

HoLEP vs MiLEP

Pieter Uvin

AZ Sint-Jan Brugge & AZ Sint-Lucas Brugge



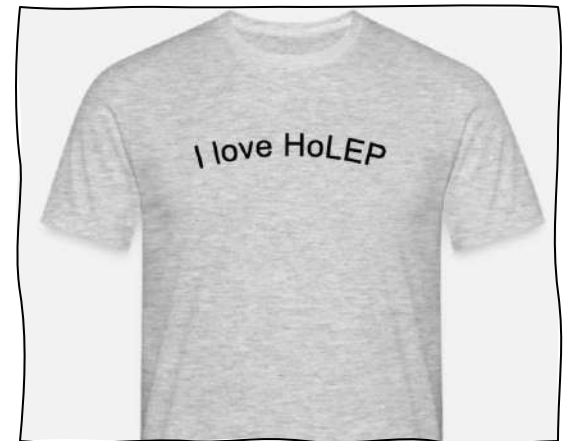
HoLEP vs MiLEP



Disclosures

HoLEP & MiLEP proctor for Tobrix / Quanta

“I love HoLEP” T-shirt



2018



2025





Sophie Vantieghem

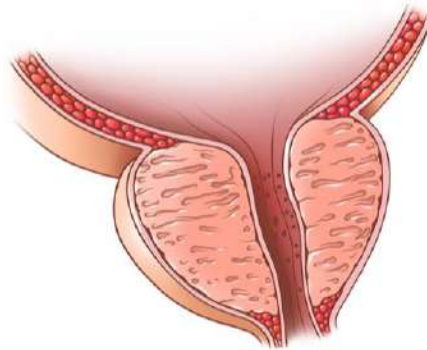


Thijs Develter

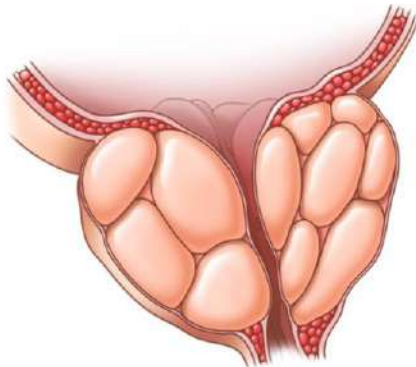


Luc De Laere

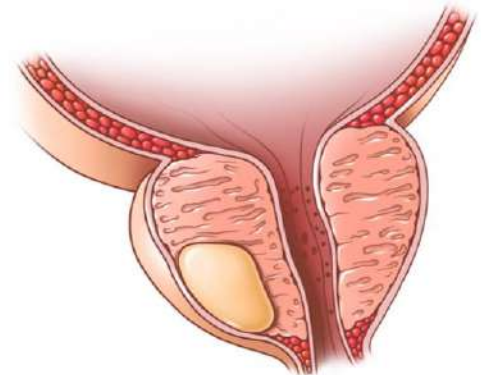
normale prostaat



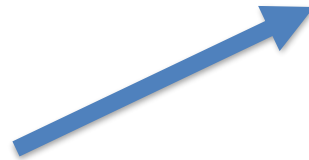
goedaardige prostaatvergroting



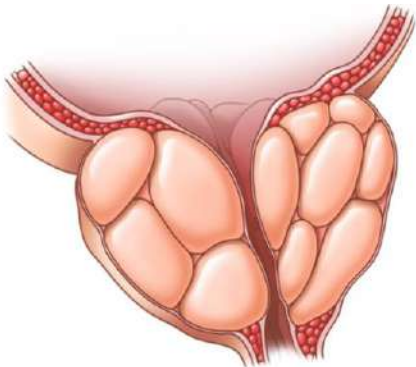
prostaatkanker



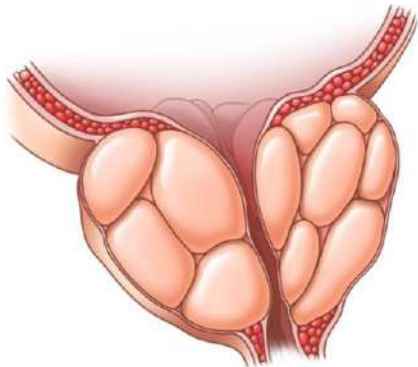
Soms geen klachten !



goedaardige prostaatvergroting



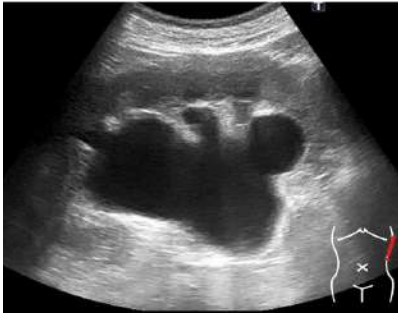
goedaardige prostaatvergroting



Zwakke straal
Onderbroken straal
Residugevoel

Aandrang
Plasfrequentie ↑



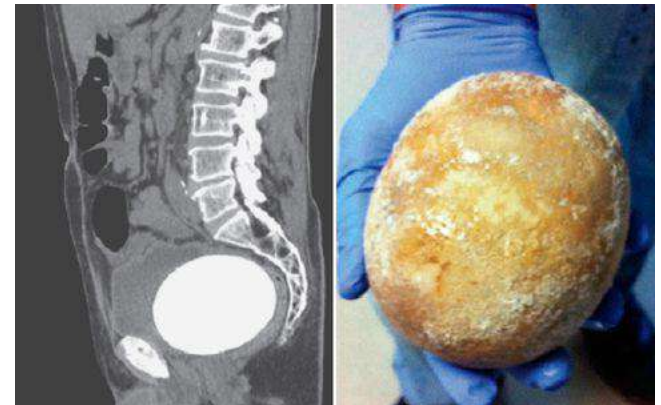
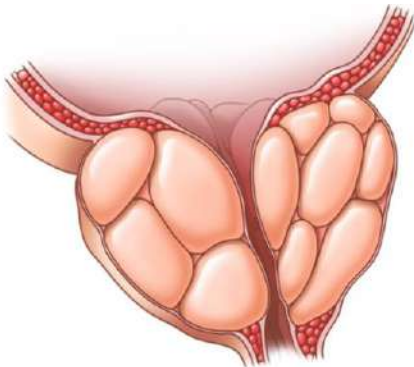


nierfalen



urineretentie

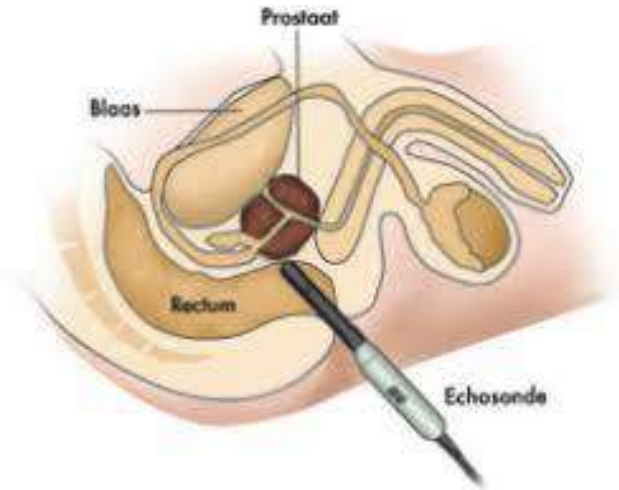
goedaardige prostaatvergroting



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:

Score op 35

1 tot 7 : mild

8 tot 19 : matig

20 tot 35 : ernstig

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:

Behandeling met medicatie

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

prostaatontspanner

prostaatkrimper



Nadelen

Efficiëntie

Neveneffecten

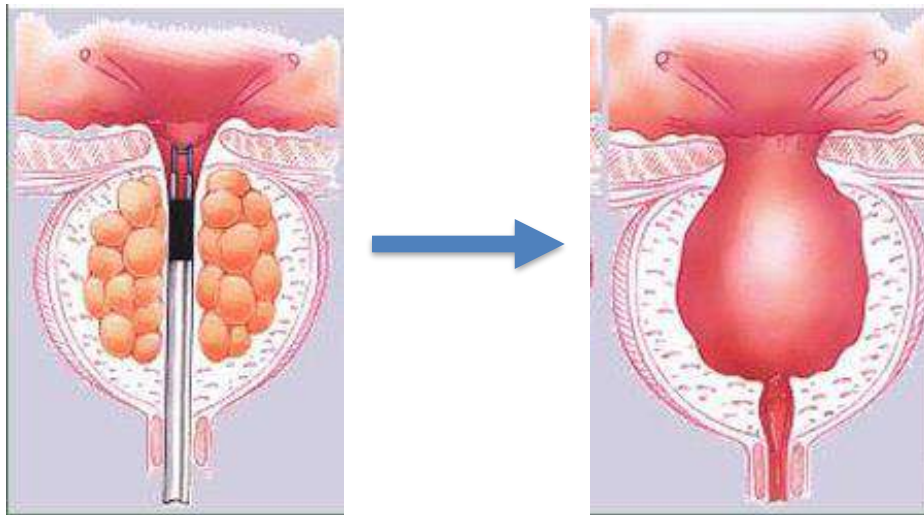
Kostprijs



chirurgie voor goedaardige prostaatvergroting



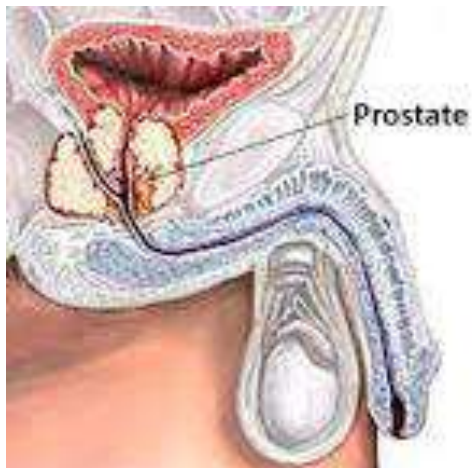
Doel van chirurgie voor goedaardige prostaatvergroting



De goedaardige prostaatkwabben verwijderen terwijl het kapsel ter plaatse blijft



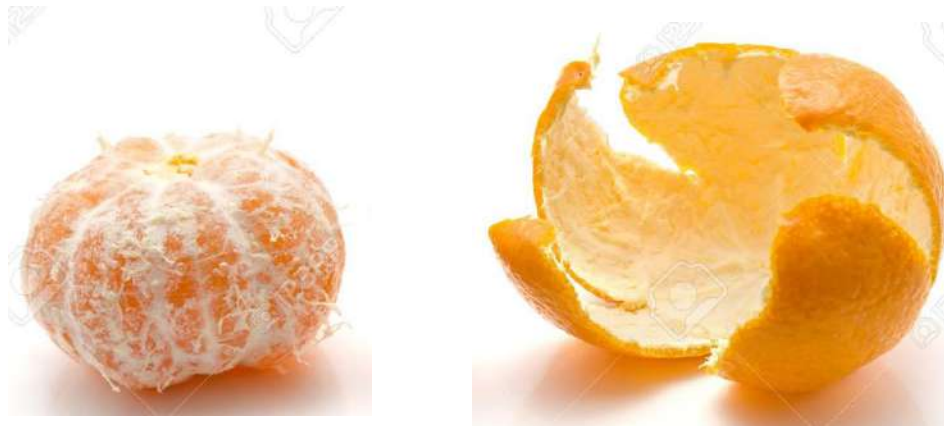
Doel van chirurgie voor prostaatkanker



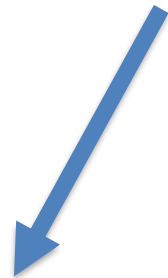
De prostaat VOLLEDIG verwijderen



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

Open prostatectomie (>80g)

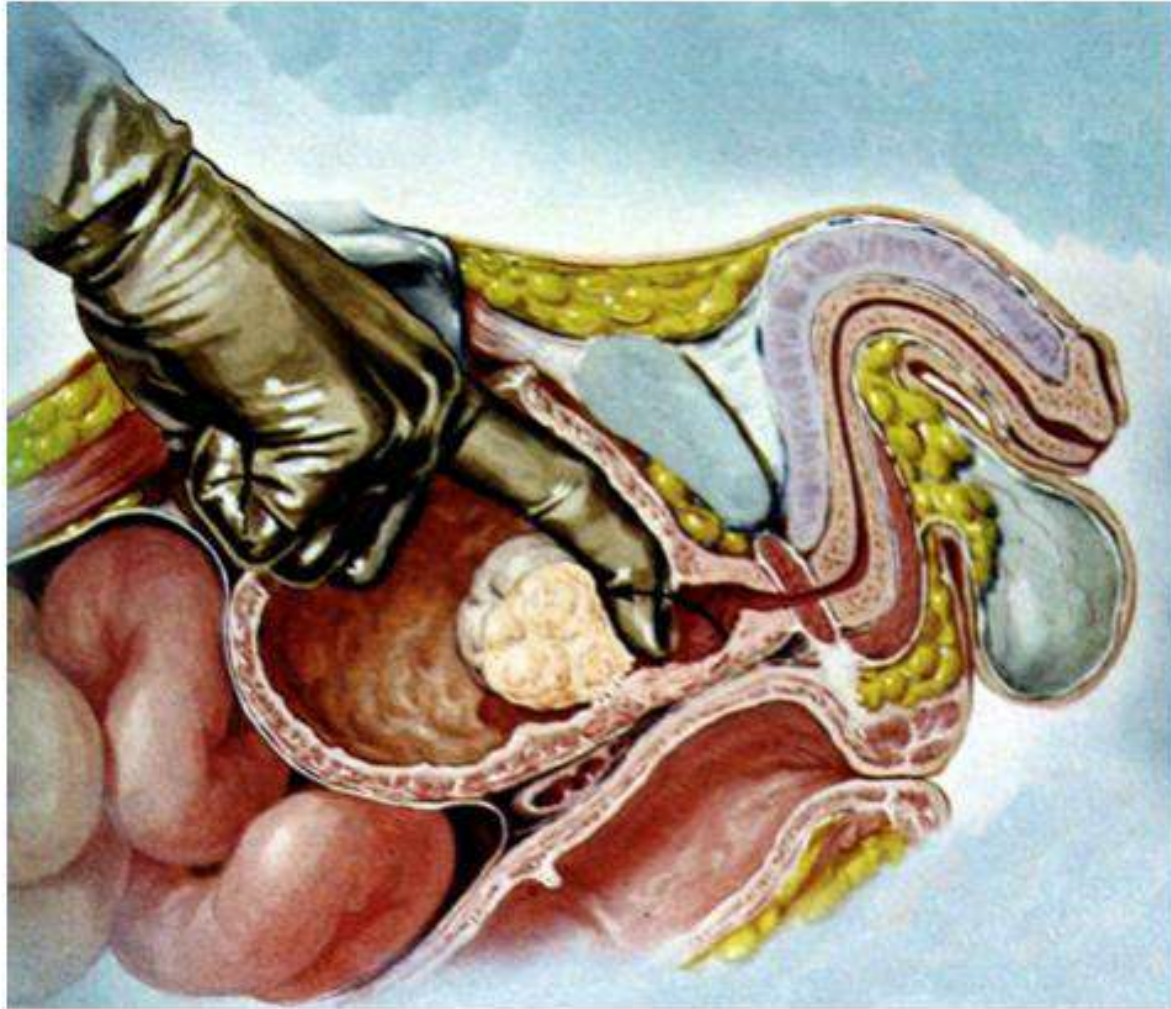
TURP (< 80g)

Innovatieve behandelingen

HoLEP

Rezüm, prostaatembolesatie

Open prostatectomie





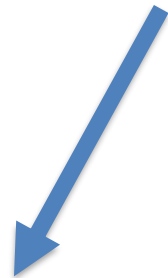
Enucleatie

Volumereductie

Open prostatectomie



*Museum Sint-Janshospitaal
Brugge*



Klassieke behandelingen

Open prostatectomie (>80g)

TURP (< 80g)

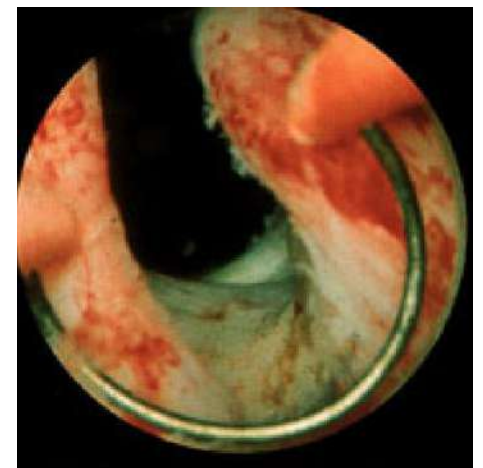
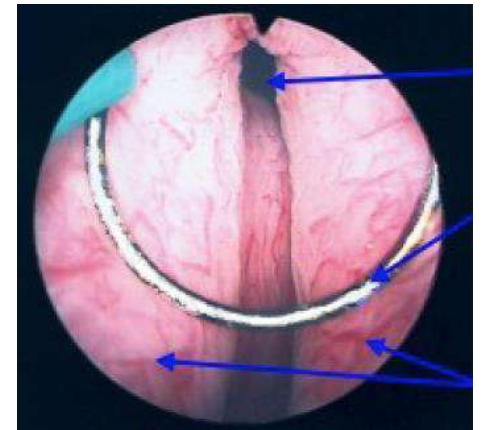
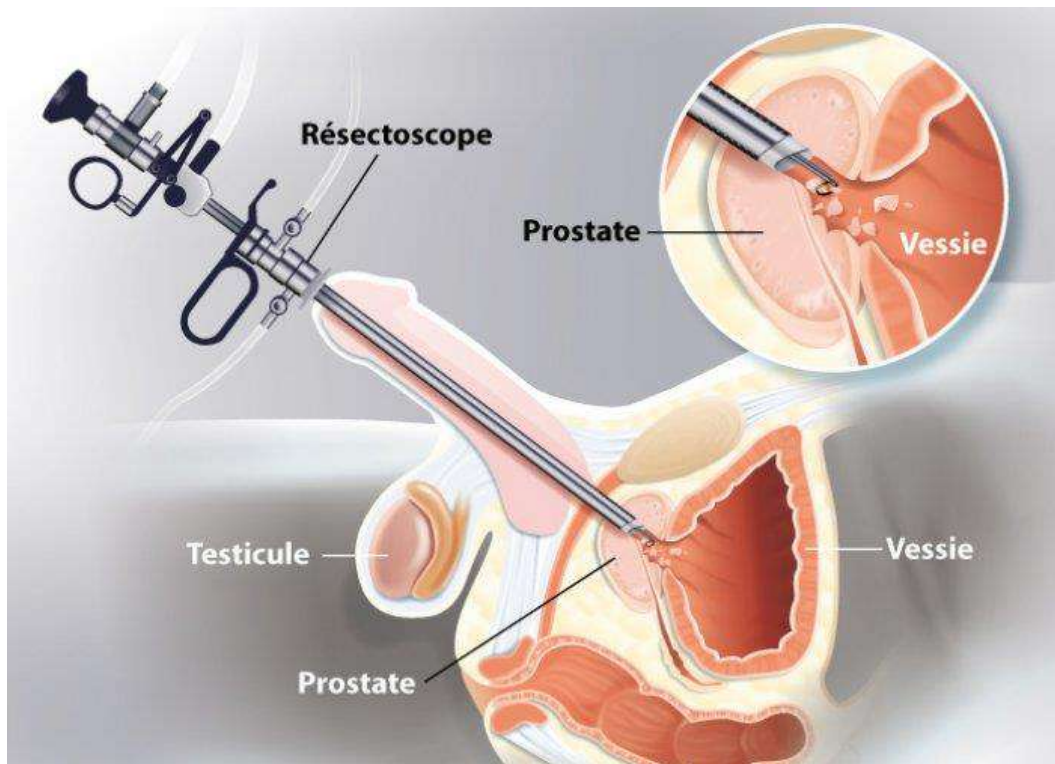
Innovatieve behandelingen

HoLEP

Rezum, prostaatembolisatie

TUR P

(=TransUrethrale Resectie Prostaat)





Enucleatie

Vinger ("open")

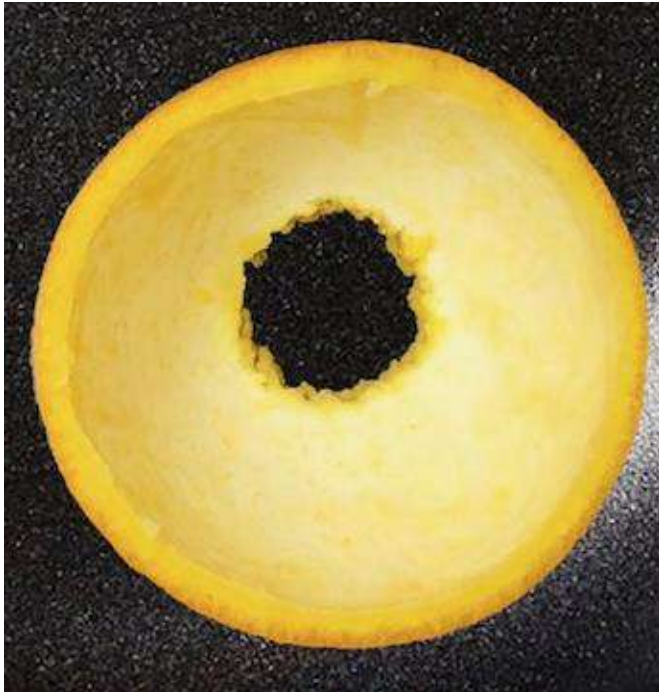
Volumereductie

Elektrische energie: TURP

Open prostatectomie

65% volume reduction

Saez et al. World J Clin Urol 2014



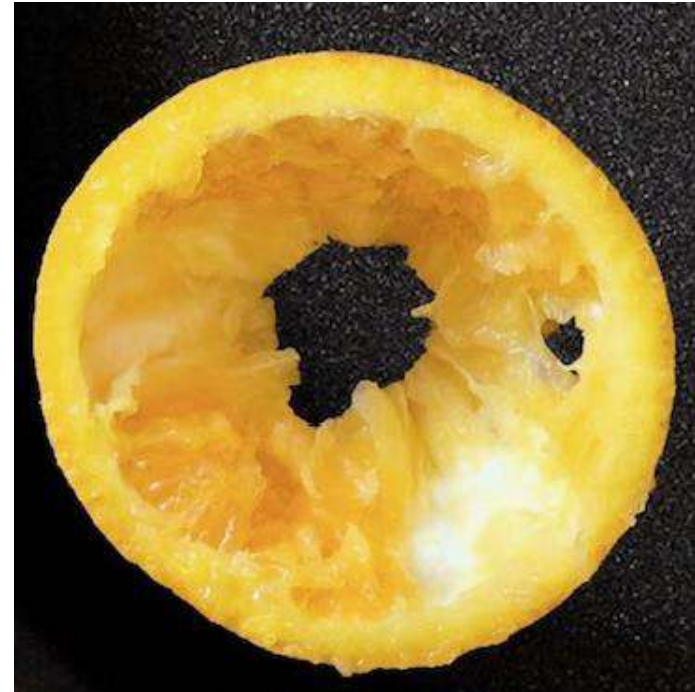
Enucleatie

Vinger ("open")

TUR P

35% volume reduction

Wilson et al. Eur Urol 2006



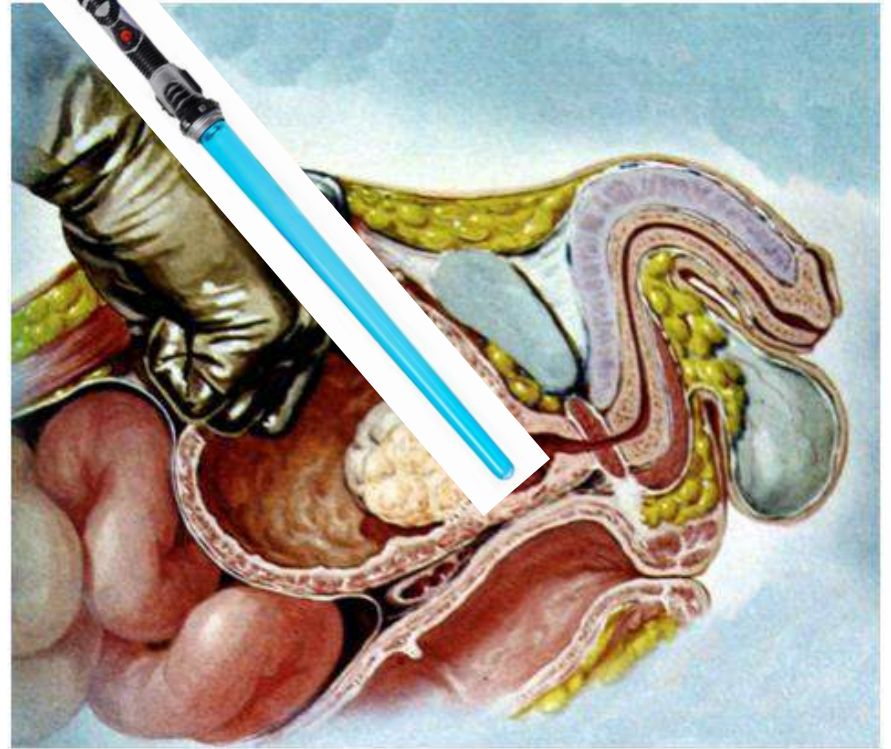
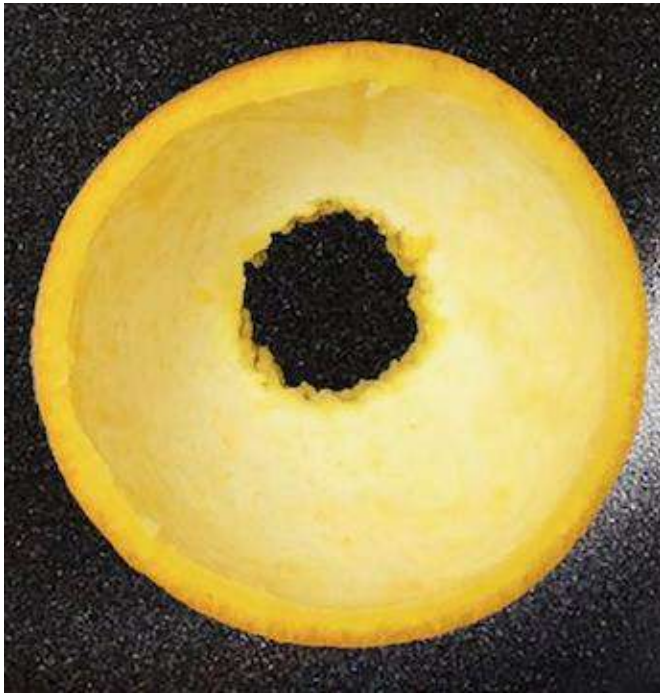
Volumereductie

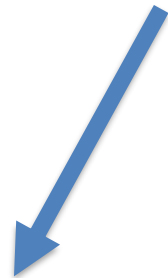
Elektrische energie: TURP

Ideale chirurgie voor goedaardige prostaatvergroting ?!

- alle prostaatvolumes
- enucleatie
- korte hospitalisatie
- laag complicatierisico

Laser Enucleatie





Klassieke behandelingen

Open prostatectomie (>80g)

TURP (< 80g)

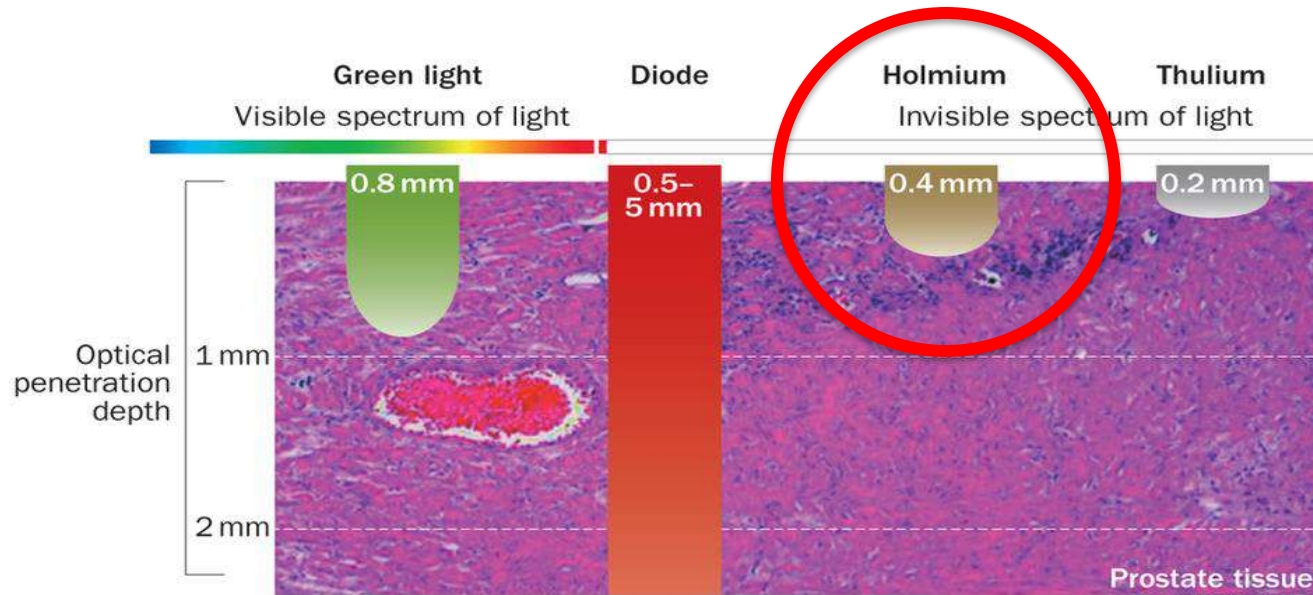
Innovatieve behandelingen

HoLEP

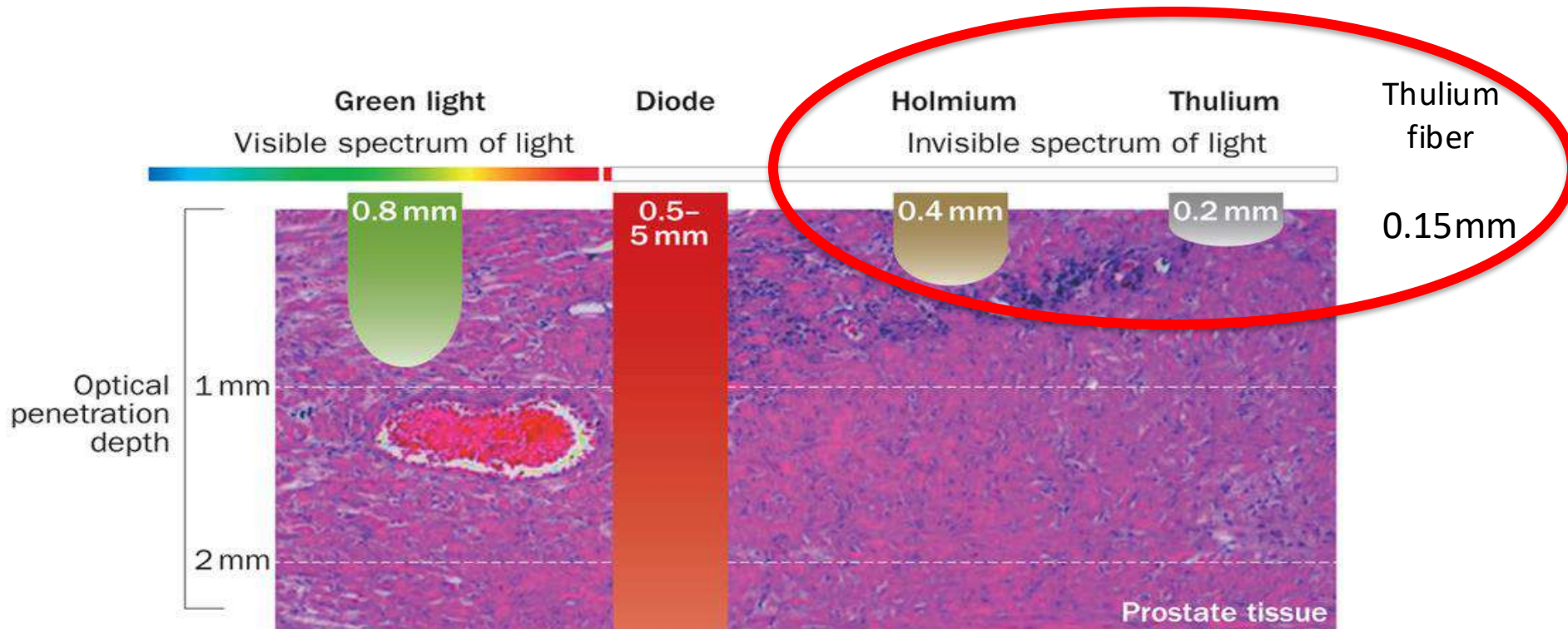
Rezum, prostaatembolisatie

HoLEP

Holmium Laser Enucleation of the Prostate



Laser Enucleation



Holmium
Thulium
Thulium fiber
Greenlight
(Bipolar energy)

HoLEP
ThuLEP
ThuFLEP
GreenLEP
BipoLEP

HoLEP

Holmium Laser Enucleation of the Prostate

High power Holmium laser



- hoge “peak power” (10kW)
anatomische dissectie



- hemostase
- grote en luide machine

Thu(f)LEP

Thulium (fiber) Laser Enucleation of the Prostate

Thulium fiber laser

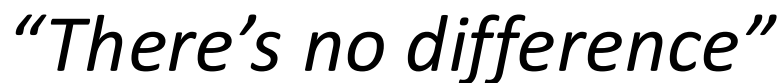
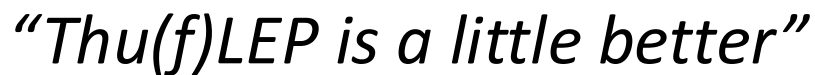


- klein en stil toestel
- hemostase

Pulsed Thulium:YAG laser



- lage “peak power”
(0.5kW – 3.7kW)

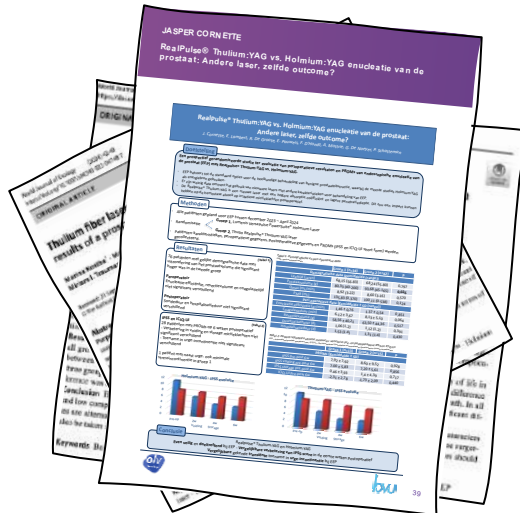




“Thu(f)LEP is a little better”



“HoLEP is a little better”



“There’s no difference”



It's the surgeon, stupid

Endoscopic enucleation

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

EDITORIAL

Enucleation is enucleation is enucleation is enucleation

Thomas R. W. Herrmann¹

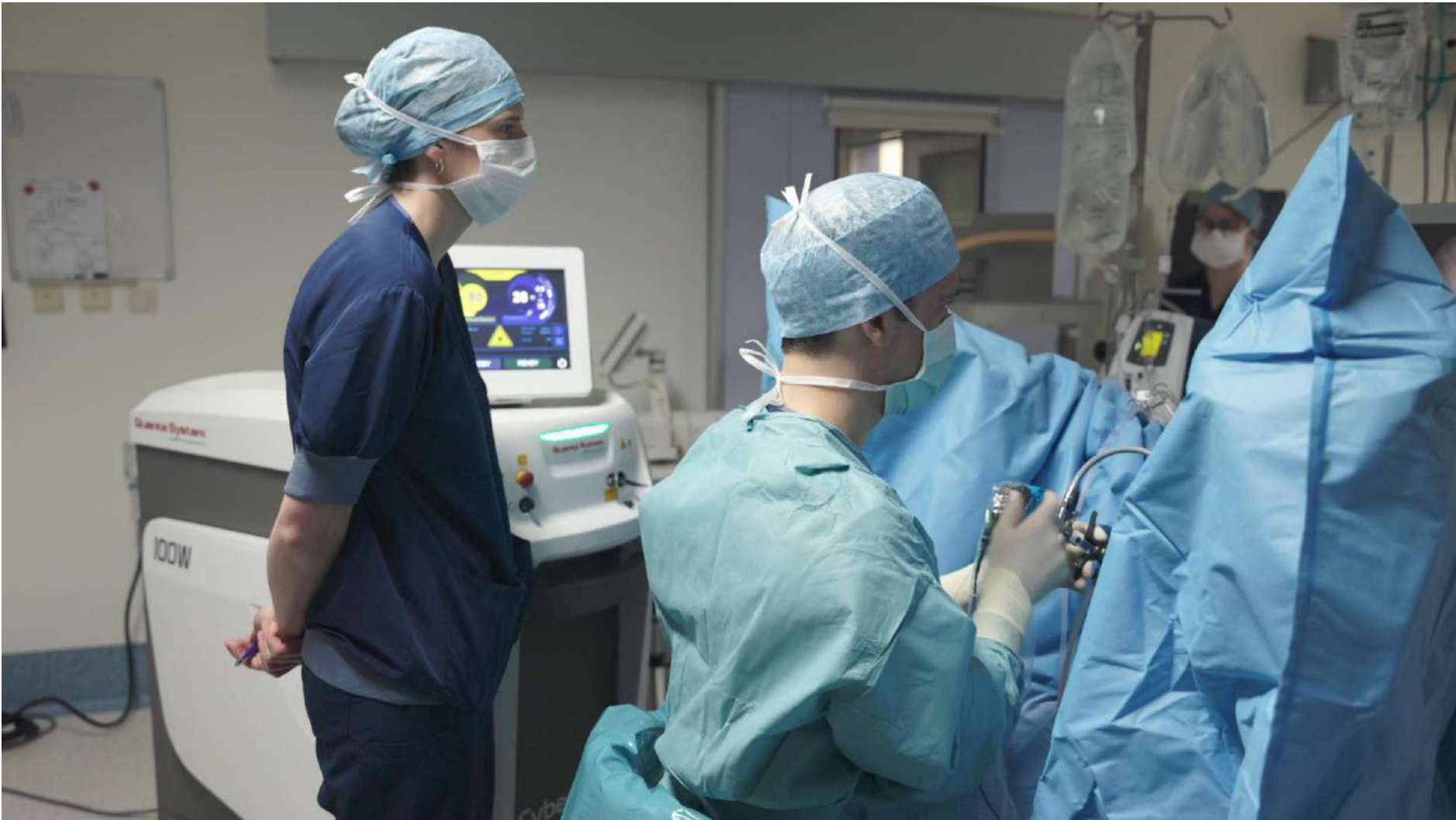
Holmium
Thulium
Greenlight
Bipolar energy

HoLEP
ThuLEP
GreenLEP
BipoLEP

FARLEY





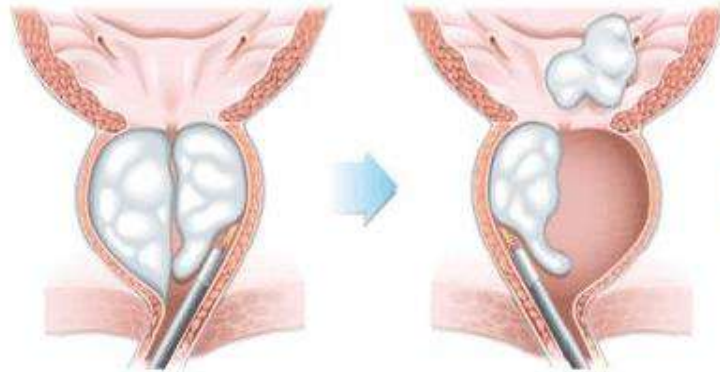




HoLEP

Holmium Laser Enucleation van de Prostaat

I. Enucleation



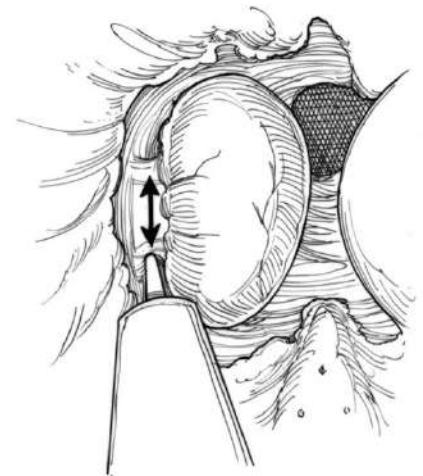
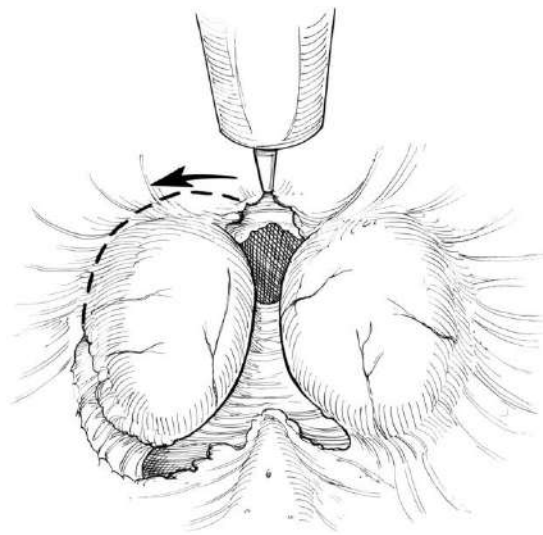
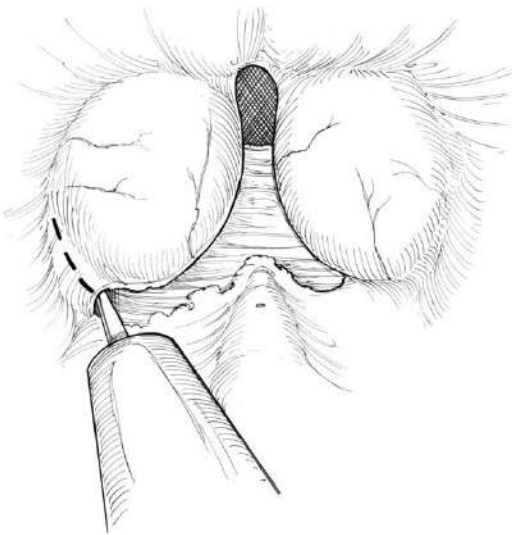
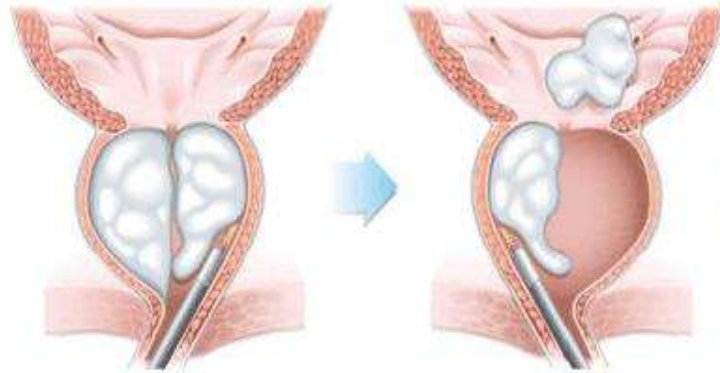
II. Morcellation



HoLEP

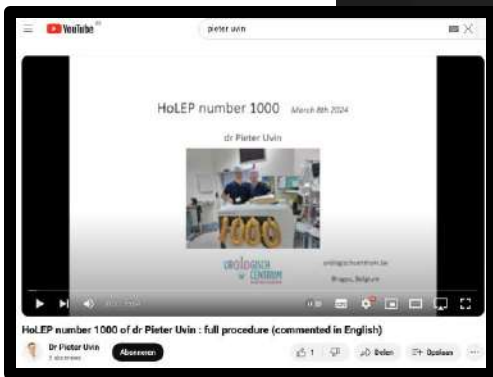
Holmium Laser Enucleation van de Prostaat

I. Enucleation



HoLEP

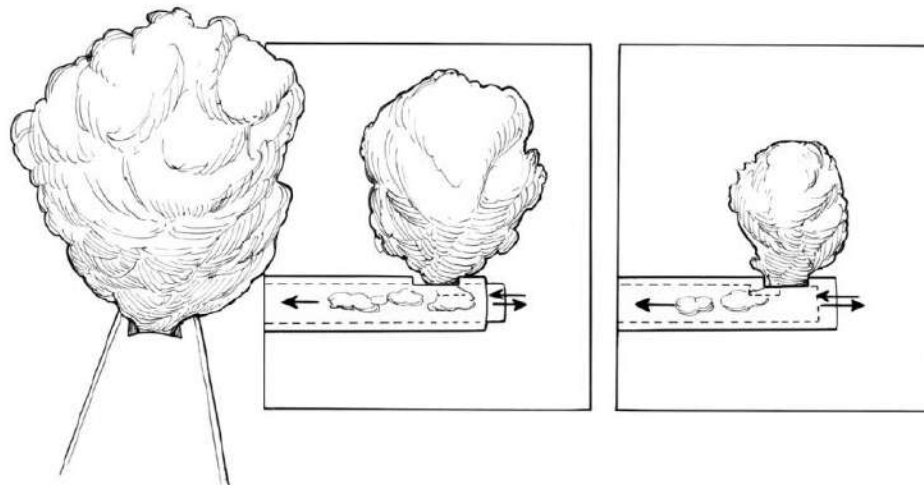
Holmium Laser Enucleation van de Prostaat



HoLEP

Holmium Laser Enucleation van de Prostaat

II. Morcellatie



HoLEP

Holmium Laser Enucleatie van de Prostaat

II. Morcellatie



The slide features a white background with black and red text. At the top left is the IPA logo (a red starburst) and the text 'INSTITUTO PRÓSTATA AUMENTADA' with 'ENUCLEAÇÃO DA PRÓSTATA COM LASER HOLEP' in smaller text below. At the top right is the Hospital Pompéia logo (a blue stylized flower). The main title 'Minimally invasive Laser Enucleation of the Prostate - MiLEP -' is in red. Below it, 'Slim (22Ch) and Ultra Slim (18.5Ch) HoLEP' is also in red. At the bottom, two columns of text list the speakers: Felipe C. A. de Figueiredo from Hospital Pompéia, Caxias do Sul - Brazil, and Patrick E. Teloken from Sir Charles Gairdner Hospital, Perth - Australia.

IPA INSTITUTO
PRÓSTATA AUMENTADA
ENUCLEAÇÃO DA PRÓSTATA COM LASER HOLEP

**Hospital
Pompéia**

**Minimally invasive
Laser Enucleation of the Prostate
- MiLEP -**

**Slim (22Ch) and Ultra Slim (18.5Ch)
HoLEP**

Felipe C. A. de Figueiredo
Hospital Pompéia
Caxias do Sul - Brazil

Patrick E. Teloken
Sir Charles Gairdner Hospital
Perth - Australia

HoLEP

Holmium Laser Enucleation van de Prostaat

II. Morcellatie

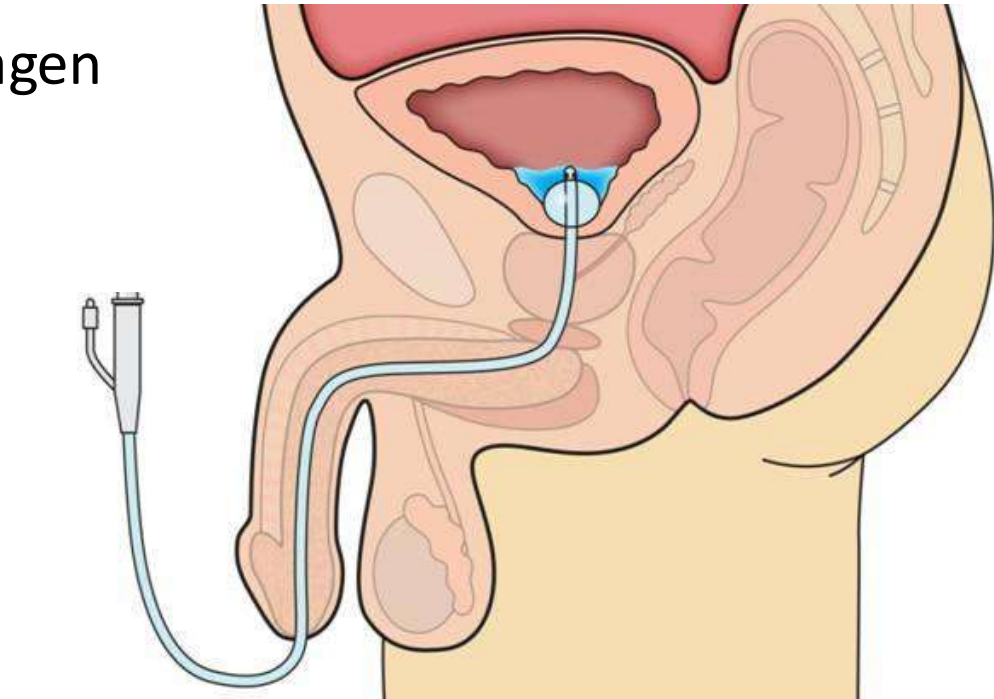


HoLEP

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...



HoLEP

Holmium Laser Enucleation van de Prostaat

Post-operatief

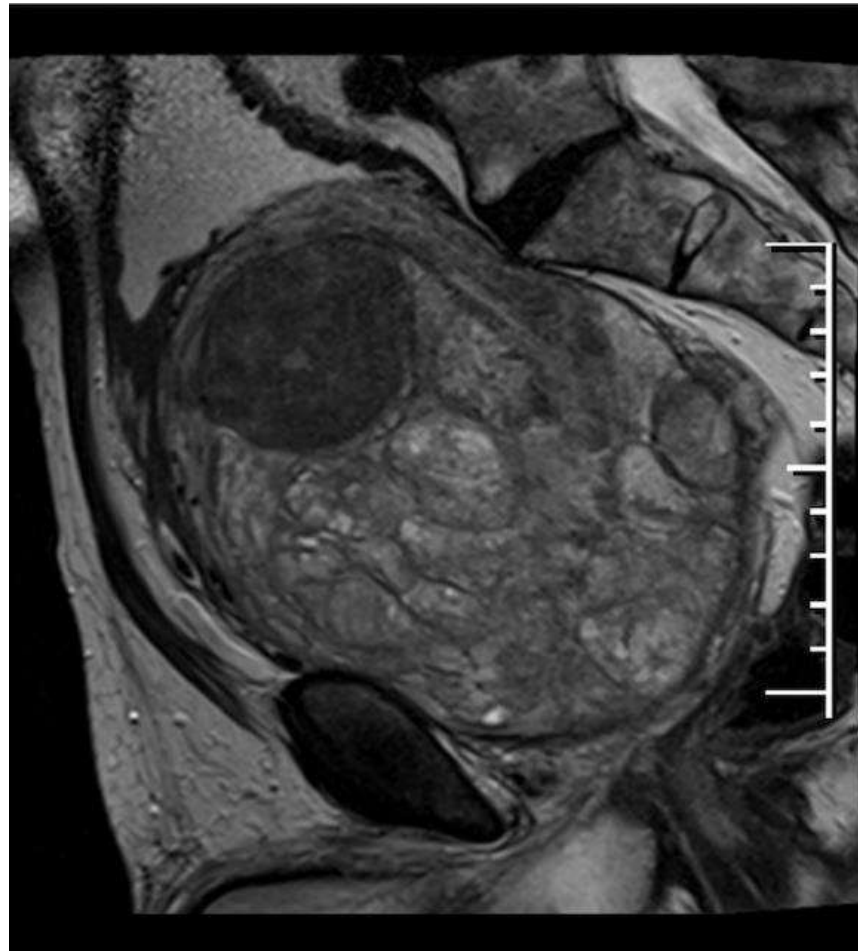
Na tien jaar !



Table 1. Descriptive analysis of HoLEP outcomes

Followup	No. Pts	IPSS Mean (range)/Median	QOL Mean (range)/Median	Qmax Mean (range)/Median	PVR Mean (range)/Median
Preop	349	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 (0-29)/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 (0-6)/1	23.7 (5.1-67.4)/22.8	36 (0-669)/15
6 Yrs	486	4.7 (0-25)/3	1 (0-6)/1	24.7 (0-62.6)/24.1	30 (0-559)/16
7 Yrs	324	4.3 (0-29)/3	1 (0-6)/1	25.6 (1-62.5)/25.1	27 (0-637)/18
8 Yrs	263	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 (0-19)/2	0.7 (0-3)/1	26.6 (5.9-57.9)/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

Laser enucleatie voor GIGANTISCHE 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_{max}) 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_{max} 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.

Onderzoek :
Prostaat, TUR.

Klinische inlichtingen :
/

258 g

Macroscopie :
258g weefselsnippers verdeeld over 10 blokken.

Microscopie :

De talrijke snippers zijn opgebouwd uit prostaatklierbuizen en fibromusculair stroma. Enkele fragmenten zijn afgeboord door normaal uitrijpend urotheel. Het prostaatparenchym toont vorming van stromale en glandulaire noduli. Elke klierbuis is omgeven door een normale basale cellaag. Het epitheel toont geen atypieën. Er is geen manifeste inflammatie.

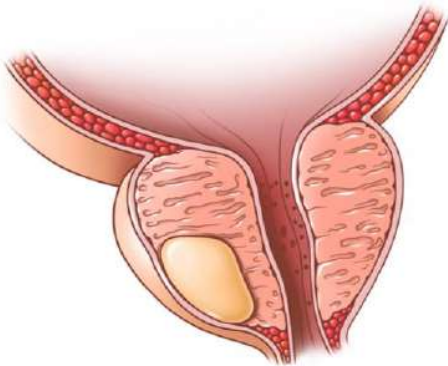
Besluit:

TUR prostaat: benigne prostaat hyperplasie.

Met collegiale groeten
Ignace Dalle

HoLEP & prostaatkanker

T2 prostaatkanker : NO PROBLEM



> [J Endourol.](#) 2023 Mar;37(3):330-334. doi: 10.1089/end.2022.0571.

Holmium Laser Enucleation of Prostate in Patients with Pre-Existing Localized Prostate Cancer, Dual Center Study

Mohamed Elsaqa ^{1 2}, Austen Slade ³, James Lingeman ³, Alex Piroozi ³, Kristofer Wagner ¹, Sameer Jhavar ⁴, Marawan M El Tayeb ¹

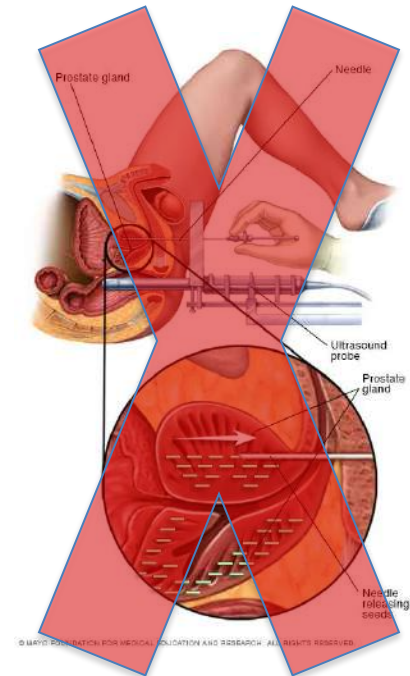
Affiliations + expand

PMID: 36463424 DOI: [10.1089/end.2022.0571](#)

HoLEP & prostaatkanker

Na external beam radiotherapie : NO PROBLEM

GEEN HoLEP na brachytherapie !



HoLEP & zwakke blaas

Clinical Trial > Urology. 2014 Feb;83(2):428-32. doi: 10.1016/j.urology.2013.09.035.

Epub 2013 Nov 12.

Efficacy of holmium laser enucleation of the prostate in patients with non-neurogenic impaired bladder contractility: results of a prospective trial

Christopher R Mitchell ¹, Lance A Mynderse ¹, Deborah J Lightner ¹, Douglas A Husmann ¹, Amy E Krambeck ²

Affiliations + expand

PMID: 24231217 DOI: [10.1016/j.urology.2013.09.035](https://doi.org/10.1016/j.urology.2013.09.035)



Conclusion: Intermediate follow-up results indicate that HoLEP is a viable management option for men with BPO and detrusor hypocontractility. Furthermore, detrusor acontractility does not appear to adversely affect postoperative results, with return of spontaneous urination and demonstration of detrusor contractility allowing for efficient voiding, in over 95% of patients.

95 % succes !

Redo HoLEP na TURP / Rezum /...

Comparative Study > J Urol. 2017 Jun;197(6):1517-1522. doi: 10.1016/j.juro.2016.12.098.

Epub 2016 Dec 30.

Outcomes of Holmium Laser Enucleation of the Prostate in the Re-Treatment Setting

Tracy Marien ¹, Mustafa Kadihasanoglu ¹, Teerayut Tangpaitoon ¹, Nadya York ², Andrew T Blackburne ³, Haidar Abdul-Muhsin ⁴, Michael S Borofsky ², Amy E Krambeck ³, Mitchell R Humphreys ⁴, James E Lingeman ², Nicole L Miller ⁵

Affiliations + expand

PMID: 28043843 DOI: [10.1016/j.juro.2016.12.098](https://doi.org/10.1016/j.juro.2016.12.098)

Free article

Conclusions: Immediate perioperative outcomes of holmium laser enucleation of the prostate performed in the re-treatment setting were no different from those in the primary setting. While re-treatment was associated with an increased likelihood of clot retention, urethral stricture and higher AUA symptom score, these minimal differences must be considered against the overall favorable symptom improvement across both cohorts.



Outcomes were no different!

De perfectie???



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



Peter Gilling

1996 !

Adoption and Outcomes of Holmium Laser Enucleation of the Prostate in the United States

Ilon C Weinstein ¹, Xian Wu ², Camilo Arenas-Gallo ², Alec Zhu ³, Aaron Brant ³, Bashir Al Hussein Al Awamlh ⁴, Christopher Gaffney ⁵, Richard Lee ³, Michael Zell ², Irina Jaeger ², Lee Ponsky ², Jonathan Shoag ⁶

Affiliations + expand

PMID: 37328009 DOI: [10.1016/j.urology.2023.05.028](#)

Results: HoLEP accounted for 3.2% (n = 6967) of all the BPH procedures performed between 2000 and 2019 and increased from 1.1% of the procedures in 2008 to 4% in 2019. Patients undergoing HoLEP had lower odds of 90-days readmission compared to TURP (Odds ratio (OR) 0.87, p = 0.025). HoLEP had similar odds of retreatment compared to TURP at both 1-year (OR

4 % in 2019

Wat zijn de nadelen van HoLEP ?

I. Complicaties

II. Investerings

III. Eerder moeilijke procedure

TABLE 3. PERIOPERATIVE DATA AND ADVERSE EVENTS

	No. of patients		Pooled estimate	p	I ² (%)	Favors
	HoLEP	TURP				
Perioperative data						
Operative time	272	268	15.91[5.45,26.36] ^a	0.003	93	TURP
Resected weight	272	268	4.12[−7.26, 15.51] ^a	0.48	97	None
Blood loss	242	238	−0.46[−0.81, 0.80] ^a	0.01	58	HoLEP
Catheterization time	272	268	−1.50[−2.22, −0.79] ^b	<0.001	92	HoLEP
Hospital stay	222	218	−1.92[−2.91, −0.93] ^b	<0.001	94	HoLEP
Adverse events						
Urethral stricture	10/251	11/239	0.86[0.38, 1.97] ^c	0.73	0	None
Stress incontinence	7/251	6/239	1.11[0.40, 2.12] ^c	0.84	0	None
Blood transfusion	0/257	8/253	0.23[0.06,0.92] ^c	0.04	0	HoLEP
Dysuria	49/157	25/153	1.87[1.25,2.80] ^c	0.003	40	TURP
Recatheterization	8/195	13/195	0.63[0.28,1.43] ^c	0.38	3	None

^aMean difference [95% Confidence interval].

^bStandard mean difference [95% Confidence interval].

^cRisk Ratio [95% Confidence interval].

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

HoLEP

1/3

TURP

1/6

Tijdelijk
dysurie:

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

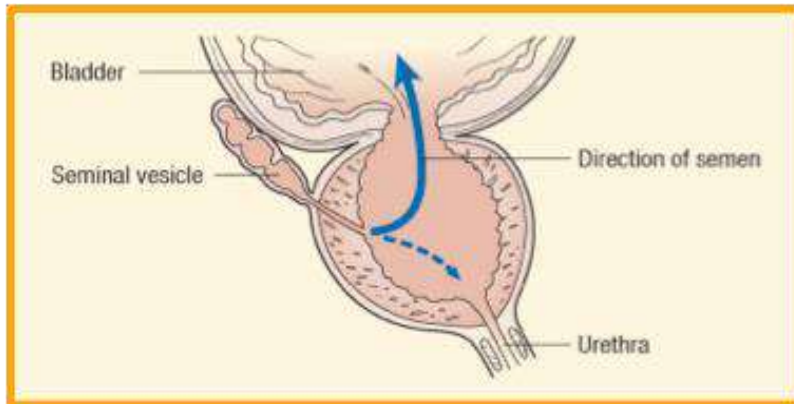
Impact on Sexual Function of Holmium Laser Enucleation Versus Transurethral Resection of the Prostate: Results of a Prospective, 2-Center, Randomized Trial

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

THE JOURNAL OF UROLOGY®

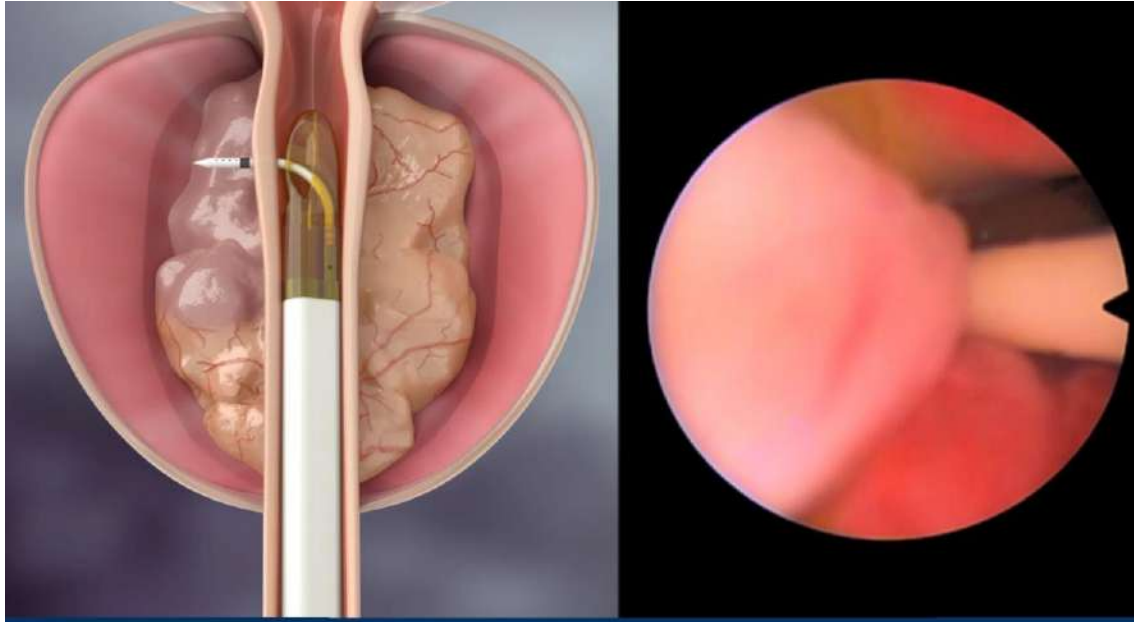
Vol. 175, 1817-1821, May 2006



80% droog orgasme

GEEN erectieprobleem

Rezum

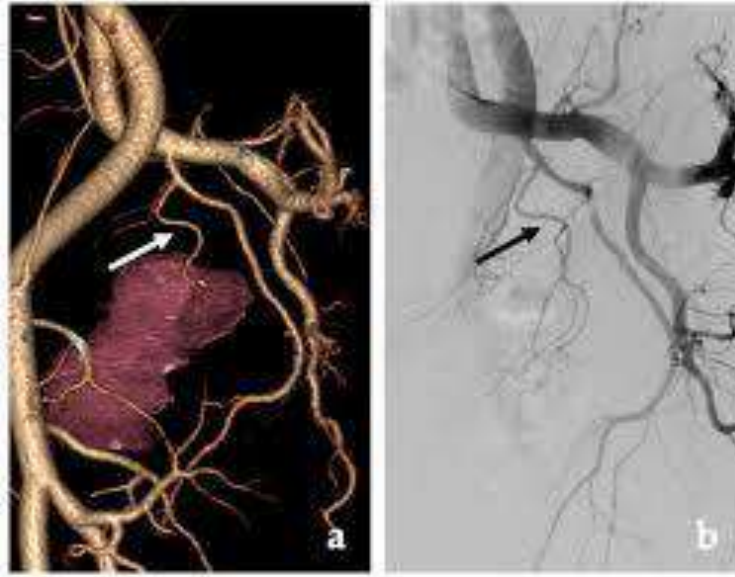


Indicatie

Prostaat volume 30 – 80ml
Geen zwakke blaas

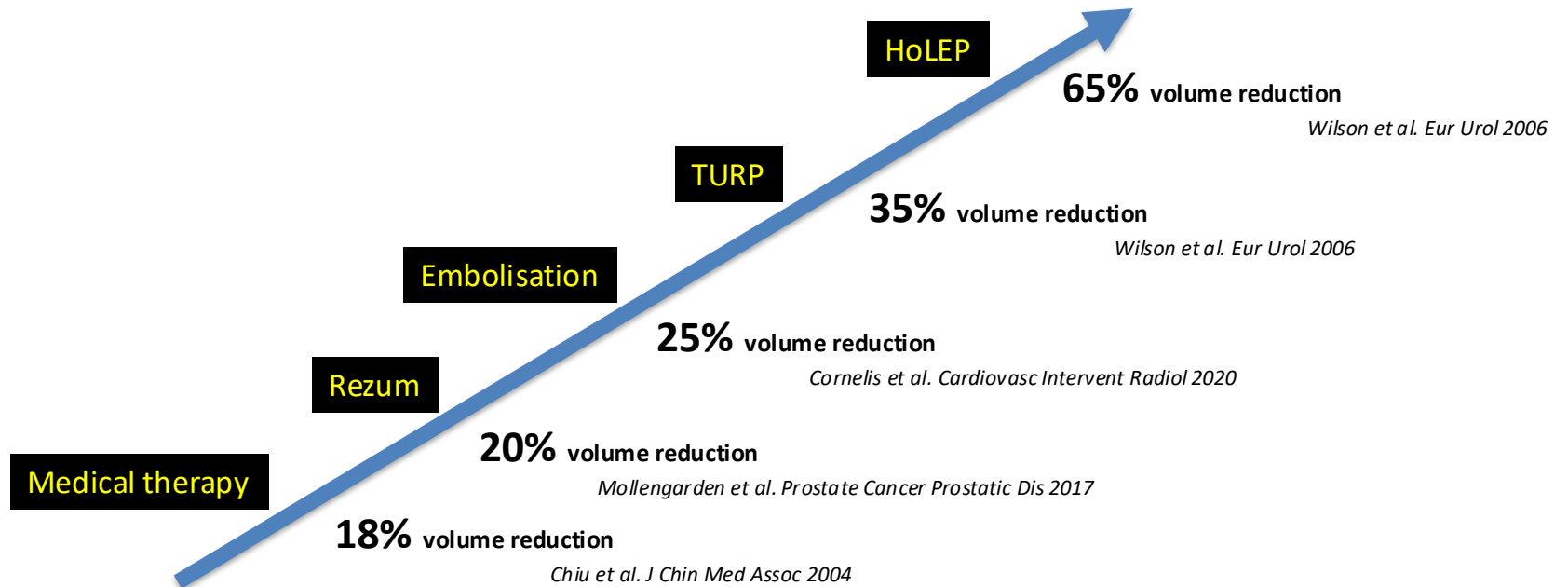
Droog orgasme bij slechts 2 % !

Prostaat embolisatie



lokale anesthesie
bloedverdunners
T4 prostaatkanker
“hostile urethra”

Droog orgasme bij 16 %



Kans op herbehandeling (na 5 jaar)

Rezum 15%

McVary et al. AUA 2020

Embolisation 20%

Bilhim et al. Cardiovasc Intervent Radiol 2022

TURP 6%

Madersbacher et al. Eur Urol 47, 2005

HoLEP 1%

Gilling et al. Eur Urol 53, 2008

Wat zijn de nadelen van HoLEP ?

I. Complicaties

II. Investerings

III. Eerder moeilijke procedure



Schade aan sfincter

Schade aan plasbuis

TABLE 3. PERIOPERATI

	No. of patients	
	HoLEP	TURP
Perioperative data		
Operative time	272	268
Resected weight	272	268
Blood loss	242	238
Catheterization time	272	268
Hospital stay	222	218
Adverse events		
Urethral stricture	10/251	11/239
Stress incontinence	7/251	6/239
Blood transfusion	0/257	8/253
Urgency	49/157	25/153
Recatheterization	8/195	13/195

Strictuur: 4%

Incontinentie: 2%

^aMean difference [95% Confidence interval].

^bStandard mean difference [95% Confidence interval].

^cRisk Ratio [95% Confidence interval].

HoLEP= holmium laser enucleation prostatectomy; TURP= tr



Schade aan sfincter



Schade aan plasbuis



DUNNERE INSTRUMENTEN ???

*Time to complete **continence** was shorter in the 24F group than in the 28F group (5.8 versus 15.2 days, $p=0.04$).*

*A statistically significant higher incidence of bulbar **stricture** was detected in the 26F compared to the 24F group ($p=0.018$).*

MiLEP = Minimally Invasive Laser Enucleation of the Prostate

Ch 22



Ch 27

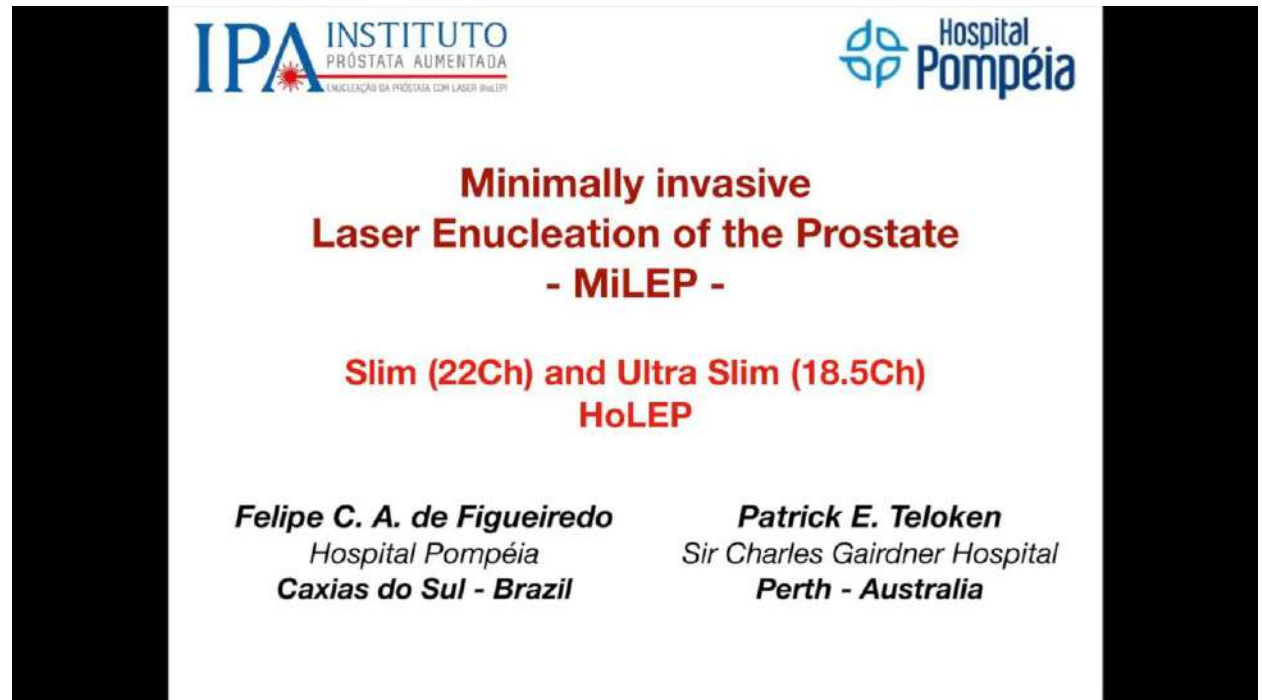




**Een MiLEP is een HoLEP maar ...
met dunner materiaal**



MiLEP = Minimally Invasive Laser Enucleation of the Prostate



Figueiredo et al. Urology Video Journal, 2022: 14, June 2022

Beperkt zicht tijdens morcellatie !!



HoLEP vs MiLEP





World Journal of Urology (2023) 41:2801–2807
<https://doi.org/10.1007/s00345-023-04562-1>

ORIGINAL ARTICLE



Mini-HoLEP (MiLEP) vs HoLEP: a propensity score-matched analysis

Tarek Taha^{1,2} · Ziv Savin^{1,2,3} · Karin Lifshitz^{2,3} · Yotam Veredgorn^{2,3} · Tomer Mendelson^{2,3} · Yuval Bar-Yosef^{2,3} · Ofer Yossepowitch^{2,3} · Mario Sofer^{1,2,3}

Received: 24 May 2023 / Accepted: 25 July 2023 / Published online: 25 August 2023
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HoLEP vs MiLEP

	Meatal dilatation						
	MiLEP	0.11	0.04–0.32	<0.001	0.1	0.03–0.32	<0.001
	Age	1.02	0.96–1.1	0.423	0.98	0.9–1.07	0.78
	ASA score	2.61	0.96–7	0.06	2.73	0.8–9.2	0.1
	AUS	1	0.99–1.01	0.59	1	0.99–1.01	0.61
	Indwelling catheter	0.07	0.02–0.24	<0.001	0.06	0.01–0.22	<0.001
	Stress urinary incontinence						
	MiLEP	0.31	0.1–0.95	0.04	0.32	0.07–1.37	0.126
	Age	1.21	1.08–1.35	<0.001	1.3	1.1–1.52	0.002
	ASA score	1.28	0.45–3.65	0.63	0.43	0.08–2.3	0.32
	AUS	1	0.99–1.01	0.39	1.01	0.99–1.02	0.22
	Indwelling catheter	7	2.23–21.97	<0.001	11.43	2.51–52	0.002

Bold indicates significant

D delta, *MiLEP* miniaturized laser enucleation of prostate, *ASA* American Society of Anesthesiology, *AUS* abdominal ultrasound



HoLEP vs MiLEP



Wat zijn de nadelen van HoLEP ?

I. Complicaties

II. Investerings

III. Eerder moeilijke procedure



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

ANDREA SALONIA, NAZARENO SUARDI, RICHARD NASPRO, BRUNO MAZZOCOLI,
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)
Total	2868.9 (3554.0)	2356.5 (2919.4)



Open Prostatectomy



HoLEP

Evaluation of the Cost-Effectiveness of Surgical Treatment Options for Benign Prostatic Hyperplasia

Kevin M Wymer¹, Gopal Narang², Austen Slade³, Vidit Sharma⁴, Viengneesee Thao⁵,
Bijan J Borah⁵, Marcelino Rivera³, Scott Cheney², Mitchell R Humphreys⁶

Affiliations + expand

PMID: 36270339 DOI: [10.1016/j.urology.2022.09.026](#)

Results: At 5 years, costs per patient for index patient 1 were \$3292 (WVTT), \$6532 (HoLEP), \$6670 (B-TURP), and \$10,257 (PUL). HoLEP resulted in the highest QALYs (4.66), followed by B-TURP (4.60), PUL (4.38), and WVTT (4.38). This translated to HoLEP being most cost-effective (ICER \$11,847). For index patient 2, HoLEP was less costly (\$6,585 vs \$15,404) and more effective (4.654 vs 4.650) relative to SP. On sensitivity analysis for index patient 1, B-TURP became most cost-effective if cost of HoLEP increased two-fold or chronic stress incontinence following HoLEP increased ten-fold. When follow-up time was varied, WVTT was preferred at very short follow up (<1 year), and HoLEP became more strongly preferred with longer follow up.

HoLEP is most cost-effective
compared to TURP, Rezum, Urolift,...

Wat zijn de nadelen van HoLEP ?

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

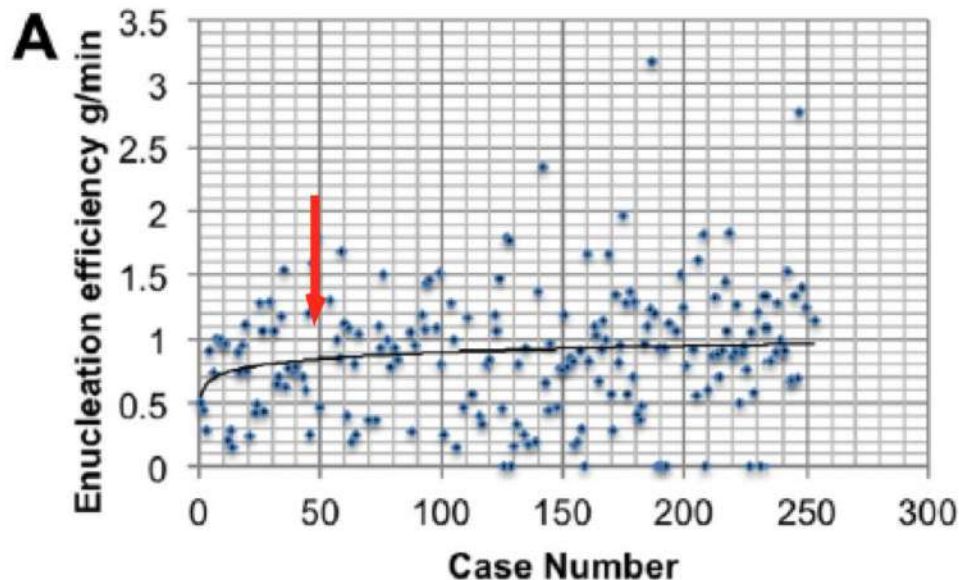
Wat zijn de nadelen van HoLEP ?

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

of THE JOURNAL
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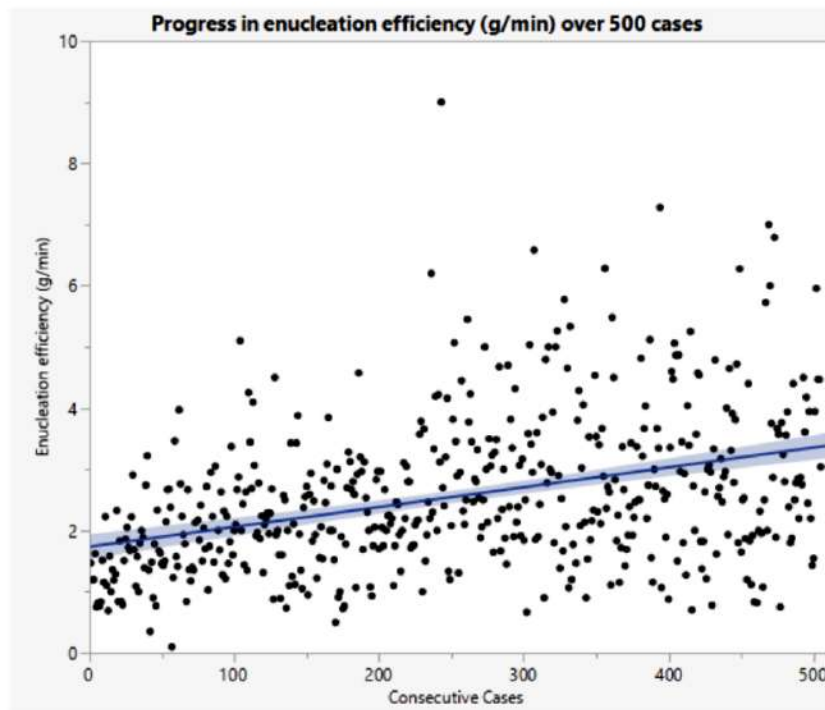
Brunckhorst O et al, 2015



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

The long-term learning curve of holmium laser enucleation of the prostate (HoLEP) in the en-bloc technique: a single surgeon series of 500 consecutive cases

M. J. Wenk¹ · F. O. Hartung¹ · L. Egen¹ · C. Netsch² · M. Kosiba³ · B. Grüne¹ · Jonas Herrmann¹



After 500 cases, still no plateau was reached.



Petraphobia

Petraphobia or **petrophobia** (from Greek *petros*, meaning "rock", "stone") is the fear of [rocks](#). This phobia is often caused by negative experiences involving rocks back in the childhood, like getting hit by a rock.

Sufferers would stay away from rocks,



Pieter Uvin

Pieter D'hulst

Wegen de nadelen op tegen de voordelen?

JA



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

Bied HoLEP aan als alternatief voor TURP en open prostatectomie :

- Minder bloedverlies
- Kortere hospitalisatieduur
- Goede functionele resultaten

EUROPEAN UROLOGY 50 (2006) 569–573

EUROPEAN UROLOGY 50 (2006) 563–568

direct.com sciencedirect.com

EUROPEAN UROLOGY 50 (2006) 563–568



available at www.sciencedirect.com
journal homepage: www.europeanurology.com



European Association of Urology



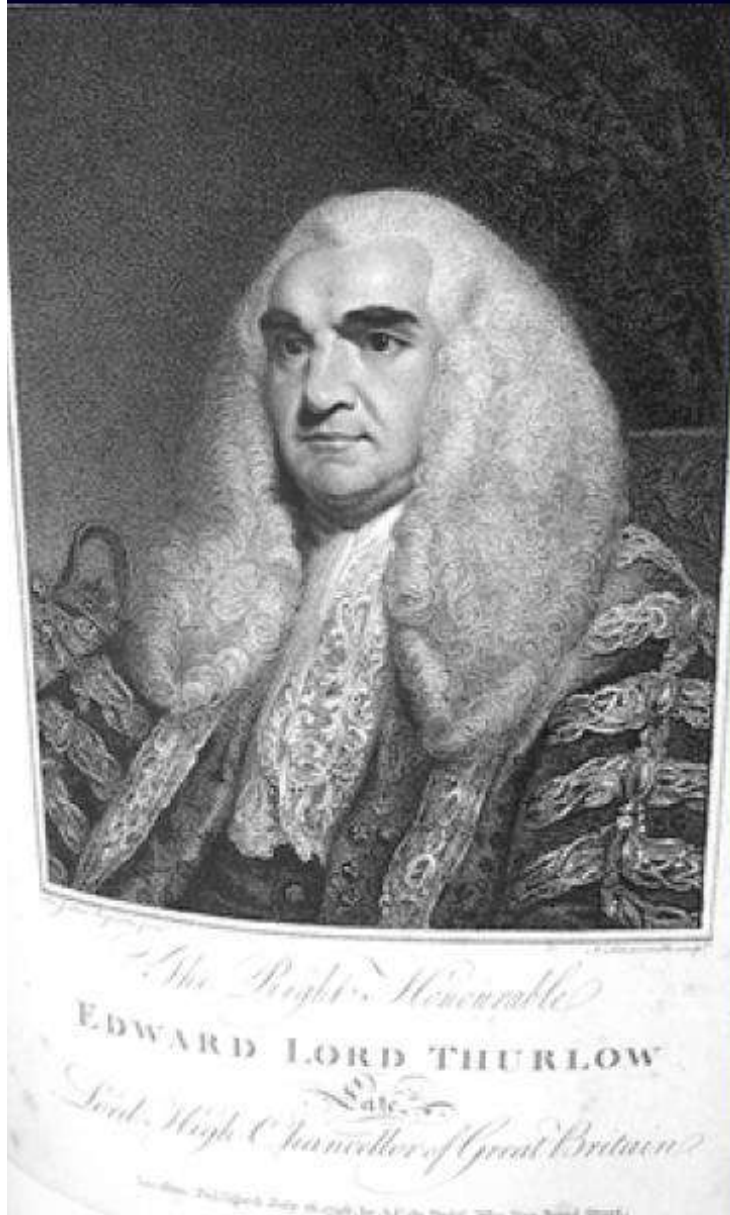
Benign Prostatic Obstruction

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

*Dep-



“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



Klassieke behandelingen

Open prostatectomie (>80g)

TURP (< 80g)

Innovatieve behandelingen

HoLEP

Rezum, prostaatembolisatie



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

	Preoperatively	Postop 1-year mean $\pm$ SD (range)	Postop 2-year mean $\pm$ SD (range)	Postop 3-year mean $\pm$ SD (range)	Postop 4-year mean $\pm$ SD (range)	Postop 5-yr mean $\pm$ 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
AUA symptom score						
HoLEP group	22.1 $\pm$ 3.3 (11–30)	2.3 $\pm$ 2.0 (0–11)	2.3 $\pm$ 2.2 (0–12)	3.0 $\pm$ 3.1 (0–16)	3.0 $\pm$ 3.1 (0–10)	3.0 $\pm$ 3.2 (0–10)
OP group	21.0 $\pm$ 3.6 (13–28)	2.3 $\pm$ 1.7 (0–7)	2.4 $\pm$ 1.6 (0–8)	2.8 $\pm$ 1.6 (0–9)	2.8 $\pm$ 1.9 (0–9)	3.0 $\pm$ 1.7 (1–9)
p value	0.09	0.94	0.89	0.82	0.68	0.98
Peak flow (ml/s)						
HoLEP group	3.8 $\pm$ 3.6 (0–10)	27.4 $\pm$ 9.7 (11–49)	26.7 $\pm$ 8.3 (14–57)	27.0 $\pm$ 9.8 (8–50)	27.7 $\pm$ 9.6 (8–53)	24.3 $\pm$ 10.1 (8–54)
OP group	3.6 $\pm$ 3.8 (0–12)	28.3 $\pm$ 7.5 (12–49)	27.4 $\pm$ 6.8 (13–51)	25.3 $\pm$ 6.9 (11–47)	25.0 $\pm$ 8.3 (11–54)	24.4 $\pm$ 7.4 (11–49)
p value	0.60	0.86	0.65	0.32	0.20	0.97
Residual volume (ml)						
HoLEP group	280 $\pm$ 273 (50–1000)	5.8 $\pm$ 16.7 (0–90)	1.7 $\pm$ 6.5 (0–33)	6.1 $\pm$ 12.1 (0–40)	8.6 $\pm$ 13.5 (0–40)	10.6 $\pm$ 24.4 (0–138)
OP group	292 $\pm$ 191 (50–1000)	6.4 $\pm$ 12.3 (0–40)	2.4 $\pm$ 6.8 (0–30)	4.4 $\pm$ 10.5 (0–40)	6.5 $\pm$ 12.1 (0–40)	5.3 $\pm$ 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.

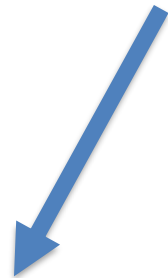
Functionele resultaten : geen verschil

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)

Innovatieve behandelingen

HoLEP

Rezüm, prostaatembolisatie

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

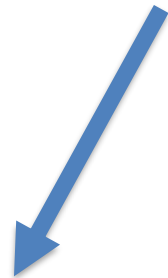


Comparison of EEP and TURP long-term outcomes: systematic review and meta-analysis

Andrey Morozov¹ · Mark Taratkin¹ · Anastasia Shpikina¹ · Yaron Ehrlich^{2,3} · Jonathan McFarland^{4,5} · Alim Dymov¹ · Vasiliy Kozlov⁶ · Harun Fajkovic^{7,8} · Juan Gomez Rivas⁹ · Lukas Lusuardi¹⁰ · Jeremy Yuen-Chun Teoh¹¹ · Thomas Herrmann^{12,13} · Jack Baniel^{2,3} · Dmitry Enikeev^{1,7,8} 

Conclusion EEP had a significantly lower reoperation rate and better functional outcomes ($Q_{\max}$ and IPSS) at long term compared with TURP. It may also be beneficial in terms of IIEF-5, PVR, and PSA level.

Laser enucleation has better functional outcomes compared to TURP



Klassieke behandelingen

Open prostatectomie (>80g)

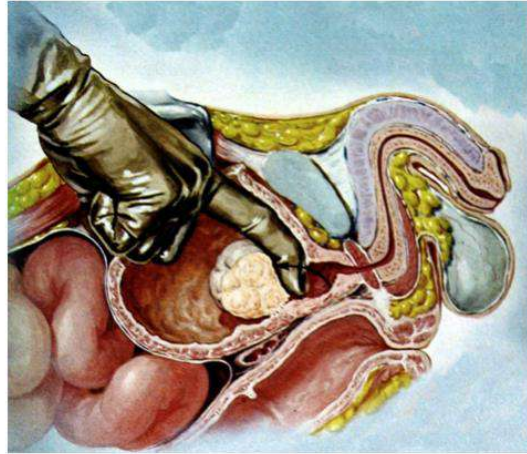
TURP (< 80g)

Innovatieve behandelingen

HoLEP

Robot enucleatie

Robot enucleatie





Comparison of Contemporary Surgical Outcomes Between Holmium Laser Enucleation of the Prostate and Robotic-Assisted Simple Prostatectomy

T. Max Shelton¹ · Connor Drake^{1,2} · Ruben Vasquez¹ · Marcelino Rivera¹ 

Conclusion

Enucleation is the most definitive method for managing symptomatic large-volume prostate hyperplasia. RASP and HoLEP offer similar treatment outcomes with regards to tissue resected, IPSS improvement, uroflowmetry, and post-void residual values. There appears to be no significant difference in bladder neck contracture rates or long-term post-operative urinary incontinence complications. Data is lacking on comparing rates of retrograde ejaculation, but the published literature cites high rates for both procedures, although urethral sparing simple prostatectomy appears to offer significantly improved antegrade ejaculation rates. The literature reflects that HoLEP offers shorter hospitalizations, lower transfusion rates, shorter catheterization time, lower costs, and higher rates of same-day discharge. Additionally, HoLEP has proven to be a feasible option for therapeutically anticoagulated patients. The demand

HoLEP offers shorter hospitalizations and lower transfusion rates

Robotic Assisted Simple Prostatectomy *versus* Holmium Laser Enucleation of the Prostate for Patients with Huge Benign Prostatic Hyperplasia

Hye Soo Kim^{1,2,3} , Yu Seob Shin^{1,2,3} 

¹Department of Urology, Jeonbuk National University Medical School, ²Research Institute of Clinical Medicine of Jeonbuk National University, ³Biomedical Research Institute of Jeonbuk National University Hospital, Jeonju, Korea



COMPARISON OF COST BETWEEN RASP AND HOLEP: LITERATURE REVIEW [Go to: ►](#)

When it comes to treating BPH, it is important for doctors to consider cost-effectiveness, but the net cost of the surgical procedure should also be taken into account from the patient's perspective. Several studies have attempted to evaluate the cost-effectiveness of procedures for BPH. One study found that the average cost of HoLEP compared to open surgery was \$2,919 to \$3,556 [16], which was attributed to shorter hospitalization in HoLEP. Another study found that the average cost per RASP, including hospitalization, was \$11,878.

2919\$ VS 11878\$

The Republic of Korea's public healthcare system is referred to as the National Health Insurance (NHI). It is provided to all citizens to improve public health and promote social security by covering healthcare service costs, such as preventative treatment, diagnosis, treatment, rehabilitation, injuries, childbirth and death. In terms of the economic impact on NHI, HoLEP is covered by insurance, whereas RASP is not an option of insurance in Korea [17]. In the center where the study was conducted, HoLEP cost \$877.57 with National insurance, while RASP cost \$5,909.36. Ultimately, HoLEP may have more economic advantages

Iedereen houdt van robotchirurgie...



Iedereen houdt van robotchirurgie...



maar je hebt geen
robot nodig voor een
prostaat enucleatie !!

Wanneer toch robot enucleatie ?

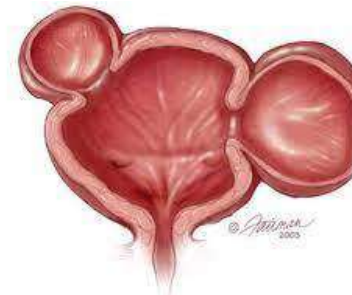
- “Hostile urethra”



- gigantische blaassteen



- (blaas divertikel)





HoLEP én MiLEP

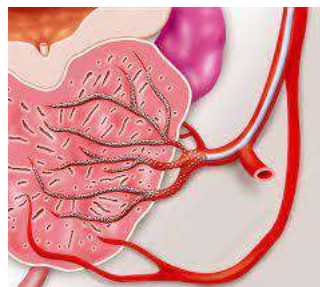




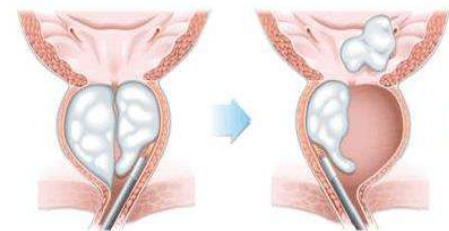
Rezum



**Robot
enucleatie**



Embolisatie



HoLEP en MiLEP

Laser Enucleatie van de prostaat : HoLEP én MiLEP

- Veilige procedure met uitstekende lange termijn resultaten
- De nieuwe **gouden standaard**



In mijn praktijk: **95 %** van de patiënten bij wie chirurgie aangewezen is



Bedankt voor uw aandacht!

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