

Συγκριτική αντιπαράθεση σύγχρονων επεμβατικών τεχνικών αντιμετώπισης ΚΥΠ

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Διευθυντής Ουρολογικής Κλινικής

Πανεπιστημιακό Γενικό Νοσοκομείο Ηρακλείου

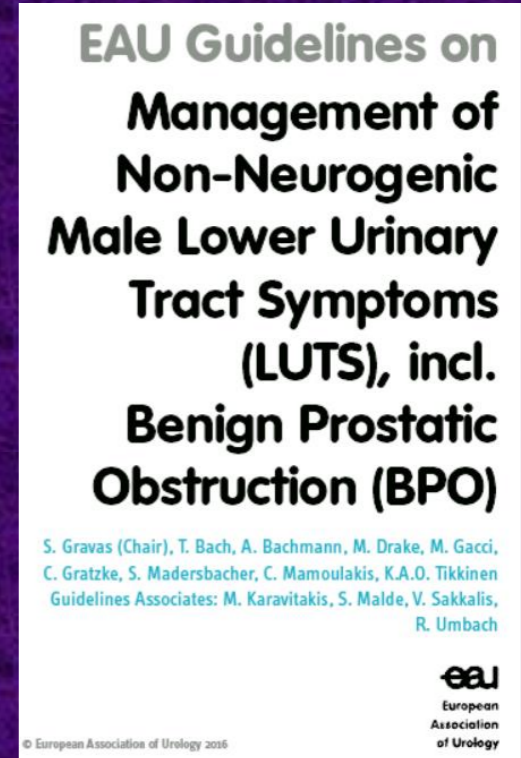


Επεμβατικές τεχνικές προς σύγκριση

- Μονοπολική Διουρηθρική Προστατεκτομή (M-TURP)
- Ανοικτή Προστατεκτομή (OP)
- HOLEP
- Green Light Laser
- Διπολική Διουρηθρική Προστατεκτομή (B-TURP)



Συστηματική ανασκόπηση διεθνούς βιβλιογραφίας



Literature Search Update for EAU guidelines on Management of non-neurogenic male LUTS, 2016

- Πλήρη άρθρα σύγκρισης των τεχνικών:
 - Τυχαιοποιημένες Κλινικές Δοκιμές (RCTs)
 - Μετα-αναλύσεις

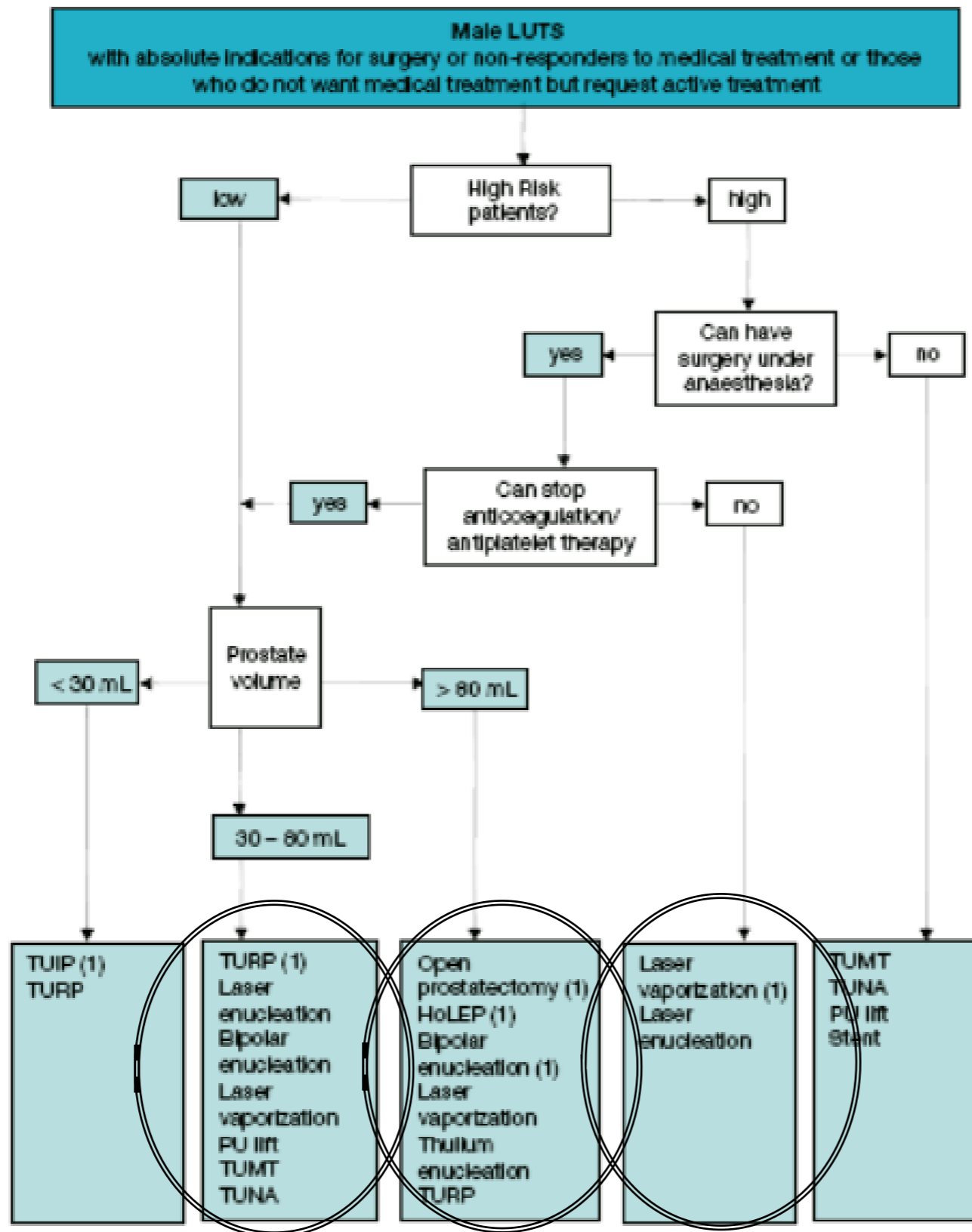


EAU Guidelines on Management of Non-Neurogenic Male Lower Urinary Tract Symptoms (LUTS), incl. Benign Prostatic Obstruction (BPO)

S. Gravas (Chair), T. Bach, A. Bachmann, M. Drake, M. Gacci, C. Gratzke, S. Madersbacher, C. Mamoulakis, K.A.O. Tikkinen
 Guidelines Associates: M. Karavitakis, S. Malde, V. Sakkalis, R. Umbach



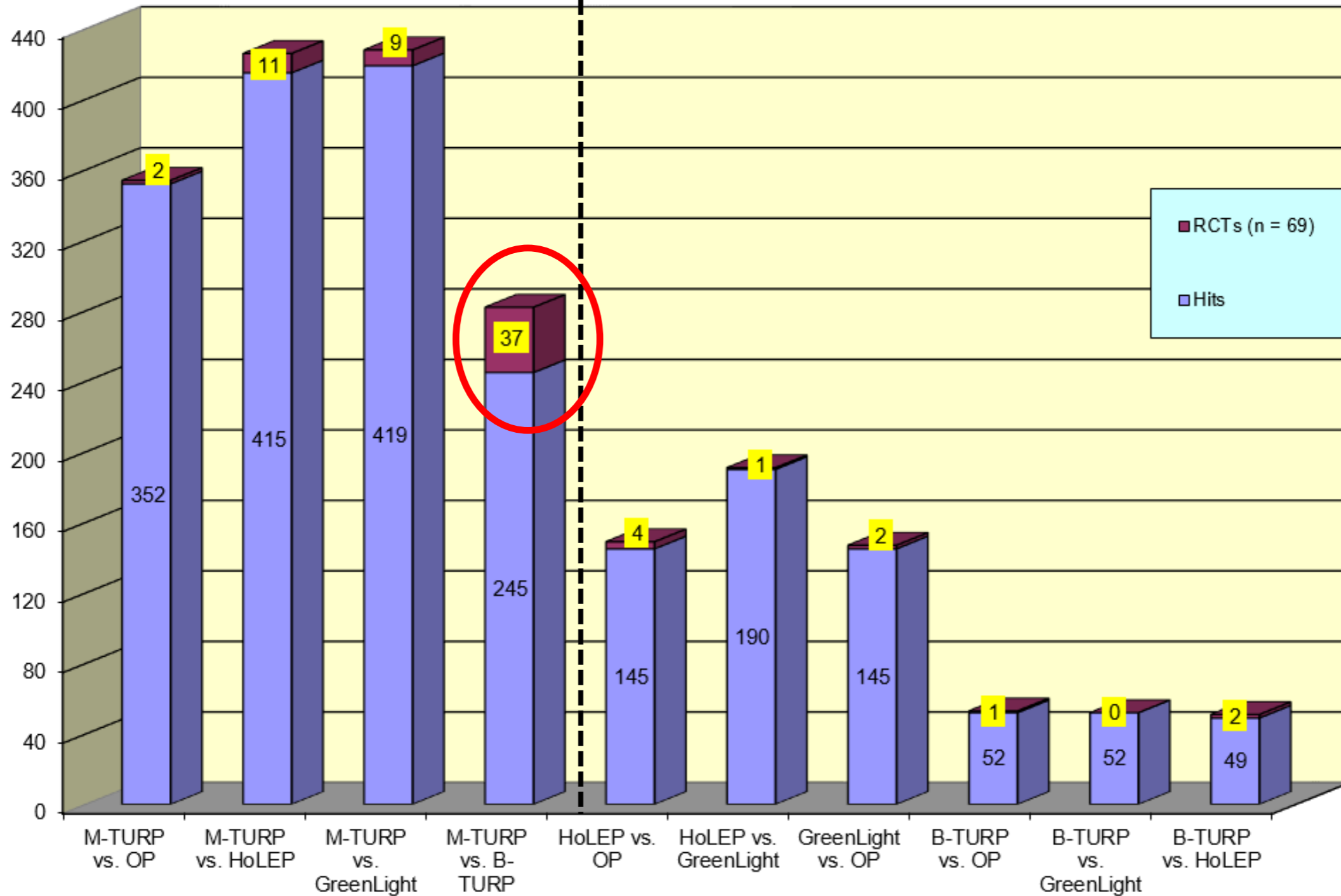
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EAU guidelines on Management of non-neurogenic male LUTS, 2016

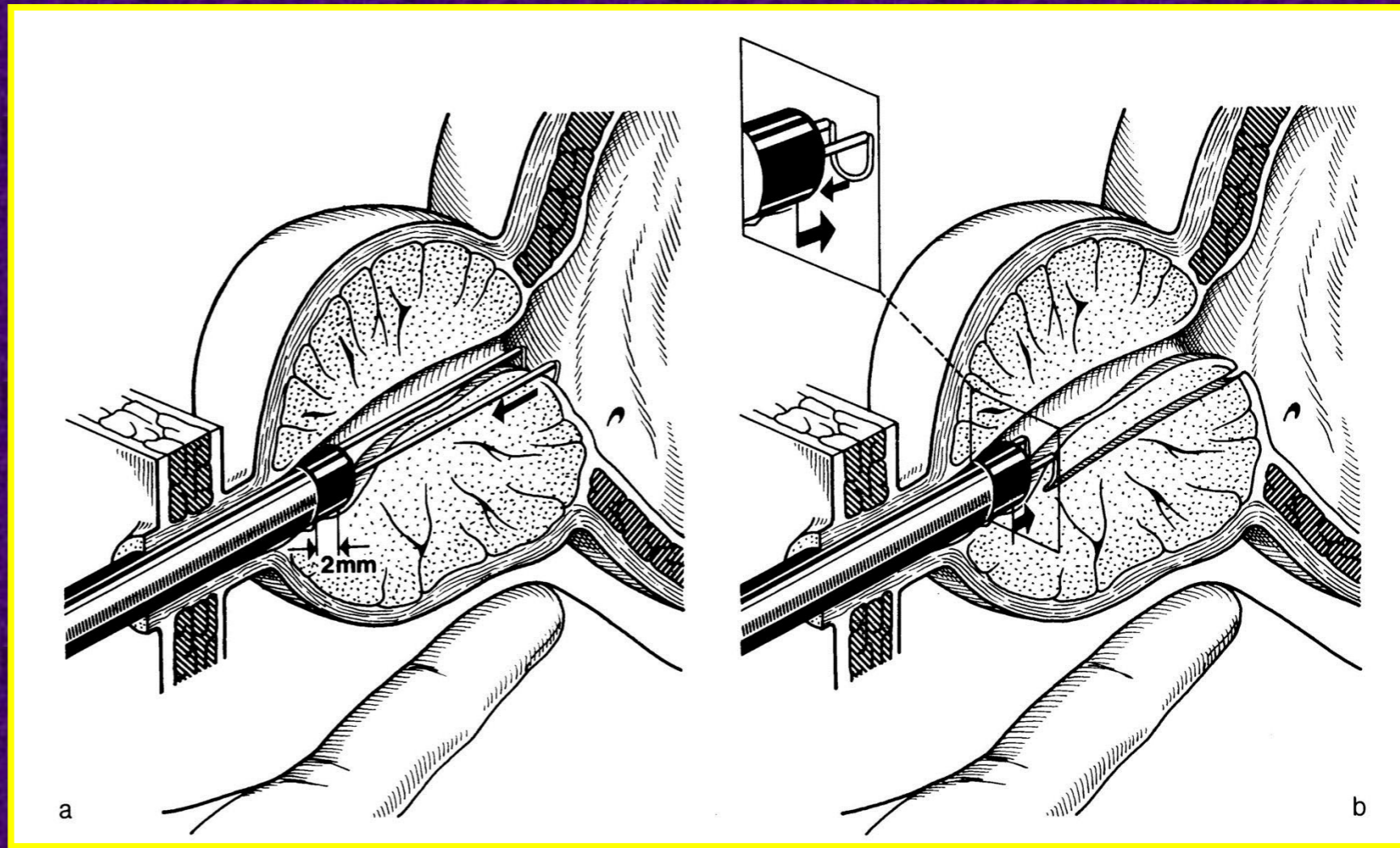
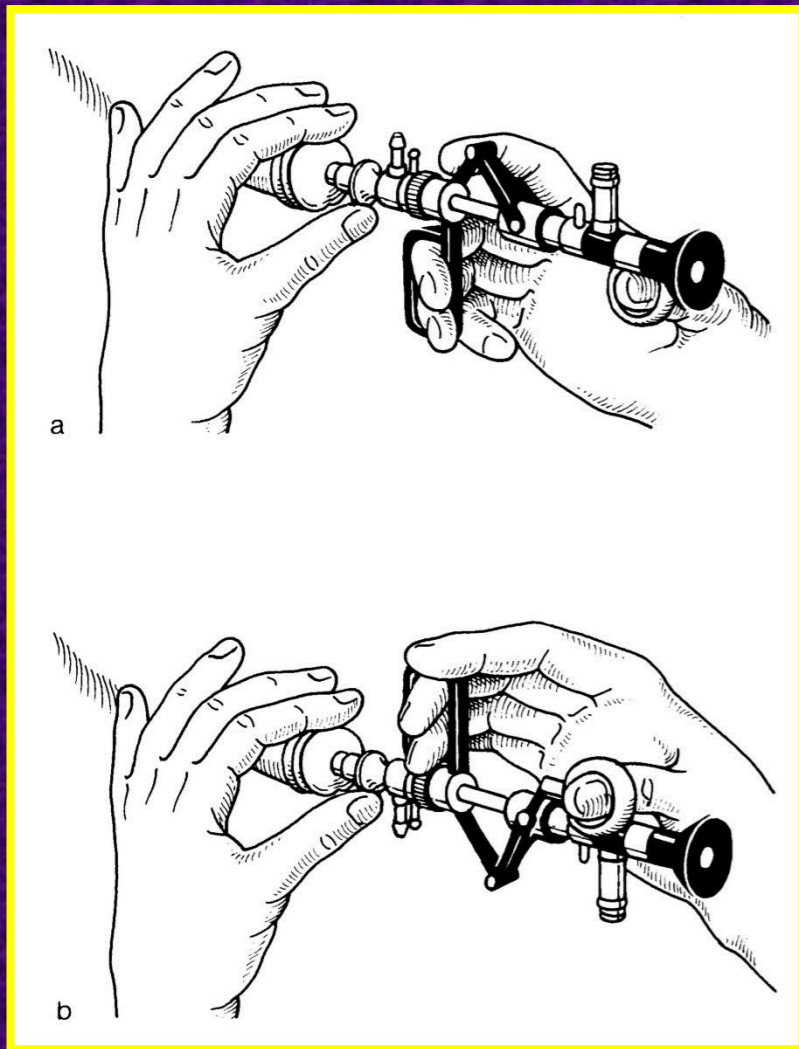


Αποτελέσματα



TURP - “χρυσός κανόνας” στην ΒΡΟ

Maximillian Stern of New York: Resectoscope was born



Stern M. JAMA 1926; 87: 1726-30



TURP-“χρυσός κανόνας”: Ψηλό επίπεδο τεκμηρίωσης

- Συστηματικές ανασκοπήσεις
- Μετα-αναλύσεις τυχαιοποιημένων κλινικών μελετών
 - Μελέτες οικονομικής αξιολόγησης

Reich et al. Eur Urol 2006; 49: 970-8

Lourenco et al. Health Technol Assess 2008; 12: 1-515

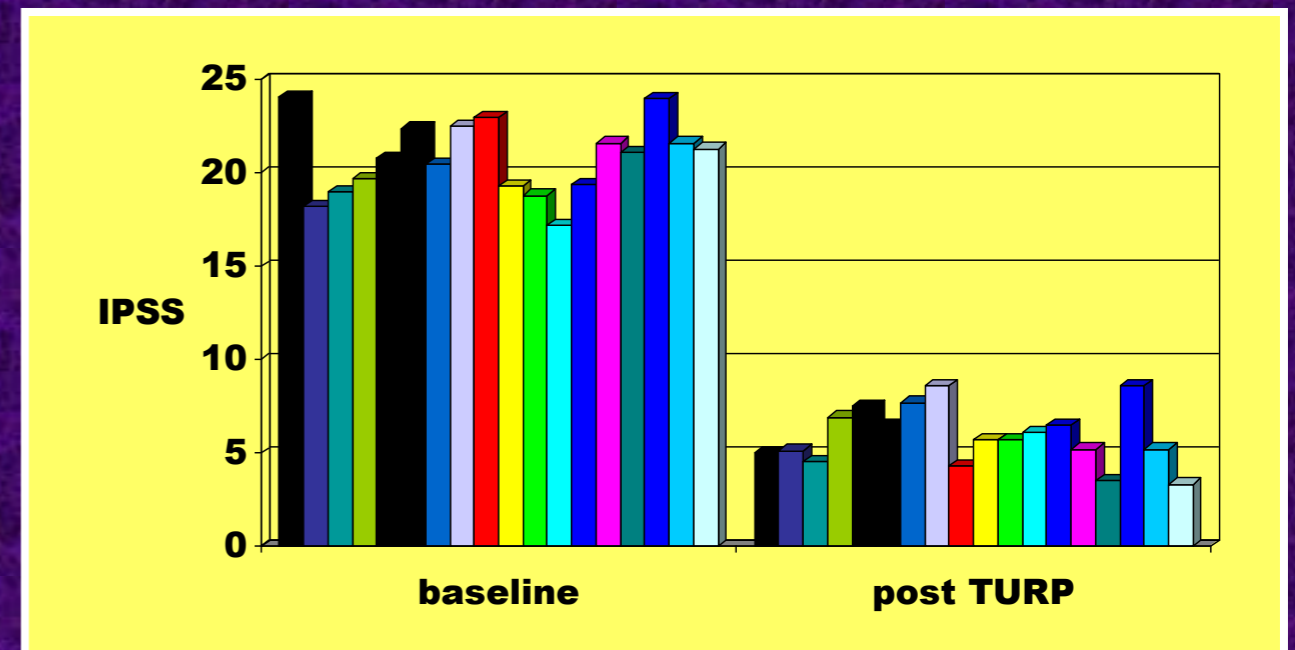
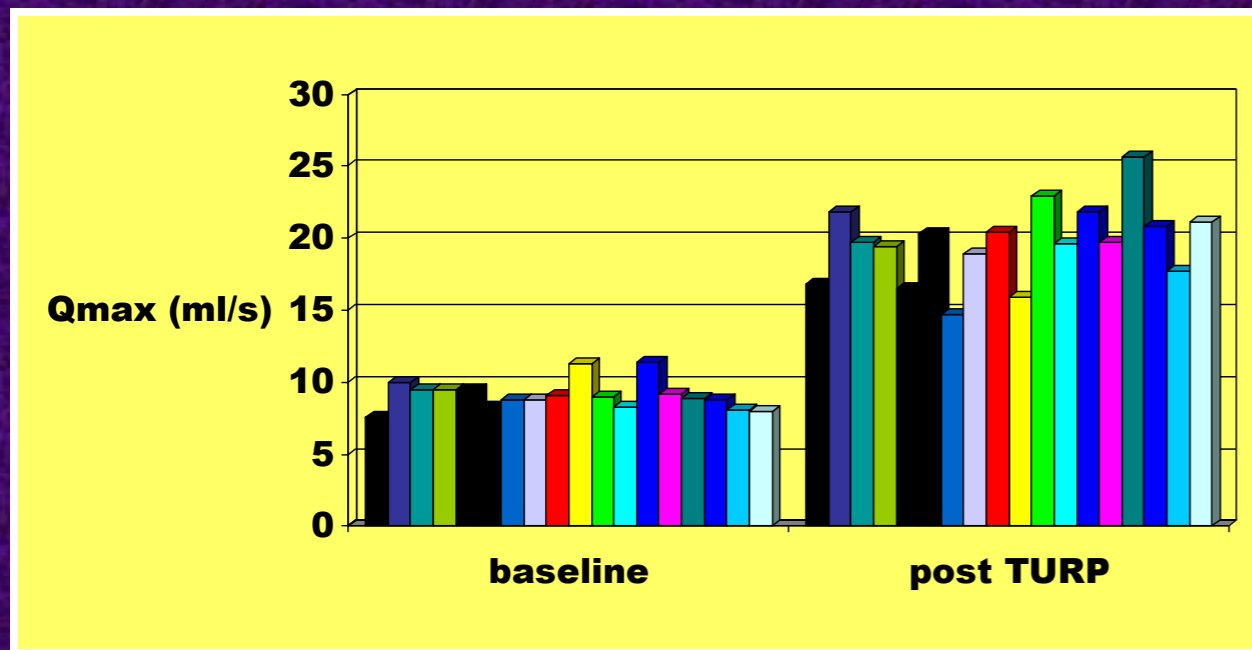
Lourenco et al. BMJ 2008; 337: a1662

Lourenco et al. BMJ 2008; 337: a449



TURP “χρυσός κανόνας”

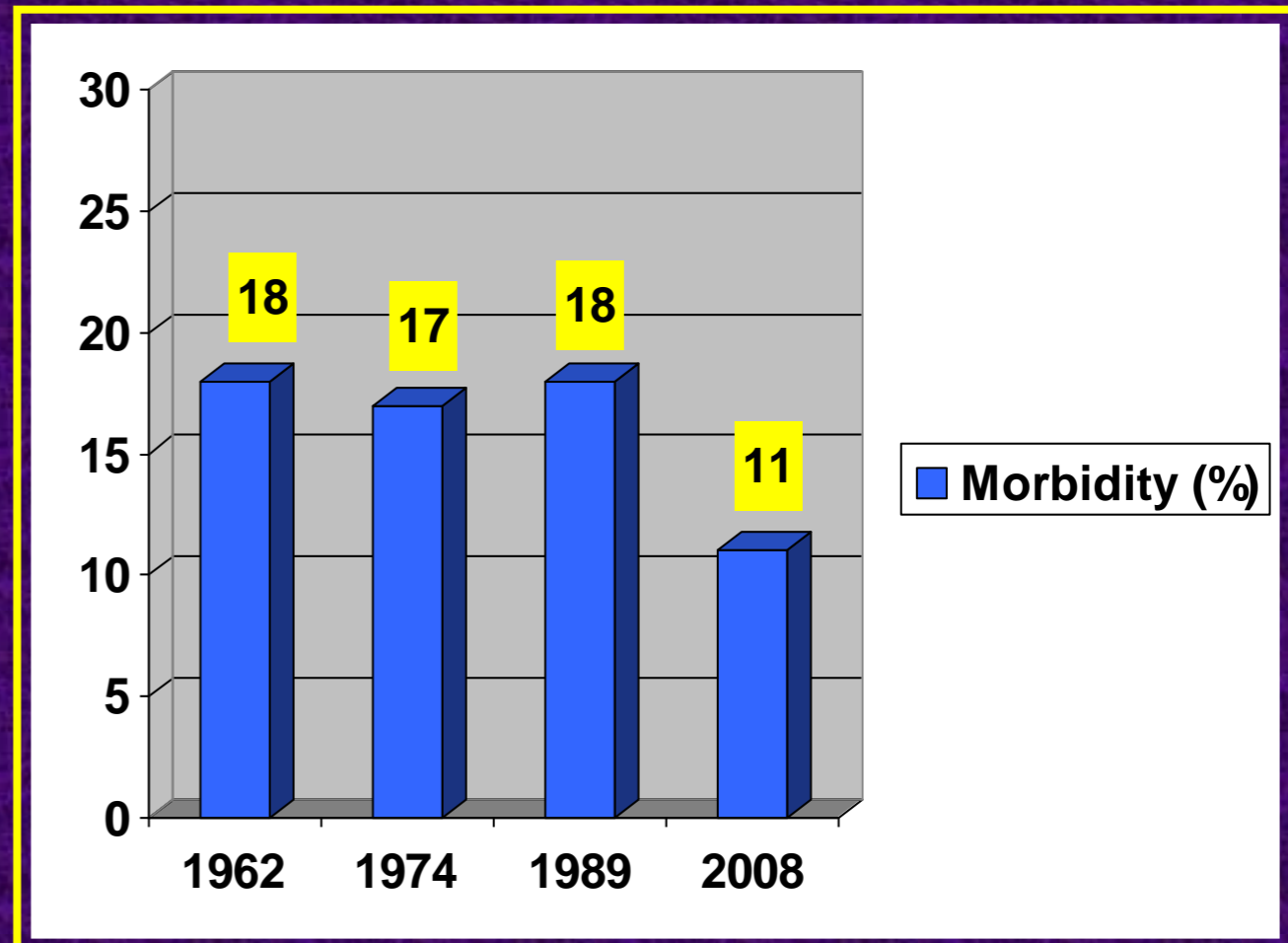
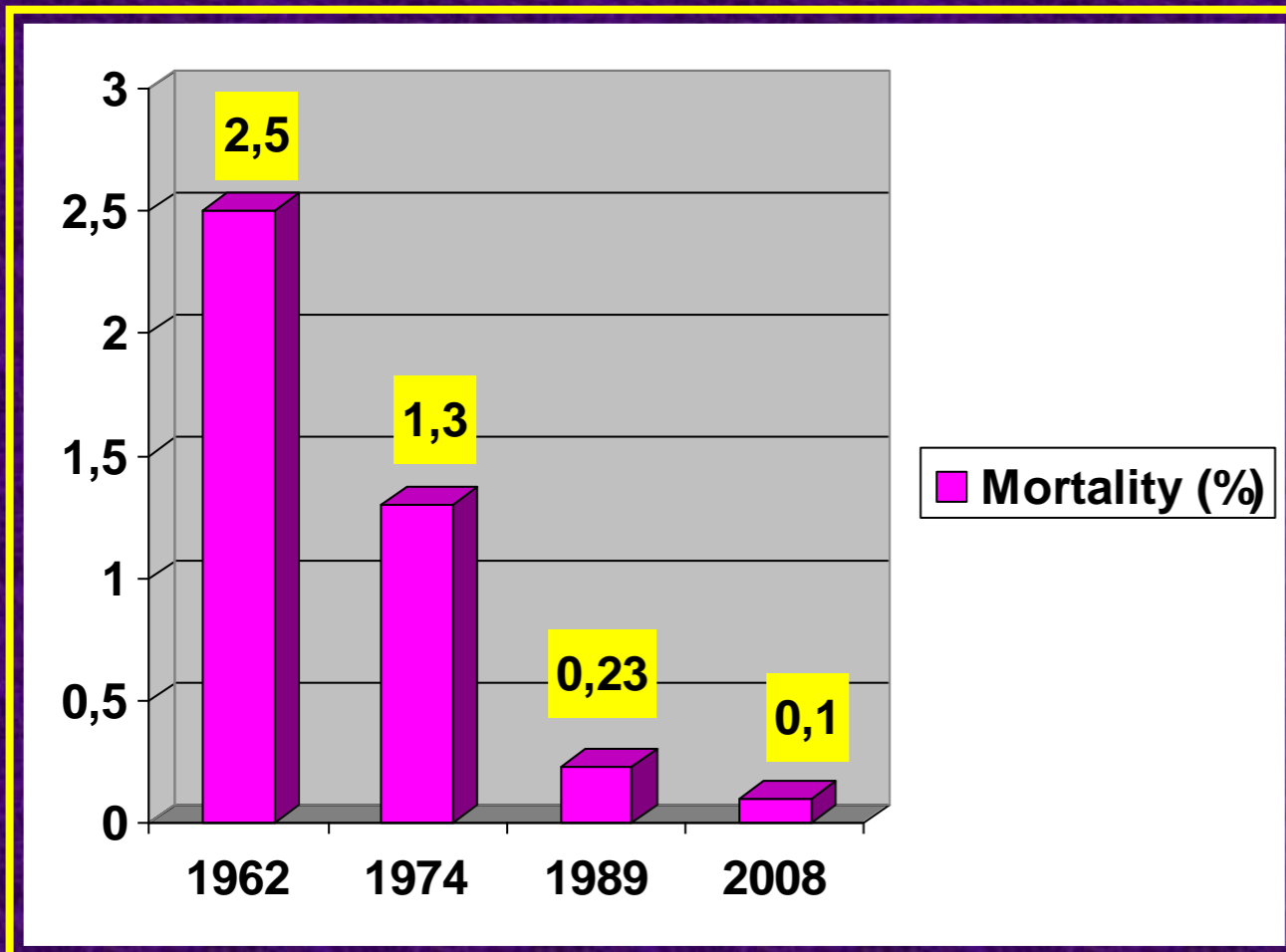
- Υψηλή αποτελεσματικότητα
- Διατήρηση αποτελεσματικότητας σε βάθος χρόνου
- Ικανοποιητική σχέση κόστους-αποτελεσματικότητας



Αποδεκτή νοσηρότητα ?



TURP: Θνητότητα & Νοσηρότητα



Holtgreve & Valk. J Urol 1962; 87: 450 (2015 ασθενείς)

Melchior et al. J Urol 1974; 112: 634 (2223 ασθενείς)

Mebust et al. J Urol 1989; 141: 243 (3885 ασθενείς)

Reich et al. J Urol 2008; 180: 246 (10654 ασθενείς)



Δυνητικές επιπλοκές της TURP

- Σύνδρομο διουρηθρικής - TUR syndrome (1,1-2,1%)
- Κλινικά σημαντική αιμορραγία
 - Μεταγγίσεις (2,0-5,1%)
 - Επίσχεση από πήγματα αίματος (1,3-5,0%)
- Στένωμα ουρήθρας (2,2-9,8%) ή αυχένα κύστης (0,3-9,2%)
- Λοιμώξεις
- Οξεία επίσχεση μετά την αφαίρεση του καθετήρα (AUR)
- Κακώσεις (ουρητηρικά στόμια, έξω σφιγκτήρας)
- Στυτική δυσλειτουργία

Rassweiler et al. Eur Urol 2006;50:969-80

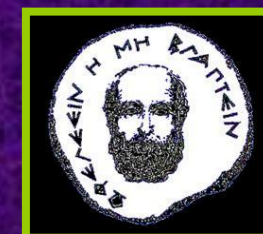
Reich et al. J Urol 2008;180:246-249



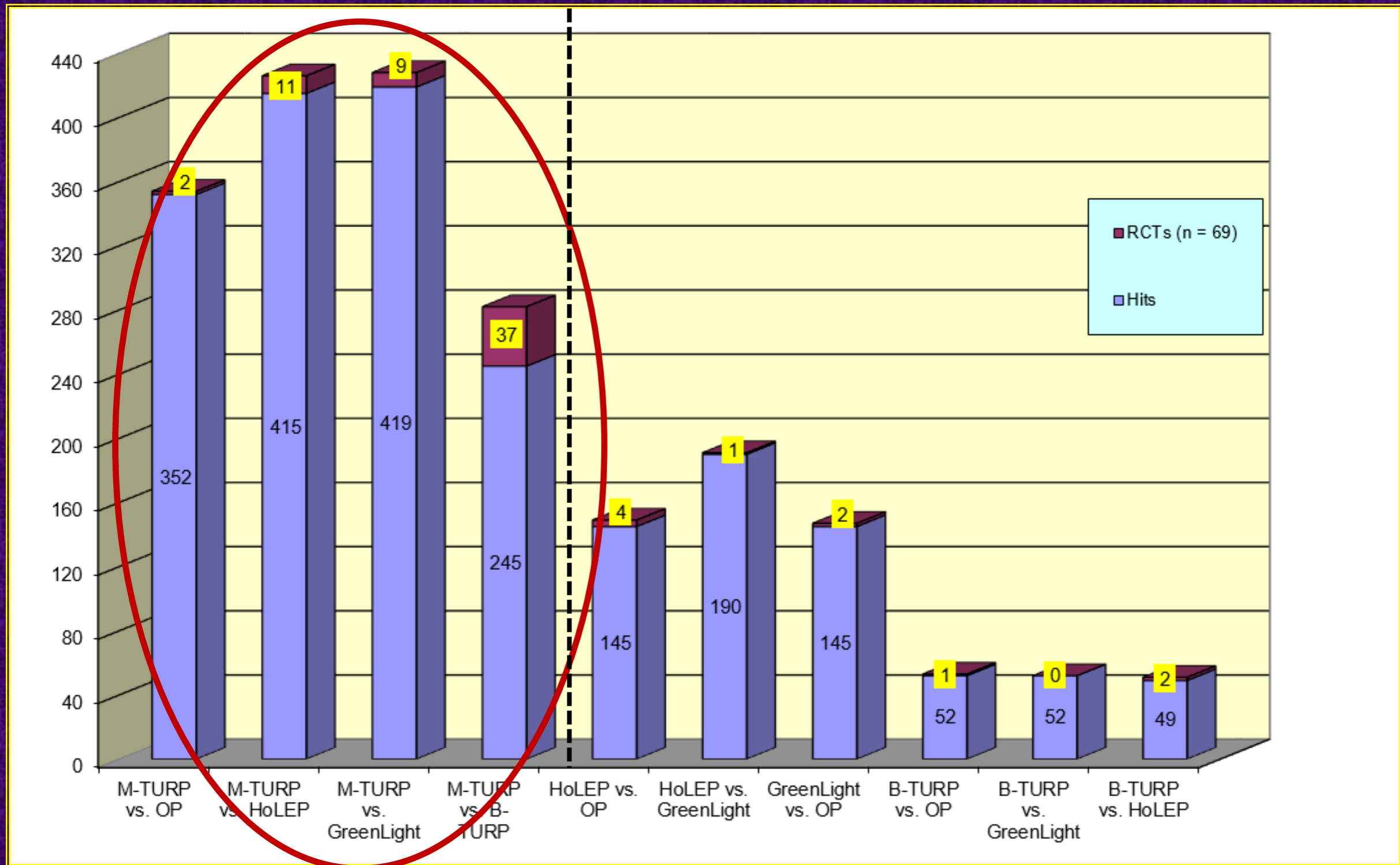
TURP “χρυσός κανόνας”

Recommendations	LE	GR
<u>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.</u>	1a	A
<u>The morbidity of M-TURP is higher than for drugs or other minimally invasive procedures.</u>	1a	A

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Συγκρίσεις με τον “χρυσό κανόνα”



Open Prostatectomy (OP)

The most invasive but effective/durable procedure for LUTS/BPO

◆ Efficacy:

- IPSS ↑: 63-86% (12.5-23.3 points)
- QoL score ↓: 60-87%
- Qmax ↑: 375% (16.5-20.2 mL/s)
- PVR ↓: 86-98%
- Efficacy maintained for up to 6 years

◆ Safety:

- Mortality: < 0.25%
- Transfusions: 7-14%
- UI (transient): ≤ 10%
- BNC/US: 6%



Open Prostatectomy (OP)

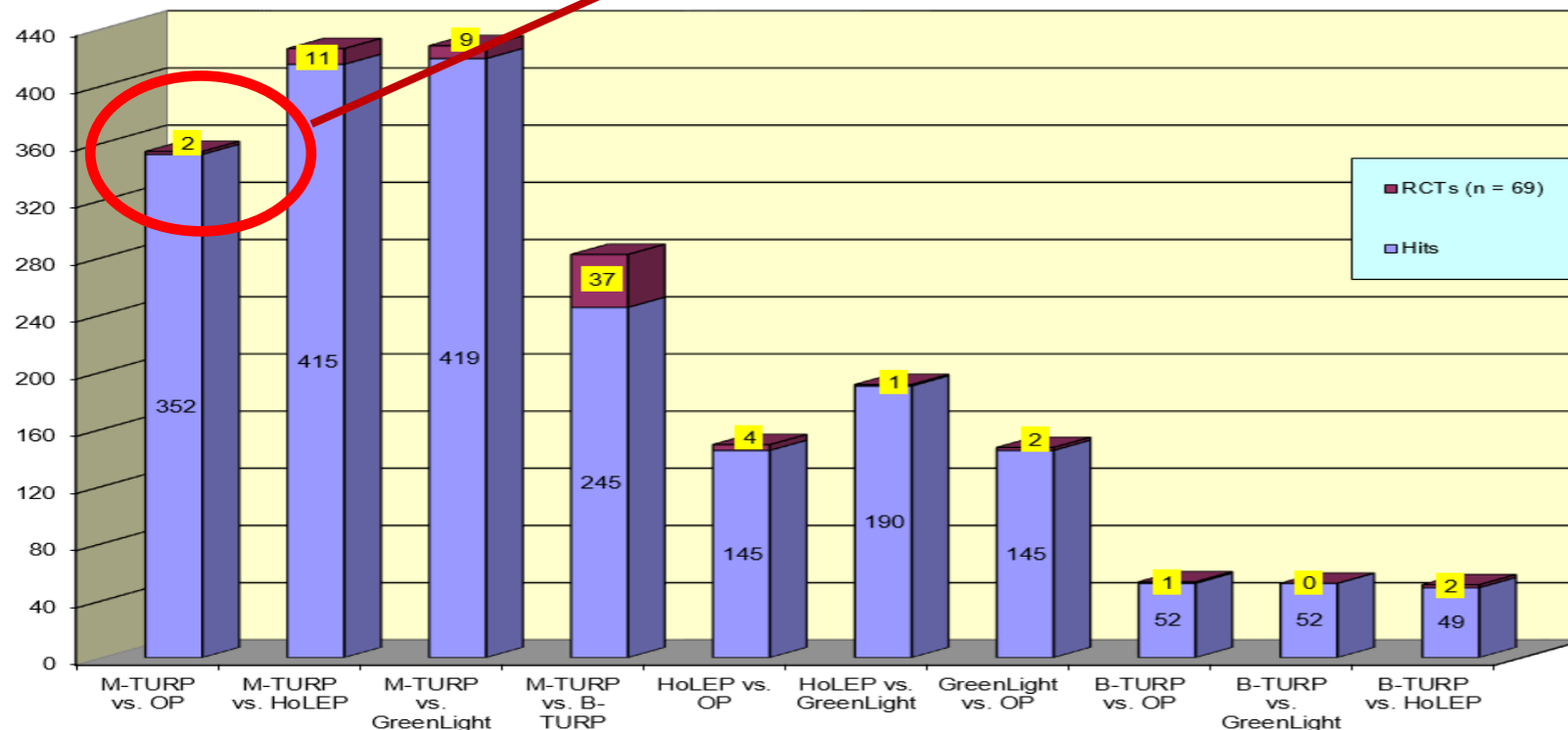
Recommendations	LE	GR
OP or EEP such as holmium laser or bipolar enucleation are the first choice of surgical treatment in men with a substantially enlarged prostate (e.g. > 80 mL) and moderate-to-severe LUTS.	1a	A
OP has a high operative morbidity.	1b	A

EAU guidelines on Management of non-neurogenic male LUTS, 2016

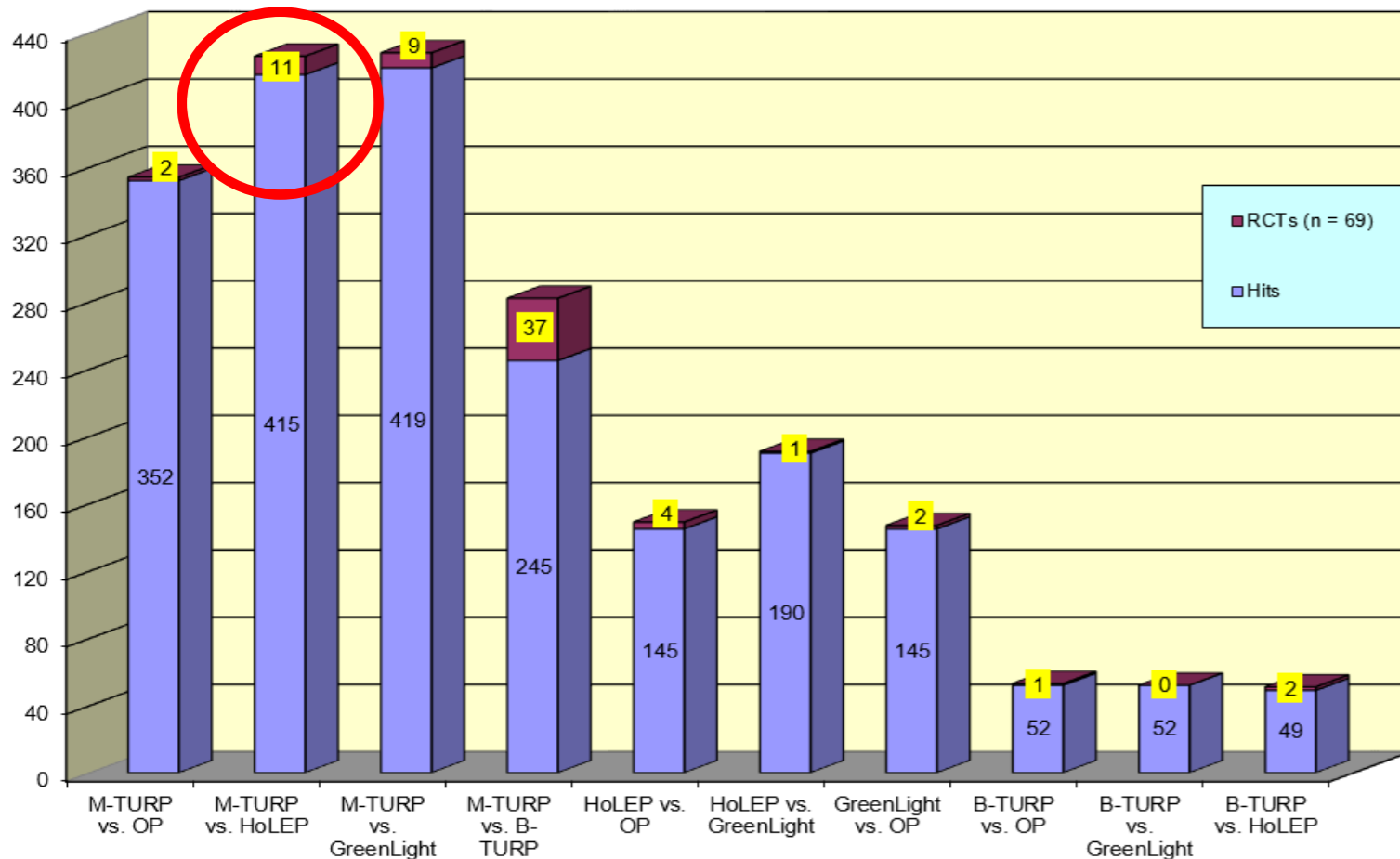
But...

“TURP comparison with OP has been based on retrospective, open, and single center series”

Campbell's Urology. 2002:1412



HoLEP vs. M-TURP



3 Meta-analyses:
similar results

Tan et al. Br J Surg. 2007;94:1201-8
(4 RCTs; n=460)

Yin et al. J Endourol. 2013;27:604-11
(6 RCTs; n=541)

Cornu et al. Eur Urol. 2015;67:1066-96
(6 RCTs; n=570)



Current Level of Evidence (1a): Summary

- Similar efficacy (Yin et al; Cornu et al) for HoLEP
- Similar safety (Tan et al & Yin et al; Cornu et al)
- HoLEP: Better perioperative profile:
 - Less hemorrhage - transfusions (Yin et al)
 - Shorter catheter-hospital duration (Yin et al; Cornu et al)
- TURP: Shorter OR duration (Tan et al; Yin et al; Cornu et al)
 - Less dysuria (Tan et al & Yin et al)



Potential limitations of the meta-analyses

- Relative low number of RCTs
- Relatively low quality of RCTs
- Relative heterogeneity among RCTs
- Relatively short follow-up (12 mo)



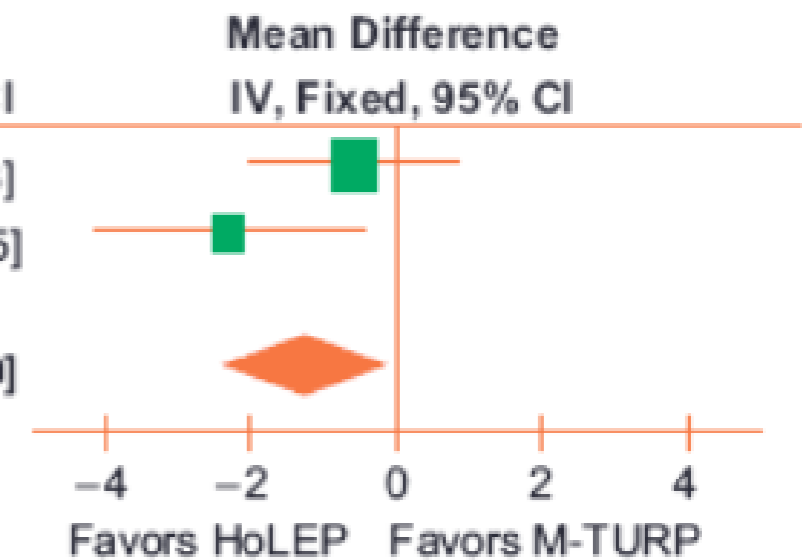
Long term results (3-7 yr): Meta-analysis (IPSS-Qmax)

E.

Study or Subgroup	HoLEP			M-TURP			Weight	Mean Difference IV, Fixed, 95% CI
	Mean	SD	Total	Mean	SD	Total		
Ahyai 2007	2.7	3.2	36	3.3	3	36	62.5%	-0.60 [-2.03, 0.83]
Gilling 2012	8	5.2	92	10.3	7.42	92	37.5%	-2.30 [-4.15, -0.45]
Total (95% CI)			128			128	100.0%	-1.24 [-2.37, -0.10]

Heterogeneity: $\chi^2 = 2.03$, $df = 1$ ($p = 0.15$); $I^2 = 51\%$

Test for overall effect: $Z = 2.14$ ($p = 0.03$)

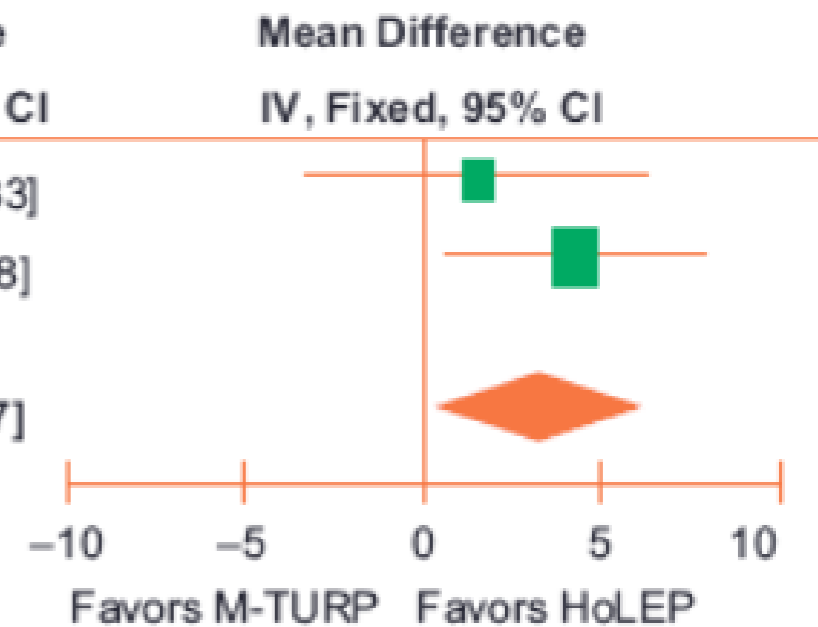


F.

Study or Subgroup	HoLEP			M-TURP			Weight	Mean Difference IV, Fixed, 95% CI
	Mean	SD	Total	Mean	SD	Total		
Ahyai 2007	29	11	36	27.5	9.9	36	35.9%	1.50 [-3.33, 6.33]
Gilling 2012	22.09	15.47	92	17.83	8.61	92	64.1%	4.26 [0.64, 7.88]
Total (95% CI)			128			128	100.0%	3.27 [0.37, 6.17]

Heterogeneity: $\chi^2 = 0.80$, $df = 1$ ($p = 0.37$); $I^2 = 0\%$

Test for overall effect: $Z = 2.21$ ($p = 0.03$)



Cornu et al. Eur Urol. 2015;67:1066-96



**EAU Guidelines on
Management of
Non-Neurogenic
Male Lower Urinary
Tract Symptoms
(LUTS), incl.
Benign Prostatic
Obstruction (BPO)**

S. Gravas (Chair), T. Bach, A. Bachmann, M. Drake, M. Gacci,
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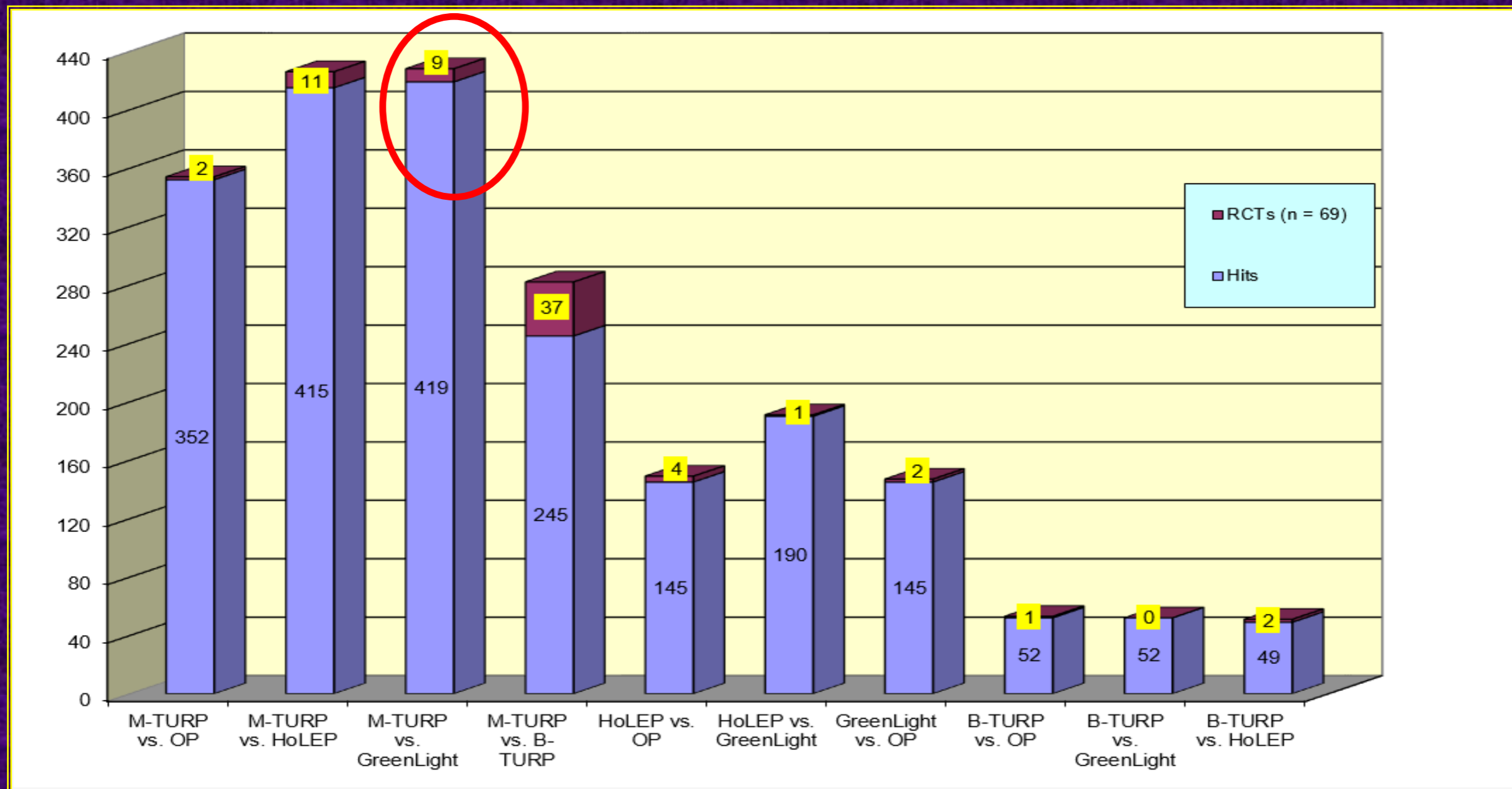
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Recommendations	LE	GR
HoLEP and 532-nm laser vaporisation of the prostate are alternatives to TURP in men with moderate-to-severe LUTS leading to immediate, objective, and subjective improvements comparable with TURP.	1a	A
The long-term functional results of HoLEP are comparable with TURP or open prostatectomy.	1b	A

EAU guidelines on Management of non-neurogenic male LUTS, 2016



GreenLight vs. M-TURP



- 1 Μετα-ανάλυση

Thangasamy et al. Eur Urol. 2012;62:315-23 (9 RCTs; n=889)



Τρέχον επίπεδο τεκμηρίωσης (1a): Σύνοψη

- Παρόμοια αποτελεσματικότητα
- Παρόμοια ασφάλεια
- **RVP: καλύτερο περιεγχειρητικό προφίλ:**
 - Λιγότερες μεταγγίσεις – επισχέσεις από πρήγματα αίματος
 - Βραχύτερος χρόνος καθετηριασμού – νοσηλείας
- **TURP: Βραχύτερη διάρκεια χειρουργείου**



Δυνητικοί περιορισμοί μετα-ανάλυσης

- Σχετικά χαμηλή ποιότητα των μελετών
- Σχετικά βραχύς χρόνος παρακολούθησης (12 mo)
- Αδυναμία ανάλυσης σε υποομάδες των διαφορετικών συστημάτων (80W KTP, 120 W HPS)
- Απουσία δεδομένων για το σύστημα 180 W XPS



- Goliath Study: Multicentre (29 centers/9 European countries)
Non-inferiority RCT
- Largest RCT (N=281; 1:1) to compare laser prostatectomy with TURP (BPO)
- The only RCT to compare GL 180 XPS with TURP
- 3 publications to date: results at 6 mo 12 mo and 24 mo

EUROPEAN UROLOGY 65 (2014) 931–942

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



Platinum Priority – Benign Prostatic Obstruction
Editorial by Charalampos Mamoulakis on pp. 943–945 of this issue

180-W XPS GreenLight Laser Vaporisation Versus Transurethral Resection of the Prostate for the Treatment of Benign Prostatic Obstruction: 6-Month Safety and Efficacy Results of a European Multicentre Randomised Trial—The GOLIATH Study

EUROPEAN UROLOGY 69 (2016) 94–102

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



Platinum Priority – Benign Prostatic Obstruction
Editorial by Jean-Nicolas Cornu and Stephan Madeysbacher on pp. 103–104 of this issue

A Multicenter Randomized Noninferiority Trial Comparing GreenLight-XPS Laser Vaporization of the Prostate and Transurethral Resection of the Prostate for the Treatment of Benign Prostatic Obstruction: Two-yr Outcomes of the GOLIATH Study

A European Multicenter Randomized Noninferiority Trial Comparing 180 W GreenLight XPS Laser Vaporization and Transurethral Resection of the Prostate for the Treatment of Benign Prostatic Obstruction: 12-Month Results of the GOLIATH Study

570 | www.jurology.com

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<http://dx.doi.org/10.1016/j.juro.2014.09.001>
Vol. 193, 570-578, February 2015
Printed in U.S.A.



The Goliath Study: Conclusions

Conclusions: XPS was shown to be noninferior (comparable) to TURP in terms of IPSS, Q_{\max} , and proportion of patients free of complications. XPS results in a lower rate of early reinterventions but has a similar rate after 6 mo.

Trial registration: ClinicalTrials.gov, identifier NCT01218672.

Conclusions: Followup at 1 year demonstrated that photoselective vaporization of the prostate produced efficacy outcomes similar to those of transurethral resection of the prostate. The complication-free rates and overall reintervention rates were comparable between the treatment groups.

Conclusions: Twenty-four-mo follow-up data demonstrated that GL-XPS provides a durable surgical option for the treatment of BPO that exhibits efficacy and safety outcomes similar to TURP.

Bachmann et al. Eur Urol. 2014;65:931-42

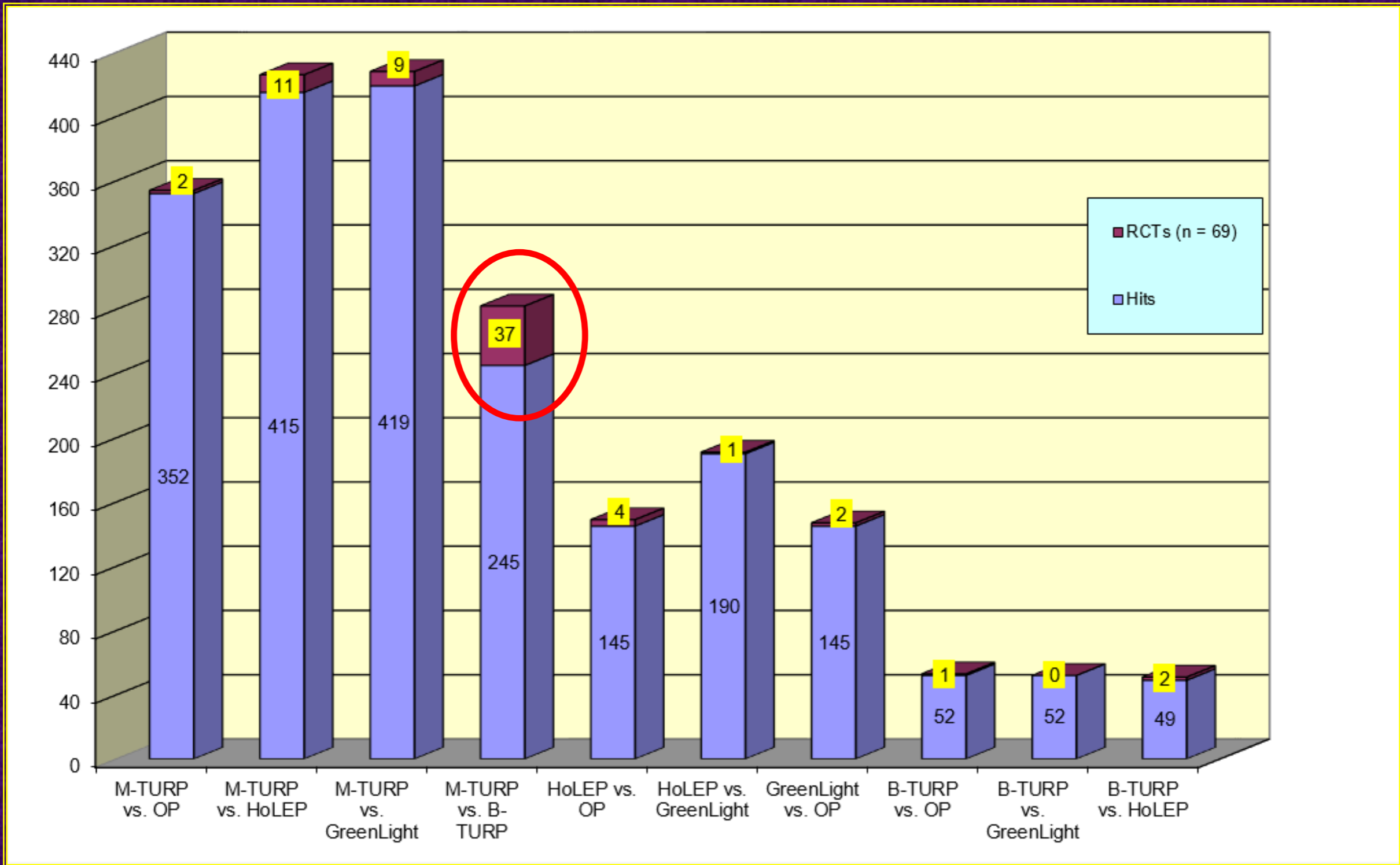
Bachmann et al. J Urol. 2015;193:570-8

Thomas et al. Eur Urol. 2016;69:94-102



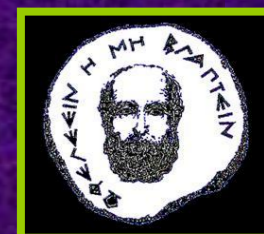
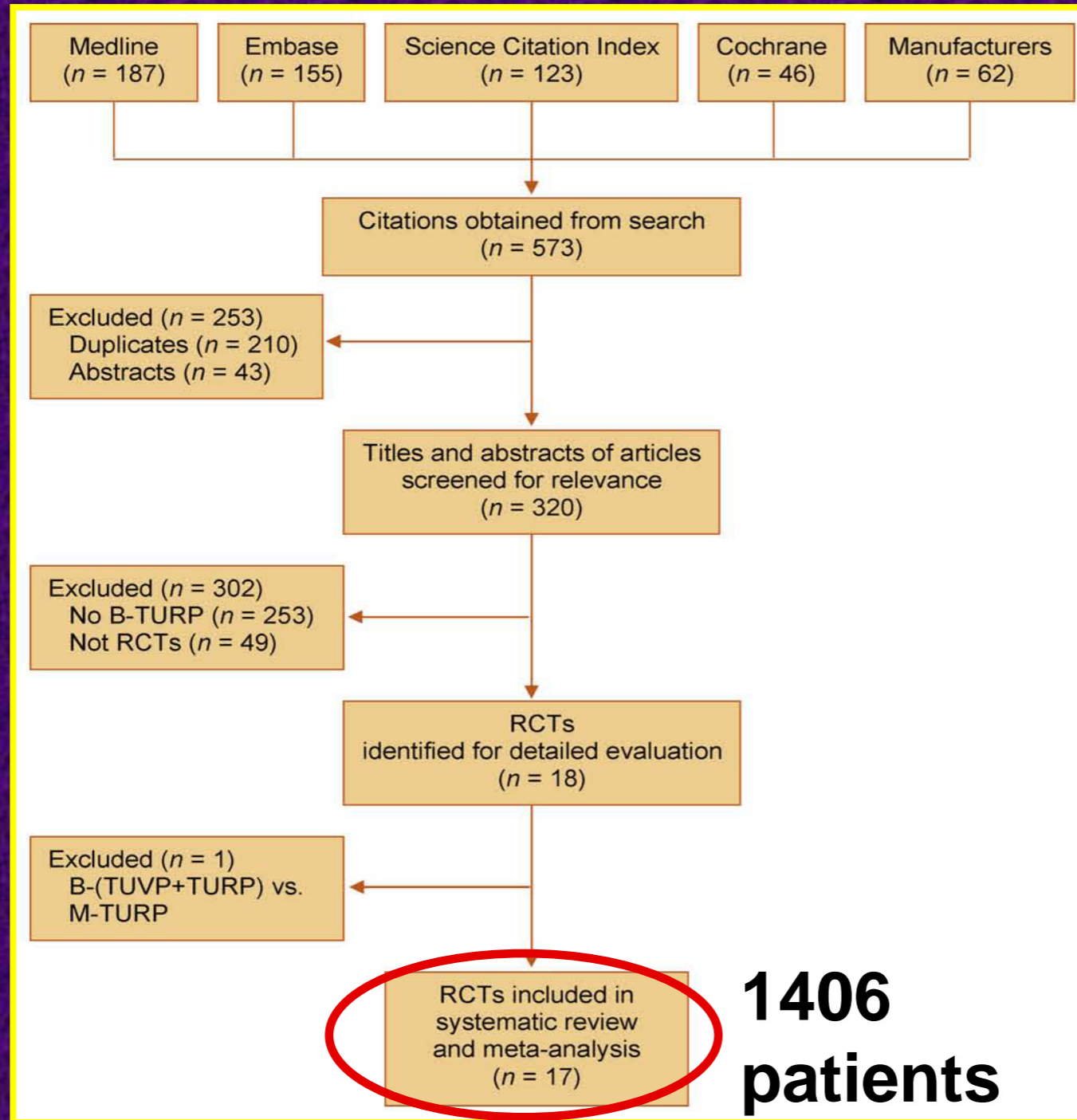
Recommendations	LE	GR
532-nm laser vaporisation of the prostate is alternative to TURP in men with moderate-to-severe LUTS leading to immediate, objective, and subjective improvements comparable with TURP.	1a	A
The intermediate-term functional results of 532-nm laser vaporisation of the prostate are comparable with TURP.	1b	A
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

M-TURP vs. B-TURP



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

Charalampos Mamoulakis^{1,2}, Dirk T. Ubbink³, Jean J.M.C.H. de la Rosette⁴



Current Level of Evidence (1a): Summary

- No difference in efficacy
- No difference in OR time, AUR and stricture rates
- **B-TURP is “preferable” (more favorable safety profile):**
 - Postop. serum Na⁺ levels significantly higher
 - TUR syndrome elimination
 - Less bleeding (fewer clot retentions/transfusions)
 - Shorter irrigation & catheterization/hospitalization time



Δυνητικοί περιορισμοί της μετα-ανάλυσης

- Σχετικά χαμηλή ποιότητα μελετών
- Σχετικά βραχύς χρόνος παρακολούθησης (12 mo)
- Απουσία δεδομένων επίδρασης στη σεξουαλική λειτουργία
- Απουσία δεδομένων αναφορικά στο κόστος



B-TURP vs. M-TURP

Τί συνέβη τα τελευταία 7 χρόνια;



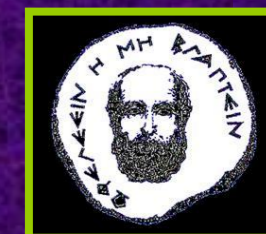
- 23 νέες RCTs:
 - > 120% αύξηση αριθμού δημοσιευμένων RCTs
 - > 100% αύξηση αριθμού ασθενών (>1500 νέοι ασθενείς)
- 2 Μετα-αναλύσεις:
 - Ahyai et al. Eur Urol. 2010;58:384-97*
 - 10/17 RCTs
 - Burke N et al. Urology. 2010;75:1015-22*
 - 13/17 RCTs
- 2 Μετα-αναλύσεις (24/17 RCTs)
 - Omar et al. BJU Int. 2014;113:24-35*
 - Cornu et al. Eur Urol 2015;67:1066-96*

Καμία επιπλέον
πληροφορία !



Summary of RCTs NOT meta-analyzed to date

RCT	Country	Trial Size	Bipolar Technology	Follow-up (months)	Main Conclusions	Favors
1. Acuña-López, 2010	Mexico	30	Gyrus	-	Similar Na and Hb drop, clot retention and AUR rates	NONE
					Similar long term efficacy and safety	NONE
2. Xie, 2012	China	220	Gyrus	60	Shorter operation time, irrigation time, lower Na/Hb drop shorter catheterization/hospitalization time, less clot retentions	B-TURP
3. Akman, 2012	Turkey	286	TURis	12	Similar efficacy, similar safety (bleeding, ED rates) Shorter operation time, lower Na drop	B-TURP
4. Huang, 2012	China	136	Gyrus	-	Less intraoperative Hb drop and Less postoperative bleeding	B-TURP
5. Mamoulakis, 2013	Multinational	218	Autocon	12	Similar effect on overall sexual function (IIEF-15)	NONE
5. Mamoulakis, 2013	Multinational	279	Autocon	36	Similar US/BNC/reintervention rates	NONE
6. Giulianeli, 2013	Italy	160	Gyrus	36	Shorter catheterization/hospitalization time, surgical re-treatment-free rate	B-TURP
7. Kumar, 2013	India	186	Gyrus	12	Similar efficacy, similar safety	NONE
8. El Saied Hafez, 2014	Egypt	50	Gyrus	-	Less drop in serum Na, Hb level and fluid overload	B-TURP
9. Ghozzi, 2014	Tunis	60	TURis	12	Shorter irrigation/catheterization/hospitalization time	B-TURP



- Μεσοπρόθεσμα δεδομένα παρακολούθησης (>12–60 μήνες)
- Δεδομένα επίδρασης στη σεξουαλική λειτουργία
- Δεδομένα κόστους
- Ειδικοί υποπληθυσμοί ασθενών ?



Trials	Inter-vention	Patients (n)	Follow-up months	IPSS Decrease		Qmax (mL/s)		US/BNC (%)	LE
				Absolute	(%)	Absolute	(%)		
Autorino et al. 2009	M-TURP	31	48	-17.9 ^a	-74 ^a	+15.0 ^a	+242 ^a	6.5/3.2	1b
	B-TURP (Gyrus)	32		-17.3 ^a	-72 ^a	+12.7 ^a	+179 ^a	3.1/3.2	
Chen et al. 2010	M-TURP	50	24	-18.0 ^a	-83 ^a	+16.9 ^{a, b}	+214 ^a	6.0/4.0	1b
	B-TURP (TURiS)	50		-19.1 ^a	-84 ^a	+18.4 ^a	+259 ^a	4.0/2.0	
Geavlette et al. 2011	M-TURP	170	18	-15.9 ^a	-66 ^a	+14.2	+222	5.1/4.1	1b
	B-TURP (TURiS)	170		-16.1 ^a	-67 ^a	+14.5 ^a	+238 ^a	6.3/3.4	
Xie et al. 2012	M-TURP	79	60	-16.2 ^a	-71 ^a	+15.2 ^a	+157 ^a	5.1/10.1	1b
	B-TURP (Gyrus)	78		-16.6 ^a	-70 ^a	+16.5 ^a	+167 ^a	5.1/5.1	
Mamoulakis et al. 2012	M-TURP	108	36	-16.0 ^a	-69 ^a	+10.8 ^a	+126 ^a	9.3/1.9	1b
	B-TURP Autocon	122		-15.4 ^a	-66 ^a	+10.7 ^a	+122 ^a	8.2/6.6	
Giulianelli et al. 2013	M-TURP	80	36	-19.4 ^a	-83 ^a	+13.5 ^a	+208 ^a	NA/13.3	1b
	B-TURP (Gyrus)	80		-20.3 ^a	-91 ^a	+14.1 ^a	+158 ^a	NA/2.5	



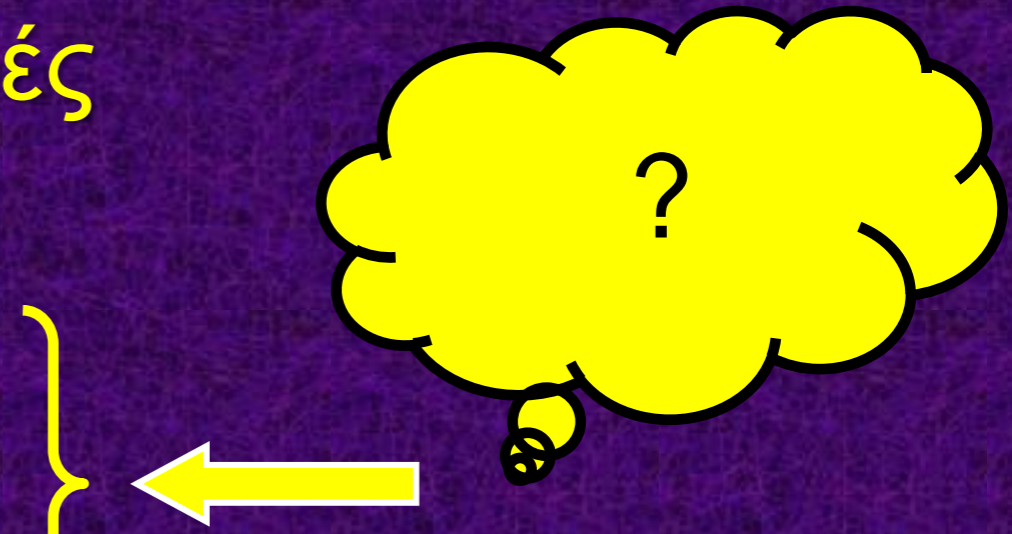
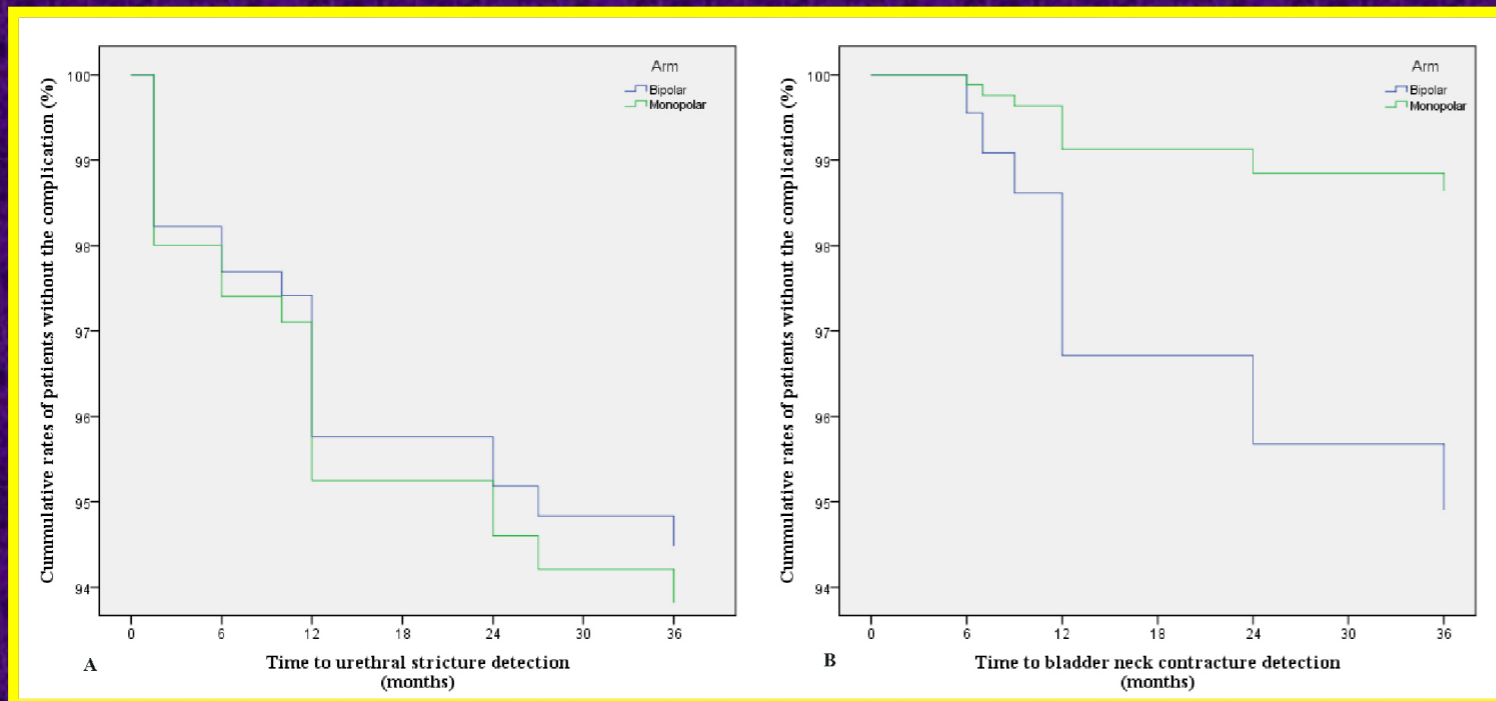
Platinum Priority – Benign Prostatic Obstruction

Midterm Results from an International Multicentre Randomised Controlled Trial Comparing Bipolar with Monopolar Transurethral Resection of the Prostate

Charalampos Mamoulakis^{a,b,*}, Michael Schulze^c, Andreas Skolarikos^d, Gerasimos Alivizatos^d, Roberto M. Scarpa^e, Jens J. Rassweiler^c, Jean J.M.C.H. de la Rosette^a, Cesare M. Scoffone^e

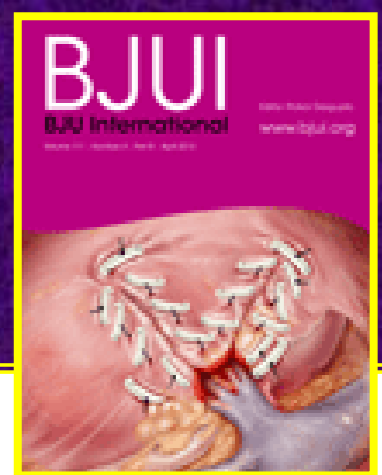


- Μεσοπρόθεσμη (36 μήνες) ασφάλεια (US, BNC rates)
- Αποτελεσματικότητα, ποσοστά επανεπέμβασης
- Μή στατιστικά σημαντικές διαφορές



Mamoulakis et al. Eur Urol. 2013;63:667-76

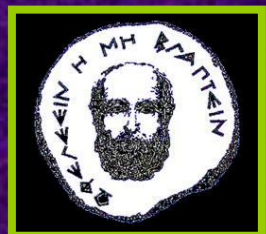




Incidence of urethral stricture after bipolar transurethral resection of the prostate using TURis: results from a randomised trial

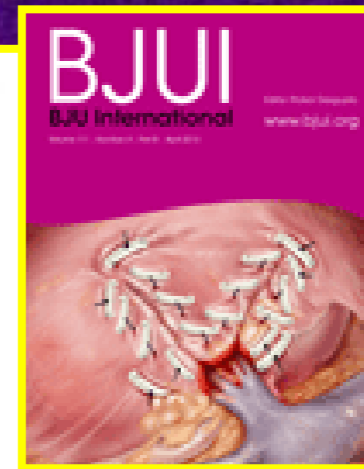
Komura et al. BJU Int. 2015;115:644-52.

- 136 ασθ. (τυχαιοποίηση 1:1) B-TURP (TURis)/M-TURP
- Παρακολούθηση 36 μήνες
- Πρωτεύον καταληκτικό σημείο: ασφάλεια (στενώματα)
- Στατιστικά σημαντική διαφορά υπέρ M-TURP (6.6 vs. 19%) !
- Υποανάλυση με βάση όγκο προστάτη
 - ≤70mL: TURis 3/40 [7.5%] vs. M-TURP: 3/39 [7.7%]; P=1.00)
 - > 70 mL: TURis (9/23 [39.1] vs 1/22 [4.6%]; P = 0.01)

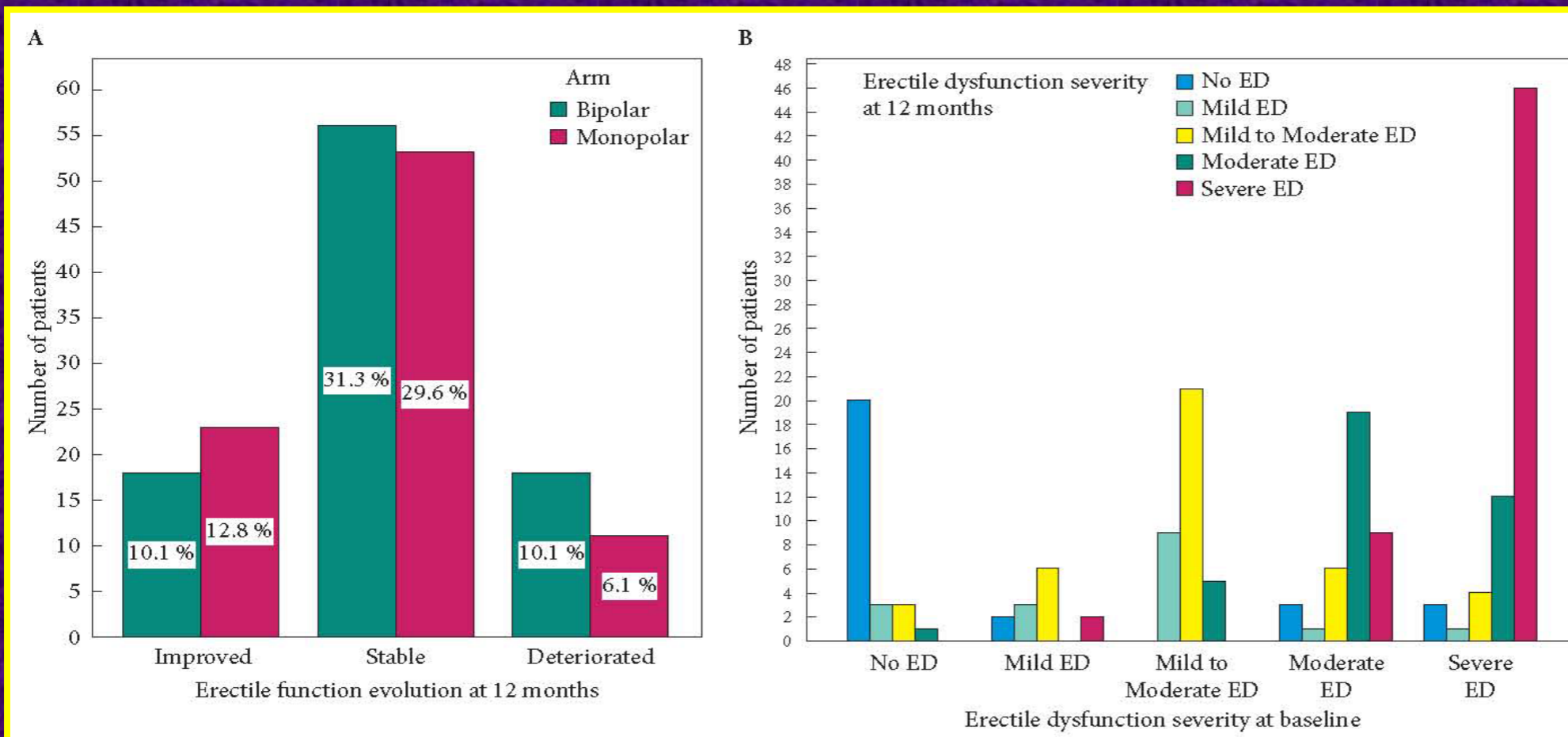


Bipolar vs monopolar transurethral resection of the prostate: evaluation of the impact on overall sexual function in an international randomized controlled trial setting

Charalampos Mamoulakis^{1,2}, Andreas Skolarikos³, Michael Schulze⁴, Cesare M. Scoffone⁵, Jens J. Rassweiler⁴, Gerasimos Alivizatos³, Roberto M. Scarpa⁵ and Jean J.M.C.H. de la Rosette¹



- Καμία διαφορά μεταξύ M-TURP & B-TURP στη συνολική σεξουαλική λειτουργία (IIEF-15) στους 12 μήνες



Mamoulakis et al. BJU Int. 2013;112:109-20

Δεδομένα Κόστους

Nationwide administrative data base in Japan (6686 patients)

In-Hospital Outcomes and Cost Assessment Between Bipolar Versus Monopolar Transurethral Resection of the Prostate

Purpose: We compared the in-hospital outcomes between bipolar and monopolar transurethral resection of the prostate (B-TURP and M-TURP, respectively) on a real-world practice using a large database.

Patients and Methods: Patients who underwent TURP were extracted from the Diagnosis Procedure Combination database, which is a case-mix administrative claims database in Japan. TURP procedures were classified into M-TURP and B-TURP groups according to intraoperative use or nonuse of D-sorbitol solution, respectively, which is the only nonelectrolyte bladder irrigation fluid for M-TURP available in Japan. To exclude causality among autologous and homologous transfusion events, we confined eligible hospitals to those in which no autologous blood preparation was undertaken for TURP and whose annual surgical caseloads were 15 cases or more. Multivariate analyses were conducted for homologous transfusion, postoperative complications, operative time, postoperative length of stay, and total costs.

Results: There were 5155 M-TURP and 1531 B-TURP patients identified. The results for M-TURP *vs* B-TURP (effect sizes were evaluated with reference to M-TURP) were 2.3% *vs* 1.3% for transfusion (odds ratio [OR]=0.54; $P=0.013$), 3.3% *vs* 1.7% for postoperative complications (OR=0.46; $P<0.01$), 98 *vs* 116 minutes for operative time (20.5% increase; $P<0.001$), 8.65 *vs* 8.45 days for postoperative stay (3.6% reduction; $P=0.003$), and \$6103 *vs* \$6062 for cost (1.7% reduction; $P=0.018$).

Conclusion: B-TURP had significantly lower rates of transfusion and postoperative complications, but a longer operative time. The impacts of B-TURP on shortening the hospital stay and lowering the costs were of little clinical significance.

Στατιστικά σημαντικό (αλλά μικρό) όφελος υπέρ B-TURP:
\$6103 vs. \$6062 (1.7% μείωση κόστους)

Sugihara et al. J Endourol. 2012;26:1053-8



Ειδικοί Υποπληθυσμοί Ασθενών ?

Bipolar Transurethral Resection of the Prostate: Darwinian Evolution of an Instrumental Technique

Charalampos Mamoulakis and Jean J. M. C. H. de la Rosette

Bipolar transurethral resection of the prostate (B-TURP) represents a Darwinian evolution of an instrumental technique that has been justified by reinforcing the leading position of monopolar transurethral resection of the prostate. Notwithstanding limitations, the best available evidence recommends B-TURP as an attractive alternative. It may serve as a reliable training platform for modern residents. High-quality evidence is lacking to definitely define its position in treating special subpopulations (anticoagulation dependence, comorbidities, and large adenomas). Regarding economic issues, preliminary evidence supports B-TURP, warranting further investigation. Future perspectives include attempts toward improvements of the existing technology, combining advantages with those of other new techniques, and evolution to novel, potentially safer, or more efficient techniques to address remaining challenges. UROLOGY 85: 1143–1150, 2015. © 2015 Elsevier Inc.



Mamoulakis & de la Rosette. Urology. 2015 May;85:1143-50.



Safety and Efficacy of Bipolar Versus Monopolar Transurethral Resection of the Prostate in Patients with Large Prostates or Severe Lower Urinary Tract Symptoms: Post Hoc Analysis of a European Multicenter Randomized Controlled Trial.

Abstract

PURPOSE: We compare bipolar vs monopolar transurethral prostate resection safety/secondary outcomes including efficacy in patients with large prostate volume or severe lower urinary tract symptoms.

MATERIALS AND METHODS: From July 2006 to June 2009 candidates for transurethral prostate resection were recruited at 4 centers, randomized 1:1 into monopolar/bipolar transurethral prostate resection arms and followed up to 36 months. Post hoc data analysis from patients with large prostate volume or severe lower urinary tract symptoms is presented. Patients with large prostate volume or severe lower urinary tract symptoms were defined as those with transrectal ultrasound based prostate volume greater than 80 ml or International Prostate Symptom Score greater than 19. Safety was estimated using sodium/hemoglobin changes immediately after surgery, complications during the early postoperative period (up to 6 weeks), and short-term (up to 12 months) and midterm (up to 36 months) followup. Secondary outcomes included, among others, efficacy quantified by changes in maximum urine flow rate, post-void residual urine volume and International Prostate Symptom Score compared with baseline.

RESULTS: A total of 279 patients were randomized. Post hoc analysis of data from patients with a large prostate volume or severe lower urinary tract symptoms was based on analysis A-in 62 of 279 participants (22.3%) (monopolar transurethral prostate resection 32, bipolar transurethral prostate resection 30) or analysis B-in 126 of 279 participants (45.2%) (monopolar transurethral prostate resection 57, bipolar transurethral prostate resection 69). Mean (SD) prostate volume was 108.0 (25.9) ml for monopolar transurethral prostate resection and 108.9 (23.4) ml for bipolar transurethral prostate resection ($p=0.756$). Mean International Prostate Symptom Score was 25.0 (4.2) for monopolar transurethral prostate resection and 25.3 (3.7) for bipolar transurethral prostate resection ($p=0.402$). Neither safety nor any secondary outcome differed significantly between the arms throughout followup. The only exception was the decrease in sodium (analysis A), which was significantly greater after monopolar transurethral prostate resection (-4.2 vs -0.7 mmol/l, $p=0.023$) and did not translate into a significant difference in transurethral resection syndrome rates (monopolar transurethral prostate resection 1 of 32 vs bipolar transurethral prostate resection 0 of 30, $p=1.000$).

CONCLUSIONS: Bipolar and monopolar transurethral prostate resection show similar safety/efficacy in these patient subpopulations.

Mamoulakis et al. J Urol. 2016;195:677-84.



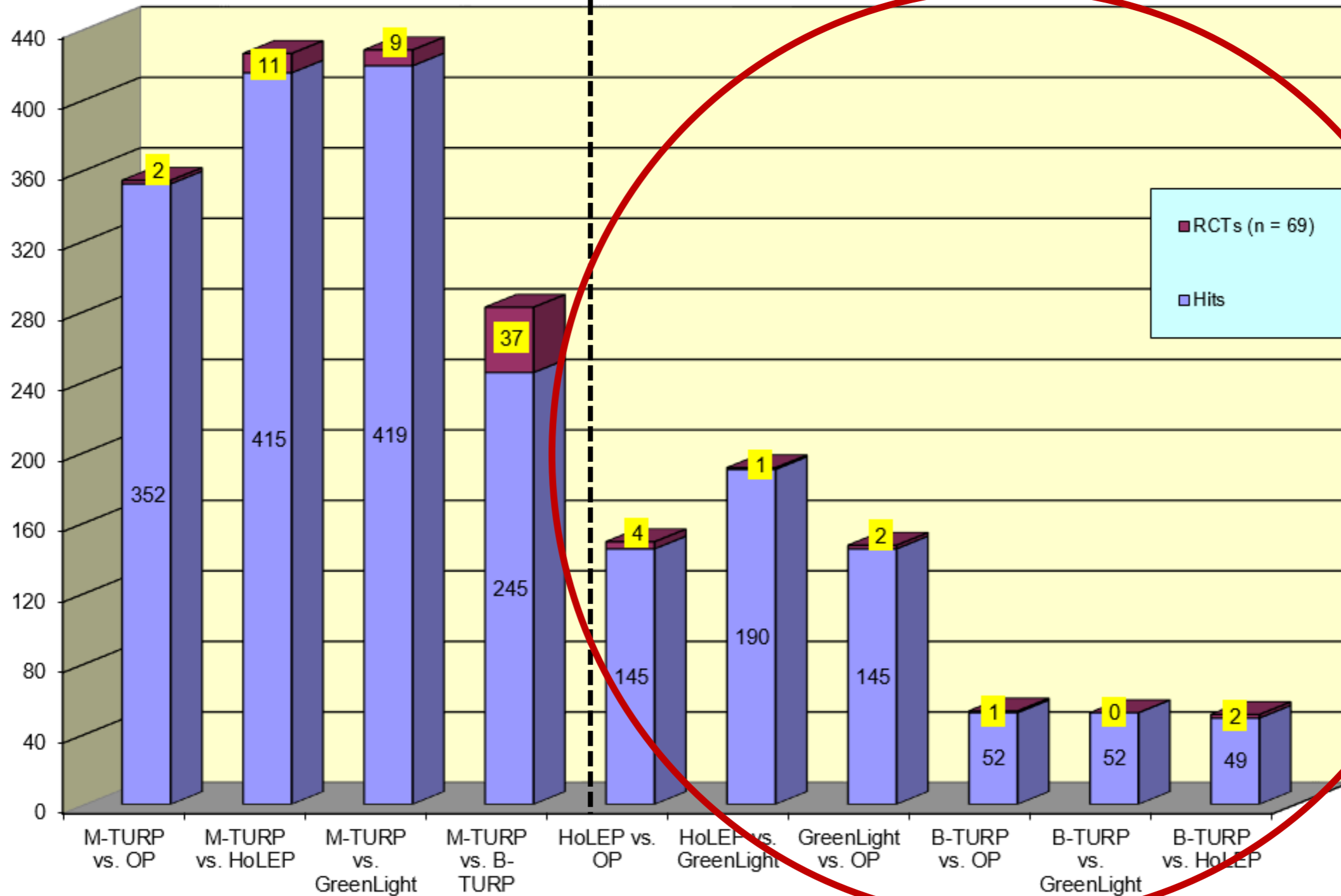
5.1.6 *Recommendations*

	LE	GR
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

EAU guidelines on Management of non-neurogenic male LUTS, 2016



Άλλες συγκρίσεις



HoLEP vs. OP

3 meta-analyses (4 RCTs-Pvol>100 ml; n=323;FU:12 (1-60) mo)

Large heterogeneity - Relatively low quality of RCTs

- Significantly shorter OR time for OP
- Significantly shorter catheter/hospital duration for HoLEP
- Significantly lower transfusion rate for HoLEP
- No difference in efficacy or any other outcome

Cornu et al. Eur Urol. 2015;67:1066-96

Li et al. PLoS One. 2015;10:e0121265

Lin et al. World J Urol. 2016;34:1207-19



HoLEP vs. Other techniques

Scarce RCTs; no firm statement can be made at present:

HoLEP vs.	n	PV (ml)	FU (mo)	IPSS/ Qmax	OR Time	Catheter Time	Hospital Time
B-TURP (TURis) ¹	120	70	12	HoLEP	B-TURP	HoLEP	HoLEP
B-TURP (PK; Gyrus) ²	280	50	24	NS	B-TURP	HoLEP	HoLEP
PVP (HPS) ³	80	90	12	NS/HoLEP	NS	NS	NS

1. *Fayad et al. Urology. 2015;86:1037-41;*
2. *Chen et al. J Urol. 2013;189:217-22;*
3. *Elmansy et al. J Urol. 2012;188:216-21*



GreenLight vs. OP

KTP 80 W

n= 125

Eighteen-Month Results of a Randomized Prospective Study Comparing Transurethral Photoselective Vaporization with Transvesical Open Enucleation for Prostatic Adenomas Greater Than 80 cc

- PVP (υπέρ): Διάρκεια καθετηριασμού- νοσηλείας
- OP (υπέρ): μέγεθος αδενώματος που αφαιρέθηκε
- Qmax, IPSS, IIEF-5 χωρίς διαφορά

<i>Adverse events</i>	<i>KTP (%)</i>	<i>Open prostatectomy (%)</i>	<i>p Value (two-sided Fisher's exact test)</i>
Intraoperative TURP-hemotaxis	5 (7.69)	0	—
Perioperative Blood Transfusion	0	8 (13.3)	0.002
Transurethral resection syndrome	0	—	—
Urethroragia	1 (1.54)	0	1.000
Pulmonary infection	0	1 (1.67)	1.000
Prolonged dysuria	5 (7.6)	7 (11.6)	0.549
Culture confirmed UTIs	14 (21.5)	16 (27)	0.504
Re-catheterization	7 (10.7)	10 (16.67)	0.365
Re-operation (urethral stricture, bladder neck contracture, apical resection)	3 (4.62)	3 (5)	1.000

Skolarikos et al. J Endourol. 2008;22:2333-40



B-TURP vs. OP

- n = 140 (Gyrus B-TURP – OP)
- Όγκος προστάτη μέχρι 100 g
- Παρακολούθηση 3 χρόνια

- Παρόμοια αποτελεσματικότητα
- **B-TURP:**
Σημαντικά λιγότερες μεταγγίσεις
Βραχύτερος χρόνος καθετηριασμού – νοσηλείας

Giulianelli et al. Arch Ital Urol Androl 2011;83:88-94





ΕΥΧΑΡΙΣΤΩ