BENİGN PROSTAT HİPERPLAZİSİNDE CERRAHİ TEDAVİLER

DOÇ.DR.MURAT BİNBAY

S.B.Üİ HASEKİ EĞİTİM ARAŞTIRMA HASTANESİ
ÜROLOJİ KLİNİĞİ EĞİTİM SORUMLUSU
S.B.Ü MEHMET AKİF ERSOY GÖĞÜS KALP VE DAMAR CERRAHİSİ HASTANESİ

Cerrahi Tedaviler

- Transüretral Prostatektomi (TUR-P monopolar/bipolar) / Transüretral Prostat İnsizyonu (TUİP)
- Açık Prostatektomi
- Transüretral Mikrodalga Tedavisi(TUMT)
- Transüretral Prostat İğne Ablasyonu(TUNA)
- Lazer Tedavileri
- Prostatik Stentler
- Prostatik Üretral Lift
- İntraprostatik Enjeksiyonlar

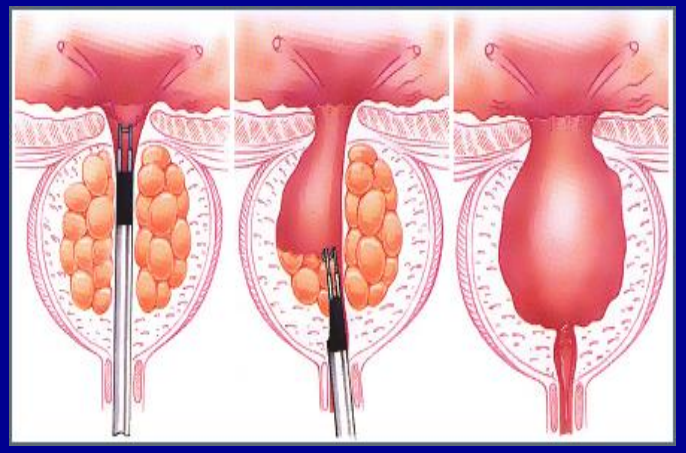
Cerrahiden beklentimiz

- Semptomatik rahatlama
  - Rahat idrar yapma
  - Mesanede idrar kalmaması
- Ameliyat sonrası dönemde cinsel fonksiyonların korunması
- Operasyon sonrası idrar kaçırmama
- Hastaneden erken taburcu
- Hızlı iyileşme dönemi
- Düşük maliyet
- Ek işlemlere gerek olmaması

Cerrahi Endikasyonlar

- Kronik üriner retansiyon
- Renal yetmezlik
- Tekrarlayan İYE
- Mesane taşı
- İlaç tedavisine yanıtsız hematüri
- Medikal tedaviye yanıtsızlık (rölatif endikasyon)

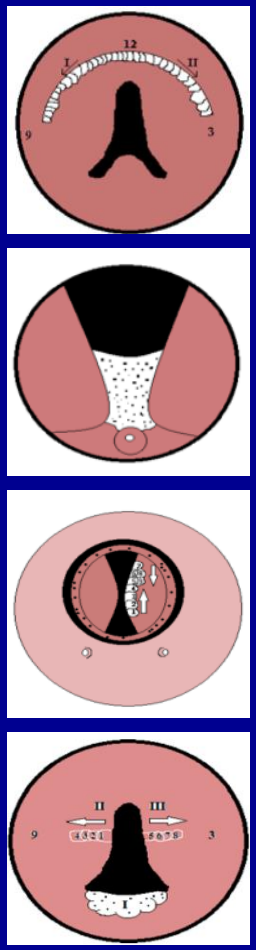
TUR-P



- **1932 J. F. McCarthy: ilk modern rezektoskop ile**
- **Yıllar geçtikçe TUR P giden hasta sayısı azalmakta**
  - **(350.000→200.000/yıl)**
- **Özellikle minimal semptomları olan hastalarda gözlem, semptomatik hastalarda ise medikal tedavi ve minimal invaziv tedaviye yönelim mevcut.**
- **TUR-P halen BPH nın cerrahi tedavisinde altın standart yöntem**

TUR-P teknikleri

- Nesbit
- Mauermayer
- Barnes
- Alcocks ve flocks



Monopolar TUR-P

- <80 ml prostatlarda
  - (cerrahın tecrübesi üst sınırı değiştirebilir)
- Genel/ spinal anestezi
- İlk önce median lobdan başlanır.
- Optimal süre: 60 dak
  - >90 dak komplıkasyon oranı artar.
- Non-hemolitik sıvılar kullanılır.
  - TUR sendromu!!!

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Collaborative Review – Benign Prostatic Enlargement

Meta-analysis of Functional Outcomes and Complications Following Transurethral Procedures for Lower Urinary Tract Symptoms Resulting from Benign Prostatic Enlargement

Sascha A. Ahyai [a,], Peter Gilling [b], Steven A. Kaplan [c], Rainer M. Kuntz [d], Stephan Madersbacher [e], Francesco Montorsi [f], Mark J. Speakman [g], Christian G. Stief [h]*

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[b] *Department of Urology, Tauranga Hospital, Tauranga, New Zealand*
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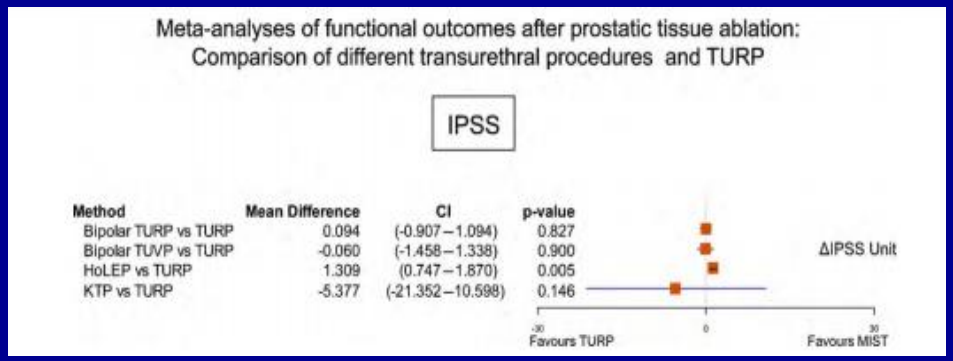
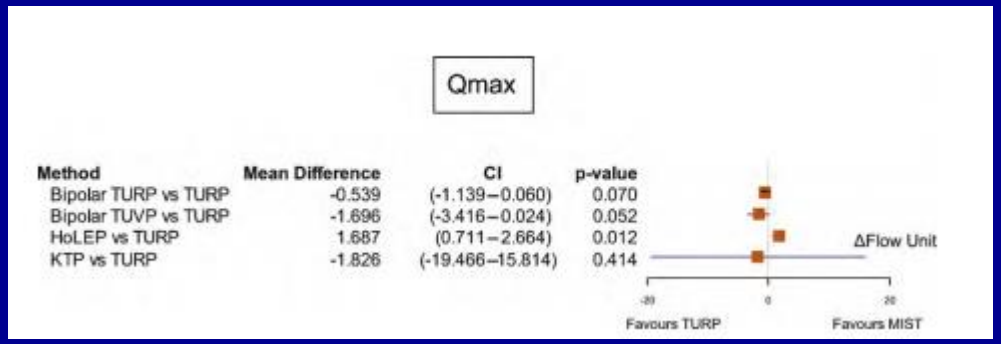
[h] *Department of Urology, Ludwig-Maximillians-University, University-Hospital-Munich-Großhadern, Munich, Germany*

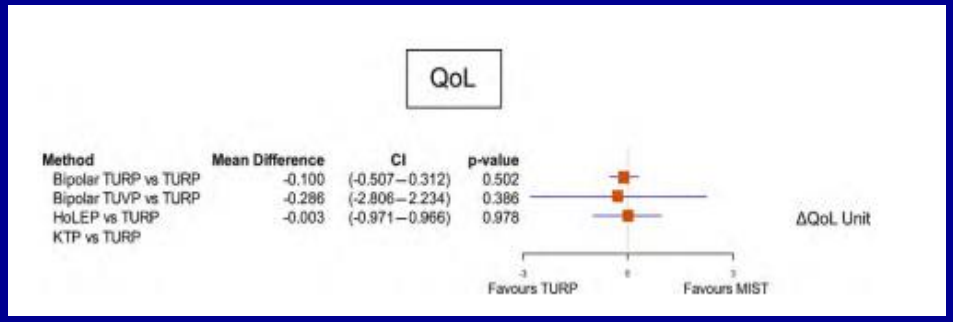
- Q_{max}: %162
- IPSS: %70
- QoL skoru: %69
- PMR: %77



Holep de anlamlı düzelme

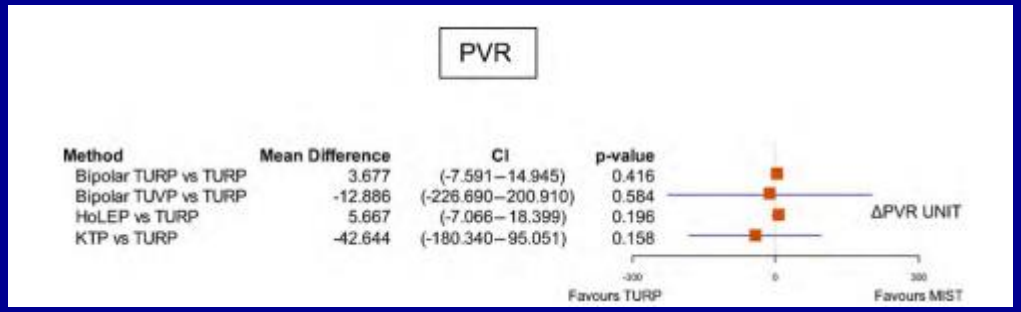
Holep de anlamlı artma



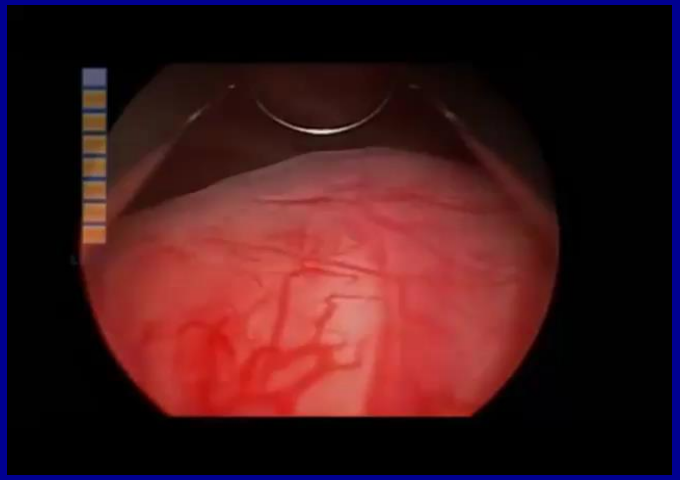


benzer

benzer



Bipolar TUR-P



- Konvansiyonel TUR'dan farkı: bipolar enerji
- Elektrik enerjisi wire loop ve şaft veya loopun paralel iki teli arasında yönlenir.
- Çevre doku hasarı daha az
- En önemli avantajı izotonik salin kullanımı
  - TUR sendromu ve dilüsyonel hiponatremi eliminasyonu

Etkinlik

- **Daha düzgün kesme (smoother)**
- **TUR send. eliminasyonu**
- **Daha az doku kömürleşme**
- **Daha az kanama**

Botto, J Endourol 2001,
Eaton, BJU Int 2002
Patel, J Endourol 2004
Dincel, J Endourol 2004
Gillerean, J Endourol 2006

- **En az bir yıllık takip içeren, 5 randomize klinik çalışma**

  - **Bipolar TUR darlık riskini arttırıyor**

    Seckiner et al, Urol Int 2006
    Ho et al, Eur Urol 2007
    Nuhoglu et al, Int J Urol 2006

  - **Bipolar ve monopolar arasında darlık oluşturma farklı değil**

    Michielsen et al, J Urol 2007
    Autorino et al, BJU Int 2007

Results from an international multicentre double-blind randomized controlled trial on the perioperative efficacy and safety of bipolar vs monopolar transurethral resection of the prostate

BJUI
BJU INTERNATIONAL

Charalampos Mamoulakis[*,†], Andreas Skolarikos[‡], Michael Schulze[§], Cesare M. Scoffone[¶], Jens J. Rassweiler[§], Gerasimos Alivizatos[‡], Roberto M. Scarpa[¶] and Jean J.M.C.H. de la Rosette[*]

*Department of Urology, Academic Medical Centre, University of Amsterdam, Amsterdam, The Netherlands, †Department of Urology, University Hospital of Heraklion, University of Crete Medical School, Heraklion, Crete, ‡Second Department of Urology, Sismanoglio Hospital, University of Athens Medical School, Athens, Greece, §Department of Urology, SLK Kliniken Heilbronn, University of Heidelberg, Heilbronn, Germany, and ¶Department of Urology, San Luigi Hospital, University of Turin, Orbassano, Turin, Italy

TABLE 6 Complications during the perioperative period

	M-TURP	B-TURP	
Number of patients	138	141	*P*
Febrile UTI (%)	2 (1.4)	1 (0.7)	0.620
Clot retention (%)	7 (5.1)	9 (6.4)	0.831
Blood transfusion (%)	4 (2.9)	9 (6.4)	0.273
TUR-syndrome (%)	1 (0.7)	0 (0.0)	0.495
AUR (%)	8 (5.8)	5 (3.5)	0.543
Urethral strictures (%)	5 (3.6)	2 (1.4)	0.279
Other (%)*	4 (2.9)	1 (0.7)	–
Total number of complications†	31	27	

*Cerebral microangiopathy decompensation (dementia), ischemic colitis, pulmonary embolism, myocardial infarction (death) (see Table 7). †Based on the modified Clavien classification system the total number of complications is M-TURP: n = 29, B-TURP: n = 26. This is because three cases with AUR were considered failures rather than complications (patients failed to void finally; M-TURP: n = 2, B-TURP: n = 1; see Table 7).

CONCLUSIONS

- In contrast to the previous available evidence, no clinical advantage for B-TURP was shown. Perioperative efficacy, safety and secondary outcomes were comparable between study arms.
- The potentially improved safety of B-TURP that is attributed to the elimination of dilutional hyponatraemia risk, a risk still present with M-TURP, did not translate into a significant clinical benefit in experienced hands.

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European Association of Urology

Review – Benign Prostatic Hyperplasia

Bipolar versus Monopolar Transurethral Resection of the Prostate: A Systematic Review and Meta-analysis of Randomized Controlled Trials

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[a] *Department of Urology, Academic Medical Center, University of Amsterdam, Amsterdam, The Netherlands*
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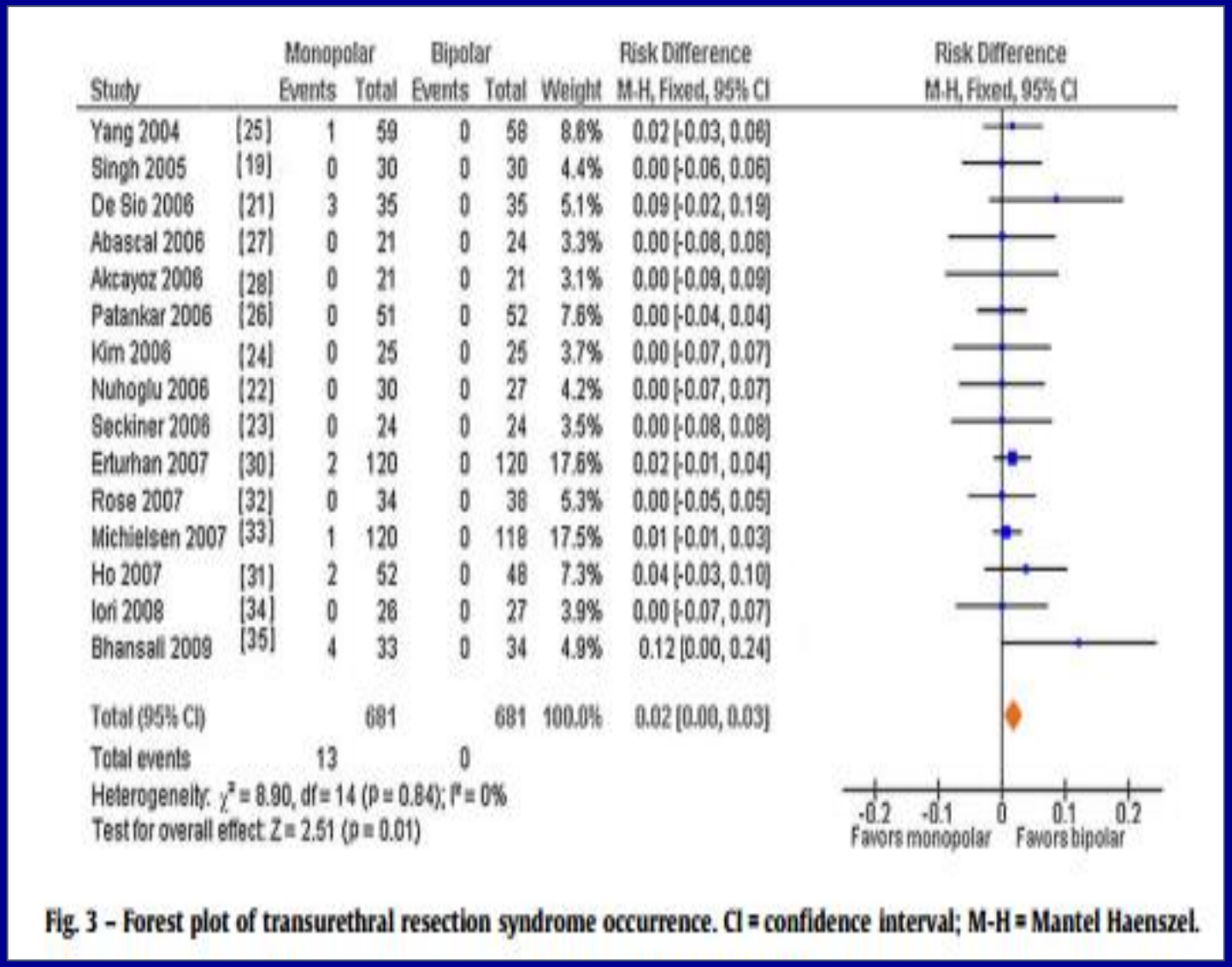


Fig. 3 – Forest plot of transurethral resection syndrome occurrence. CI = confidence interval; M-H = Mantel Haenszel.

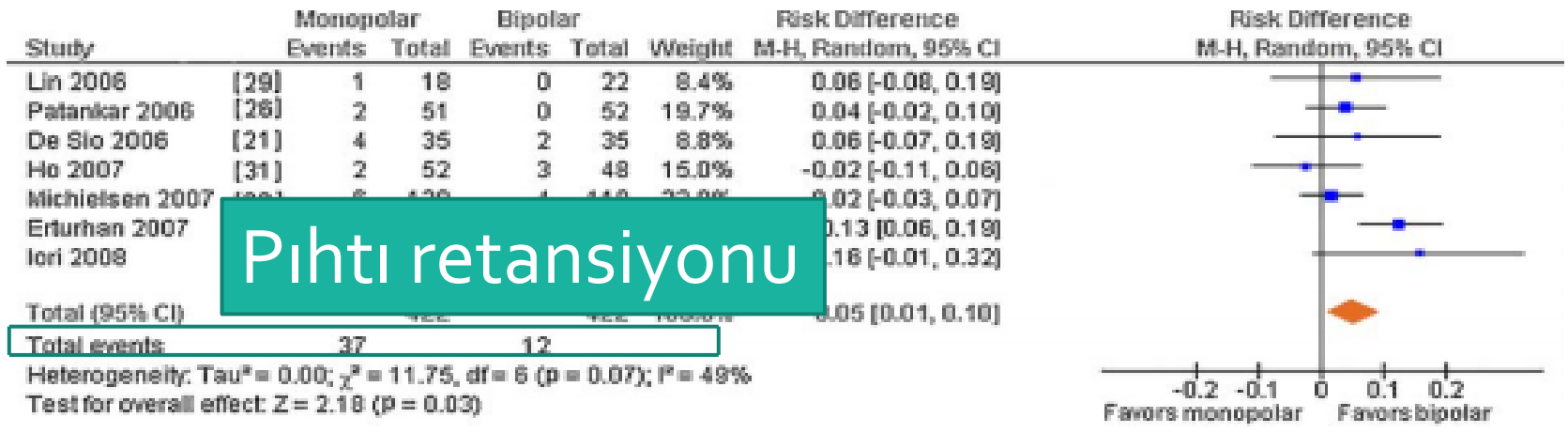


Fig. 4 – Forest plot of clot retention occurrence. CI = confidence interval; M-H = Mantel Haenszel.

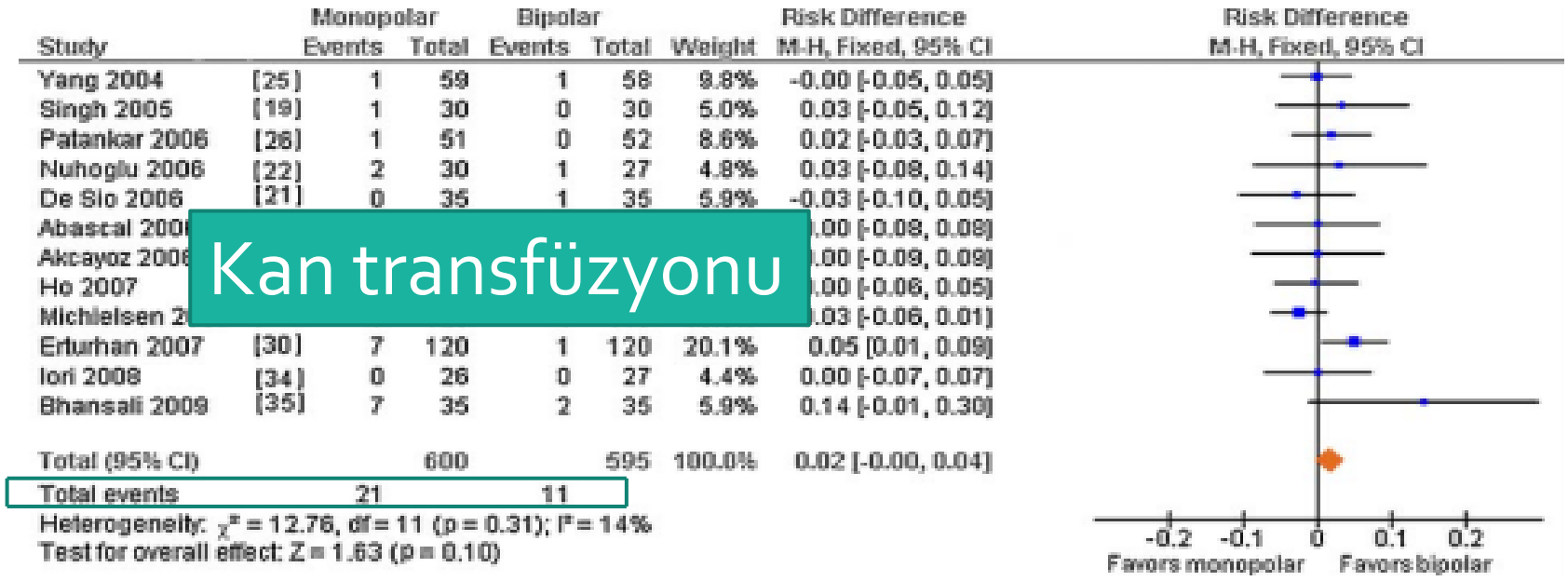
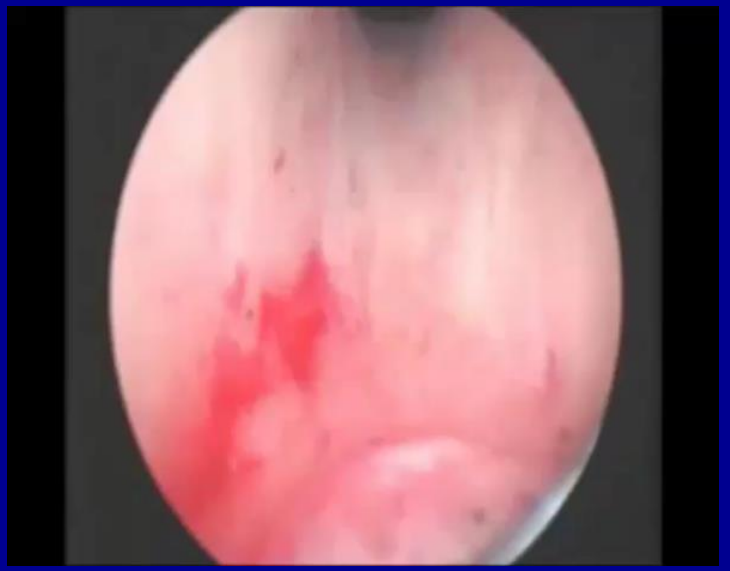


Fig. 5 – Forest plot of cases requiring blood transfusion. CI = confidence interval; M-H = Mantel Haenszel.

TUIP



- <30 cc prostat
- Median lobu olmayan hastalarda

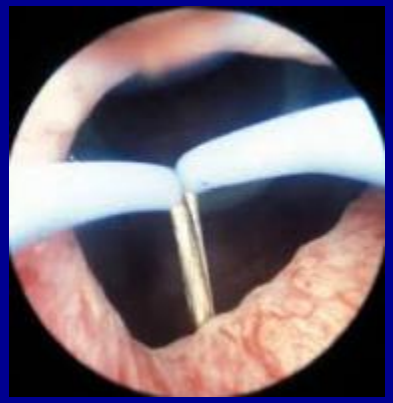
- Mesane boynundan verumontanuma saat 5 ve 7 hizalarından (2 adet) prostat kapsülüne uzanan kesi yapılır.
  - Ayrıca saat 6 hizasından yapılan tek derin insizyonda mevcuttur.

- Doku çıkarılmaz
- TUR-P ile aynı endikasyonlarda yapılır.
- Operasyon süresi daha kısa olup empotans ve retrograd ejakülasyon oranı daha düşüktür.
- Seksüel olarak aktif genç erkeklerin tedavisinde ideal tedavi seçeneğidir.

TUR P Komplikasyonları

- **İntraoperatif**
  - Kanama %2.5
  - TUR sendromu %1
  - Ekstravazasyon % 0.9-2
- **Erken postoperatif**
  - İşeme zorluğu %4.5
  - Transfüzyon gerektiren kanama %2
  - Üriner enfeksiyon %4.1
  - Epididimit % 0.1
- **Geç Komplikasyonlar**
  - Üretra darlığı %4.1
  - Mesane boynu darlığı %4.7
  - Üriner inkontinans %2.2
  - Erektil disfonksiyon %6.5
  - Retrograd ejakulasyon %65.4
  - Re-operasyon %7.2

EAU Guidelines , 2016



Recommendations	LE	GR
M-TURP is the current surgical standard procedure for men with prostate sizes of 30-80 mL and bothersome moderate-to-severe LUTS secondary of BPO. M-TURP provides subjective and objective improvement rates superior to medical or minimally invasive treatments.	1a	A
The morbidity of M-TURP is higher than for drugs or other minimally invasive procedures.	1a	A
B-TURP achieves short- and mid-term results comparable with M-TURP.	1a	A
B-TURP has a more favourable peri-operative safety profile compared with M-TURP.	1a	A
TUIP is the surgical therapy of choice for men with prostate sizes < 30 mL, without a middle lobe, and bothersome moderate-to-severe LUTS secondary to BPO.	1a	A

AÇIK PROSTATEKTOMİ

ENDİKASYONLAR

- Prostat >80-100 cc hacimli
- Büyük mesane divertikülü ve/veya taşları
- Dorsal litotomi pozisyonunun ortopedik olarak mümkün olmaması
- Ciddi üretra darlığı ya da geçirilmiş hipospadiyas cerrahisi
- İnguinal herni varlığı

KONTRAENDİKASYONLAR

- Küçük fibröz prostat
- Prostat kanseri varlığı
- Prostata ulaşımı engelleyen daha önce geçirilmiş pelvik cerrahi

RESEARCH ARTICLE

Endoscopic Enucleation versus Open Prostatectomy for Treating Large Benign Prostatic Hyperplasia: A Meta-Analysis of Randomized Controlled Trials

Maoyin Li, Jianguang Qiu, Qi Hou, Dejuan Wang, Wentao Huang, Cheng Hu, Ke Li, Xin Gao

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Table 3. Summary of perioperative outcomes

Outcome	No. of studies	Trial size EP/OP	WMD(95% CI)	P value	Heterogeneity		Favors
					I^2	P value	
Operative time, min	/	/	/	/	/	/	/
HoLEP vs OP	6, 21, 35	133/127	32.15 [8.87, 55.42]*	0.01	93%	0.00	OP
BEEP vs OP	22–25	240/235	5.21 [-8.94, 19.35]*	0.47	93%	0.00	None
EP vs OP total	6, 21–25, 35	373/362	16.21 [3.72, 28.70]*	0.01	94%	0.00	OP
Hemoglobin decrease, g/dL	/	/	/	/	/	/	/
HoLEP vs OP	6, 35	101/99	-0.95 [-1.35, -0.56]*	0.00	0%	0.75	HoLEP
BEEP vs OP	22–25	240/235	-1.22 [-2.12, -0.33]*	0.01	97%	0.00	BEEP
EP vs OP total	6, 22–25, 35	341/334	-1.14 [-1.81, -0.47]*	0.00	96%	0.00	EP
Resected prostate weight, g	/	/	/	/	/	/	/
HoLEP vs OP	6, 21, 35	133/127	-14.17 [-28.33,-0.02]*	0.05	70%	0.03	None
BEEP vs OP	22–25	240/235	-8.09 [-12.90,-3.28]*	0.00	0%	0.91	OP
EP vs OP total	6, 21–25, 35	373/362	-9.63 [-14.46, -4.81]*	0.00	24%	0.24	OP
Catheterization, days	/	/	/	/	/	/	/
HoLEP vs OP	6, 21, 35	133/127	-3.83 [-7.17, -0.48]*	0.02	99%	0.00	HoLEP
BEEP vs OP	22–25	240/235	-3.78 [-4.51, -3.04]*	0.00	92%	0.00	BEEP
EP vs OP total	6, 21–25, 35	373/362	-3.80 [-5.11, -2.48]*	0.00	99%	0.00	EP
Hospital stay, days	/	/	/	/	/	/	/
HoLEP vs OP	6, 21, 35	133/127	-5.84 [-9.51, -2.17]*	0.00	99%	0.00	HoLEP
BEEP vs OP	22–25	240/235	-4.43 [-5.03, -3.84]*	0.00	85%	0.00	BEEP
EP vs OP total	6, 21–25, 35	373/362	-4.93 [-5.96, -3.89]*	0.00	97%	0.00	EP

*Using a random effect model;
EP = endoscopic enucleation of the prostate; OP = open prostatectomy; WMD = weighted mean difference; HoLEP = holmium laser enucleation of the prostate; BEEP = bipolar electrosurgical enucleation of the prostate.

doi:10.1371/journal.pone.0121265.t003

Perioperativ sonuçlarına baktığımızda:

- Op zamanı, çıkarılan prostat hacmi açık prostatektomi lehine iken
- Hgb düşmesi , kateterizasyon süresi , hastanede kalış endoskopik enükleasyon lehine

Table 4. Summary of postoperative outcomes

Outcome	No. of studies	Trial size EP/OP	WMD(95% CI)	P value	Heterogeneity		Favors
					I^2	P value	
IPSS 3 mo HoLEP vs OP	6, 21, 35	133/127	0.29 [-0.36, 0.93]	0.38	30%	0.24	None
IPSS 3 mo BEEP vs OP	22, 23, 25	160/155	0.15 [-0.45, 0.75]	0.63	0%	0.84	None
IPSS 3 mo total	6, 21–23, 25, 35	293/282	0.21 [-0.23, 0.65]	0.34	0%	0.65	None
IPSS 6 mo HoLEP vs OP	35	60/60	-0.40 [-1.50, 0.70]	0.48	/	/	None
IPSS 6 mo BEEP vs OP	22, 24, 25	191/189	0.04 [-0.52, 0.59]	0.90	0%	0.95	None
IPSS 6 mo total	22, 24, 25, 35	251/249	-0.05 [-0.55, 0.44]	0.83	0%	0.90	None
IPSS 12 mo HoLEP vs OP	6, 35	101/99	0.00 [-0.64, 0.65]	0.99	0%	0.97	None
IPSS 12 mo BEEP vs OP	22–25	237/233	-0.15 [-0.50, 0.21]	0.42	0%	0.98	None
IPSS 12 mo total	6, 22–25, 35	338/332	-0.11 [-0.42, 0.20]	0.48	0%	1.00	None
Qmax 3 mo HoLEP vs OP	6, 21, 35	133/127	-0.35 [-2.51, 1.81]*	0.79	21%	0.28	None
Qmax 3 mo BEEP vs OP	22, 23, 25	160/155	-0.79 [-3.08, 1.68]*	0.56	77%	0.01	None
Qmax (mL/s) 3 mo total	6, 21–23, 25, 35	293/282	-0.55 [-2.28, 0.98]*	0.44	64%	0.02	None
Qmax 6 mo HoLEP vs OP	35	60/60	2.90 [0.67, 5.13]	0.01	/	/	HoLEP
Qmax 6 mo BEEP vs OP	22, 24, 25	191/189	0.45 [-0.88, 1.78]	0.51	0%	0.92	None
Qmax 6 mo total	22, 24, 25, 35	251/249	1.09 [-0.05, 2.24]	0.06	17%	0.31	None
Qmax 12 mo HoLEP vs OP	6, 35	101/99	-1.53 [-3.40, 0.34]	0.11	0%	0.62	None
Qmax 12 mo BEEP vs OP	22–25	237/233	-0.31 [-1.40, 0.78]	0.58	0%	0.47	None
Qmax 12 mo total	6, 22–25, 35	338/332	-0.62 [-1.56, 0.32]	0.20	0%	0.55	None
QoL 3 mo HoLEP vs OP	6,21	73/67	0.24 [-0.06, 0.53]*	0.11	71%	0.06	None
QoL 3 mo BEEP vs OP	22, 23, 25	160/155	-0.15 [-0.37, 0.07]*	0.19	0%	0.75	None
QoL3 mo total	6, 21–23, 25	233/222	0.05 [-0.18, 0.27]*	0.69	63%	0.03	None
QoL 6 mo HoLEP vs OP	/	/	/	/	/	/	/
QoL 6 mo BEEP vs OP	22, 24, 25	191/189	-0.07 [-0.32, 0.19]	0.60	0%	0.94	None
QoL 6 mo total	22, 24, 25	191/189	-0.07 [-0.32, 0.19]	0.60	0%	0.94	None
QoL 12 mo HoLEP vs OP	6	41/39	-0.07 [-0.46, 0.32]	0.72	/	/	None
QoL 12 mo BEEP vs OP	22–25	240/233	-0.08 [-0.25, 0.09]	0.38	0%	0.74	None
QoL 12 mo total	6, 22–25	281/272	-0.08 [-0.23, 0.08]	0.35	0%	0.87	None
PVR 3 mo HoLEP vs OP	21, 35	93/88	-0.75 [-10.93, 9.43]*	0.88	83%	0.02	None
PVR 3 mo BEEP vs OP	22, 23, 25	160/155	-0.46 [-2.27, 1.35]*	0.62	0%	0.89	None
PVR (mL) 3 mo total	21–23, 25, 35	252/243	-0.47 [-3.32, 2.38]*	0.75	35%	0.19	None
PVR 6 mo HoLEP vs OP	35	60/60	2.30 [-0.87, 5.47]	0.16	/	/	None
PVR 6 mo BEEP vs OP	22, 24, 25	191/189	-0.29 [-1.64, 1.07]	0.68	0%	0.99	None
PVR 6 mo total	22, 24, 25, 35	251/249	0.11 [-1.13, 1.36]	0.86	0%	0.54	None
PVR 12 mo HoLEP vs OP	35	60/60	-0.60 [-5.85, 4.65]	0.82	/	/	None
PVR 12 mo BEEP vs OP	22–25	237/233	-0.20 [-1.39, 0.99]	0.74	0%	0.61	None
PVR 12 mo total	22–25, 35	297/293	-0.22 [-1.38, 0.94]	0.71	0%	0.76	None
IIEF-5 3 mo EP vs OP	6, 22	84/79	0.47 [-0.64, 1.58]	0.41	0%	0.68	None
IIEF-5 6 mo EP vs OP	6, 22, 24	162/158	-0.44 [-2.03, 1.14]*	0.58	61%	0.08	None
IIEF-5 12 mo EP vs OP	6, 22, 24	161/157	1.00 [0.21, 1.78]	0.01	9%	0.33	EP
IIEF-5 24 mo EP vs OP	6, 24	121/119	0.89 [-0.01, 1.80]	0.05	0%	0.62	None

*Using a random effect model;
EP = endoscopic enucleation of the prostate; OP = open prostatectomy; WMD = weighted mean difference; HoLEP = holmium laser enucleation of the prostate; BEEP = bipolar electrosurgical enucleation of the prostate; IPSS = International Prostate Symptom Score; Qmax = maximum flow rate; QoL = quality of life; PVR = post-void residual urine volume; IIEF-5 = International Index of Erectile Function; mo = month.

doi:10.1371/journal.pone.0121265.t004

Postoperativ fonksıyonel sonuçlarına baktığımızda:

- Genel olarak IPSS, Q MAX, QOL , PVR, IIEF açısından anlamlı fark yok
- 6. aydaki Q MAX Holep de , 12. aydaki IIEF Endoskopik enükleasonda daha iyi

Table 5. Summary of complications.

Outcome	No. of studies	Trial size EP/OP	RR(95% CI)	P value	Heterogeneity		Favors
					I^2	P value	
Blood transfusion	/	/	/	/	/	/	/
HoLEP vs OP	6, 34	101/99	0.16 [0.04, 0.58]	0.01	0%	0.32	HoLEP
BEEP vs OP	22–25	240/235	0.27 [0.10, 0.72]	0.01	16%	0.31	BEEP
EP vs OP total	6, 22–25, 34	341/334	0.22 [0.10, 0.47]	0.00	0%	0.42	EP
Recatheterization	/	/	/	/	/	/	/
HoLEP vs OP	6, 34	101/99	1.56 [0.53, 4.62]	0.42	0%	0.44	None
BEEP vs OP	22–25	240/235	0.39 [0.12, 1.22]	0.10	17%	0.30	None
EP vs OP total	6, 22–25, 34	341/334	0.78 [0.37, 1.63]	0.51	25%	0.26	None
Urinary tract infection	/	/	/	/	/	/	/
HoLEP vs OP	/	/	/	/	/	/	/
BEEP vs OP	22–25	240/235	0.60 [0.31, 1.18]	0.14	0%	0.93	None
EP vs OP total	22–25	240/235	0.60 [0.31, 1.18]	0.14	0%	0.93	None
Urinary incontinence	/	/	/	/	/	/	/
HoLEP vs OP	6, 21	73/67	0.86 [0.53, 1.40]*	0.55	0%	0.40	None
BEEP vs OP	22–25	162/228	1.45 [0.19, 11.25]*	0.72	83%	0.00	None
EP vs OP total	6, 21–25	235/295	1.35 [0.42, 4.37]*	0.62	85%	0.00	None
BNC/urethral strictures	/	/	/	/	/	/	/
HoLEP vs OP	6, 21, 34	133/127	0.78 [0.24, 2.49]	0.67	0%	0.91	None
BEEP vs OP	22–25	234/228	0.69 [0.31, 1.54]	0.36	0%	0.47	None
EP vs OP total	6, 21–25, 34	367/355	0.71 [0.37, 1.39]	0.32	0%	0.84	None
Reintervention	/	/	/	/	/	/	/
HoLEP vs OP	6, 7, 21, 34	133/127	1.06 [0.49, 2.29]	0.89	0%	0.96	None
BEEP vs OP	22–25	234/228	0.71 [0.33, 1.53]	0.38	0%	0.46	None
EP vs OP total	6, 7, 21–25, 34	367/355	0.86 [0.50, 1.48]	0.58	0%	0.81	None

*Using a random effect model;

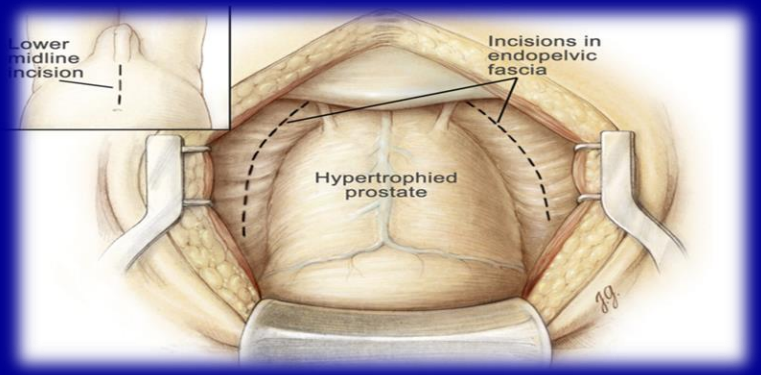
EP = endoscopic enucleation of the prostate; OP = open prostatectomy; RR = risk ratio; HoLEP = holmium laser enucleation of prostate; BEEP = bipolar electrosurgical enucleation of the prostate; BNC = bladder neck contracture.

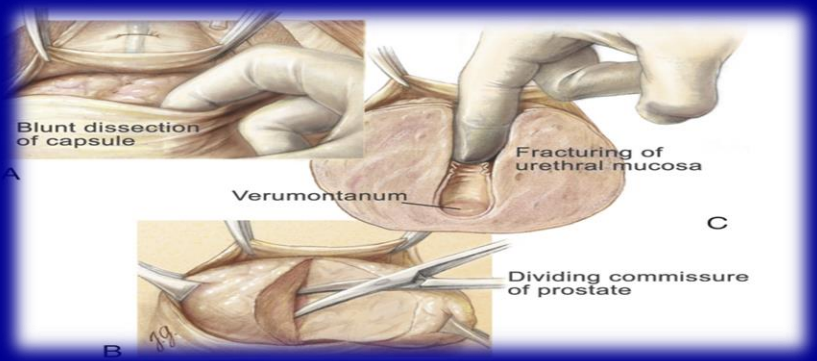
doi:10.1371/journal.pone.0121265.t005

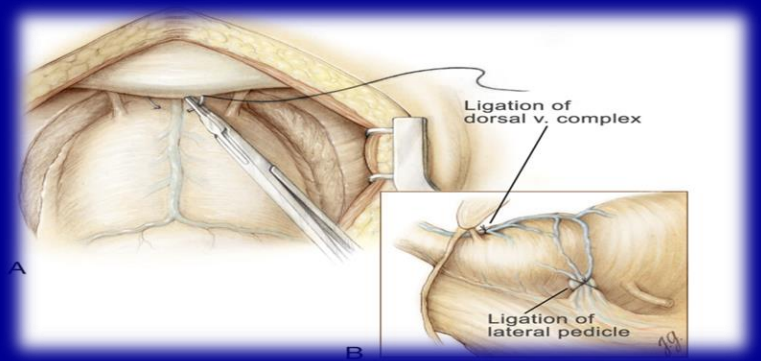
Komplikasyonlara baktığımızda:

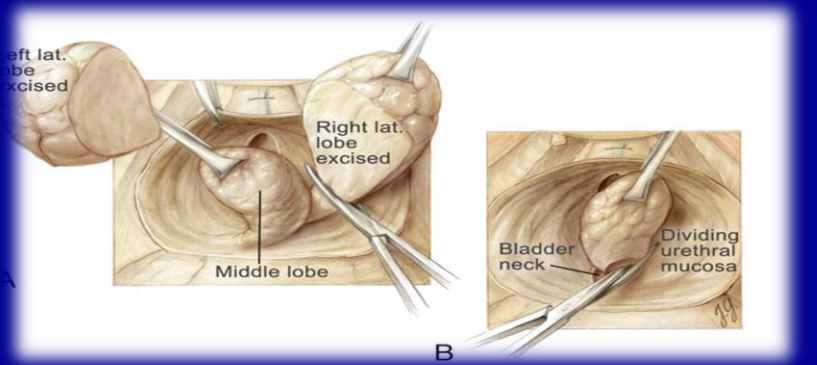
- Re kateterizasyon, ÜTİ, inkontinans, üretral darlık , tekrar müdahale benzer
- Kan transfüzyonu endoskopik enükleasyon lehine

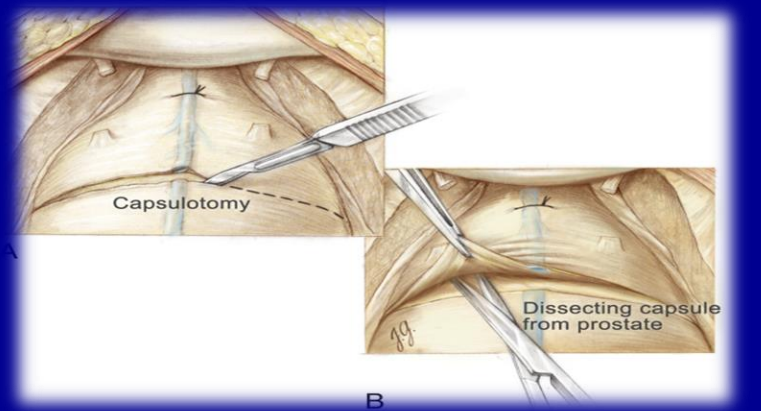
Retropubik Prostatektomi (Millin)

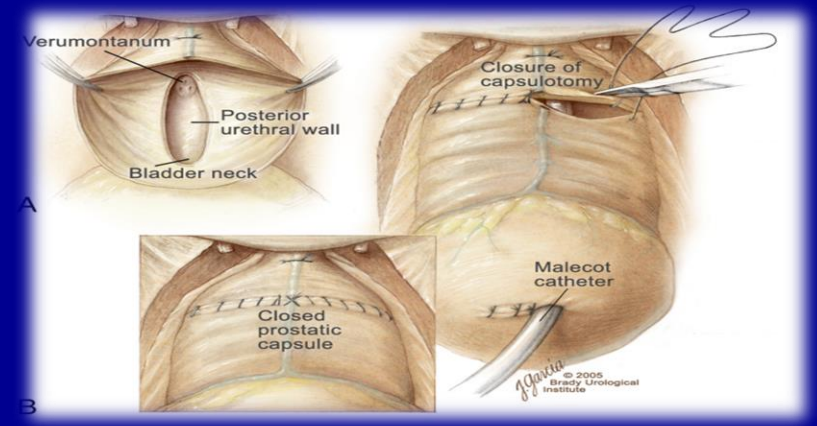




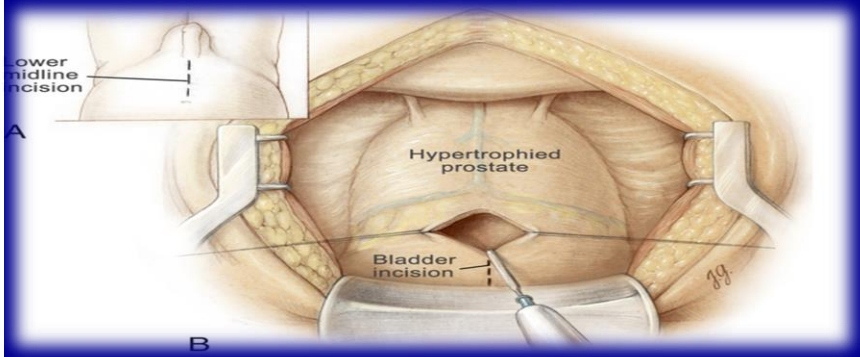


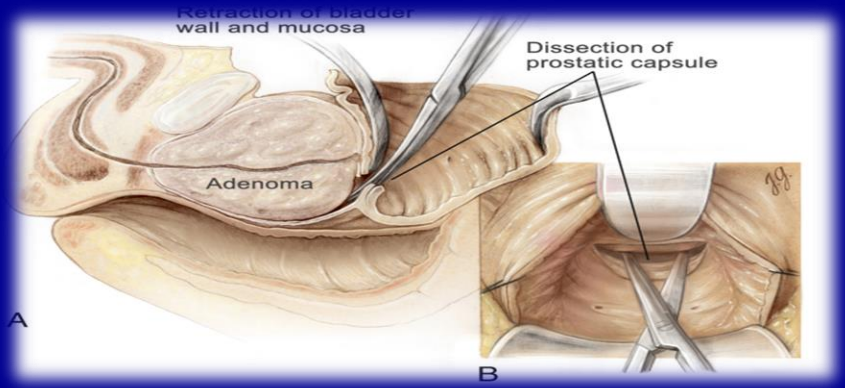


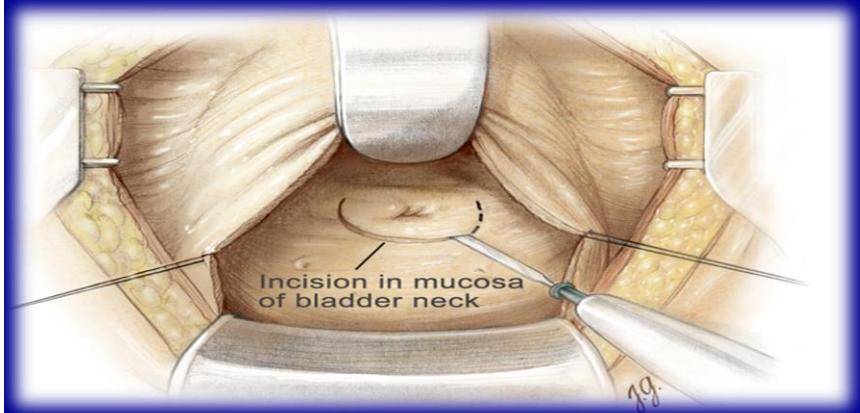


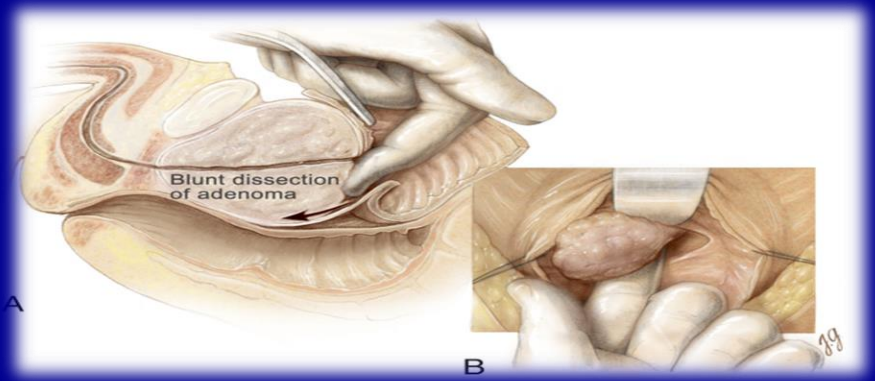


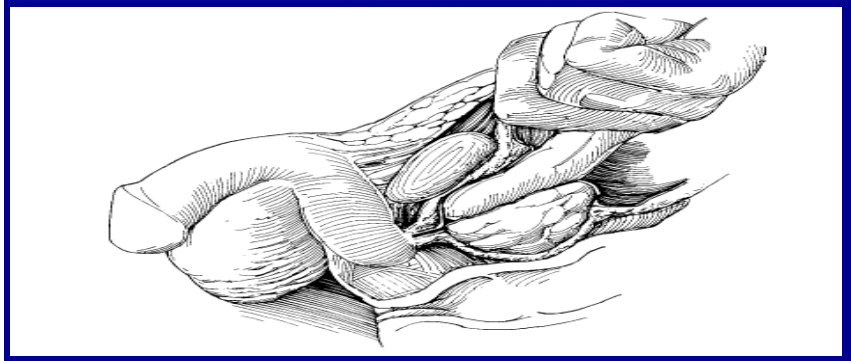
Suprapubik Prostatektomi (Freyer)

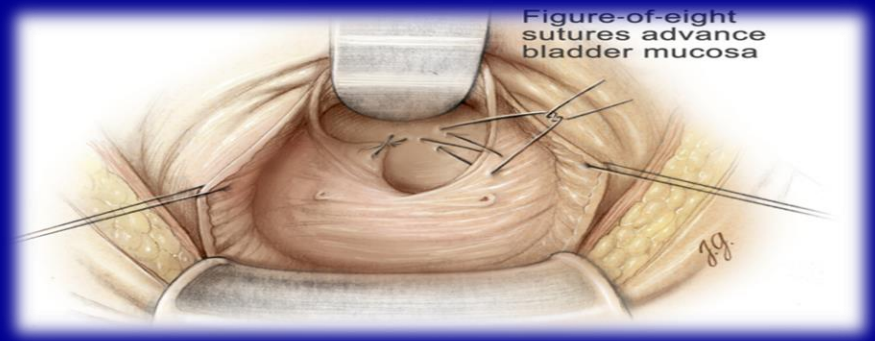


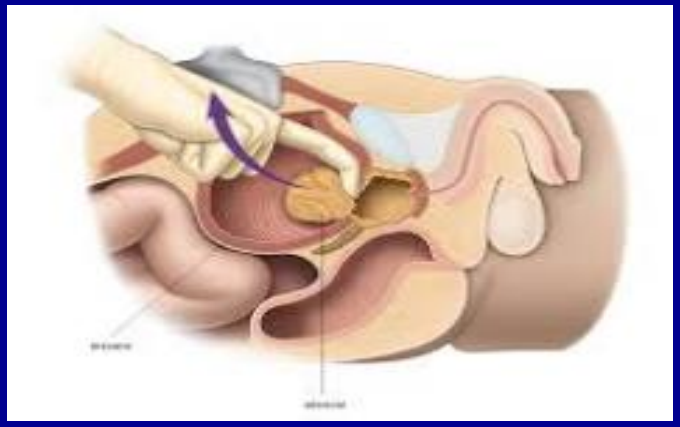


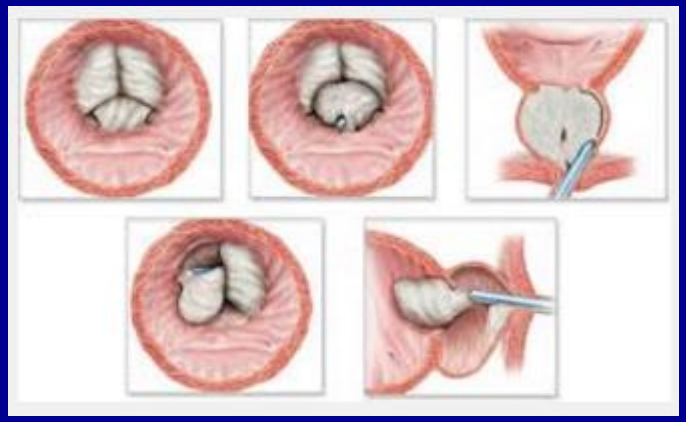












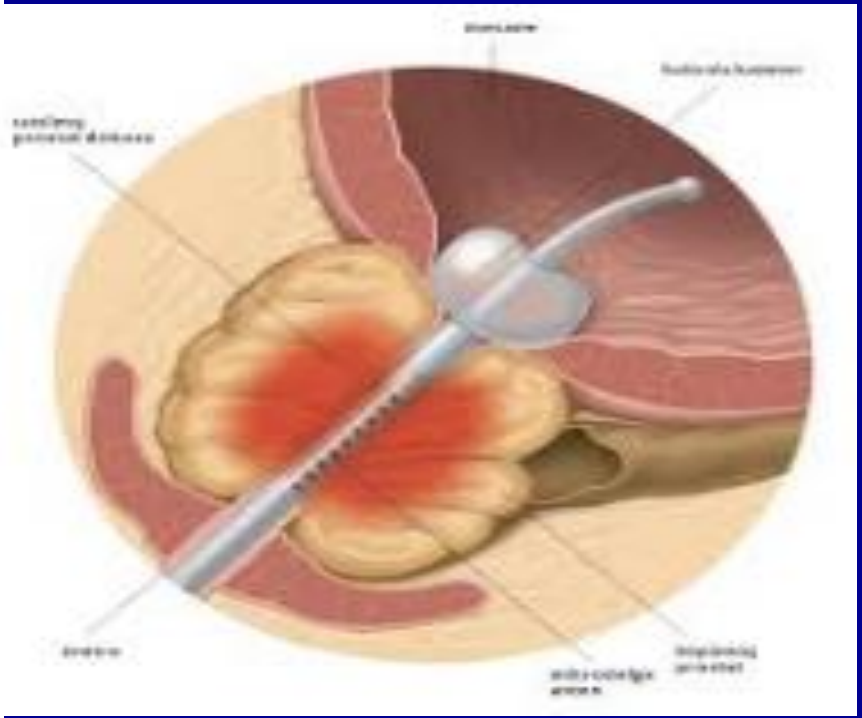
Recommendations	LE	GR
OP or EEP such as holmium laser or bipolar enucleation are the first choice of surgical treatment in men with a substantially enlarged prostate (e.g. > 80 mL) and moderate-to-severe LUTS.	1a	A
OP has a high operative morbidity.	1b	A

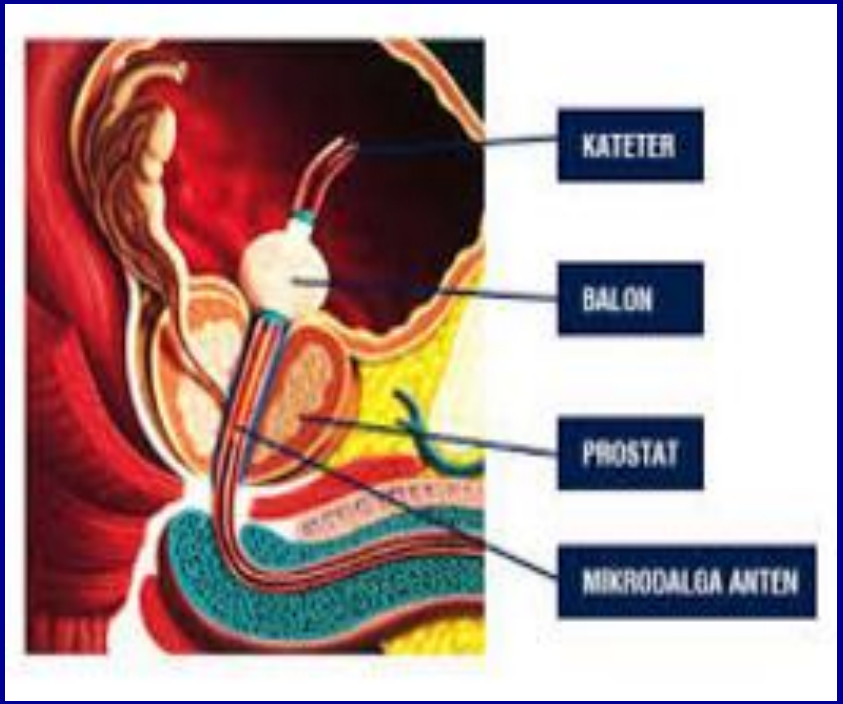
TRANSÜRETRAL MİKRODALGA TEDAVİSİ

- Prostat içine ısı sağlayan bir intraüretral araç aracılığıyla mikrodalga radyasyon yayarak çalışır.
- Sitotoksik eşik değer (> 45°C). üzerindeki sıcaklıklarda doku destrükte edilir.
  - koagülasyon nekrozu
- α-reseptör denervasyon ve apoptozis,
  - prostat üretra düz kas tonusunu azalır.

Etkileri

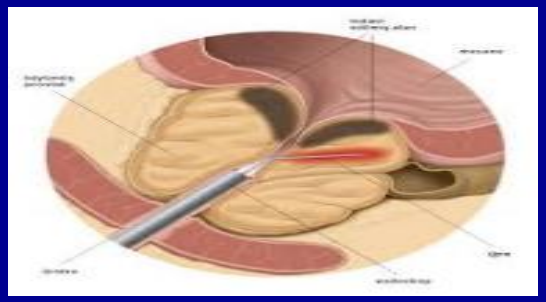
- TUMT öncesi endoskopi, bir prostat orta varlığını tanımlamak için gereklidir
- Lob veya prostatik üretranın yetersiz uzunluğu.
- Düşük peri-ve post-operatif morbidite ve anestezi ihtiyacı olmadığından, TUMT gerçek bir ayakta tedavi prosedürüdür.
- Yaşlı ,komorbiditeler veya daha büyük anestezi riski olan hastalar için bir seçenektir.





Recommendations	LE	GR
TUMT achieves symptom improvement comparable with TURP, but TUMT is associated with decreased morbidity and lower flow improvements.	1a	A
Durability is in favour of TURP which has lower re-treatment rates compared to TUMT.	1a	A

TRANSÜRETRAL İĞNE ABLASYONU

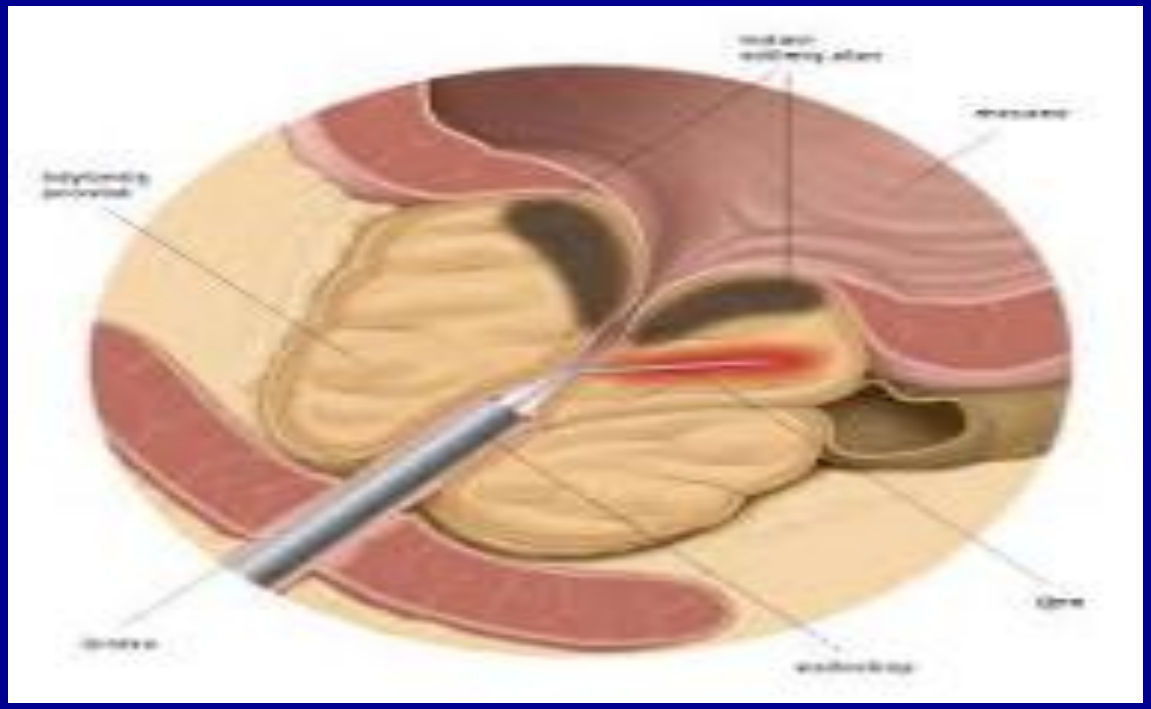


- Transüretral iğne ablasyonu (TUNA ™) cihazı standart sistoskopun bir eki kullanarak; direkt görüş altında transüretral takılı iğneler aracılığı ile prostat parankim içine düşük seviyeli radyofrekans enerjisini iletir.
- Enerji, prostat hacmi ve mesane çıkım obstrüksiyonunda azalmaya yol açar, tranzisyon bölgesinde koagülasyon nekrozuna neden olur.

- TUNA ™, lokal anestezi veya Sedasyon altında günlük durum prosedürü olarak yapılabilir.
- TUNA ™,> 75 mL prostat veya izole mesane boynu tıkanıklığı için uygun değildir.
- Buna ek olarak, TUNA ™ prostat orta loblarını tedavi edemez.

- Genellikle TUNA ™, hafif hematüri, üriner enfeksiyonlar, darlıklar, inkontinens, ED ve boşalma bozuklukları gibi TURP'la karşılaştırıldığında daha az advers olay ile ilişkilidir.

Boyle, P., et al. A meta-analysis of trials of transurethral needle ablation for treating symptomatic benign prostatic hyperplasia. BJU Int, 2004. 94: 83.

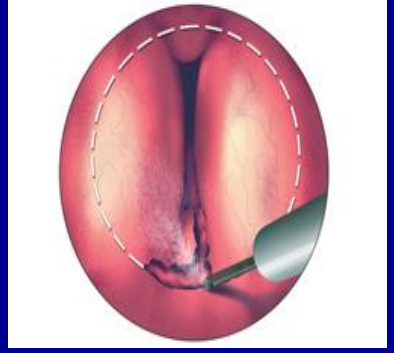


Recommendations	LE	GR
TUNA™ is a minimally invasive alternative with decreased morbidity compared to TURP but with less efficacy.	1a	A
Durability is in favour of TURP with lower re-treatment rates compared to TUNA™.	1a	A

Lazer Tedavileri

- BPH tedavisinde ilk kullanılan lazer tipi: Neomidyum YAG lazer
  - terk edilmiştir
- Günümüzde BPH tedavisi
  - Potasyum Titanil Fosfat (KTP) laser
  - Holmiyum lazer
  - Tulyum lazer
  - Diod lazer
- KTP lazer…… doku ablasyonu
- Diğerleri…… doku kesme

Holmium Lazer



- Prostatın Holmium lazer ile enükleasyonu (HoLEP) açık cerrahinin endoskopik versiyonu
- Prostat loblarının çıkarılması için Ho:YAG lazer enerjisi kullanılır.
- Lazer ışınının dalga boyu 2140 nm , su ve su içeren dokular tarafından emilir.
- İrrigasyon: normal saline

- Doku koagülasyon ve nekrozu yeterli hemostaz elde etmek için 3-4 mm sınırlı
- Histolojik inceleme için gerekli doku mevcut
- Çıkarılan adenom genellikle büyük olduğu için doku parçalayıcılara (morselatör) ihtiyaç vardır.

Pozitif Etkinlik

- Daha iyi hemostaz, daha az kan kaybı, antikoagülan altında yapılabilir
- Ameliyat sonrası dönemde hiçbir kayda değer bir fark yok. (bazı meta-analizlerde daha iyi?)
- İşemeyi açık prostatektomi kadar etkili geliştirir
- Tur-P (potens, idrar vs.) karşılaştırılabilir post-operatif sonuçları
- Açık prostatektomi ile benzer yeniden ameliyat oranları (5 yıl)
- Kısa kateterizasyon ve hastanede kalış

Negatif Etkinlik

- Deneyim ve endoskopik becerileri İhtiyaçları
- En yaygın post-operatif komplikasyon: disuria

BJUI
BJU INTERNATIONAL

Long-term results of a randomized trial comparing holmium laser enucleation of the prostate and transurethral resection of the prostate: results at 7 years

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Accepted for publication 16 March 2011

TABLE 3
Patient outcome scores over time

Follow-up	AUA score	QoL	Q_{max}, mL/s
1 Month			
HoLEP	8.6 ± 1.2	2.7 ± 0.4	22.3 ± 2.3
TURP	5.7 ± 1.1	1.6 ± 0.3	18.4 ± 1.6
3 Months			
HoLEP	4.8 ± 0.8	1.8 ± 0.4	24.2 ± 1.7
TURP	2.4 ± 0.9	1.9 ± 0.6	18.9 ± 1.9
6 Months			
HoLEP	6.0 ± 1.0	1.6 ± 0.3	21.3 ± 2.1
TURP	4.8 ± 0.7	1.5 ± 0.2	18.9 ± 2.8
12 Months			
HoLEP	4.6 ± 0.7	1.5 ± 0.5	21.3 ± 2.1
TURP	4.7 ± 0.9	1.4 ± 0.3	18.9 ± 2.8
24 Months			
HoLEP	6.1 ± 1.0	1.25 ± 0.2	21.0 ± 2.0
TURP	5.2 ± 0.8	1.25 ± 0.2	19.3 ± 2.2
92 Months			
HoLEP	8.0 ± 5.20	1.47 ± 1.30	22.09 ± 15.47
TURP	10.3 ± 7.42	1.31 ± 0.85	17.83 ± 8.61

TABLE 4 BPH Impact Index and ICSmale-SF

	HoLEP	TURP
BPHII	1.53 ± 2.9	0.58 ± 0.79
ICSmale VS	4.2 ± 3.76	3.00 ± 2.41
ICSmale IS	3.07 ± 3.39	1.17 ± 1.4
ICSFreq	0.93 ± 0.70	0.75 ± 0.62
ICSNoct	1.73 ± 0.88	1.83 ± 1.19
ICSQoL	0.73 ± 0.88	0.33 ± 0.49

TABLE 5 International Index of Erectile Function

	HoLEP	TURP
Erectile function	11.6 ± 7.46	9.21 ± 7.17
Orgasmic function	2.73 ± 3.17	2.79 ± 4.04
Sexual desire	5.00 ± 2.62	5.00 ± 2.60
Intercourse	2.33 ± 3.58	2.21 ± 3.38
Overall satisfaction	5.00 ± 2.22	4.61 ± 2.70

TABLE 2
Perioperative comparative data

	HoLEP	*P* value	TURP
Resectoscope time, min	62.1 ± 5.9	<0.001	33.1 ± 3.7
Pathological weight, g	40.4 ± 5.7	<0.050	24.7 ± 3.4
Catheter time, h	17.7 ± 0.7	<0.010	44.9 ± 10.1
Hospital time, h	27.6 ± 2.7	<0.001	49.9 ± 5.6

Elzayat et al. – Retrospective analysis of 225 patients who underwent HoLEP, safe and effective alternative for open surgery, less blood loss, shorter hospitalisation and catheterisation time

Variable	Mean (range)
Enucleation time (min)	95.8 ± 43.1 (30–255)
Morcellation time (min)	21.75 ± 17.04 (3–120)
Enucleated tissue weight (gm)	86.5 ± 47.3 (25–340)
Total energy used (kj)	229.5 ± 93.1 (61.5–610)
Catheterization time (day)	1.3 (1–17)
Hospital stay (day)	1.2 (1–9)

(No)	Mean Qmax (ml/sec)	Mean PVR (ml)	Mean IPSS	Mean QoL score
Preoperative (155)	8.09 (0–15)	325 (14–2,000)	18.7 (8–35)	3.7 (1–6)
1 month (174)	24.03 (5.4–54.8)	46.8 (0–301)	6.2 (0–28)	1.3 (0–6)
3 months(135)	25.7 (8.5–67)	32.4 (0–209)	4.5 (0–17)	1.02 (0–5)
6 months (128)	26.4 (6.3–78)	28.8 (0–292)	3.6 (0–17)	0.82 (0–5)
1 year (105)	26.16 (5.5–70)	29.7 (0–380)	3.9 (0–21)	0.8 (0–6)
2 years (62)	28.03 (6.8–72)	37 (0–238)	3.5 (0–19)	0.7 (0–4)
3 years (31)	28.5 (5.1–71)	46.1 (0–183)	3.7 (0–26)	0.7 (0–4)

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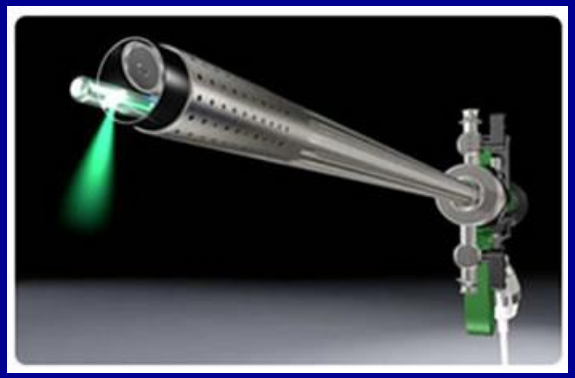
doi:10.1016/j.eururo.2005.08.015

532 nm (‘Greenlight’) vaporisation of the prostate



Lazerler: Potasyum titanil fosfat (KTP) / Lityum Triborate (LBO), 532nm

Hemoglobin tarafından emilir, su tarafından emilmez, daha iyi hemostaz

3 tip;

- 80 W (KTP)
- 120 W HPS (LBO)
- 180 W XPS (LBO)

Pozitif Etkinlik

- TURP ile benzer post-operatif sonuçlar
- Daha kısa kateterizasyon ve hastanede kalma süresi
- Daha az transfüzyon, daha az pıhtı retansiyonu
- Benzer retansiyon, darlık oranları
- Benzer post-operatif cinsel işlev sonuçları
- HoLEP ile karşılaştırıldığında daha az post-operatif disüri

Negatif Etkinlik

- Daha uzun çalışma süresi
- Patolojik değerlendirme için örnek yok

Bachmann et al. – evaluate the perioperative complications and short-term outcome of 180 W XPS Laser, 201 patients An effective treatment option for LUTS due to BPE

Type of complication	Clavien-Dindo grade, 2004	Treatment	Discharge up to 1 mo postoperatively No./total No. (%)	1–3 mo No. Total No. (%)	Overall reported
Mild dysuria	1	Conservative, analgetics, antipyretics	8/76 (10.5)	7/66 (10.6)	
Moderate dysuria	1	Conservative, analgetics, antipyretics	1/76 (10.5)	–	
Urethral stricture (no surgery)	1	Conservative	1/75 (1.3)	1/72 (1.4)	
Temporary urinary incontinence (urge/stress)	2	Conservative, anticholinergics	4/75 (5.6)	4/72 (5.3)	
Urinary tract infection	2	Antibiotics, antipyretics	3/74 (4.1)	2/72 (2.8)	
Retention (including patient's previous history of retention)	3a	Indwelling catheter	2/75 (2.7)	2/72 (2.8)	
Inability to pass urine	3b	TURP (apical resection)	–	–	1/201 (0.5)

NS = not significant; TURP = transurethral resection of the prostate.

Parameter	Baseline	1 mo	3 mo	6 mo
IPSS	19.6 ± 7.7 (n = 132)	8.1 ± 5.8† (n = 67)	8.5 ± 6.2 (n = 80)	9.4 ± 6.8 (n = 21)
Q_{max}, ml/s	8.4 ± 3.7 (n = 109)	15.1 ± 10.4† (n = 49)	18.8 ± 9.3 (n = 76)	21.0 ± 1.6 (n = 5)
PVR, ml	190 ± 355 (n = 147)	29 ± 66‡ (n = 73)	51 ± 89 (n = 83)	35 ± 67 (n = 21)
IPSS-QOL	3.9 ± 1.1 (n = 151)	1.8 ± 1.4† (n = 71)	1.6 ± 1.4 (n = 63)	1.4 ± 1.5 (n = 16)
PSA, ng/ml	5.5 ± 6.9 (n = 189)	–	2.6 ± 3.4† (n = 54)	2.0 ± 1.2 (n = 16)
Prostate volume with preoperative values§				
<40 ml	31.4 ± 7.7 (n = 51)		23.3 ± 2.9† (n = 3)	
41–80 ml	59.8 ± 11.9 (n = 93)		35.7 ± 9.3† (n = 19)	
>80 ml	119.0 ± 50.0 (n = 50)		58.3 ± 13.5† (n = 8)	

IPSS = International Prostate Symptom Score; Q_{max} = maximum flow rate; PVR = postvoid residual (urine); QOL = quality of life; PSA = prostate-specific antigen.
* Mean plus or minus standard deviation values shown and the number of patients for whom data are available.
† Highly significant to baseline $p < 0.001$.
‡ $p = 0.001$.
§ Transrectal prostate volume measurement usually is of importance after 6 or 12 mo. Therefore only a few transrectally measured values are available for 3 mo.

EUROPEAN UROLOGY 61 (2012) 600–607
doi:10.1016/j.eururo.2011.11.041

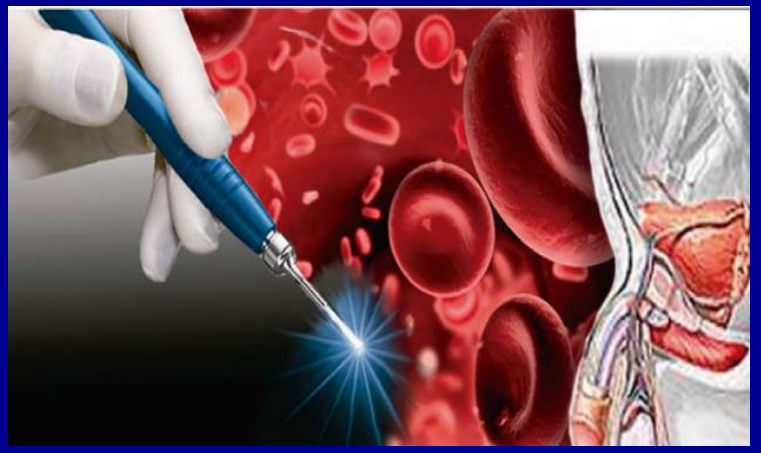
- Thangasamy et al. – PVP vs TURP (448 patients vs 441 patients), 2002-2012, biomedical database search, meta-analysis
- PVP ile daha kısa hastaneye yatma ve kateterizasyon zamanı
- PVP ile daha uzun çalışma süresi
- PVP ile daha az kan nakli ve pıhtı tutma
- Ara dönem fonksiyonel takiplerde fark yoktu

Outcome	PVP, *n*	TURP, *n*	Mean difference	95% CI	*p* value
Operation time, min	259	252	19.64[T]	9.05–30.23	0.0003
Catheterisation time, d	303	293	1.91[P]	1.47–2.35	<0.00001
Length of hospital stay, d	253	243	2.13[P]	1.78–2.48	<0.00001

PVP = photoselective vaporisation of the prostate; TURP = transurethral resection of the prostate.
[T] Favours TURP.
[P] Favours PVP.

Thangasamy, I.A., et al. Photoselective vaporisation of the prostate using 80-W and 120-W laser versus transurethral resection of the prostate for benign prostatic hyperplasia: a systematic review with meta-analysis from 2002 to 2012. Eur Urol, 2012. 62: 315.

Thulium:yttrium-aluminium-garnet laser (Tm:YAG)



- 1940-2013 nm arasında dalga boyu
- Sürekli dalga modu, ön-yangın uygulamaları
- Vaporisation / VapoResection / Enucleation

- Sınırlı sayıda çalışma
- TURP ile karşılaştırıldığında daha az kan kaybı, kateterizasyon zamanı ve hastanede kalma
- TURP ile karşılaştırılabilir üretral striktür oranları
- Daha ileri RCT'ye ihtiyaç duyuyor ...

Thulium Laser Enucleation Versus Plasmakinetic Resection of the Prostate: A Randomized Prospective Trial With 18-Month Follow-up

Zhonghua Yang, Xinghuan Wang, and Tongzu Liu

Table 2. Perioperative data

Parameters	PKRP Group (n = 79)	ThuLEP Group (n = 79)	*P* Value
Operation time, min	47.4 ± 15.9 (35-75)	65.4 ± 22.2 (47-85)	.022
Catheterization, days	3.5 ± 1.2 (0.50-4.00)	2.1 ± 0.8 (0.50-3.00)	.031
Irrigated volume, L	27.2 ± 5.2 (6-30)	12.4 ± 6.4 (6-20)	.022
Hb decrease, g/dL*	0.30 ± 0.03 (0.10-0.31)	0.15 ± 0.02 (0.08-0.21)	.045
Hospital stay, d	4.6 ± 1.4 (3-6)	2.5 ± 1.4 (3-6)	.026

Hb, Hemoglobin.
Results are shown as the mean ± standard deviation (range).
* Values assayed at the beginning of operation and at 1 hour postoperatively.

Table 3. Results during the 18-month follow-up

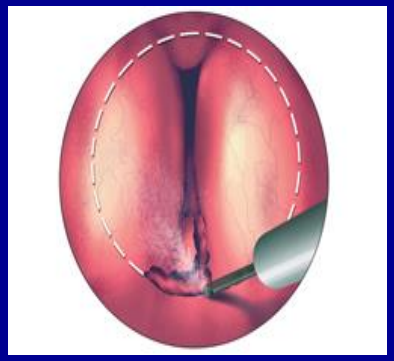
Parameters	PKRP Group (n = 79)	ThuLEP Group (n = 79)	*P* Value
Qmax, mL/s			
1 month	25.1 ± 11.5 (11.9-37.8)	24.6 ± 12.1 (12.1-38.1)	.251
3 months	25.6 ± 13.1 (12.3-38.2)	24.5 ± 11.9 (11.8-37.4)	.274
6 months	24.5 ± 12.8 (11.9-38.1)	24.1 ± 12.3 (11.4-38.3)	.271
12 months	23.9 ± 12.3 (11.4-37.7)	23. 2 ± 13.5 (10.3-37.9)	.263
18 months	23.2 ± 13.3 (8.1-38.2)	22.9 ± 12.7 (7.9-37.5)	.289
PVR, mL			
1 month	27.2 ± 13.3 (0-55)	26.9 ± 12.8 (0-51)	.247
3 months	26.9 ± 12.7 (0-47)	27.5 ± 13.5 (0-49)	.218
6 months	24.5 ± 12.1 (0-49)	25.5 ± 12.7 (0-53)	.196
12 months	28.3 ± 12.7 (0-57)	27.4 ± 13.1 (0-59)	.138
18 months	31.2 ± 14.3 (0-54)	30.7 ± 15.2 (0-51)	.182
IPSS			
1 month	4.7 ± 1.3 (1-10)	4.2 ± 1.5 (1-9)	.092
3 month	4.3 ± 1.1 (1-9)	4.8 ± 1.7 (1-10)	.127
6 months	4.9± 1.5 (1-11)	4.1 ± 1.5 (1-11)	.067
12 months	4.6 ± 1.8 (1-10)	5.2 ± 1.9 (1-12)	.086
18 months	5.2 ± 1.9 (2-12)	5.7 ± 2.1 (1-13)	.131
Quality of life score			
1 month	0.7 ± 0.2 (1-2)	0.8 ± 0.2 (1-2)	.121
3 months	0.8 ± 0.3 (1-3)	0.8 ± 0.5 (1-3)	.127
6 months	0.9 ± 0.5 (1-3)	0.9 ± 0.6 (1-3)	.151
12 months	1.1 ± 0.7 (1-4)	1.2 ± 0.9 (1-4)	.086
18 months	1.2 ± 0.9 (1-4)	1.2 ± 1.1 (1-4)	.119

Results are shown as the mean ± standard deviation (range).

Fonksiyonel sonuçlarda(Q max, Pvr, Ipss ,Qol) fark yok

Diode laser: Prostat vaporizasyonu

- 940/980/1318/1470 nm dalga boyunda vaporizayon ve enükleasyon için kullanılır.
- AÜSS 'de İyi bir gelişme, iyi hemostatik özellikleri mevcut.
- uzun süreli RCT takip eksik
- Yeniden operasyon oranları (%20-33)
- Kalıcı stres inkontinans (%9)



Recommendations	LE	GR
HoLEP and 532-nm laser vaporisation of the prostate are alternatives to TURP in men with moderate-to-severe LUTS leading to immediate, objective, and subjective improvements comparable with TURP.	1a	A
The short-term and mid-term functional results of 532-nm laser vaporisation of the prostate are comparable with TURP.	1b	A
The long-term functional results of HoLEP are comparable with TURP or open prostatectomy.	1b	A
Thulium enucleation may be an alternative to TURP and HoLEP in men with moderate-to-severe LUTS leading to immediate and mid-term objective and subjective improvements.	1b	A
Diode laser operations lead to short-term objective and subjective improvement.	1b	B
ThuVaRP is an alternative to TURP for small- and medium-size prostates.	1b	A
With regard to intra-operative safety and haemostatic properties, diode and thulium lasers appear to be safe.	3	C
With regard to intra-operative safety, 532-nm laser vaporisation is superior to TURP.	1b	A
532-nm laser vaporisation should be considered in patients receiving anticoagulant medication or with a high cardiovascular risk.	3	B

Prostatik stentler

- Hareket mekanizması:

- Lümen açıklığını korumak için bir protez kullanımıdır.

Prostat stentler öncelikle kalıcı katetere alternatif olarak tasarlanmıştır, aynı zamanda önemli komorbiditesi olmayan hastalarda primer tedavi seçeneği olarak da değerlendirilmiştir.

- Prostat stenti çalışan bir detrusor fonksiyonu gerektirir.
- Kalıcı stentler…… Biyouyumlu, epitelize olur
  - UroLume
- Geçici stentler biyostabil veya biyolojik olarak parçalanabilir ve epitelize olmaz.
  - Memokath…..IPSS 11-19 azalma; Qmax 3-11 artış

Negatif Etkinlik

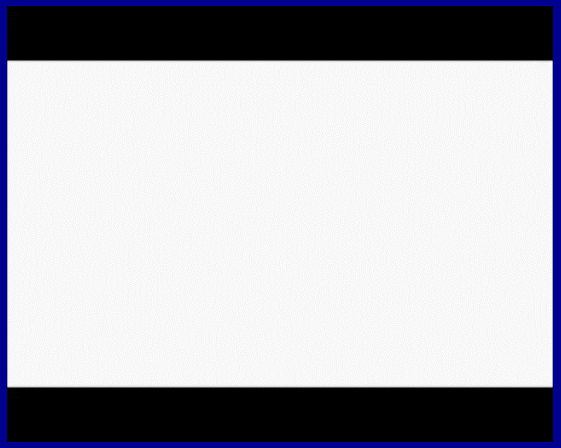
- Yanlış yerleştirilme
- Migrasyon
- Kötü tolerasyon
- Enkrüstasyon

→ AÜSS artma

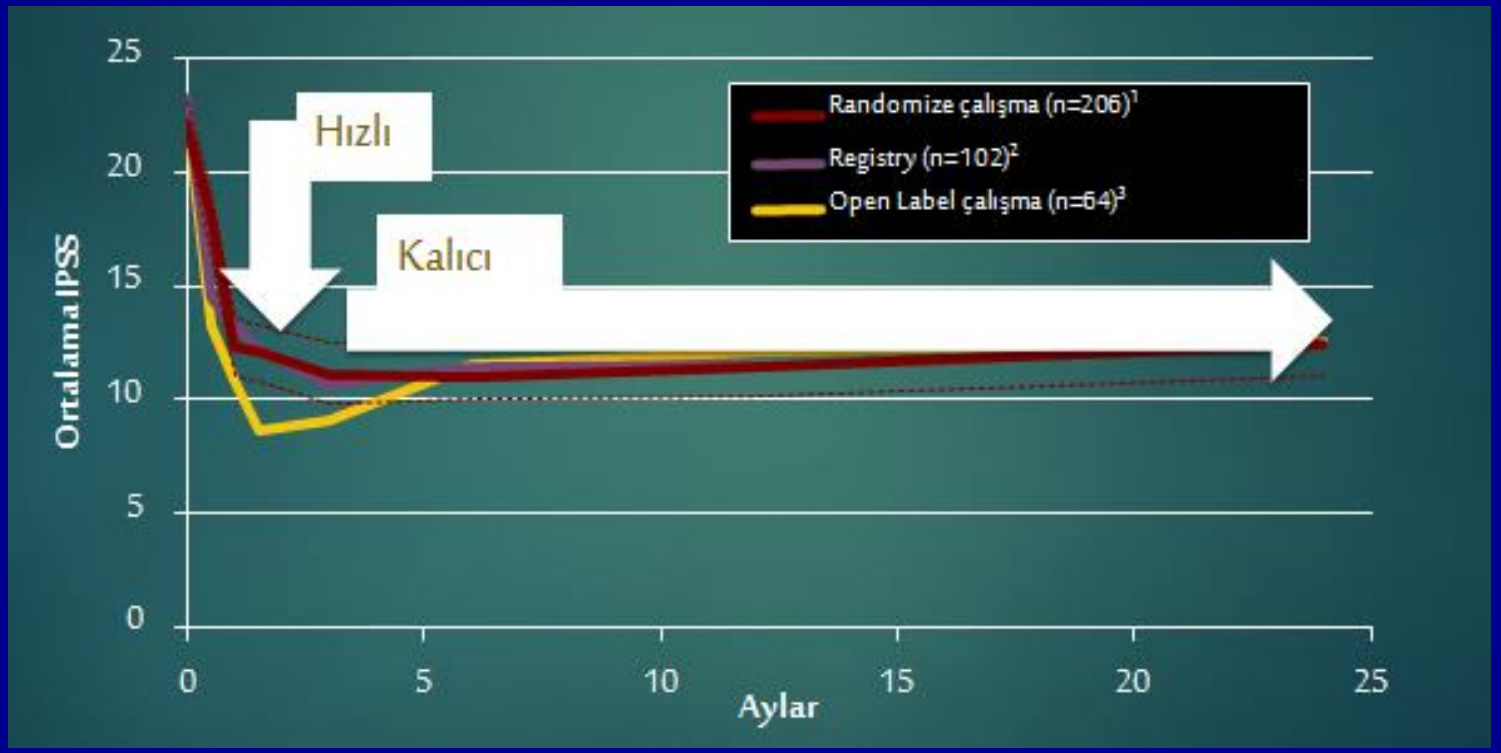
Vanderbrink, B.A., et al. Prostatic stents for the treatment of benign prostatic hyperplasia. Curr Opin Urol, 2007

•Hızlı yan etkileri → Perineal ağrı ve irritatif semptomlar

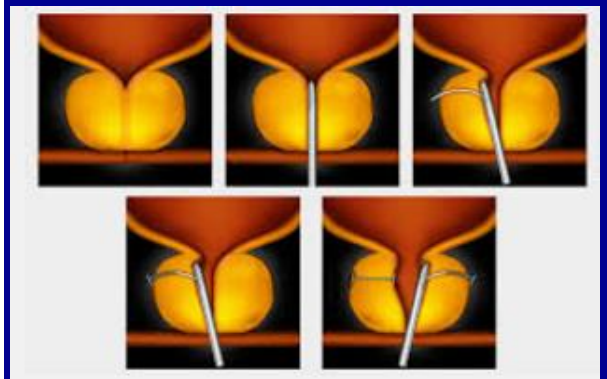
Üretral lift



- Etki mekanizması: Prostatik üretral lift (PUL) lokal & genel anestezi altında
- Lateral lob basısı sistoskopi eşliğinde küçük kalıcı sütür tabanlı implantlar tarafından sıkıştırılır (Urolift®)
- Prostatik fossada verumontanum mesane boynu arasında değişen bir kanal boyunca prostatik idrar yolu açıklığı ile sonuçlanır.



2 haftada semptomlarda hızlı düzelme
2-3 yıl sürdürülmüş dayanıklılık
Cinsel disfonksiyon açısından güçlü güvenlik profili



1. Roehrborn ve ark. Urology Practice 2015.
2. McNicholas ve ark. Eur Urol 2013.
3. Chin ve ark. Urology 2012.

➢2-4 haftada çözülen, hafif-orta yan etkiler

	PUL	Kontrol
Dizüri	34%	17%
Hematüri	26%	5%
Pelvik ağrı	18%	5%
Urgency	7%	0%
Urge İnkontinans	4%	2%
Enfeksiyon	3%	2%

Roehrborn et al. Can J Urol 2015 [*in press*]; AUA2015, New Orleans

N=80

45 Prostatik Üretral lift : 35 TURP

1 yıllık takip

	PUL	TURP	p
#1) AÜSS (≥30% IPSS reduction)	72.7%	91.2%	0.05
#2) İyileşme (≥70% VAS @ 1 mo)	81.8%	52.9%	0.008
#3) Erektil fonksiyon(<6 SHIM reduction)	97.4%	93.9%	0.6
#4)Ejekülasyon fonksiyonu(MSHQ-EjD #3≠0)	100%	60.6%	<0.0001
#5) Kontinans (ISI<5)	85.0%	75.0%	0.4
#6) Güvenlik (no Clavien-Dindo II+)	92.7%	78.8%	0.1

Sonksen et al. Eur Urol 2015; Barber N. AUA2015, New Orleans.

- Minimal İnvaziv
- Lokal Anestezi
- Doku Rezeksiyonu yok
- Termal Enerji kullanılmıyor
- Semptomlarda hızlı düzelme
- Çoğunlukla Kateter ihtiyacı duyulmuyor
- Erektil disfonksiyon (-)
- Retrograt Ejekülasyon (-)

Minimal invaziv acık prostatektomi

- Etki mekanizması:Minimal invaziv basit prostatektomi (MISP) ;laparoskopik basit prostatektomi (LSP) ve robot yardımlı basit prostatektomiyi (RASP) içerir.
  - LSP→2002 RASP→2008

- Ekstraperitoneal yaklaşımda→ LSP
- Transperitoneal → RASP

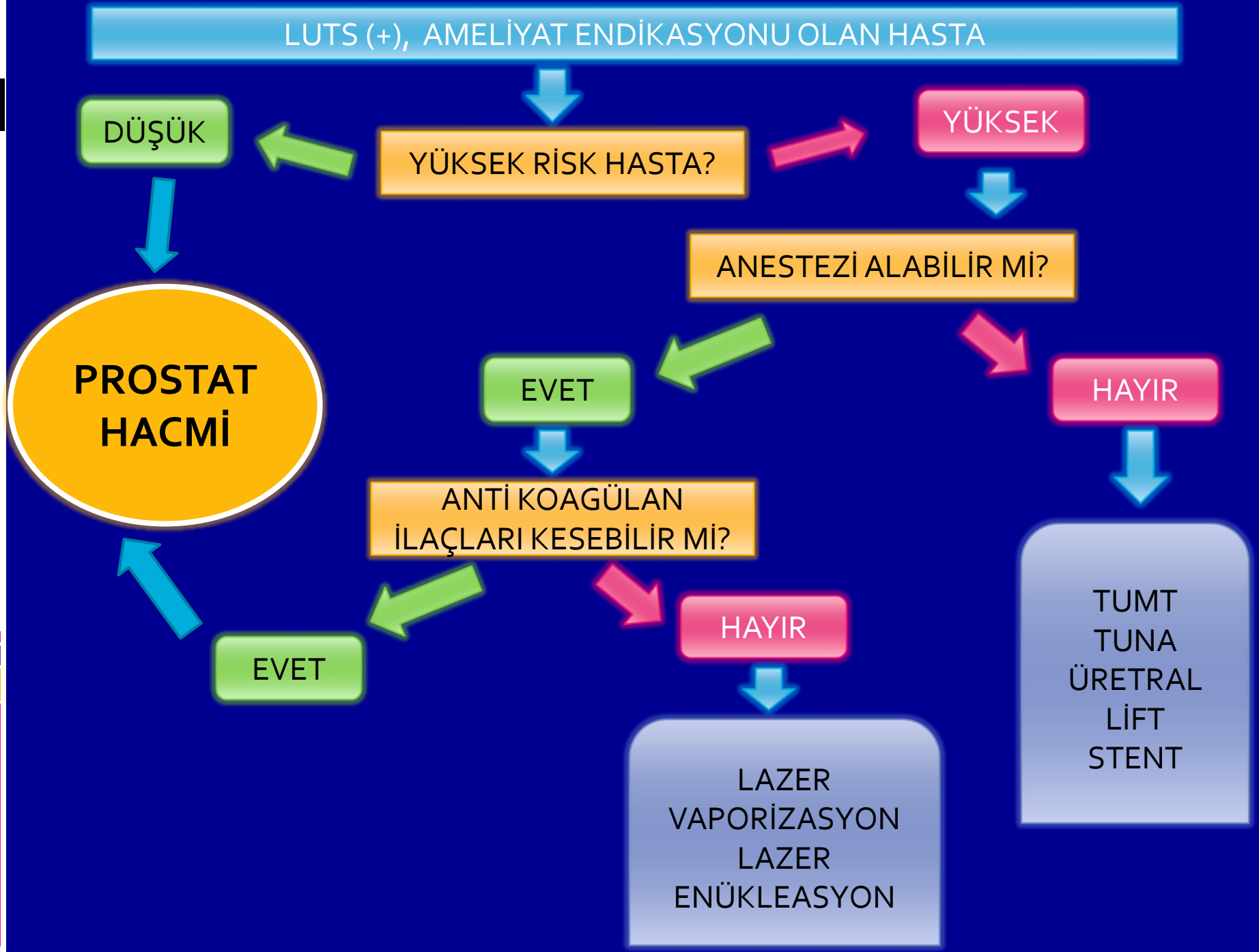
- MISP, Q_{max} ve IPSS' de açık prostatektomi gibi benzer iyileştirmeler sağlayarak etkili ve güvenli bir tedavi seçeneği gibi gözükmektedir

- Fakat çalışmaların çoğu çalışma retrospektif niteliktedir.

- Etkinlik, güvenlik ve hastaneye yatış oranlarını karşılaştırmak için yüksek kaliteli çalışmalara ihtiyaç vardır
- Öğrenme eğrisi ve maliyeti de değerlendirilmelidir.

Cerrahi tekniğin seçimi

- Prostat büyüklüğü
- Eşlik eden hastalıklar
- Anestezi riskleri (asa skoru)
- Hastanın cerrahiyle ilişkili yan etkileri kabul etme isteği
- Cerrahi armamentariumun bulunabilirliği
- Cerrahın deneyimine bağlıdır.


LUTS (+), AMELİYAT ENDİKASYONU OLAN HASTA
YÜKSEK RİSK HASTA?
DÜŞÜK
YÜKSEK
PROSTAT HACMİ
ANESTEZİ ALABİLİR Mİ?
EVET
HAYIR
ANTİ KOAGÜLAN İLAÇLARI KESEBİLİR Mİ?
EVET
HAYIR
TUMT
TUNA
ÜRETRAL
LİFT
STENT
LAZER VAPORİZASYON
LAZER ENÜKLEASYON

<30 mL	30-80 mL	>80 mL
TUIP* **TUR-P**	**TUR-P*** Lazer Enükleasyon Bipolar Enükleasyon Lazer Vaporizasyon Üretral Lift TUMT TUNA	***Açık Prostatektomi** ***HoLEP** ***Bipolar enükleasyon** Lazer vaporizasyon Thulyum enükleasyon TUR-P