY INVASIVE AND ROBOTIC SURGERY

Status of robot-assisted radical cystectomy  
Laparoscopic pyeloplasty versus robotic pyeloplasty for ureteropelvic junction obstruction: a series of 60 cases performed by a single surgeon

HISTORY OF UROLOGY

Wine and treatment of genitourinary disease: from antiquity to modern times

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Forensic implications in self-insertion of urethral foreign bodies

Ice pack induced scrotal skin necrosis following vasectomy

RESIDENTS' CORNER

Ureteric stricture secondary to unusual extension of prostatic adenocarcinoma

Metastatic esophageal adenocarcinoma to the prostate presenting with bilateral ureteral obstruction

Giant desmoid tumor in a case of ileal neobladder

Urolith masquerading as severe acute radiation toxicity: case report

An unusual clinical presentation of rhabdomyomatous Wilms' tumor

CLINICAL TRIALS

Office based urology trials

Open clinical uro-oncology trials in Canada

ISSN 1195-9479

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*Index Medicus/  
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and  
*Current Contents/  
Clinical Medicine*

Volume 17  
Number 1  
February 2010

- 40 HoLEP 40 TURP
- Prostate size 30-100cc
- One year follow-up
- **No difference in operating times**
- **HoLEP less blood loss, shorter catheter time and hospital stay**
- **HoLEP greater improvement in flow, AUA and PVR**
- **25% irritative symptoms HoLEP vs 20% TURP**
- **Urethral Strictures HoLEP 1 vs 2 TURP**

# HoLEP voor erg grote prostaten



## Holmium Laser Enucleation of the Prostate for Prostates Larger Than 175 Grams

Amy E. Krambeck, M.D., Shelly E. Handa, R.N., and James E. Lingeman, M.D.

### Abstract

**Background and Purpose:** Open simple prostatectomy has been considered the treatment of choice for symptomatic benign prostatic hyperplasia (BPH) of large prostates because traditional endoscopic techniques have not proven either effective or feasible. We present our experience with holmium laser enucleation of the prostate (HoLEP) for glands >175 cc.

**Methods:** An Institutional Review Board approved prospective database has been maintained since January 1999 for all HoLEP procedures. The database was reviewed retrospectively for patients who underwent HoLEP for BPH with a preoperative transrectal ultrasonography (TRUS) volume of >175 cc.

**Results:** From January 1999 to November 2008, we identified 57 patients with a mean pretreatment TRUS volume of 217.8 cc (range 175–391 cc). Preoperative retention was present in 30 patients. Preoperative mean prostate-specific antigen level was 14.6 ng/mL, mean American Urological Association (AUA) symptom index was 19.0, and mean peak flow (Q<sub>max</sub>) was 8.2 mL/sec. Mean hospital stay was 26 hours, and postoperative catheterization was 18.5 hours (range 6–96 hrs). All patients were able to void after catheter removal. Mean enucleated tissue weight was 176.4 g (range 48–532.2 g). At 6-month follow-up, AUA symptom index was 6.5, mean PSA level was 0.78 ng/mL, and Q<sub>max</sub> was 18.5. During the follow-up period, no patient needed catheterization or had persistent incontinence.

**Conclusions:** Even in the large prostate gland, HoLEP provides a satisfactory outcome with low morbidity. HoLEP is the only endoscopic technique that allows for tissue removal comparable to that of open prostatectomy for such patients.



# HoLEP en de lange termijn resultaten



# Holmium Laser Enucleation of the Prostate: Long-Term Durability of Clinical Outcomes and Complication Rates During 10 Years of Followup

Hazem M. Elmansy, Ahmed Kotb and Mostafa M. Elhilali\*,†

From the Division of Urology, Department of Surgery, Faculty of Medicine, McGill University, Montreal, Quebec, Canada

**Table 1.** Descriptive analysis of HoLEP outcomes

Followup	No. Pts	I-PSS Mean (range)/Median	QOL Mean (range)/Median	Qmax Mean (range)/Median	PVR Mean (range)/Median
Preop	949	19 (0–35)/19	3.8 (0–6)/4	8 (1.3–20)/8	311 (10–2,500)/192
1 Mo	909	7 (0–32)/6	1.6 (0–6)/1	22 (1.6–67.4)/20	48 (0–500)/32
3 Mos	876	5.2 (0–35)/4	1.2 (0–6)/1	23.2 (2.1–67.4)/21.8	36 (0–999)/22
6 Mos	823	4.7 (0–32)/4	1 (0–6)/1	24.3 (4.8–65.3)/23.2	33 (0–823)/18
1 Yr	771	4.4 (0–27)/3	1 (0–6)/1	24.6 (2.3–70)/23.2	31.7 (0–637)/15
2 Yrs	722	4 (0–30)/3	0.99 (0–6)/1	24.6 (2.4–72.5)/22.6	34 (0–511)/15
3 Yrs	676	4.3 (0–26)/3	0.99 (0–6)/1	24.5 (5.1–72)/22.9	32 (0–575)/14
4 Yrs	623	4.6 (0–27)/3	1 (0–6)/1	23.7 (3.7–67.6)/22.3	36 (0–644)/13
5 Yrs	563	4.6 (0–25)/3	1 (0–5)/1	23.7 (5.1–67.4)/22.8	36 (0–669)/15
6 Yrs	486	4.7 (0–25)/3	1 (0–5)/1	24.7 (0–62.6)/24.1	30 (0–559)/16
7 Yrs	324	4.3 (0–29)/3	1 (0–4)/1	25.6 (1–62.5)/25.1	27 (0–637)/18
8 Yrs	233	4 (0–20)/3	0.8 (0–5)/1	25.8 (4–67.6)/25.8	27.8 (0–528)/15
9 Yrs	161	3.5 (0–16)/2	0.7 (0–3)/1	26.6 (5.8–57.9)/27.1	27.1 (0–456)/15
10 Yrs	89	3.6 (0–12)/3	0.7 (0–3)/1	26.9 (6.6–44.5)/27.8	20.7 (0–654)/12

# HoLEP en seks



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# Impact on Sexual Function of Holmium Laser Enucleation Versus Transurethral Resection of the Prostate: Results of a Prospective, 2-Center, Randomized Trial

Alberto Briganti, Richard Naspro, Andrea Gallina, Andrea Salonia, Ivano Vavassori, Rodolfo Hurle, Enzo Scattoni, Patrizio Rigatti and Francesco Montorsi\*

*From the Departments of Urology, Università Vita-Salute San Raffaele, Milan and Hospital Gavazzeni (IV, RH), Bergamo, Italy*

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**Purpose:** We compared the impact of HoLEP and TURP on sexual function.

**Materials and Methods:** Between January 2002 and January 2003, 120 patients with a mean age  $\pm$  SD of  $65.2 \pm 7.1$  years who had benign prostatic hyperplasia were enrolled in this 2-center, prospective, randomized study. A total of 60 patients with a mean age of  $65.25 \pm 6.9$  years underwent HoLEP (group 1) and 60 with a mean age of  $64.18 \pm 7.2$  years underwent TURP (group 2). Patients were assessed before surgery, and at 12 and 24-month followup visits. Subjective symptoms were scored by the International Prostate Symptom Score, the International Prostate Symptom Score quality of life question, IIEF, 10 nonvalidated general assessment questions, physical examination, serum prostate specific antigen and transrectal ultrasonography.

**Results:** A total of 32 patients (53.3%) in group 1 and 31 (51.6%) in group 2 reported various degrees of erectile dysfunction before surgery according to the IIEF-EF score. Differences between preoperative and postoperative orgasmic domain scores in each group were significant ( $p < 0.001$ ). A slight but not significant increase in the mean IIEF-EF domain score was reported in each group at postoperative assessments without any difference between the 2 surgical approaches. According to general assessment question analysis the prevalence of subjectively reported postoperative retrograde ejaculation was significantly higher than at baseline assessment in the 2 groups with no differences between the 2 surgical procedures.

**Conclusions:** TURP and HoLEP significantly lowered the IIEF orgasmic function domain with no differences between techniques. This was caused by retrograde ejaculation. Marginal, nonsignificant erectile function improvement was reported after surgery in the 2 groups.

80% retrograde ejaculatie !

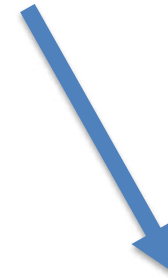
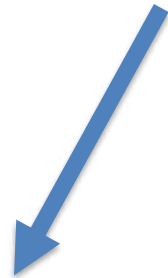


## Nadelen

Dysurie  
Urineverlies  
Stricturen

Ejaculatie stoornissen

Hospitalisatie



## Klassieke behandelingen

Open prostatectomie (>80g)

TURP (< 80g)

## Laser enucleatie

HoLEP

ThuLEP, Greenlight,...

Treatment options : MIST



**Minimally invasive surgical treatments : MIST**

TUMT  
TUNA

Urolift  
iTIND  
Aquablation

**Rezum**  
**Prostaatembolisatie**

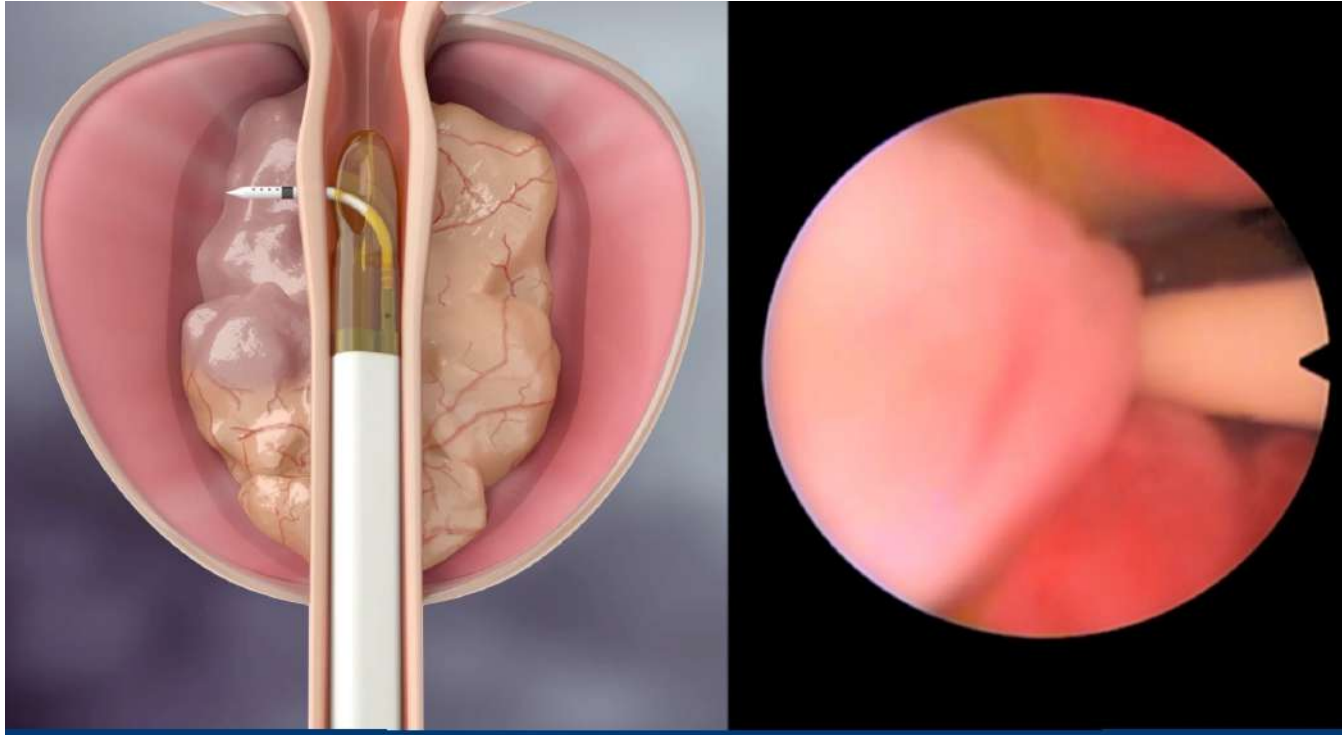
## Rezüm



Stoom opgewekt door radiofrequentie (103°C)

Stoom in prostaatweefsel leidt tot necrose en krimpen van de prostaat

FDA approved sinds 2015





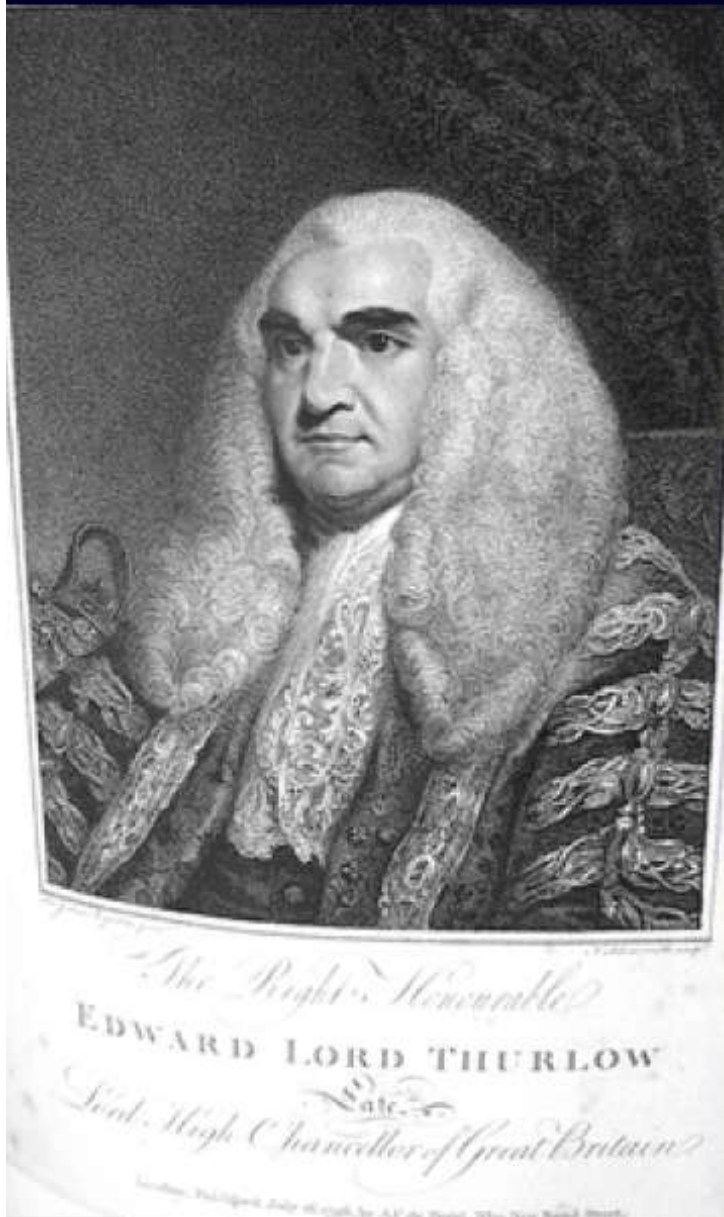
Praktisch



**Anesthesie:** algemeen of lokaal

**Makkelijke procedure** (5 min) in daghospitalisatie

Patiënt gaat naar huis met een verblijfsonde (3 tot 7 dagen)

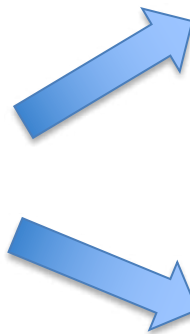


“There is no more science in surgery than in butchering,”

- *Lord Thurlow*

Parliamentary debate on the establishment of a Royal College of Surgeons in 1811

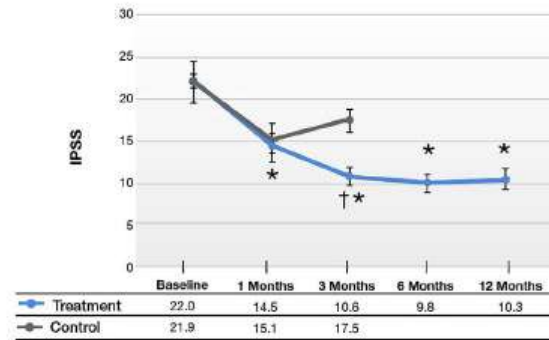
prostaatvolume tussen 30ml en 80ml  
postmictioneel residu < 250ml



Rezum (136 patiënten)

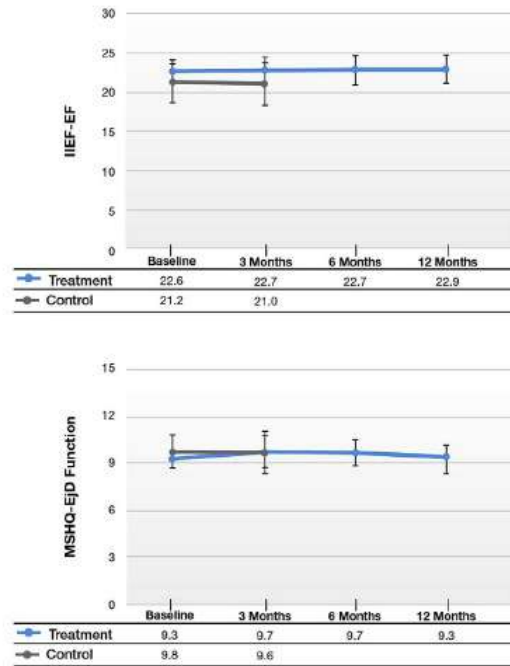
Sham procedure (61 patiënten)  
cystoscopie + activatie van generator

## Functioneel



IPSS beter dan “sham” na 3 maanden

# Seksueel



## Neveneffecten

17% dysurie

12% hematurie

4% retentie

4% UWI

**Allen verdwenen na drie weken (al dan niet met behandeling)**

**Table 5.** Summary of adjudicated adverse events during the blinded 3-month study period

AEs	Thermal treatment group (n = 136)		Control group (n = 61)	
	Events, n	Subjects, n (%)	Events, n	Subjects, n (%)
Serious AEs	8	7 (5.1)	0	0 (0)
Related serious AEs	3*	2 (1.5)	0	0 (0)
All non-serious AEs	164	59 (43.4)	27	14 (23)
Related AEs	138	52 (38.2)	11	6 (9.8)
Dysuria	23	23 (16.9)	1	1 (1.6)
Hematuria, gross	16	16 (11.8)	0	0 (0)
Hematospermia	10	10 (7.4)	0	0 (0)
Urinary frequency	8	8 (5.9)	0	0 (0)
Urinary urgency	8	8 (5.9)	0	0 (0)
UTI, suspected	6	5 (3.7)	0	0 (0)
Urinary retention	5	5 (3.7)	0	0 (0)
Decrease in ejaculatory volume	4	4 (2.9)	0	0 (0)
Anejaculation	4	4 (2.9)	0	0 (0)
Epididymitis	4	4 (2.9)	1	1 (1.6)
UTI, culture proven	4	4 (2.9)	0	0 (0)
Pain or discomfort, pelvic	4	4 (2.9)	0	0 (0)

AE = adverse event; UTI = urinary tract infection.

\*Three serious AEs in two subjects: one with de novo extended urinary retention and one with nausea and vomiting owing to alprazolam and hospitalized overnight for observation.

## Rezum

geeft verbetering van plasklachten bij patiënten met prostaatvolumes tussen 30 en 80g

Maar...

Wat met de lange termijn resultaten ?

**NO DATA AVAILABLE**

## Rezum

geeft verbetering van plasklachten bij patiënten met prostaatvolumes tussen 30 en 80g

Maar...

Wat met de lange termijn resultaten ?

**NO DATA AVAILABLE**

Wat met grote prostaten (>80g)?

**NO GOOD  
DATA  
AVAILABLE**

Wat met patiënten met urineretentie?



## Rezum

geeft verbetering van plasklachten bij patiënten met prostaatvolumes tussen 30 en 80g

Maar...

Wat met de lange termijn resultaten ?

**NO DATA AVAILABLE**

Wat met grote prostaten (>80g)?

Wat met patiënten met urineretentie?

**NO GOOD  
DATA  
AVAILABLE**

Wat is het verschil met TURP en HoLEP?

Rezum

Medical therapy

TRUS (6 months after Rezum): **18% volume reduction**

*Mollengarden et al. Prostate Cancer Prostatic Dis 2017*

TRUS (6 months after finasteride): **18% volume reduction**

*Chiu et al. J Chin Med Assoc 2004*

**Enucleation**

TRUS (6 months after HoLEP): **64% volume reduction**  
*Wilson et al. Eur Urol 2006*

**TURP**

TRUS (6 months after TURP): **36% volume reduction**  
*Wilson et al. Eur Urol 2006*

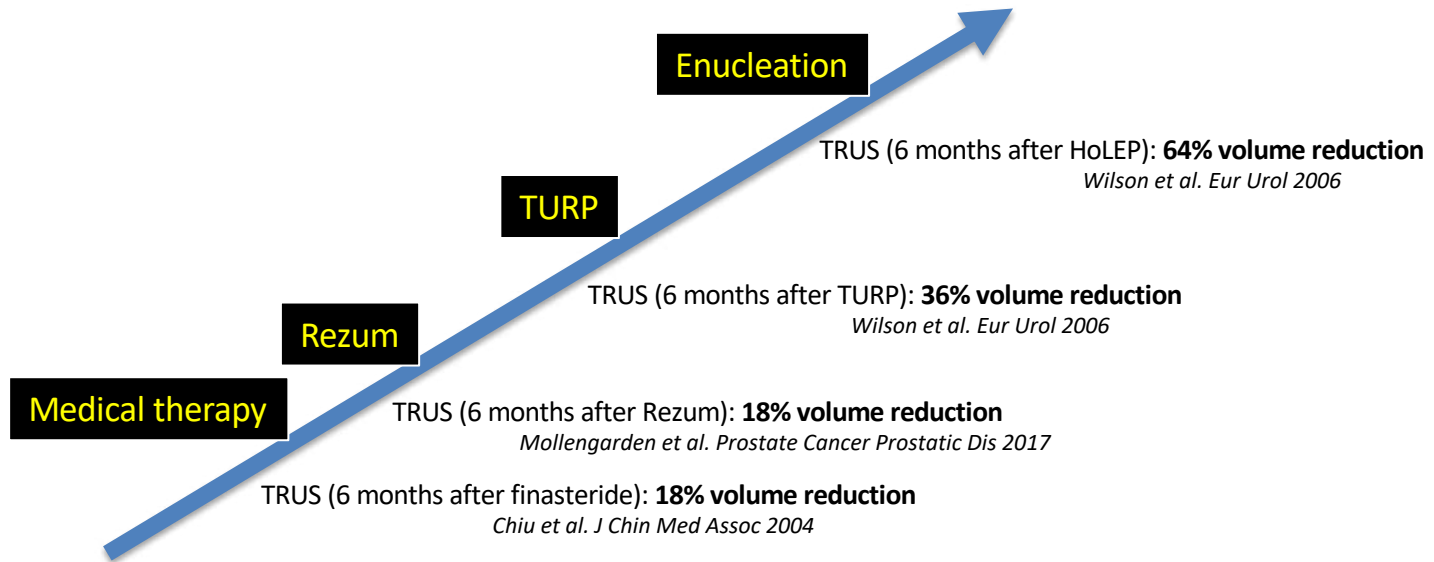
**Rezum**

TRUS (6 months after Rezum): **18% volume reduction**  
*Mollengarden et al. Prostate Cancer Prostatic Dis 2017*

**Medical therapy**

TRUS (6 months after finasteride): **18% volume reduction**  
*Chiu et al. J Chin Med Assoc 2004*

Volledige verwijdering adenoom



Geen verwijdering adenoom

## Herbehandeling nodig na 5 jaar ?

Rezum

15%

*McVary et al. AUA 2020*

TURP

6%

*Madersbacher et al. Eur Urol 47, 2005*

HoLEP

1%

*Gilling et al. Eur Urol 53, 2008*

## Seksuele resultaten

### Rezum

- Geen veranderde erectiele functie
- Verminderd ejaculatie volume : 3%

*McVary et al. Urology 2019*

### HoLEP & TURP

- Geen veranderde erectiele functie
- Droog orgasme : 80%

*Montorsi et al. J Urol 2004*

*Briganti et al. J Urol 2006*

**One more thing...**



## Kost



**Handstuk**

1600 euro (éénmalig gebruik)

**Generator**

30 000 euro



# Rezum

- Minder efficiënt dan TURP en HoLEP
- Minder invasief dan TURP en HoLEP
- Daarom:

**nieuwe speler in de behandeling van plasklachten bij patiënten met**

prostaatvolume tussen de 30 en 80g  
postmictioneel residu < 250ml



# Rezüm

- Minder efficiënt dan TURP en HoLEP
- Minder invasief dan TURP en HoLEP
- Daarom:

**nieuwe speler in de behandeling van plasklachten bij patiënten met**

prostaatvolume tussen de 30 en 80g  
postmictioneel residu < 250ml



**Meestal anesthesie  
nodig**

**Niet mogelijk bij grote  
prostaten**

**Bloedverduunners te  
stoppen**

Treatment options : MIST



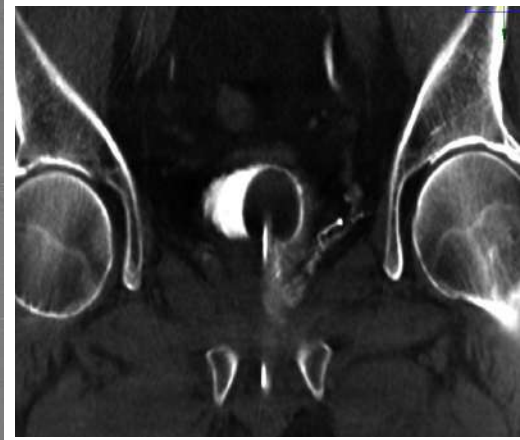
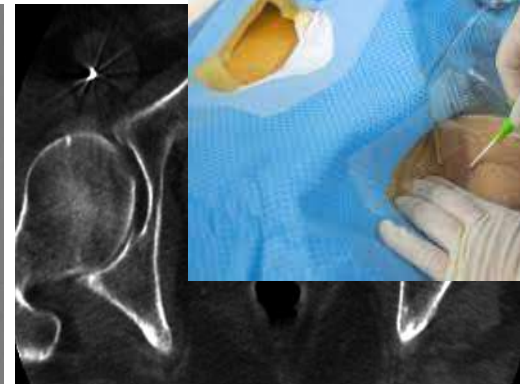
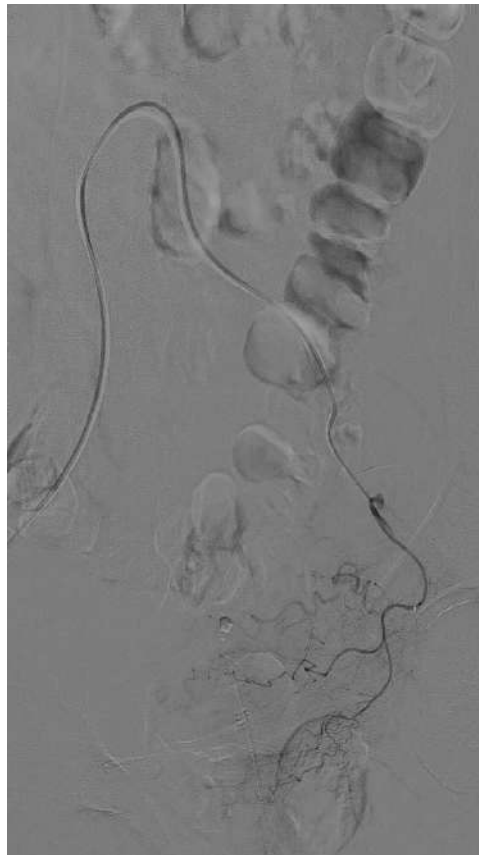
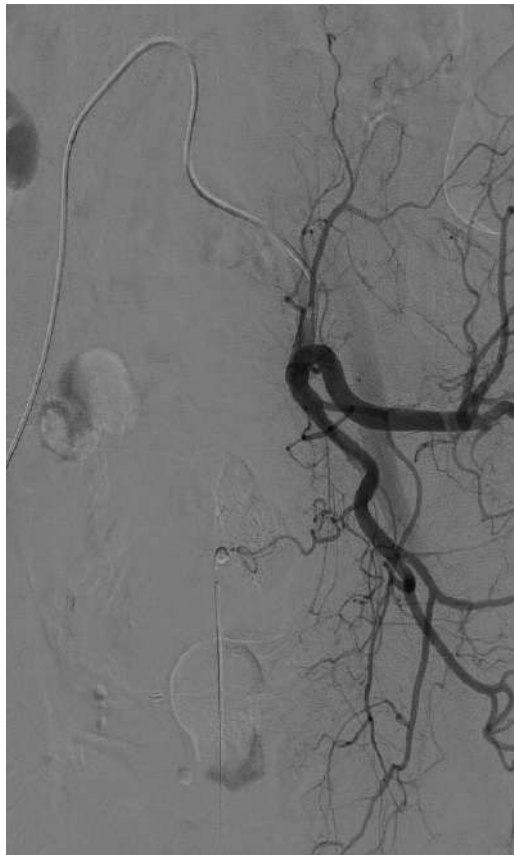
**Minimally invasive surgical treatments : MIST**

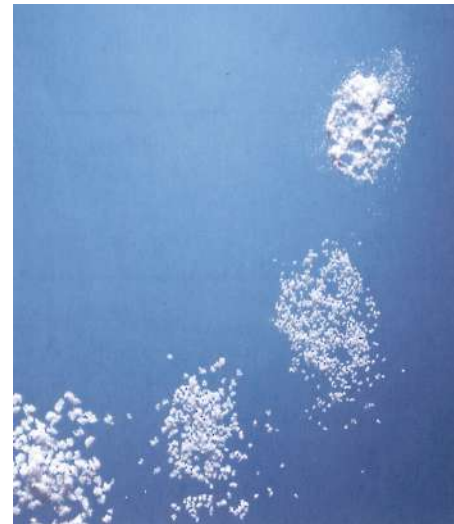
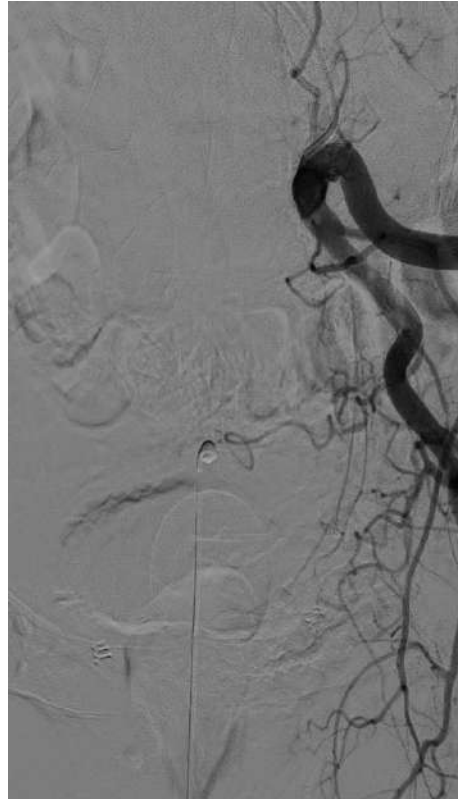
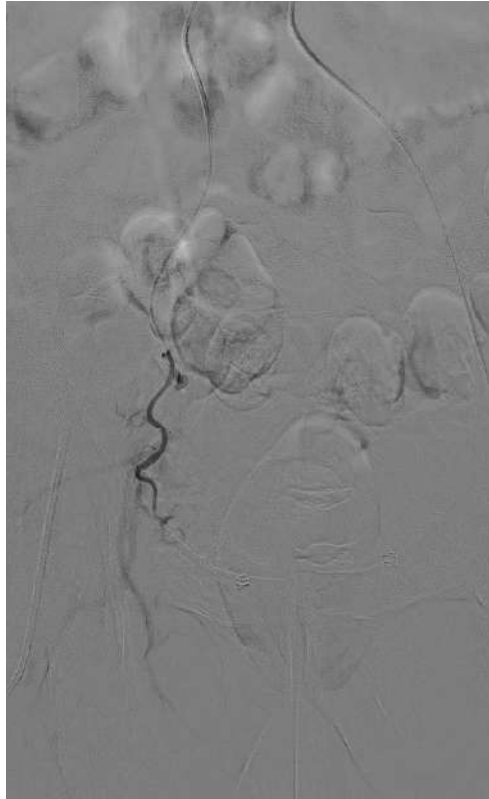
TUMT  
TUNA

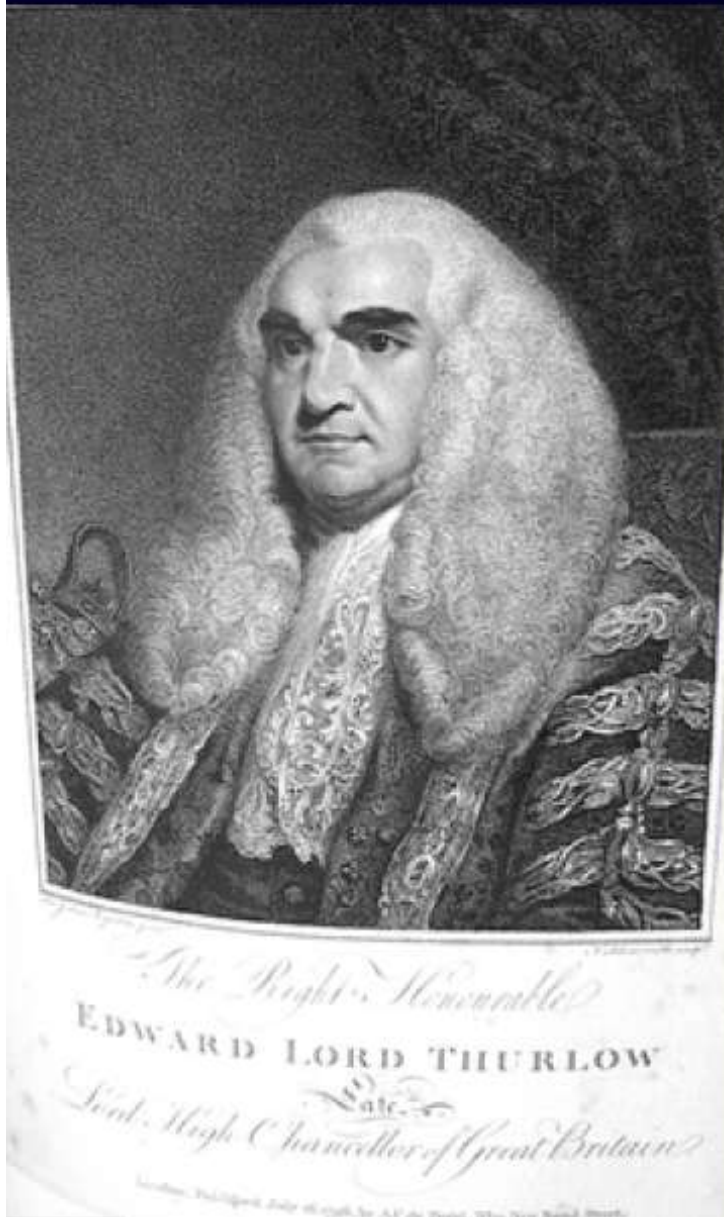
Urolift  
iTIND  
Aquablation

**Rezum**  
**Prostaatembolisatie**

- Punctie van de arteria femoralis in de lies onder LOKALE anesthesie
- Catheterisatie van de prostaatarteriën





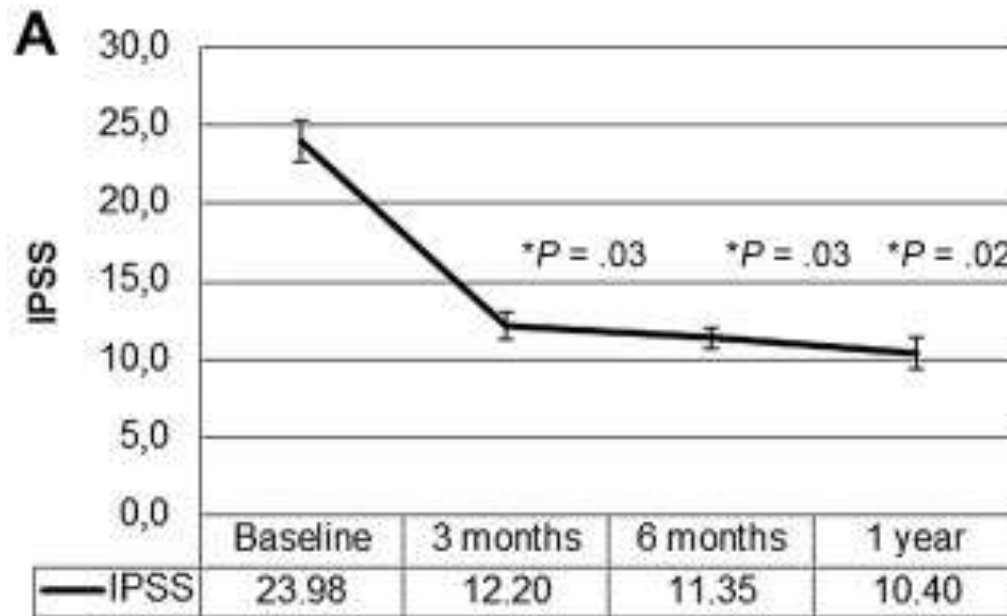


“There is no more science in surgery than in butchering,”

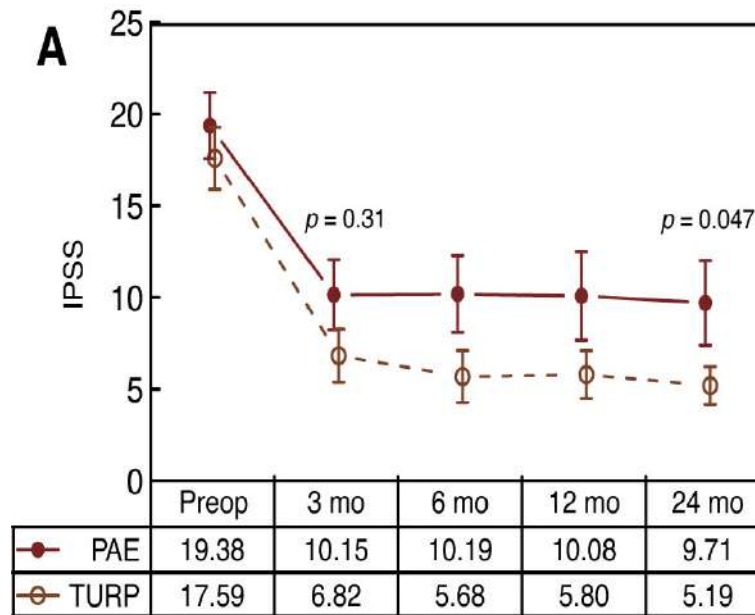
- *Lord Thurlow*

Parliamentary debate on the establishment of a Royal College of Surgeons in 1811

# Resultaten prostaatembolisatie

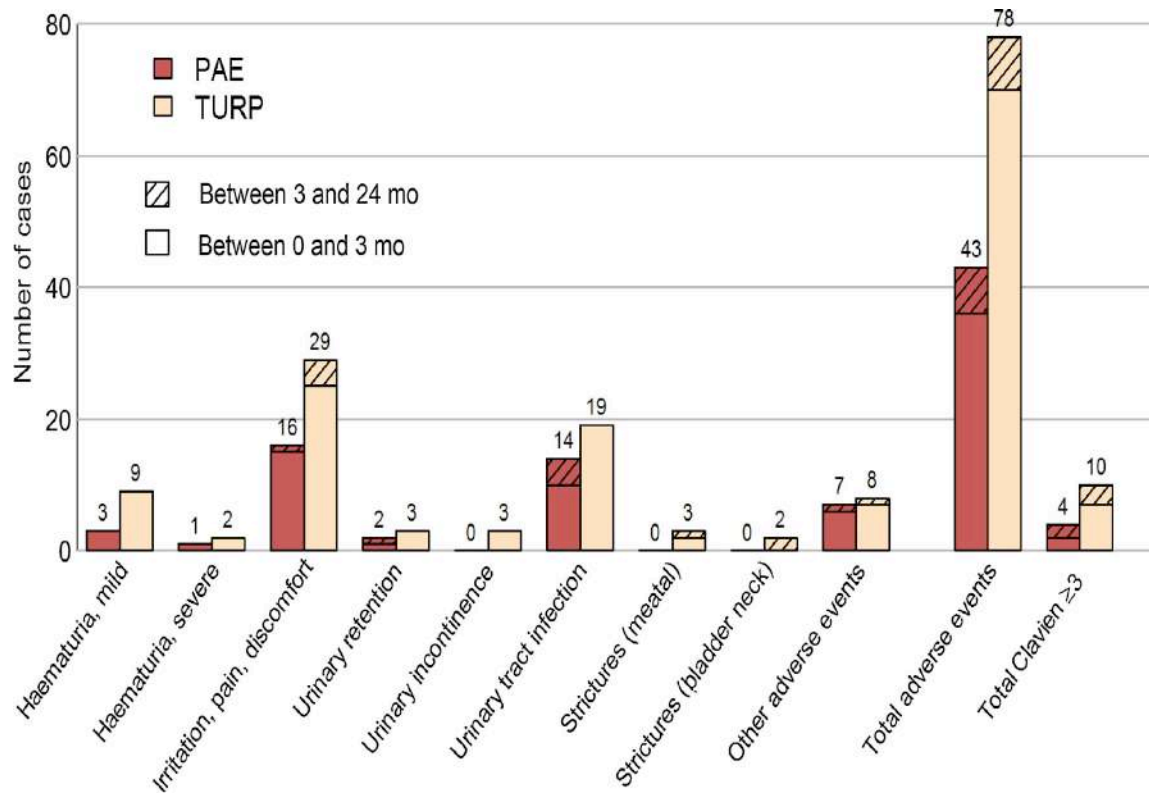


# Resultaten prostaatembolisatie vs TURP





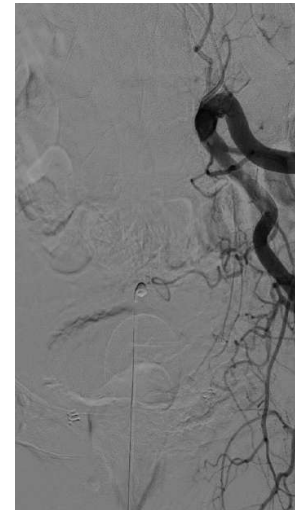
# Risico's prostaatembolisatie



# PAE (Prostatic Artery Embolisation)

## Prostaatembolisatie

- Prostaat krimpt door afsluiten bloedvoorziening
- Verbetering van de klachten, maar minder dan na TURP
- Onder lokale anesthesie en zonder bloedverdunners te stoppen
- Behoud van ejaculatie



# Rezum

## Stoomtherapie van de prostaat

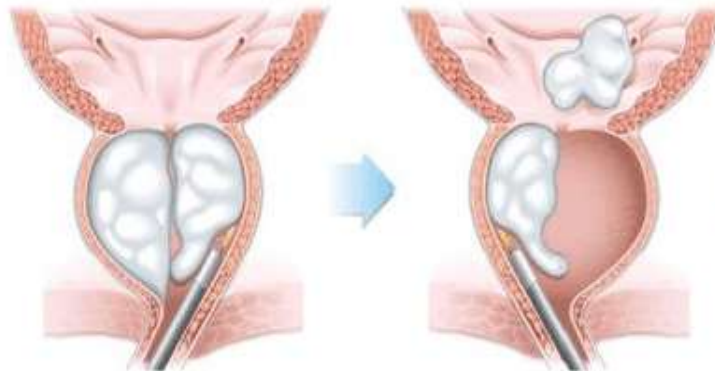
- Prostaat krimpt door toedienen van stoom
- Verbetering van de klachten, maar minder dan na TURP
- Behoud van ejaculatie
- Een nieuwe speler in de behandeling van plasklachten bij patiënten met  
prostaatvolume tussen de 30 en 80g  
postmictioneel residu < 250ml



# HoLEP

## Holmium Laser Enucleation van de Prostaat

- prostaatweefsel wordt uitgesneden met laser
- efficiënte techniek met uitstekende lange termijn resultaten, met echter herstelperiode en droog orgasme
- de nieuwe referentie in de behandeling van goedaardige prostaatvergroting



# Bedankt voor uw aandacht!

## Vragen?

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