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**LA CHIRURGIA UROLOGICA
ROMANA 2011**



***IX Corso di Aggiornamento in
Chirurgia Urologica***

**Laparoscopic transcapsular adenomectomy:
a step by step description of the technique and results
By Anastasios Asimakopoulos**

***Laparoscopic transcapsular adenomectomy:
a step by step description of the technique
and results***

Dr. Anastasios Asimakopoulos

Specialist in Urology

Fellow of the Clinique Saint-Augustin, Bordeaux, France

Large adenomas: which definition?

- >60 mL?
- >80 mL?
- >100 mL?

Guidelines on the Treatment of Non-neurogenic Male LUTS

M. Oelke (chairman), A. Bachmann, A. Descazeaud,
M. Emberton, S. Gravas, M.C. Michel, J. N'Dow,
J. Nordling, J.J. de la Rosette

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Monopolar TURP is the current surgical standard procedure for men with prostate sizes of 30-80 mL, BPO and moderate-to-severe LUTS. Monopolar TURP provides subjective and objective improvement rates superior to medical or minimally invasive treatments. However, the morbidity of monopolar TURP is higher than for TUIP, bipolar TURP, drugs, or other minimally-invasive procedures.

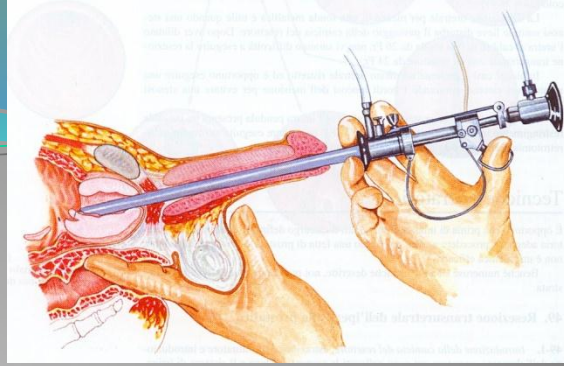
1a

A

...this upper limit depends on the surgeon's experience, resection speed, and resectoscope sizes.

TURP

Complications



• Trasmfusioni	8,0%	1-13
• Sindrome post-TUR	1,0%	0,1-2%
• Mortalità (IMA)	0,2%	0,004-3,3
• Stenosi uretrale	6,3%	0,6-10,1
• Stenosi del collo	1,5%	0,9-3,2
• Incontinenza urinaria grave	1,0%	0,6-1,4
• Urgenza "de novo"	20%	7-43
• Re-intervento per recidiva	5,0%	2%/anno
• Deficit erettile	6.5%	3,4-32,4%
• Eiaculazione retrograda	74%	60-100%

Long-term risk of mortality

- The 8-year incidence of myocardial infarction was identical after TURP (4.8%) and OP (4.9%).
- Mortality rates at 90 days (0.7% vs. 0.9%), one year (2.8% vs. 2.7%), 5 years (12.7% vs. 11.8%) and 8 years (20% vs. 20.9%) were almost identical.

Retreatment

- 20,671 men, who underwent TURP in Austria → overall reported re-treatment rates (including secondary TURP, urethrotomy, and bladder neck incision) were 5.8%, 12.3%, and 14.7% at 1, 5, and 8 years of follow-up, respectively.
- The incidence of secondary TURP was 2.9%, 5.8% and 7.4% for the same follow-up periods.

“I always resect out to the surgical capsule!”

- *TURP leaves about half of the adenoma. Therefore, TURP might be very difficult for complete resection of an adenoma.*

Endoscopia della prostata: TURP

Limits

- Volume ghiandolare >70 cc
 - Velocità max di resezione di 1 cc/min.
 - Tempo resezione ≤ 1 h
- Stenosi dell'uretra
- Anchilosi anche
- Controindicazioni ad anestesia (periferica/generale)

- prostatic adenomas >45 g
- procedures lasting >90 min
- patients aged > 80 years
- history of acute urinary retention.



- Increased operative morbidity of TURP

Bipolar TURP

Bipolar TURP achieves short-term results comparable to monopolar TURP.

1a

A

B-TURP offers an attractive alternative to monopolar TURP in patients with BPO, BPE, and LUTS with similar efficacy but lower morbidity.

Long-term results of B-TURP are still awaited.

In a recent study with a follow-up of 3 years, the initially observed significant improvements remained durable for the bipolar and monopolar arm in terms of IPSS (6.8 vs. 6.2) and Qmax (20.5 vs. 21.5 mL/s).

KTP laser

Advantages

- Good functional outcomes
- Good haemostasis
- Reduced catheterization
- Reduced hospital stay
- Irrigation not necessary

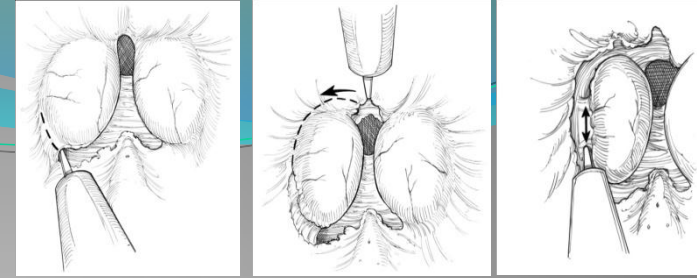


Disadvantages

- No possibility for definitive histology
- Absence of long-term data
- Costs
- Learning curve



Holmium laser



Advantages

- Efficacy
- Short hospital stay
- Reduced duration of catheterization
- Reduced bleeding
- Irrigation not necessary

Disadvantages

- Steep learning curve
- Costs
- Complications
- Necessity of morcellation

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

5. Conclusions

HoLEP is a safe and minimally invasive technique for the treatment of small and large prostates. Even though HoLEP takes longer to perform than OP, it is associated with reduced perioperative morbidity, significantly shorter catheterisation, and a shorter hospital stay. Furthermore, functional results are comparable at the 2-yr follow-up; thus, HoLEP is an attractive alternative to OP.

Holmium Laser Enucleation of the Prostate versus Open Prostatectomy for Prostates Greater than 100 Grams: 5-Year Follow-Up Results of a Randomised Clinical Trial

5. Conclusions

HoLEP is a highly effective technique for immediate deobstruction of BOO. It can be performed on prostates of all sizes. Up to at least 5 yr after the operation, the results are as durable as those of OP, and the reoperation rates are equally low. In light of HoLEP's significantly lower perioperative morbidity, this procedure might be considered not only as an alternative to OP, but as the new gold standard for surgical treatment of large prostate adenoma.

Letteratura HoLEP

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HOLMIUM LASER ENUCLEATION FOR PROSTATIC ADENOMA: ANALYSIS OF LEARNING CURVE OVER THE COURSE OF 70 CONSECUTIVE CASES

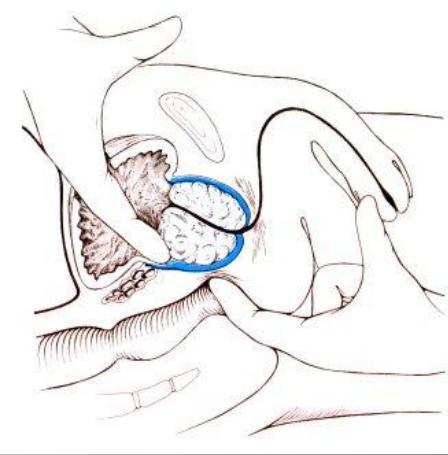
NARIHITO SEKI,* OSAMU MOCHIDA, NAOKO KINUKAWA, KAZUYUKI SAGIYAMA
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J Urol. 170(5):1847-50, 2003

**Curva di apprendimento:
50 casi**

Surgical alternatives: open adenomectomy



Advantages

- Good and durable clinical results
- Lower re-operation rates than transurethral surgery

Disadvantages

- Invasive
- High overall complication rate
- Cosmesis

	LE	GR
Open prostatectomy is the first choice of surgical treatment in men with BPH-LUTS refractory to drugs, BPO, and prostate sizes > 80-100 mL in the absence of Holmium lasers.	1b	A

Historical aspects

- In 2002 Mariano described the first laparoscopic prostatectomy for BPH.
- In 2005 Sotelo presented 17 cases of laparoscopic simple retropubic prostatectomy.
- After these initial presentations, laparoscopic simple prostatectomy has spread.

Surgery Illustrated – Surgical Atlas

Laparoscopic treatment of benign prostatic hyperplasia (BPH): overview of the current techniques

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Techniques of enucleation

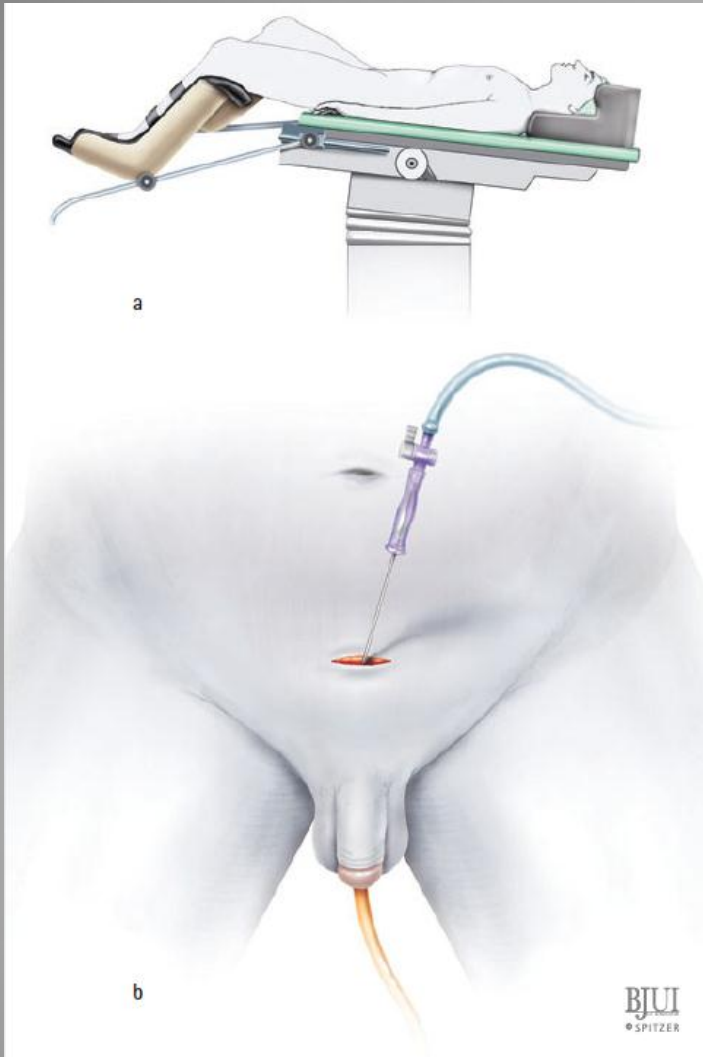
Extra or intraperitoneal

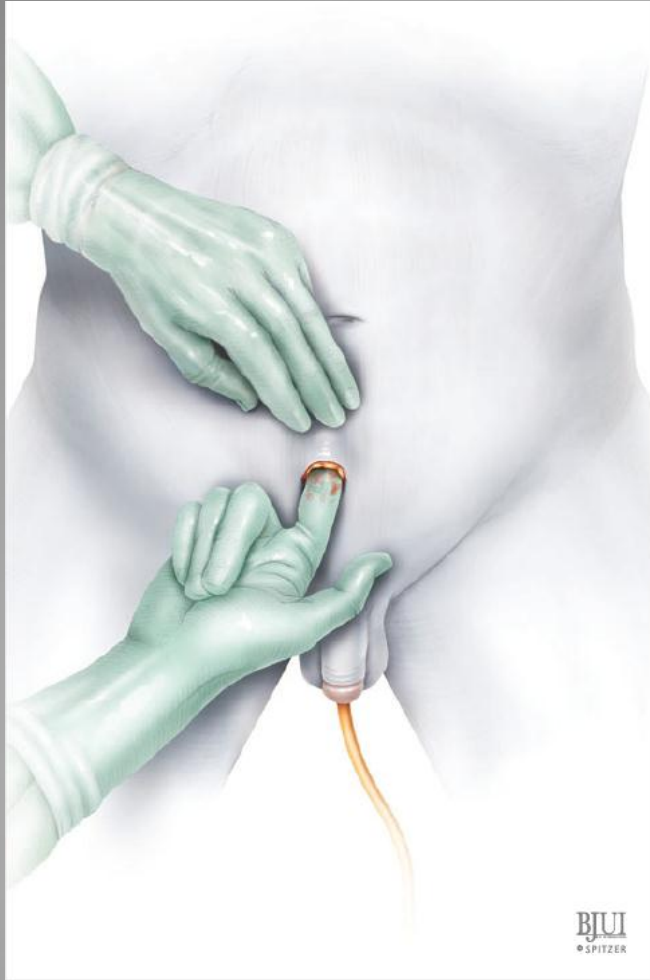


Transcapsular or transvesical

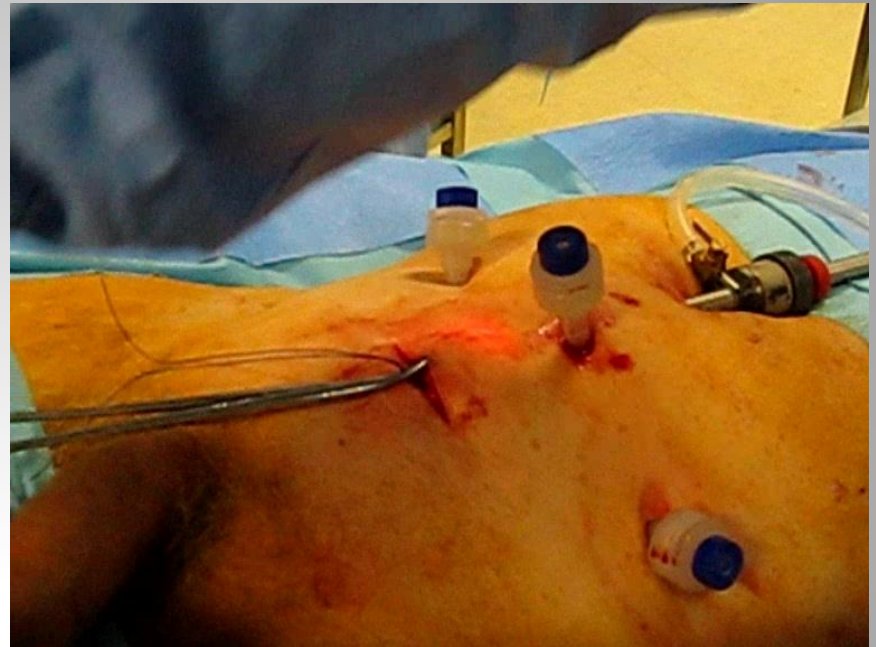
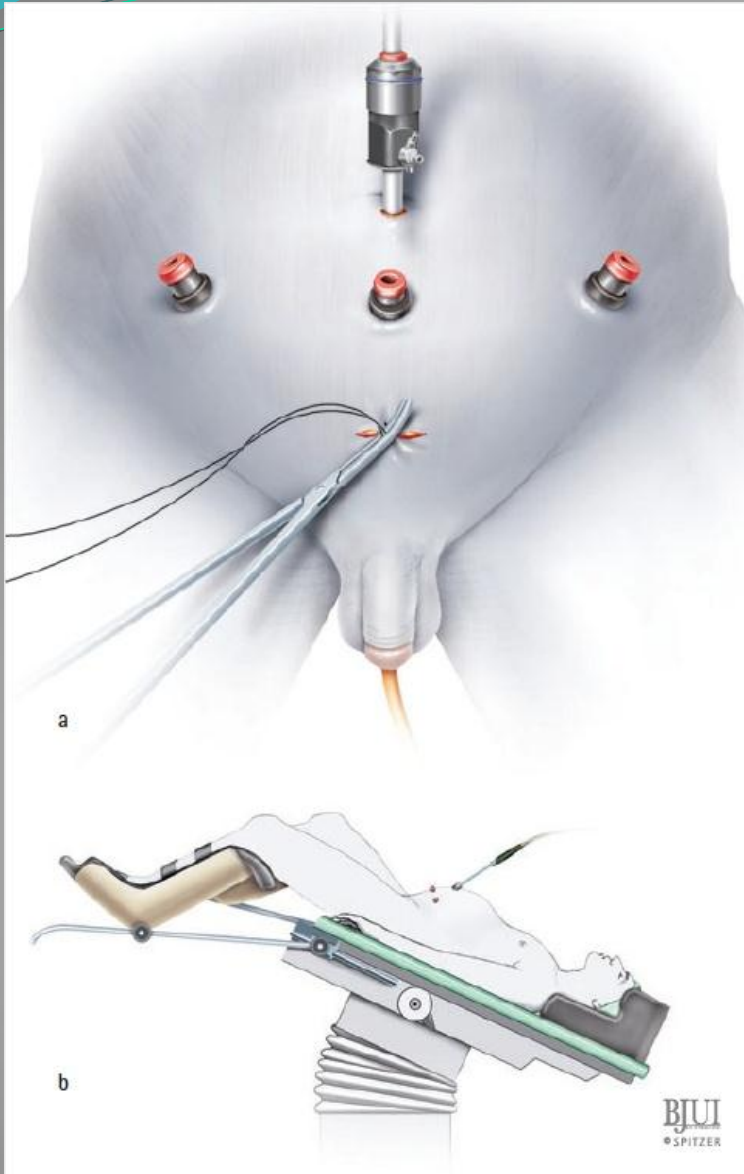


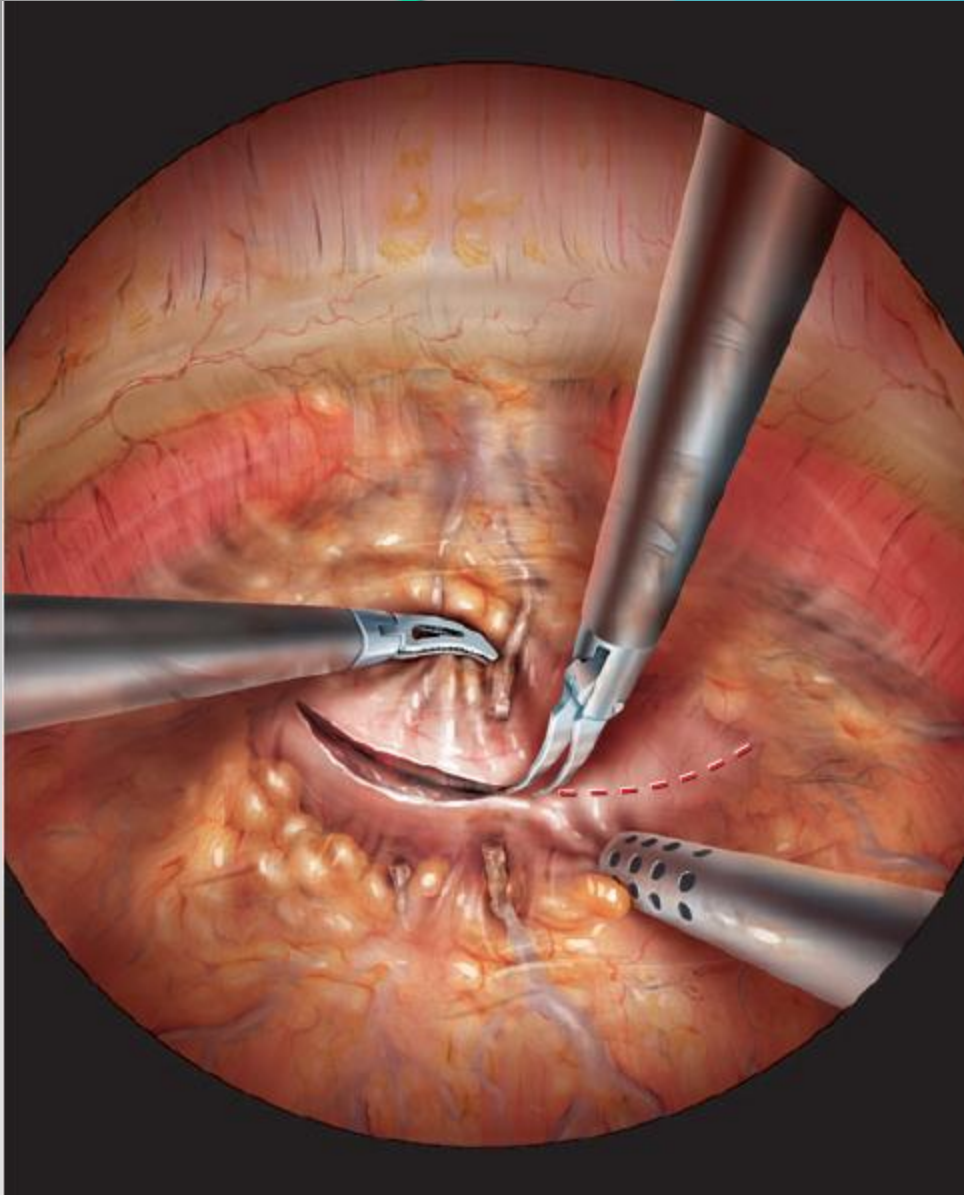
With or without finger assistance

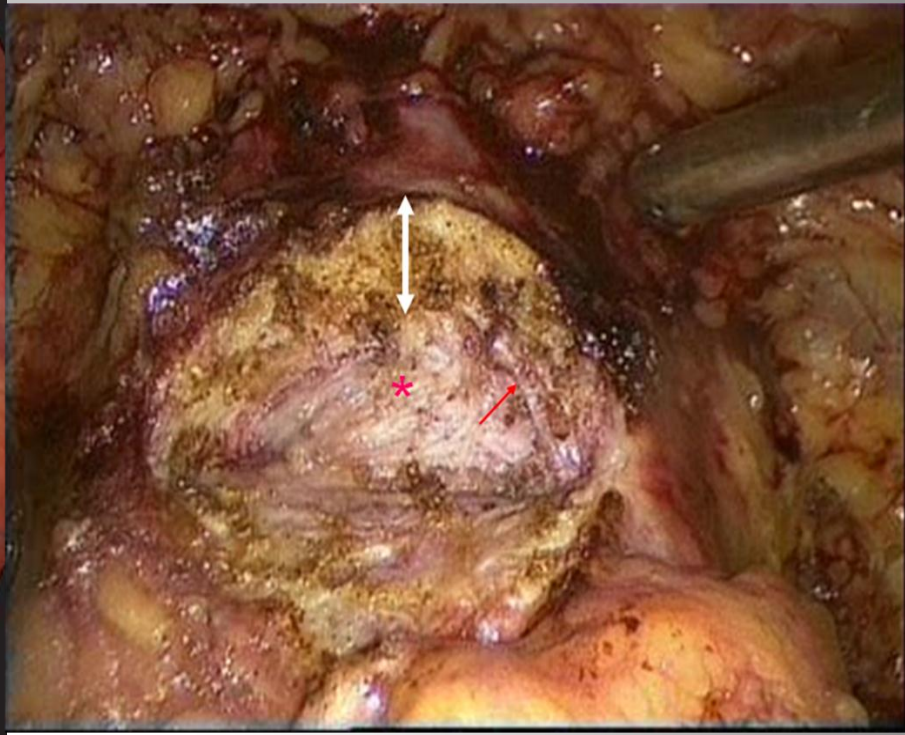
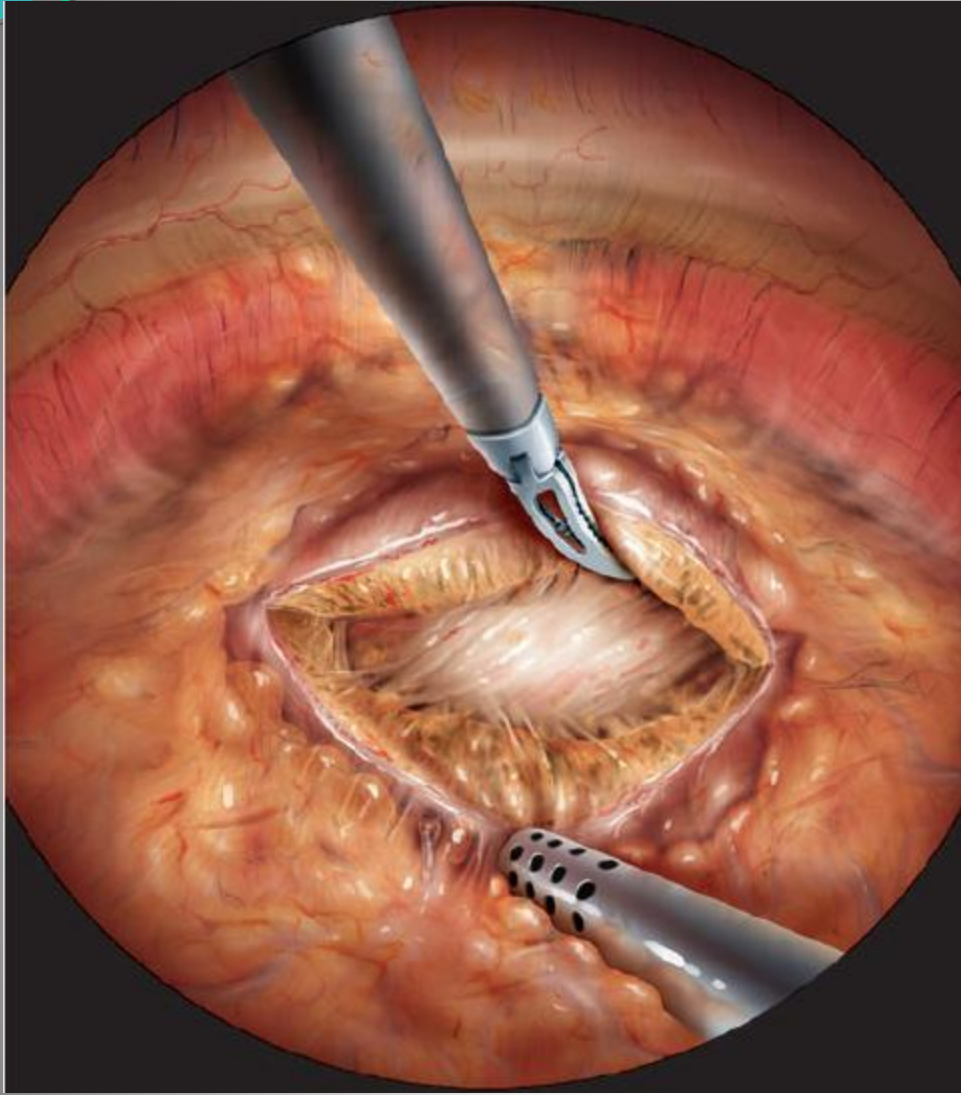


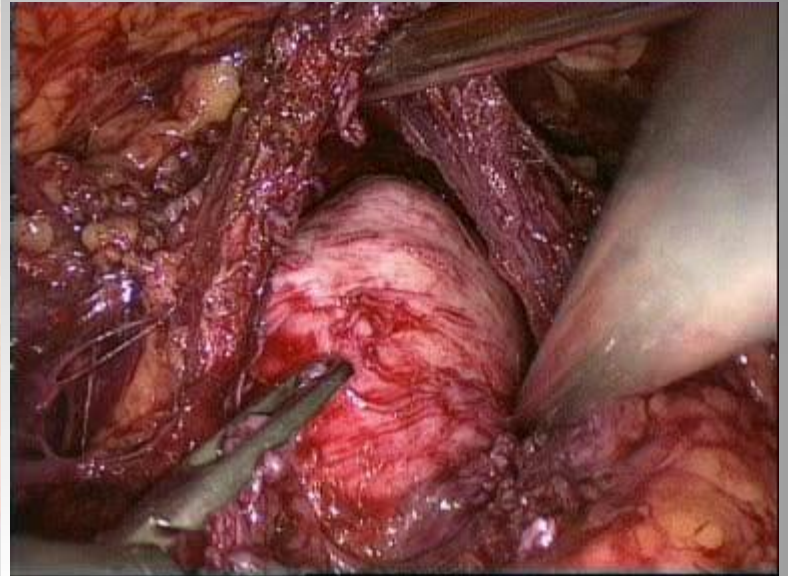
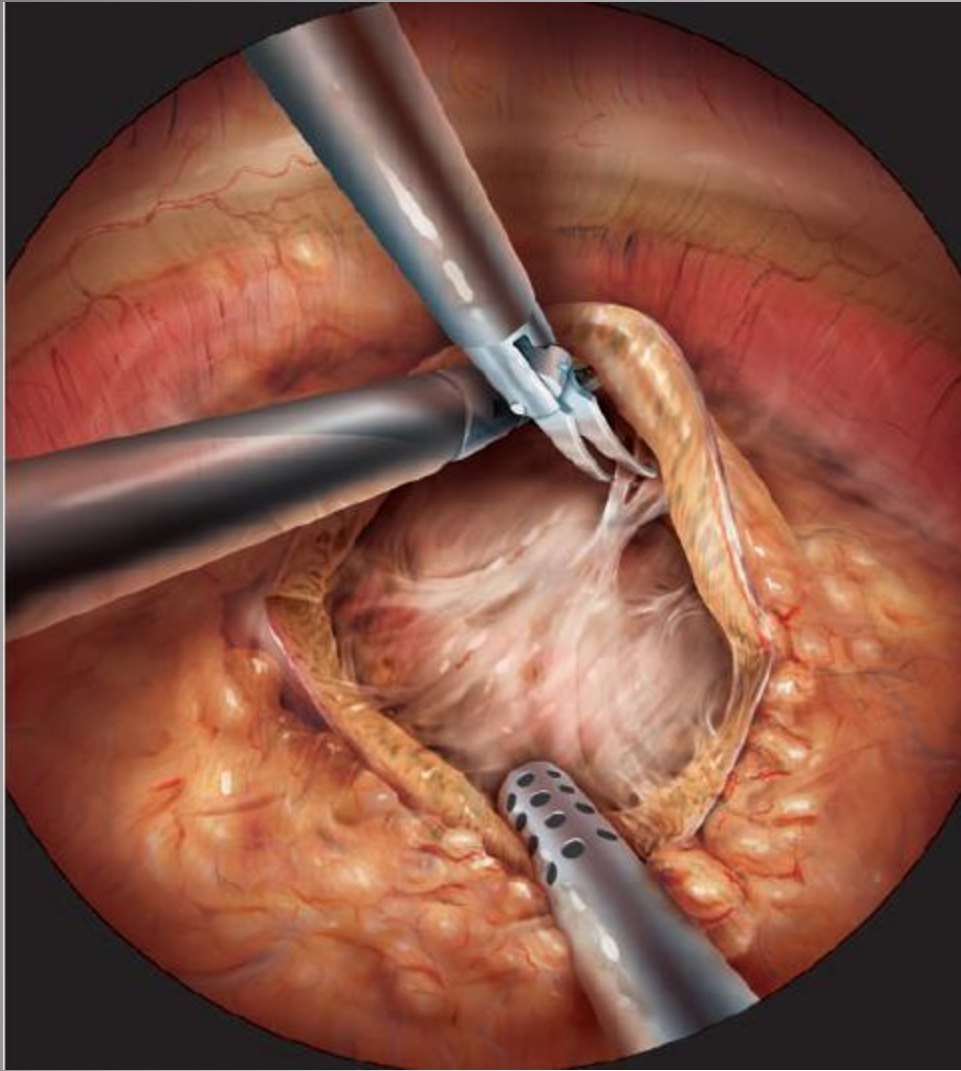


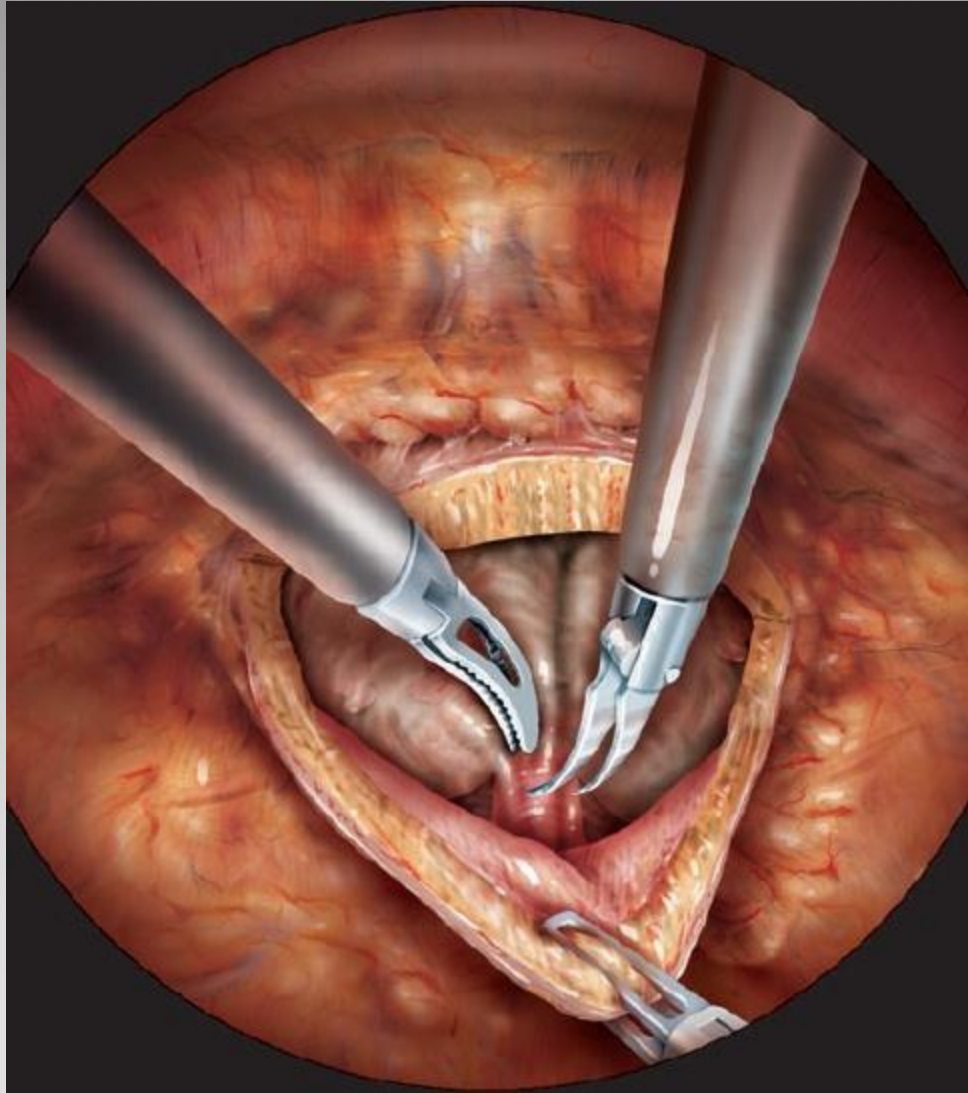


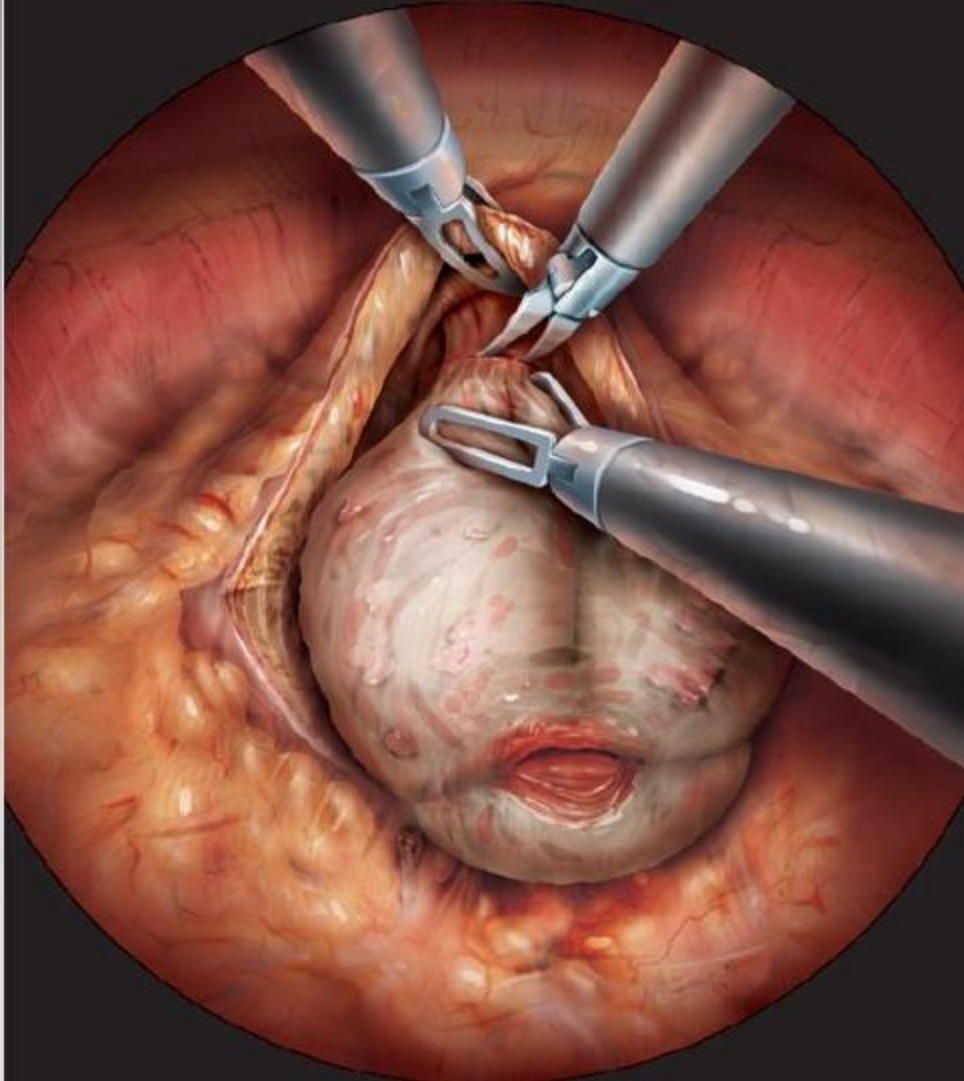


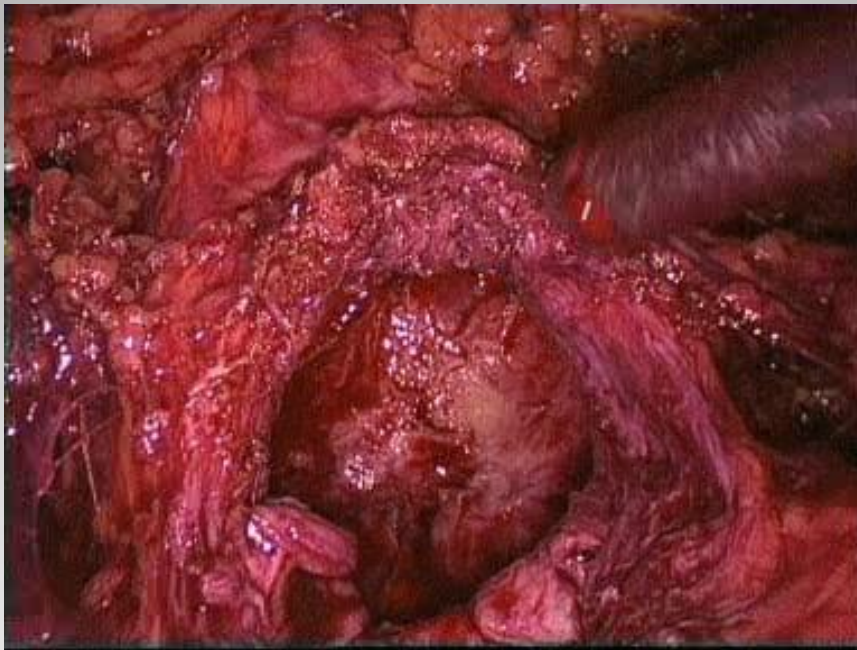


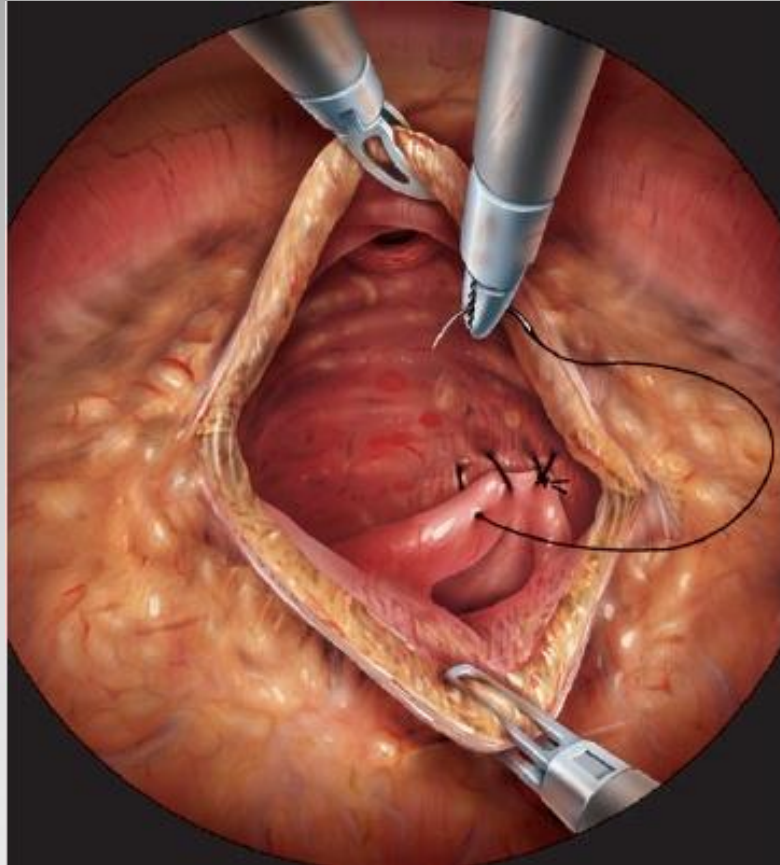


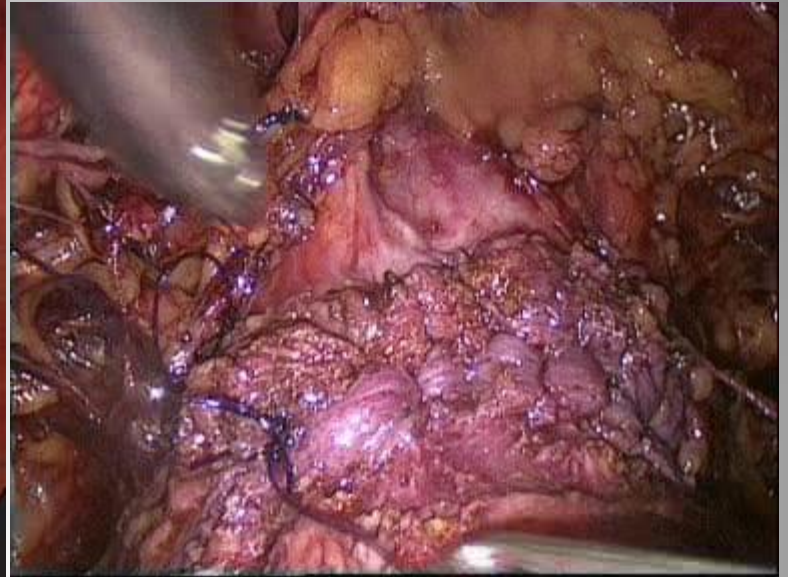
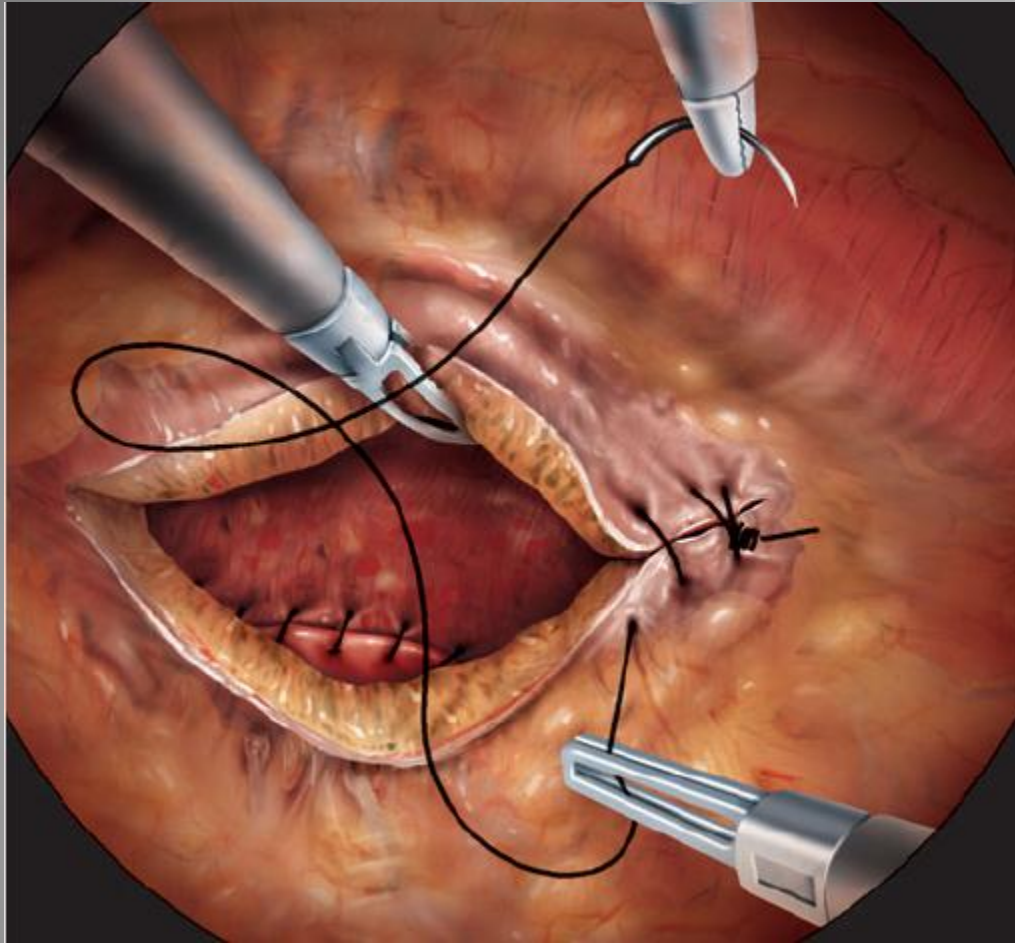


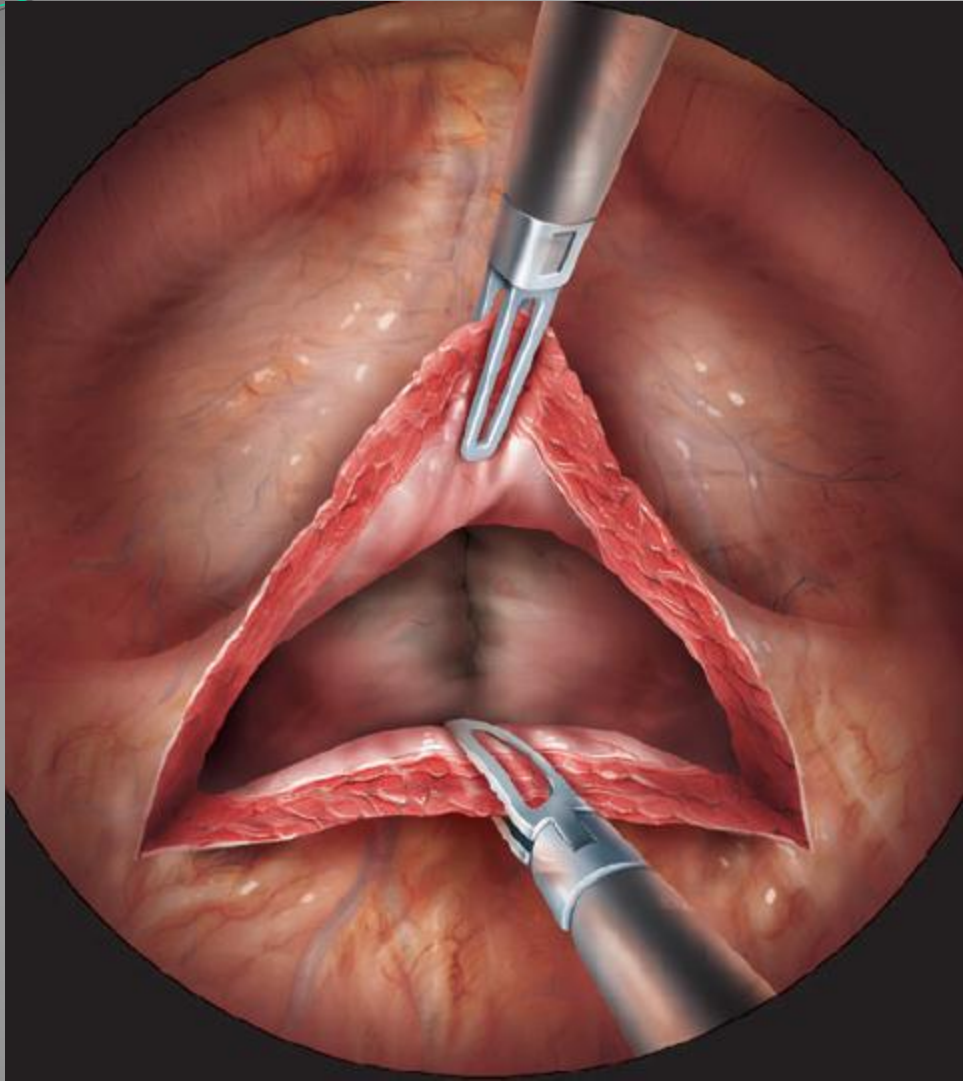












- More operative space
- No necessity of developing the extraperitoneal space → saving of time
- Repeats the steps of the open transvesical approach

But...

- Risks for bowel complications
- (ileus, peritonitis, bowel injuries)
- urine leak from the bladder suture (that could determine a urine peritonitis)
- necessity of a steep Trendelenburg position

Indications for LSP

- Large prostates
- BPH accompanied by bladder diverticula or bladder stones
- difficulty to insert the urethroscope because of a serious urethral stricture
- difficulty in assuming the lithotomy position (for example in hip anchilosis)

Advantages

- 1) Better control of bleeding due to magnified view and gas pressure acting in a closed space.
- 2) Less morbidity and pain with respect to OP because of smaller incisions and absence of retractor use.
- 3) Smaller surgical incisions → better cosmesis / less risk of wound infections / less use of analgesics → shorter hospital stay and earlier return to normal activities.

Drawbacks

- 1) Prolonged operative duration.
- 2) Absence of haptics/force feedback (balanced however by the better view offered by the laparoscope).
- 3) Learning curve.
- 4) A big adenoma would require a big incision for its removal → morcellation??
- 5) Costs???

Laparoscopic treatment of benign prostatic hyperplasia (BPH): overview of current techniques. Do our patients need it?

Journal:	<i>BJU International</i>
Manuscript ID:	BJU-2011-0668
Manuscript Type:	Letter to the Editor
Date Submitted by the Author:	03-May-2011
Complete List of Authors:	PROTOGEROU, VASSILIS; IASO GENERAL, UROLOGICAL
keywords:	minimally invasive, BPH, laparoscopic prostatectomy, open prostatectomy
Abstract:	Laparoscopic prostatectomy for BPH is a minimally invasive technique for BPH. Needs well trained urologists and is considerable more difficult for the alterantive options for treating BPH.

Dear Sirs,

We read your interesting article “Laparoscopic treatment of benign prostatic hyperplasia (BPH): overview of current techniques” published at BJU Int 2011:107, 1168-1182. We understand that since it is a description-only paper there are no results regarding the outcome of the operation (complication rate, postoperative flow measurements etc). Anyway, we would be interest to see the results from your technique.

We have some comments regarding this technique. First of all it is a challenging operation as you also mentioned and maybe cannot be perform by all the urologists. Of course the complete removal of large adenomas seems promising for better functional results comparing to other minimal invasive techniques (like the greenlight laser) that might not be able to remove the whole of the adenoma. Having that in mind we believe that laparoscopic procedure should be compared to open prostatectomies performed for big prostates and not to TUR operations.

Second, the key point of this operation is to make an opening to the body surface so that we can have access to the prostate either transvesical or directly to the capsule. After that, enucleation is performed. It is interesting to notice that finger assisted enucleation is encouraged as it is quicker. We think that laparoscopic techniques for this operation is “too much”. It is much easier to make a small incision at the skin and then open the bladder and perform finger enucleation of the prostate. Laparoscopic operations are more expensive and usually need more operation time and in order to justify their existence they should have significant advantages comparing to the standard open procedures.

We believe that simple techniques are preferable providing that they have good results. We have made a small modification in the standard transvesical prostatectomy¹ and we performed it through a small incision (3 cm) in a short period of time, with short hospital staying (3 days) and good functional results. It is a much simple operation and although experience is needed it can be more easily learned and performed by more urologists than the laparoscopic prostatectomy.

The technique described in your paper is an excellent technique performed by experienced and well trained urologist. This is what makes it a very interesting alternative but it is also its main drawback. We believe that operations that stand the test of time are those that are simple and effective. Evolution should focus not only to operations that “can be performed” as a proof to our technical evolution and superiority compared to the older years of urology but also to those who are simple and equally, if not more, effective.

Challenging operation...

Is too much...

More expensive...

More operative time...

No results...



Reply

Aim of our manuscript was to provide a detailed description of the surgical technique of laparoscopic adenomectomy and not to prove its superiority or even lack of inferiority when compared to the standard open procedure.

EAU GUIDELINES

- Open prostatectomy is the most effective and durable procedure for the treatment of BPH-LUTS for men with prostates >80-100 mL in the absence of Holmium laser.
- In the same guidelines, however, open simple prostatectomy is also considered the most invasive surgical treatment of BPH.

- Surgeons are responsible to find, for each specific surgical modality, its right indication and use, based on:
 - technical feasibility,
 - safety,
 - results
 - cost-effectiveness,
 - man-powered related issues that are characteristic of each medical centre (i.e laparoscopic skills?).

Feasibility

- The feasibility of LSP has been already demonstrated in several manuscripts for large glands (volume higher than 80ml).
- We acknowledge that a surgical procedure that is technically feasible should not necessarily be routinely implemented.
- However, the first between the aforementioned parameters is satisfied.

Safety

- Current evidence suggests that LSP when compared to OSP shows a significant advantage in terms of **blood loss**.
- **Complication rate** is also acceptable
- **Postoperative pain** seems to be lower (due to the absence of retractor use)
- Others suggest a reduced risk of **surgical infections** due to smaller incisions
- Consequently safety requirement is satisfied and the complication profile is respected.

Laparoscopic Simple Prostatectomy

Author	N° patients	Prostate volume (mL)	Operative time	Blood loss	Hospital stay (d)	Catheter (d)	Transfusion
Okday 2011	16	147 (80-200)	133 (75-210)	134 (50-300)	3.9		1
van Velthoven 2004	18	95.1±28.1	145±32.5	192±178	5.9±5.5	3±2.4	
Mariano 2006	60	144.5±41.74	138.48±23.38	330.98±149.52			NO
Zhou 2009	45	78.2±16.3 (enucleated)	105.4±26.5				3
Sotelo 2005	17	93	156 (85-380)	516 (100-2500)	2	6.3 (3-7)	5
Ramón de Fata Chillón F 2010	10		112.5 (80-135)		3.5 (2-5)	7 (3-21)	
Baumert 2006	30	122±39	115±30	367±363	5.1±1.8	4±1.7	
McCullough 2009	96		95.1±32.9		6.3±1.9	5.2±2.6	
Yun 2010	11	109.3	191.9	390.9			
Castillo 2011	59	108.5 (75-150)	123 (90-180)	415 (50-1500)	3.5 (2-7)	4.2 (3-7)	4
Chlosta 2011	66	85.5 (enucleated)	55	200	5.2	7.3	NO
*Porpiglia 2006 finger-assisted	20	69.52±21.5 (enucleated)	107.25±34.9	411.6±419	7.8±4.1	6.3±3.7	

Functional outcome

- Regarding the functional outcome, laparoscopic adenomectomy has produced equivalent results with the open counterpart, even after a long follow-up (in terms of IPSS score, Q_{max} , post-void residue volume).
- The simple fact, however, that it has not demonstrated any disadvantages when compared to the gold-standard open approach is an aspect that according to the same authors, already favors laparoscopy, considering its miniminvasive character.

Functional outcomes of LSP

Author	IPSS pre	IPSS post	Qmax pre	Qmax post	PVR pre	PVR post
Oktay 2011	25.4	9.2	4	24.7		
Zhou 2009	25.5	6.2	6.1	18.7		
Sotelo 2005	24.5 (AUASS)	9.9 (AUASS)	7	22.8		
Baumert 2006	22.4	5.7	8.1	24.6		
Yun 2010	26.86	4.2	4.5	15.5	106	24.1
Chlosta 2011	29.5	5.8	5.8	18.5		
Porpiglia 2006	20.9	10	8.8	27.22		

Costs

- Laparoscopic operations are generally considered more expensive when compared to the open counterpart. In our case this is partially true.
- The cost of laparoscopic armamentarium is amortized by
 - Multiple uses
 - Multiuse materials
 - Shorter hospital stay
- We should remember, however, that costs between procedures can be hardly compared due to different national healthcare system differences, management strategy of the surgical team, surgical tradition, hospital strategies, reimbursement policies ecc.

Difficulty

- We acknowledge that laparoscopic experience is needed in order to overcome the learning curve and avoid complications.
- However, we are unaware of studies that report the learning curve of open simple prostatectomy.
- We think that the clinical practice is distributed in function of competence: in a department that routinely uses laparoscopy the procedure is performed without great difficulties and in reasonable time.
- Digital assistance can always be used, reducing further the risk of wrong dissection planes as well as surgical time.

LSP vs OSP

Procedural type	Study	N° of pts	Operative time	EBL	Irrigation time (d)	Catheterization	Hospital stay	Transfusion rates	Comments
LSP vs OSP	Baumert 2006	30 vs 30	115±30 vs 54±19	367±363 vs 643±647	0.33±0.7 vs 4±3.7	4±1.7 vs 6.8±4.7	5.1±1.8 vs 8±4.8	3.33% vs 16.7% (ns)	No difference in incidence and severity of complications and in functional outcomes
LSP vs OSP	McCullough 2009	96 vs 184	95.1±32.9 vs 54.7± 19.7			5.2±2.6 vs 6.4±2.9	6.3 ±1.9 v 7.7 ± 2.4		Similar bleeding rates Of the 19 urinary tract infections observed between the two groups, 18 occurred in OSP as well as all 9 cases of urinary sepsis.
LSP vs OSP	Porpiglia 2006	20 vs 20	107.25±34.9 vs 95.5±22.5	411.6±419 vs 687.5±298.6		6.3±3.7 Vs 5.6±1.1	7.8±4.1 Vs 7±1.6		1 patient of LSP re-operated for bleeding

Quindi...

- Routine implementation of a laparoscopic variant of a procedure that is well-established is difficult.
- It is not our aim to demonstrate that laparoscopic adenomectomy should be performed for large adenomas instead of the open one;
- however, we can affirm that the laparoscopic approach is a valid alternative in the urologic armamentarium for the treatment of large adenomas.
- LSP not sostitutive BUT alternative to OSP

Do our patients need it?

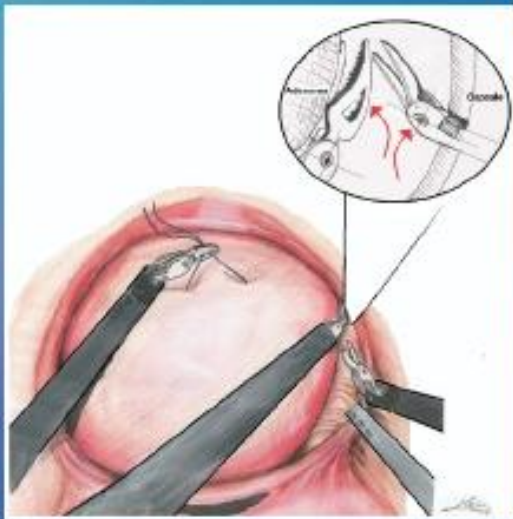
- ...we can reply that patients –more and more educated and informed- need the best; it is upon the surgeon's experience and preference to choose the approach that -in his hands- will provide the best results for a given patient with his given disease.

Laparoscopic Simple Prostatectomy- which candidate?

- ? Reserved for centers WITHOUT 80-100W Holmium laser but WITH advanced laparoscopic skill set



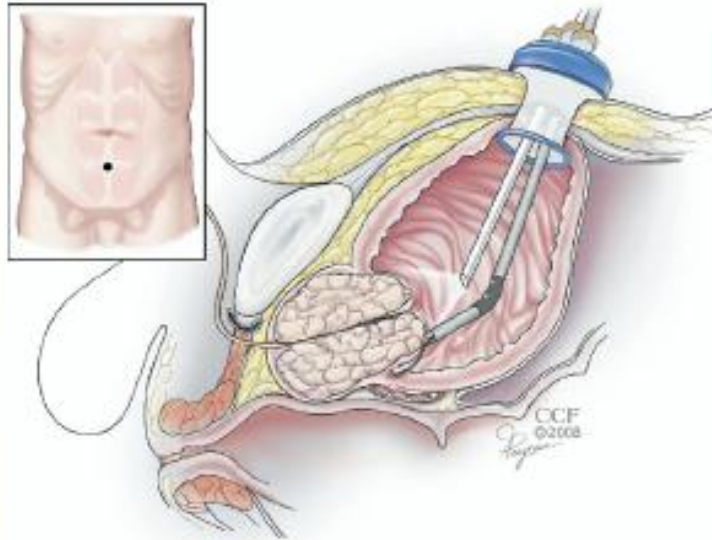
Robotic simple prostatectomy



7 patients	Av	Range	SD
Age	64.66	56-72	5.35
Operative time (mins)	195	120-300	84.32
Blood loss (ml)	381.66	60-800	337.18
Catheterization (days)	7.5	6-10	1.64
Drainage (days)	3.5	3-4	0.54
Hospitalization (days)	1.33	1-2	0.51
(USTR) prostate vol (gm)	77.66	40-106	22.98

Sotelo R et al. J Urol 2008;179:513-5.

Single-port transvesical SPx

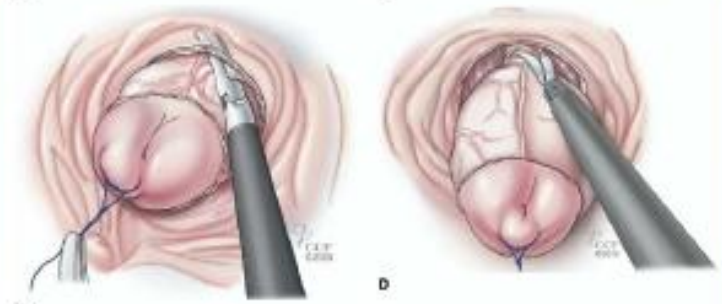


A



A

B



C

D



E