Συγκριτικά πλεονεκτήματα/μειονεκτήματα της διπολικής διουρηθρικής προστατεκτομής

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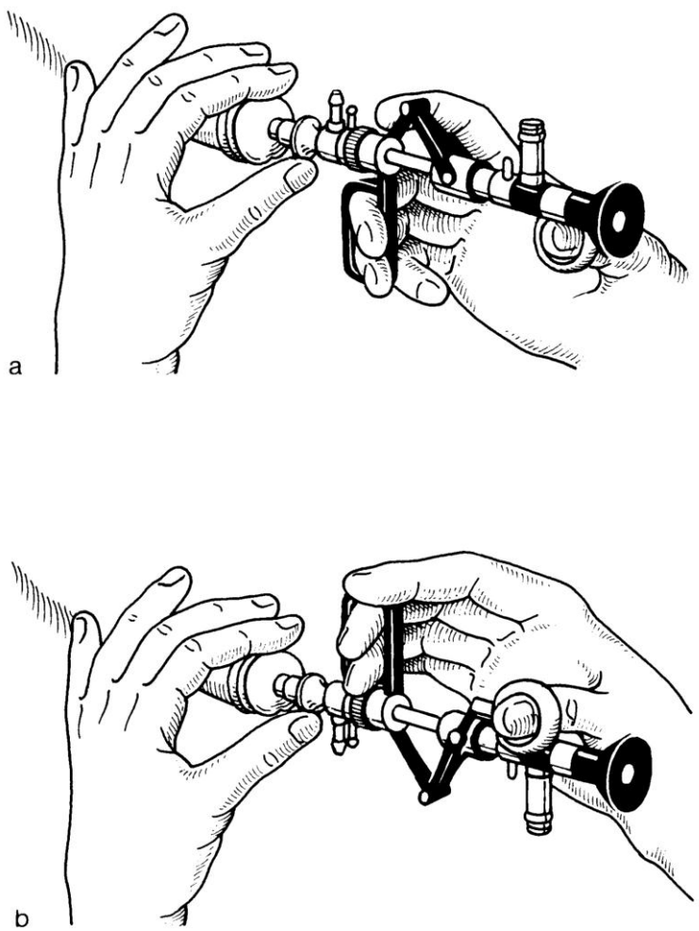
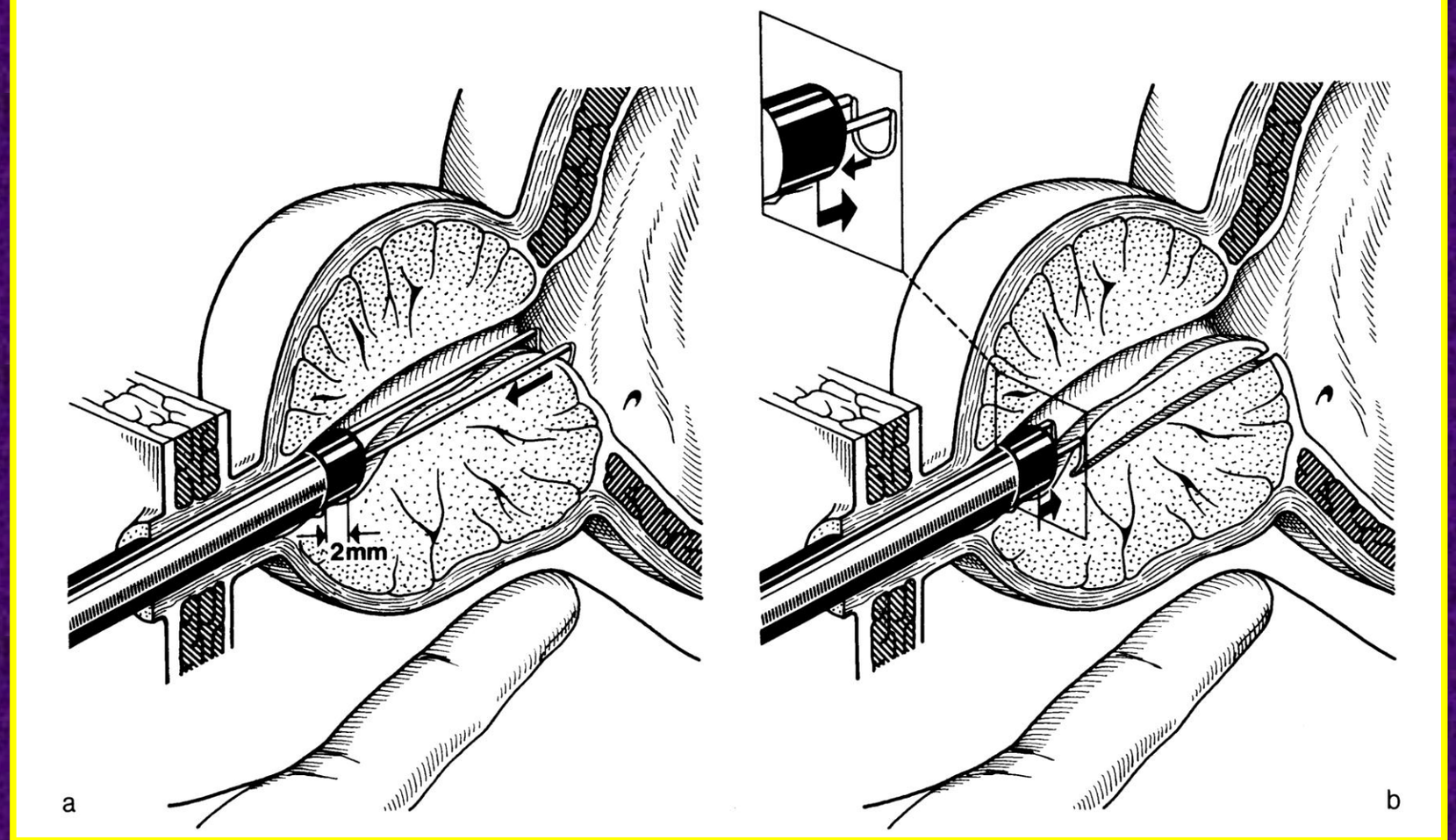
Διευθυντής Ουρολογικής Κλινικής Πα.Γ.Ν.Η.

TURP - the surgical “gold standard” for BPO

Maximillian Stern of New York: Resectoscope was born





Stern M. JAMA 1926; 87: 1726-30

TURP-“χρυσός κανόνας”: Ψηλό επίπεδο τεκμηρίωσης

“TURP is here to stay!”

de la Rosette JJ. Curr Opin Urol 2009; 19: 1-2

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

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

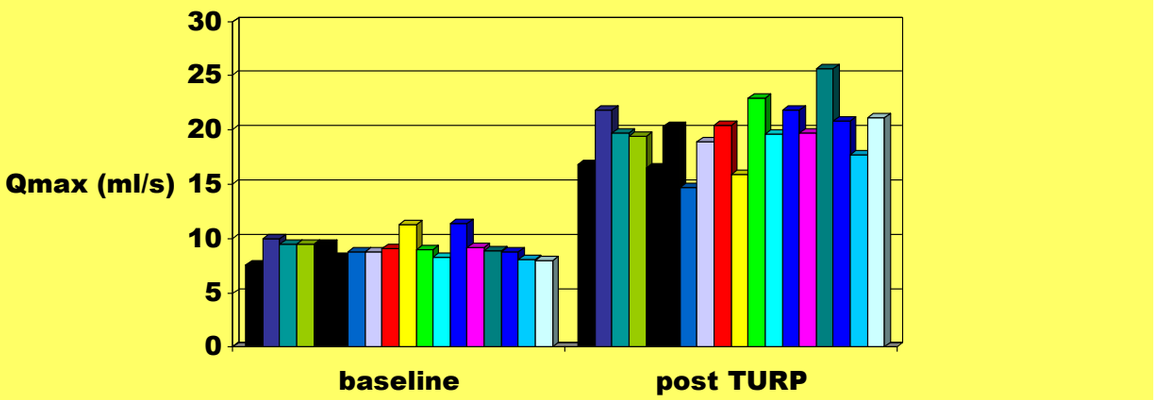
Lourenco et al. Health Technol Assess 2008; 12: 1-515

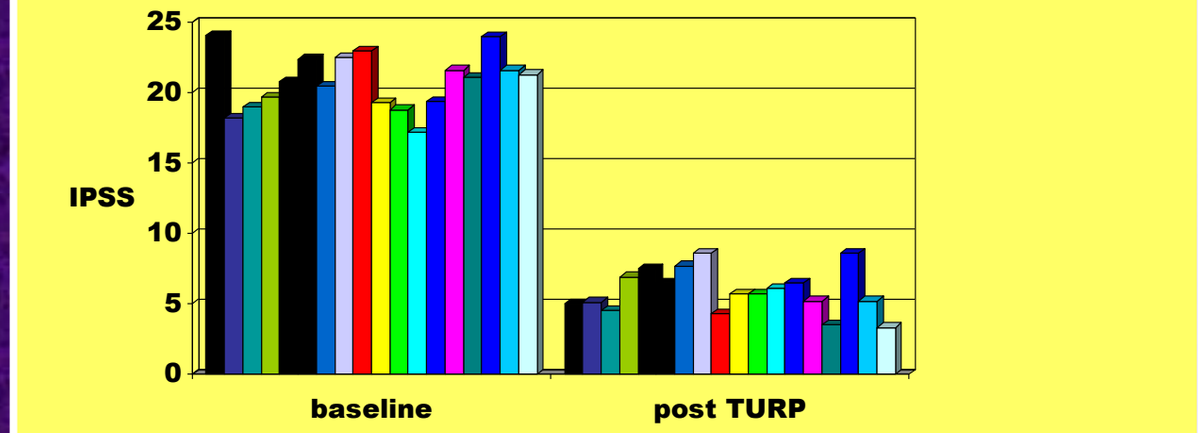
Lourenco et al. BMJ 2008; 337: a1662

Lourenco et al. BMJ 2008; 337: a449

TURP “χρυσός κανόνας”

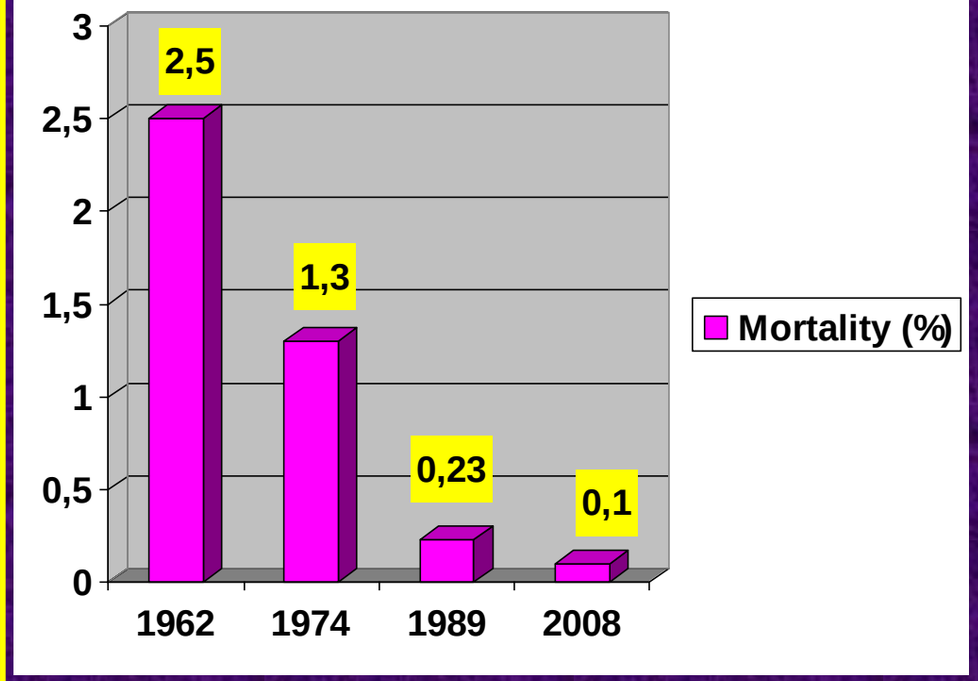
- Υψηλή αποτελεσματικότητα
- Διατήρηση αποτελεσματικότητας σε βάθος χρόνου
- Ικανοποιητική σχέση κόστους-αποτελεσματικότητας

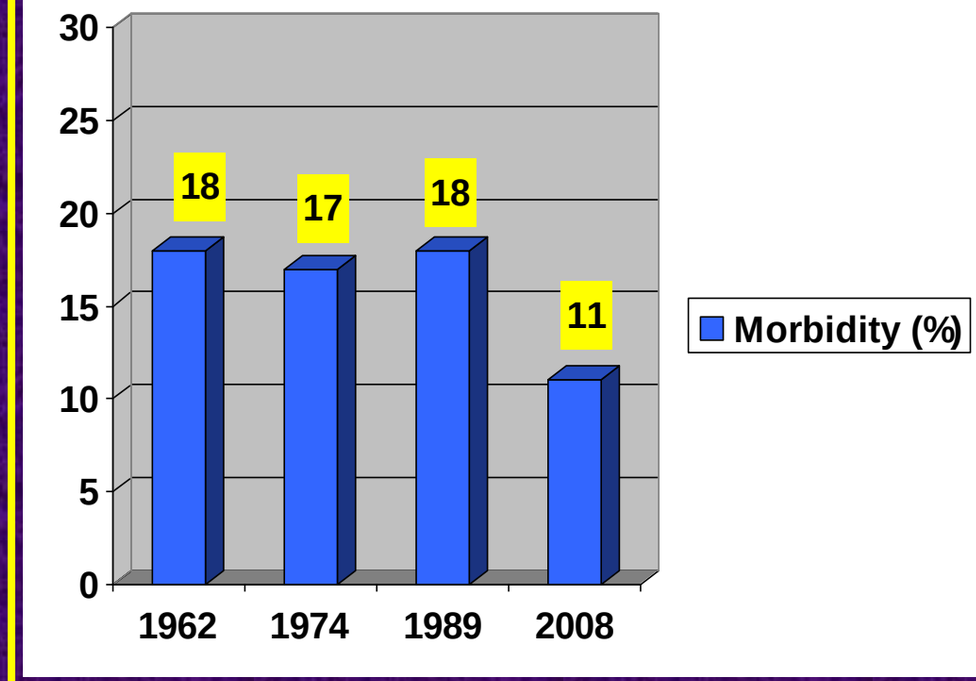




Αποδεκτή νοσηρότητα ?

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

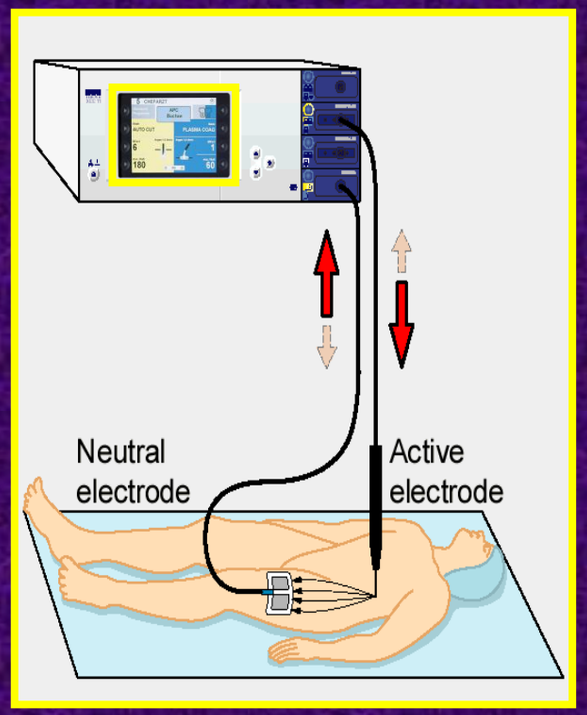
M-TURP: current surgical “gold standard”

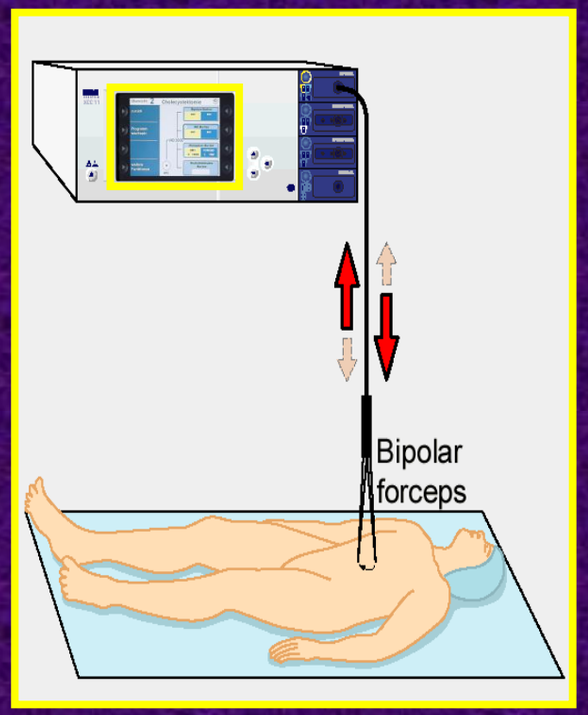
5.1.6 ***Recommendations***

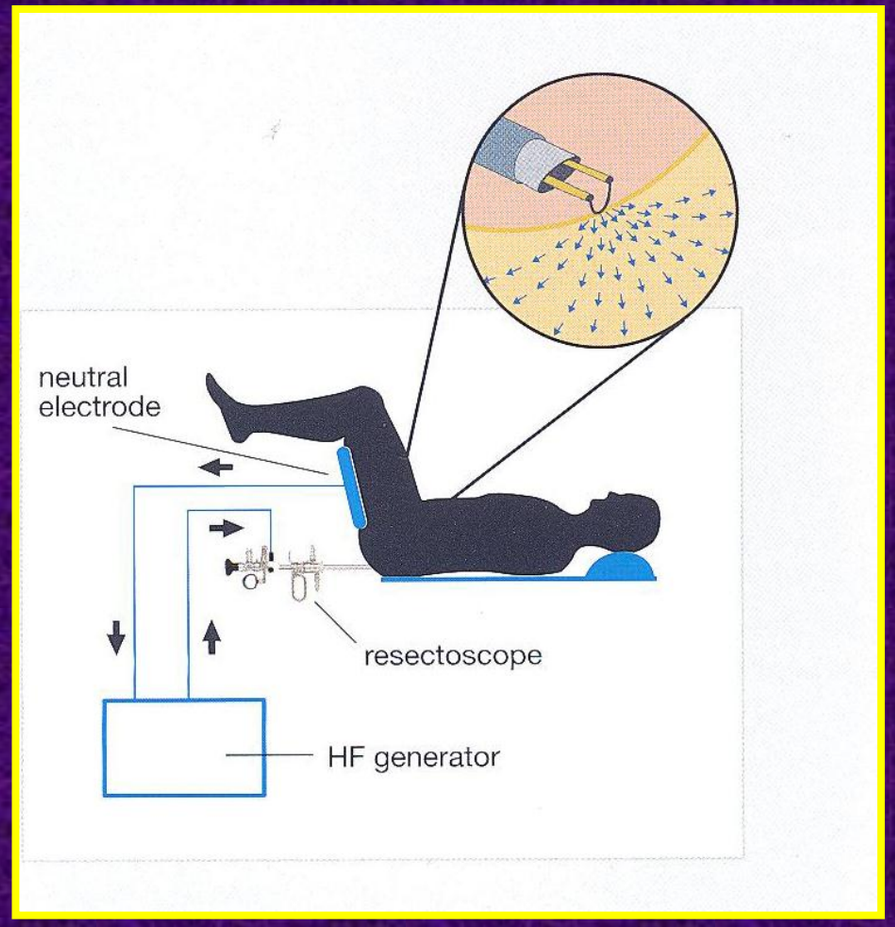
	LE	GR
M-TURP is the current surgical standard procedure for men with prostate sizes of 30-80 mL and bothersome moderate-to-severe LUTS secondary of BPO. M-TURP provides subjective and objective improvement rates superior to medical or minimally invasive treatments.	1a	A
The morbidity of M-TURP is higher than for drugs or other minimally invasive procedures.	1a	A

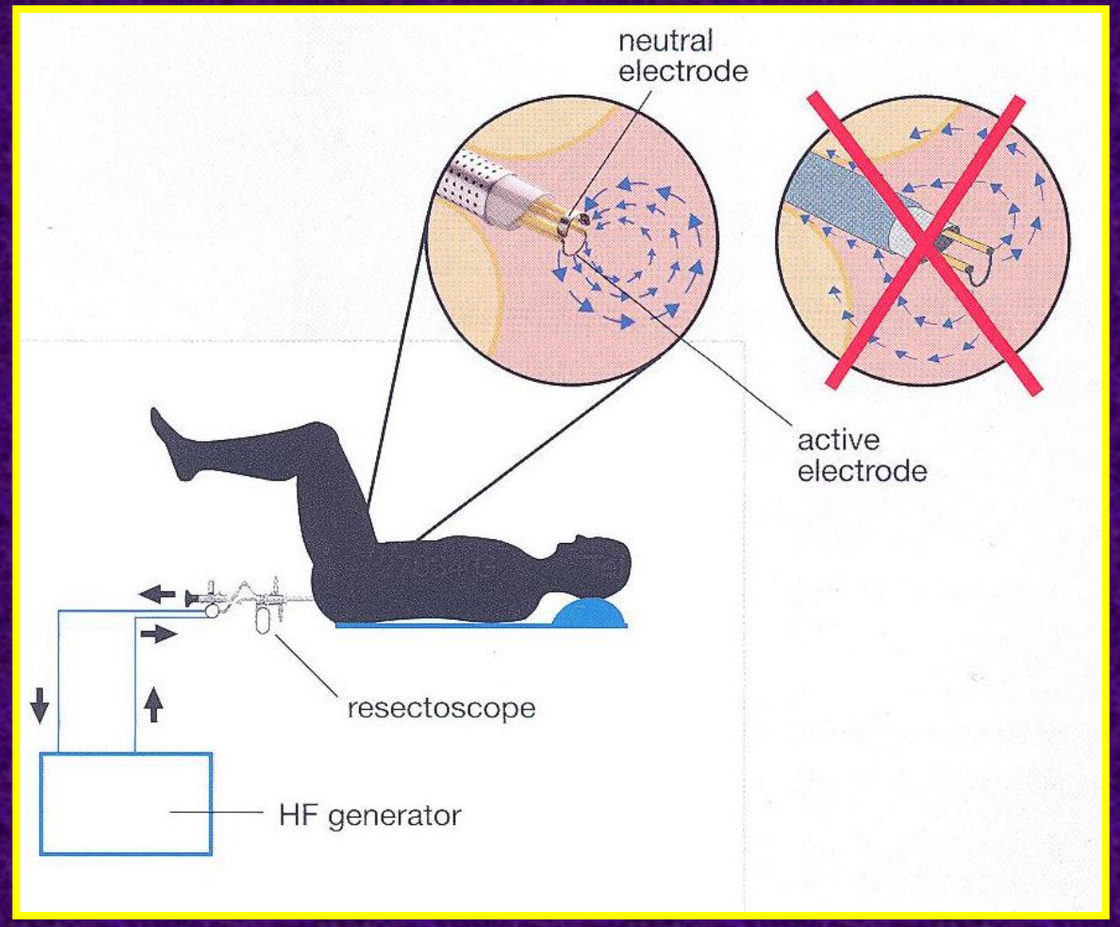
EAU Guidelines, 2016

Αρχή λειτουργίας της διπολικής τεχνολογίας



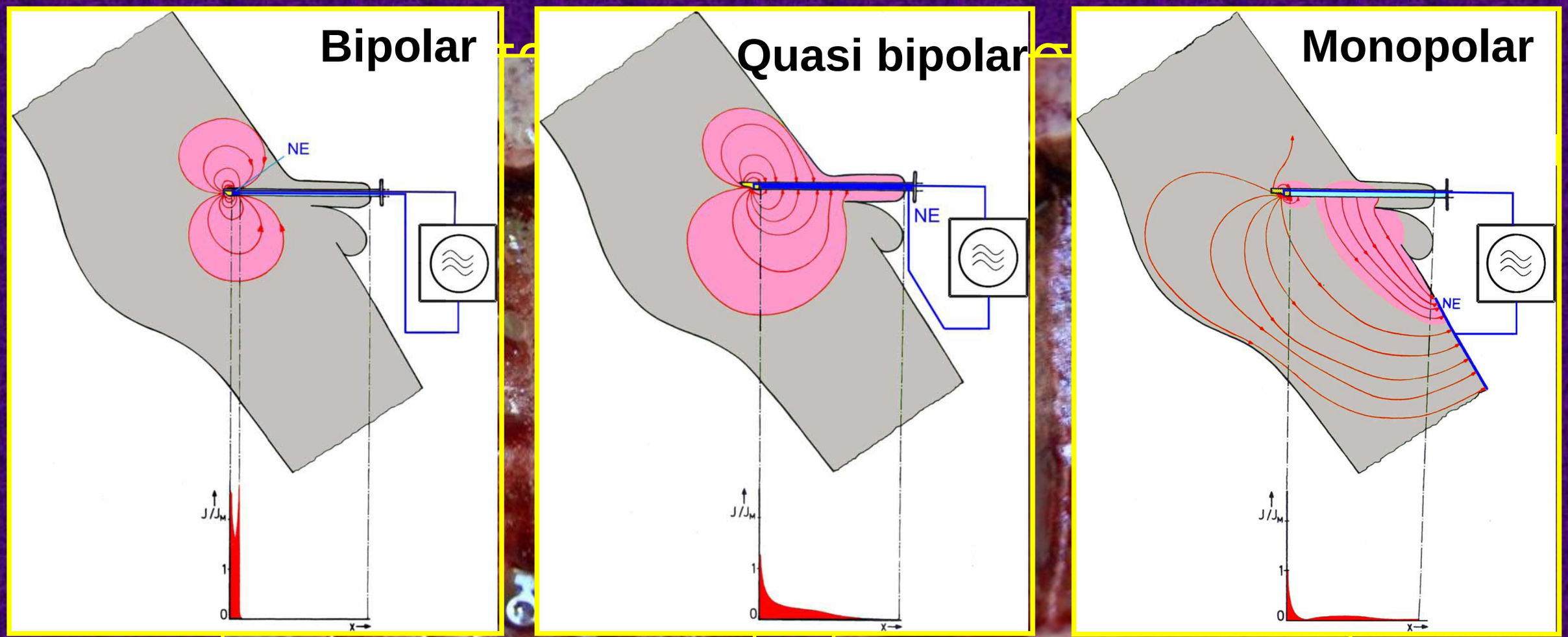


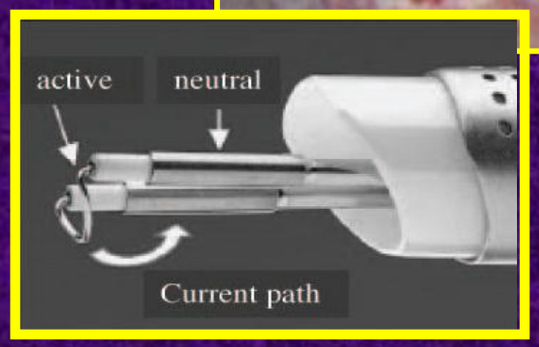


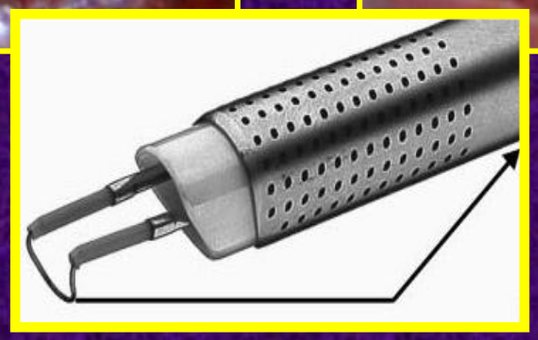


Θεωρητικά πλεονεκτήματα της B-TURP

- Καλύτερη προβολή και χειρισμός προστατικού ιστού
- Καλύτερη αιμόσταση
- Μικρότερη απορρόφηση υγρών
- Ακριβέστερη μέτρηση απολεπιζόμενου ιστού *ex vivo* λόγω βαθύτερης αιμόστασης
- Διατήρηση ισοτονικότητας διαλύματος (NaCl 0,9%)

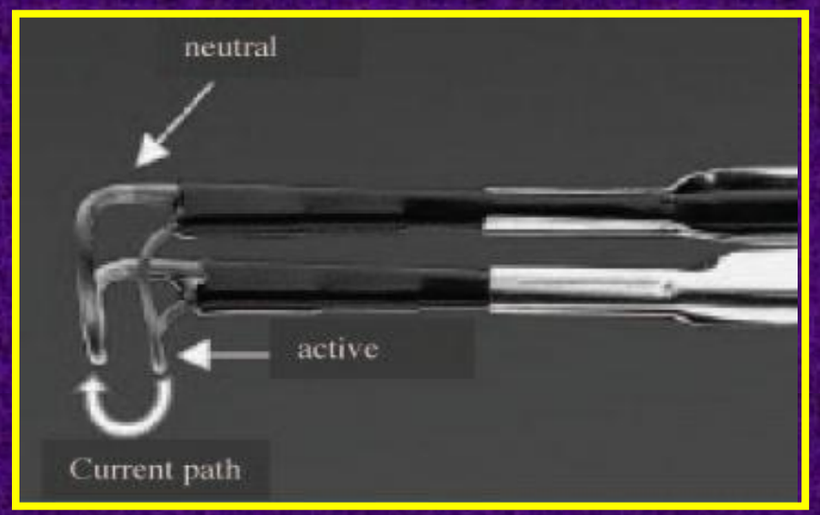


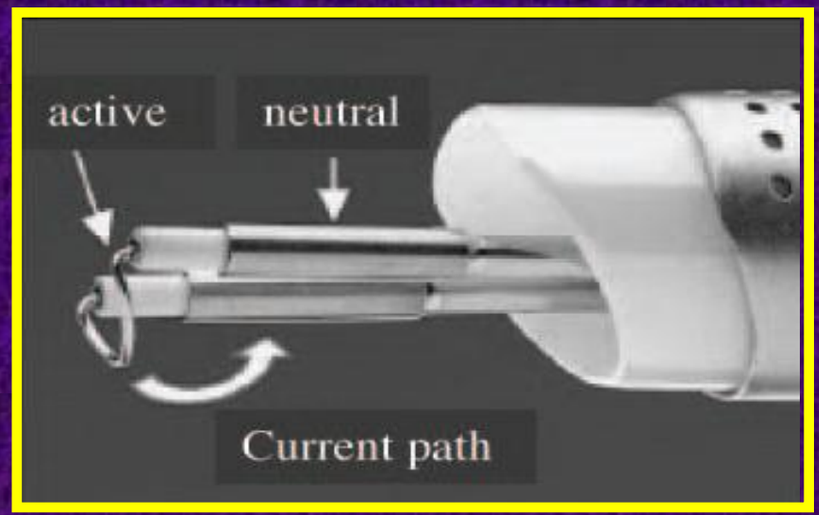


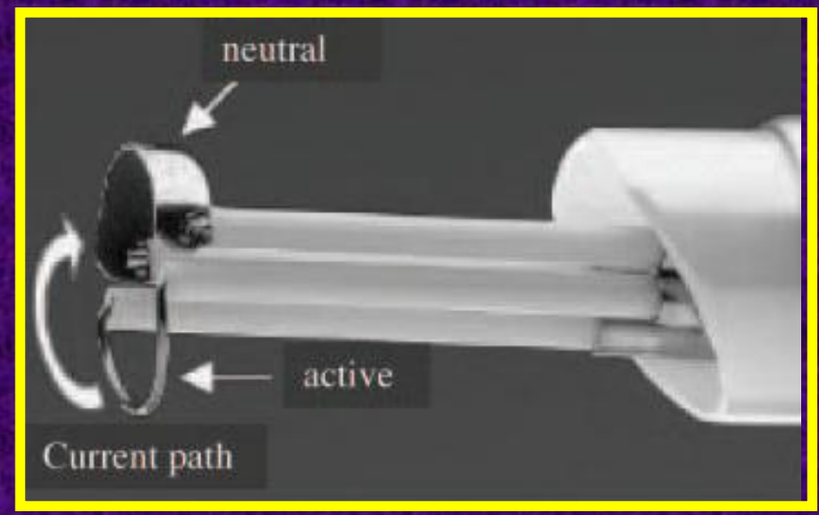


Διπολικά συστήματα: διαφορετικές ηλεκτροφυσικές οντότητες

Αληθή διπολικά συστήματα: τα δύο ηλεκτρόδια είναι προσαρμοσμένα σε κοινό άξονα (IEC,1998)







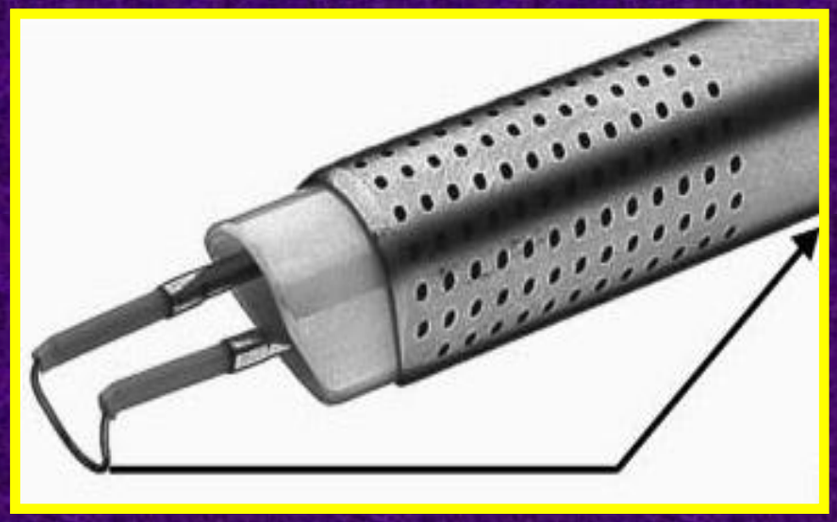
VISTA (ACMI)

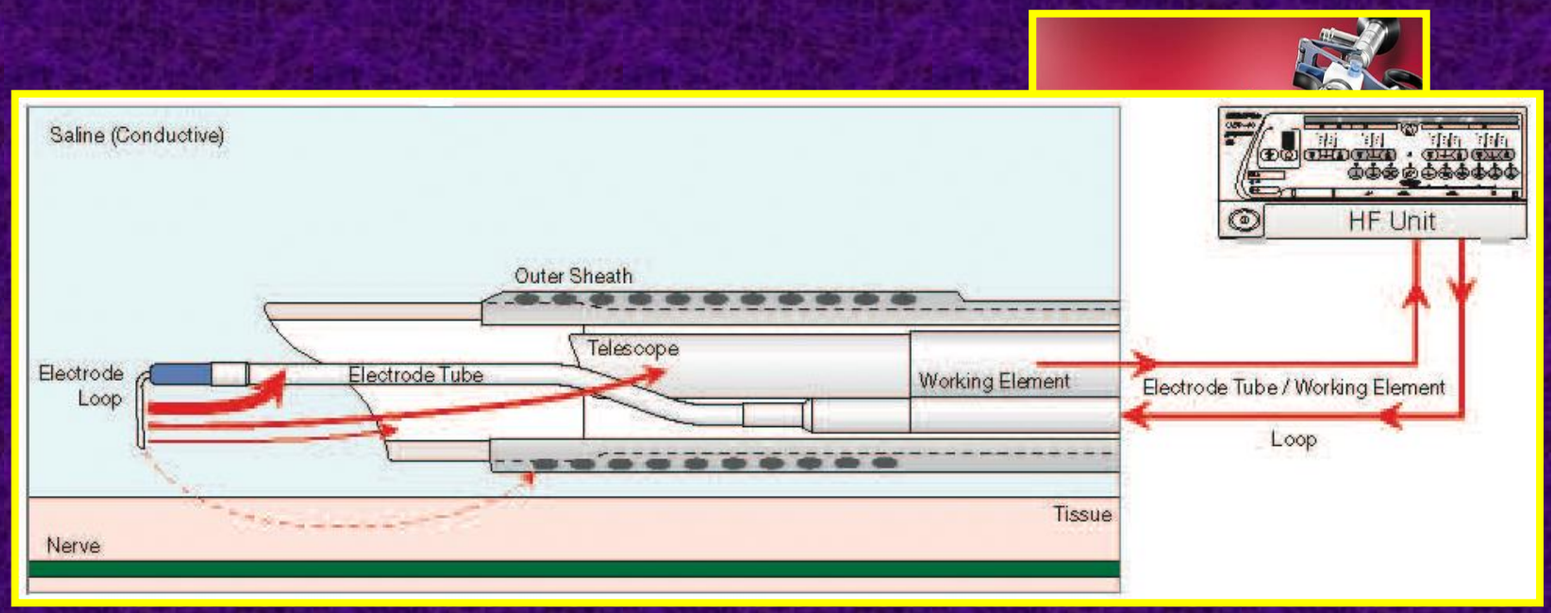
PK (Gyrus-ACMI)

Autocon (K. Storz)

Διπολικά συστήματα: διαφορετικές ηλεκτροφυσικές οντότητες

Ημι-διπολικά συστήματα: δεν πληρούν τον ορισμό της IEC





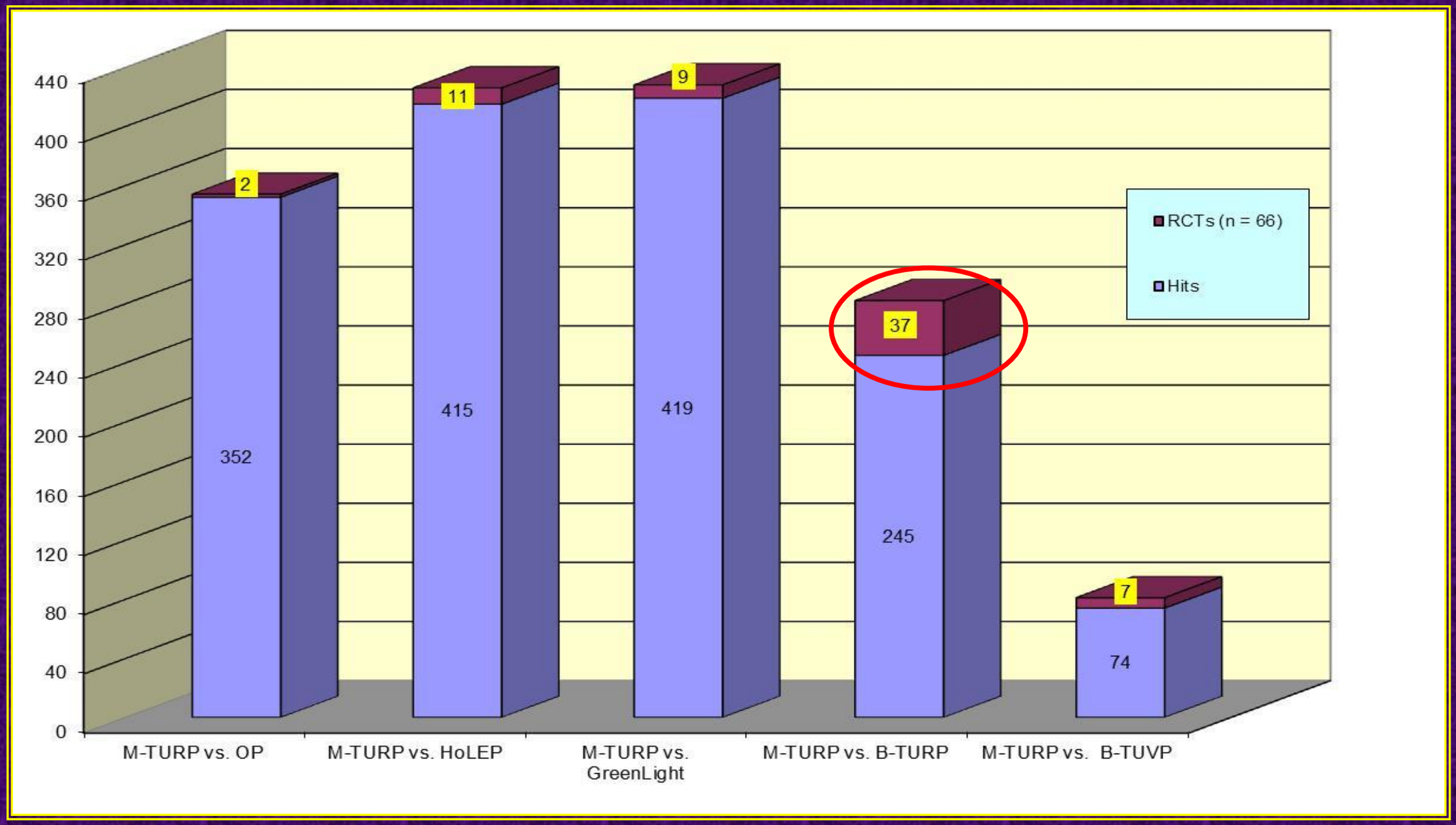
TURis (Olympus)

S(a)-line resectoscope (R. Wolf)

TEKNO-Medical

Συνεδρία ΕΟΕ, 20 Απριλίου 2016 Χ. Μαμουλάκης: moulaki@uoc.gr

M-TURP vs. B-TURP

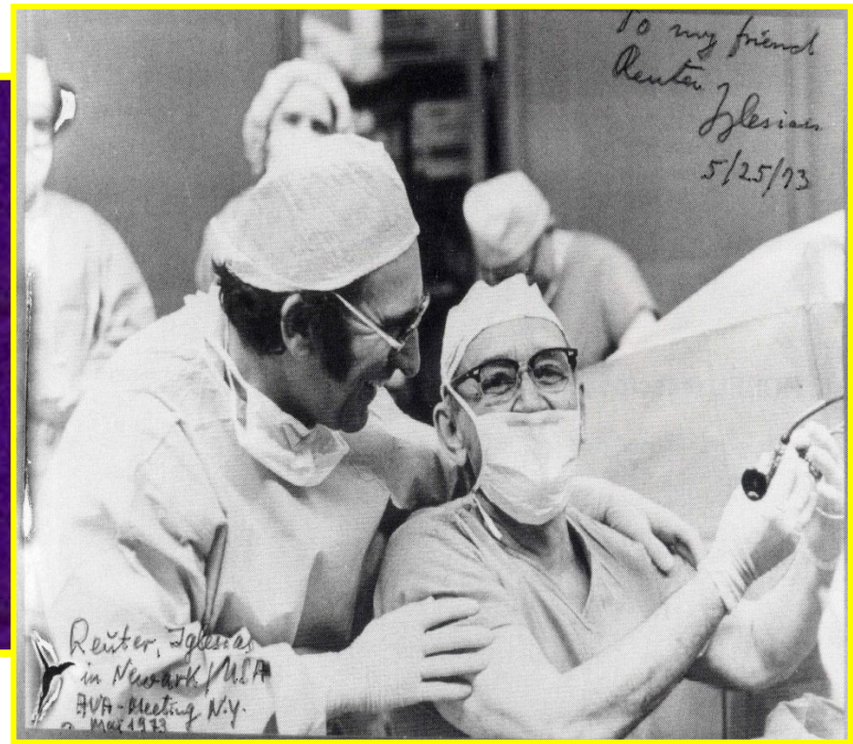


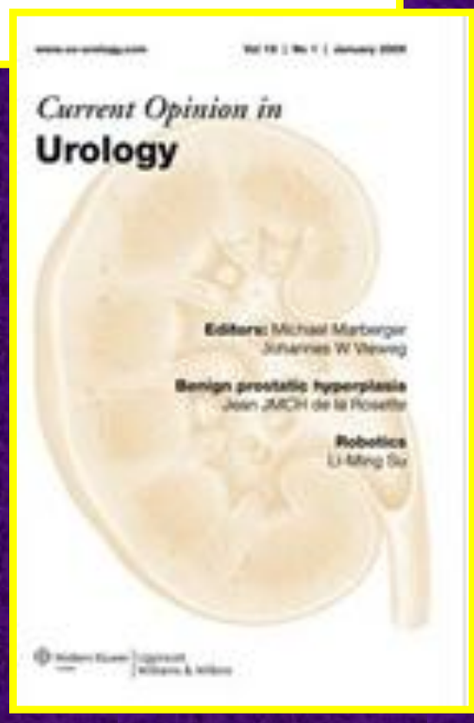
EAU Guidelines Literature Search Update

Bipolar transurethral resection of the prostate: the 'golden standard' reclaims its leading position

Charalampos Mamoulakis, Marleen Trompetter and Jean de la Rosette

Current Opinion in Urology 2009, 19:26–32





Conclusion

Bipolar shares similar clinical efficacy with monopolar TURP, durable in time with low long-term complication rates. It has minimized bleeding risk and has rendered the TUR syndrome 'a historical event'. PlasmaKinetic and TURIS system leads to shorter and similar catheterization time-hospital stay, respectively. The RCT-derived evidence does not support an increased incidence of urethral strictures with bipolar compared with monopolar current.

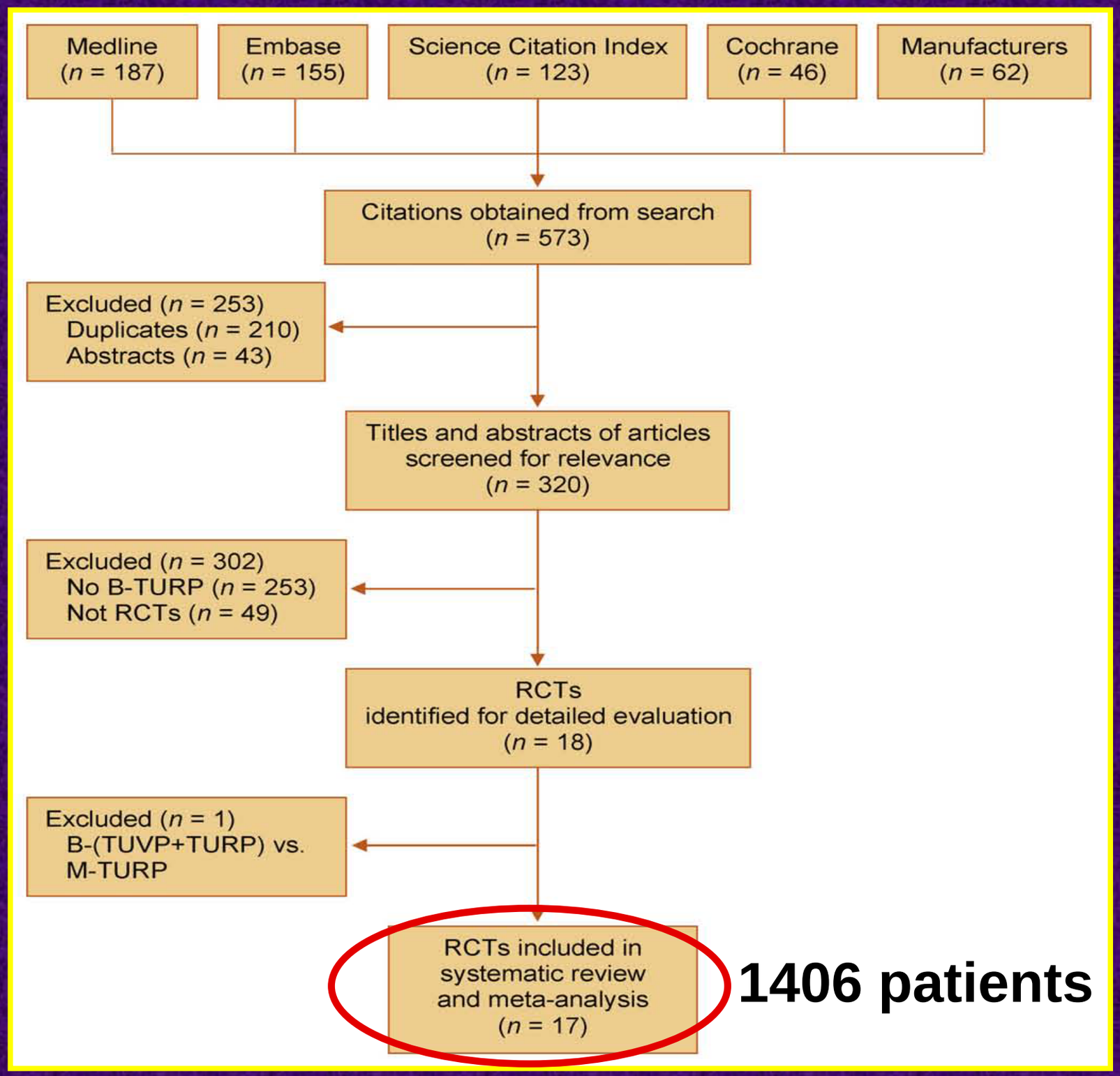
EUROPEAN UROLOGY 56 (2009) 798–809

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

Charalampos Mamoulakis, Dirk T. Ubbink , Jean J.M.C.H. de la Rosette

- Κύρια καταληκτικά σημεία:
  1. Αποτελεσματικότητα (Qmax, IPSS)
  2. Ασφάλεια
     - Ελάττωση Na^+ ορού
     - TUR - syndrome
     - Ελάττωση Hb
     - Μεταγγίσεις
     - Επίσχεση από πήγματα
     - AUR
     - Στενώματα

- Δευτερεύοντα καταληκτικά σημεία:
  1. Διάρκεια χειρουργείου
  2. Διάρκεια πλύσεων
  3. Διάρκεια καθετ/σμού
  4. Διάρκεια νοσηλείας


Medline
(n = 187)
Embase
(n = 155)
Science Citation Index
(n = 123)
Cochrane
(n = 46)
Manufacturers
(n = 62)
Citations obtained from search
(n = 573)
Excluded (n = 253)
Duplicates (n = 210)
Abstracts (n = 43)
Titles and abstracts of articles
screened for relevance
(n = 320)
Excluded (n = 302)
No B-TURP (n = 253)
Not RCTs (n = 49)
RCTs
identified for detailed evaluation
(n = 18)
Excluded (n = 1)
B-(TUVP+TURP) vs.
M-TURP
RCTs included in
systematic review
and meta-analysis
(n = 17)
1406 patients

Κύρια ανάλυση (όλες οι μελέτες)

- Κύρια καταληκτικά σημεία:
  1. Αποτελεσματικότητα (Qmax, IPSS)
  2. Ασφάλεια
     - Ελάττωση Na^+ ορού
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- Δευτερεύοντα καταληκτικά σημεία:
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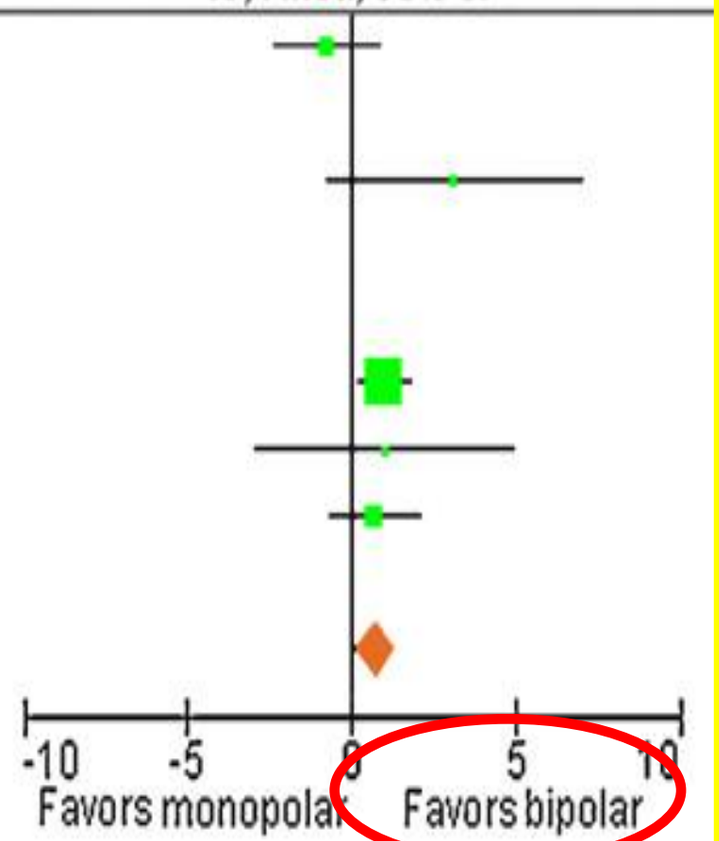
  2. Διάρκεια πλύσεων
  3. Διάρκεια καθετ/σμού
  4. Διάρκεια νοσηλείας

- Qmax (12 mo): στατιστικά σημαντική αλλά κλινικά μη σημαντική διαφορά

Study	Monopolar Mean	SD	Total	Bipolar Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Nuhoglu 2006 [22]	17.1	2.7	24	17.9	3.1	26	15.4%	-0.80 [-2.41, 0.81]
Lin 2006 [29]	18	0	22	18	0	18		Not estimable
Seckiner 2006 [23]	18.8	6.9	23	15.7	6.3	21	2.6%	3.10 [-0.80, 7.00]
De Sio 2006 [21]	20.8	0	35	22.3	0	35		Not estimable
Ho 2007 [31]	18.3	0	48	18.7	0	52		Not estimable
Erturhan 2007 [30]	19.5	3.5	120	18.5	3	120	58.7%	1.00 [0.18, 1.82]
Iori 2008 [34]	24.2	5	27	23.2	9	26	2.6%	1.00 [-2.94, 4.94]
Bhansali 2009 [35]	16.6	2.64	34	15.9	3.126	33	20.7%	0.70 [-0.69, 2.09]
Total (95% CI)			333			331	100.0%	0.72 [0.08, 1.35]

Heterogeneity: $\chi^2 = 5.32$, df = 4 (p = 0.26); $I^2 = 25\%$

Test for overall effect: Z = 2.2? (p = 0.03)



- IPSS (12 mo): καμία διαφορά

Κύρια ανάλυση (όλες οι μελέτες)

- Κύρια καταληκτικά σημεία:
  1. Αποτελεσματικότητα (Qmax, IPSS)
  2. Ασφάλεια
     - Ελάττωση Na^+ ορού
     - TUR - syndrome
     - Ελάττωση Hb
     - Μεταγγίσεις
     - Επίσχεση από πήγματα
     - AUR
     - Στενώματα

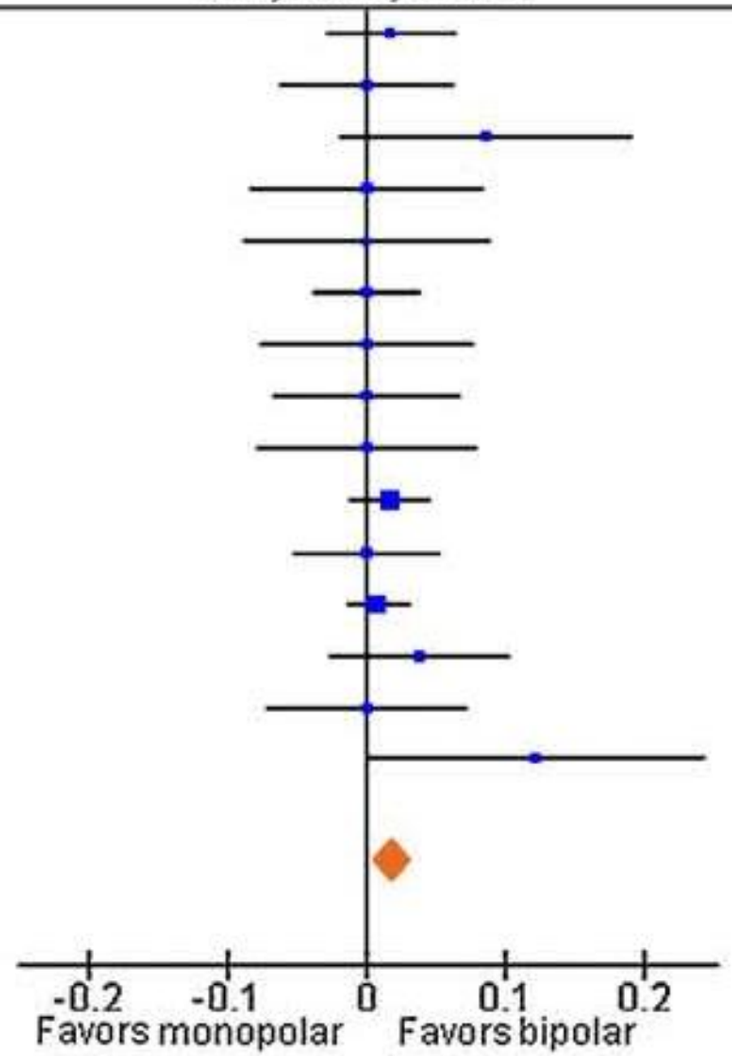
- Δευτερεύοντα καταληκτικά σημεία:
  1. Διάρκεια χειρουργείου
  2. Διάρκεια πλύσεων
  3. Διάρκεια καθετ/σμού
  4. Διάρκεια νοσηλείας

- Επίπεδα Na^+ ορού: σημαντικά χαμηλότερα μετά M-TURP
- TUR syndrome: NNH = 50 (95% CI: 33-111)

Study		Monopolar Events	Monopolar Total	Bipolar Events	Bipolar Total	Weight	Risk Difference M-H, Fixed, 95% CI
Yang 2004	[25]	1	59	0	58	8.6%	0.02 [-0.03, 0.06]
Singh 2005	[19]	0	30	0	30	4.4%	0.00 [-0.06, 0.06]
De Sio 2006	[21]	3	35	0	35	5.1%	0.09 [-0.02, 0.19]
Abascal 2006	[27]	0	21	0	24	3.3%	0.00 [-0.08, 0.08]
Akcayoz 2006	[28]	0	21	0	21	3.1%	0.00 [-0.09, 0.09]
Patankar 2006	[26]	0	51	0	52	7.6%	0.00 [-0.04, 0.04]
Kim 2006	[24]	0	25	0	25	3.7%	0.00 [-0.07, 0.07]
Nuhoglu 2006	[22]	0	30	0	27	4.2%	0.00 [-0.07, 0.07]
Seckiner 2006	[23]	0	24	0	24	3.5%	0.00 [-0.08, 0.08]
Erturhan 2007	[30]	2	120	0	120	17.6%	0.02 [-0.01, 0.04]
Rose 2007	[32]	0	34	0	38	5.3%	0.00 [-0.05, 0.05]
Michielsen 2007	[33]	1	120	0	118	17.5%	0.01 [-0.01, 0.03]
Ho 2007	[31]	2	52	0	48	7.3%	0.04 [-0.03, 0.10]
Iori 2008	[34]	0	26	0	27	3.9%	0.00 [-0.07, 0.07]
Bhansali 2009	[35]	4	33	0	34	4.9%	0.12 [0.00, 0.24]
Total (95% CI)			681		681	100.0%	0.02 [0.00, 0.03]
Total events		13		0			

Heterogeneity: $\chi^2 = 8.90$, df = 14 (p = 0.84); $I^2 = 0\%$

Test for overall effect: Z = 2.51 (p = 0.01)



- Επίσχεση από πήγματα: NNH = 20 (95% CI: 10-100)
- Μεταγγίσεις: καμία διαφορά

Study		Monopolar Events	Monopolar Total	Bipolar Events	Bipolar Total	Weight	Risk Difference M-H, Random, 95% CI
Lin 2006	[29]	1	18	0	22	8.4%	0.06 [-0.08, 0.19]
Patankar 2006	[26]	2	51	0	52	19.7%	0.04 [-0.02, 0.10]
De Sio 2006	[21]	4	35	2	35	8.8%	0.06 [-0.07, 0.19]
Ho 2007	[31]	2	52	3	48	15.0%	-0.02 [-0.11, 0.06]
Michielsen 2007	[33]	6	120	4	118	23.0%	0.02 [-0.03, 0.07]
Erturhan 2007	[30]	17	120	2	120	19.1%	0.13 [0.06, 0.19]
Iori 2008	[34]	5	26	1	27	6.0%	0.16 [-0.01, 0.32]
Total (95% CI)			422		422	100.0%	0.05 [0.01, 0.10]
Total events		37		12			

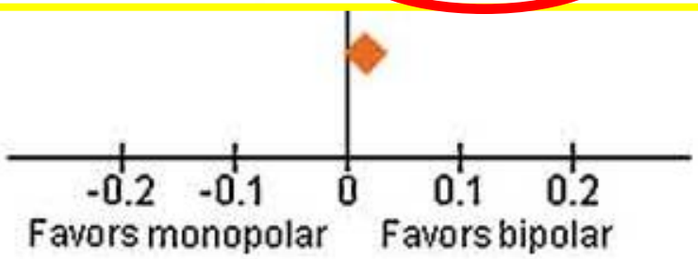
Heterogeneity: Tau² = 0.00; χ^2 = 11.75, df = 6 (p = 0.07); I² = 49%
Test for overall effect: Z = 2.18 (p = 0.03)

Risk Difference M-H, Random, 95% CI

-0.2 -0.1 0 0.1 0.2
Favors monopolar Favors bipolar

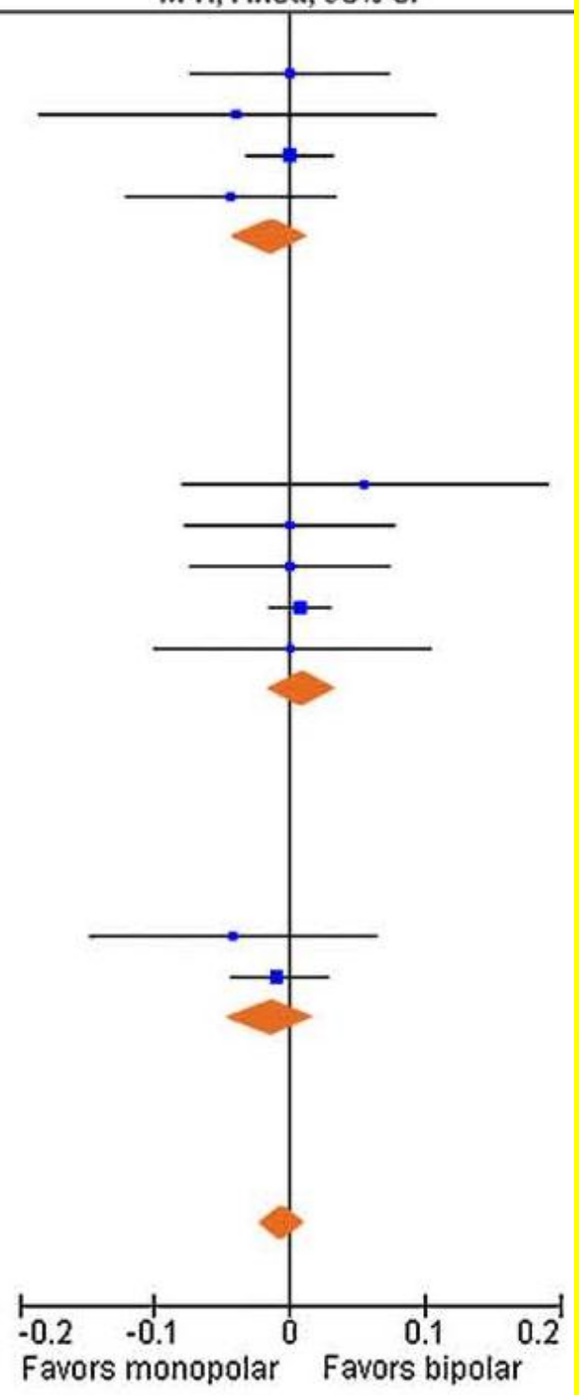
Total (95% CI)	600		595	100.0%	0.02 [-0.00, 0.04]	
Total events	21		11			

Heterogeneity: χ^2 = 12.76, df = 11 (p = 0.31); I² = 14%
Test for overall effect: Z = 1.68 (p = 0.10)



- Οξεία επίσχεση μετά αφαίρεση καθετήρα: καμία διαφορά
- Στενώματα: καμία διαφορά (μελέτες & μετα-ανάλυση)

Study	Monopolar Events	Monopolar Total	Bipolar Events	Bipolar Total	Weight	Risk Difference M-H, Fixed, 95% CI
Patients with urethral stricture within 12 mo						
Nuhoglu 2006 [22]	0	26	0	24	4.2%	0.00 [-0.07, 0.07]
Seckiner 2006 [23]	1	21	2	23	3.7%	-0.04 [-0.19, 0.11]
Erturhan 2007 [30]	2	120	2	120	20.4%	0.00 [-0.03, 0.03]
Ho 2007 [31]	1	52	3	48	8.5%	-0.04 [-0.12, 0.03]
Subtotal (95% CI)		219		215	36.9%	-0.01 [-0.04, 0.02]
Total events	4		7			
Heterogeneity: $\chi^2 = 1.50$, df = 3 (p = 0.68); $I^2 = 0\%$						
Test for overall effect: Z = 0.89 (p = 0.37)						
Patients with bladder neck contracture within 12 mo						
Lin 2006 [29]	1	18	0	22	3.4%	0.06 [-0.08, 0.19]
De Sio 2006 [21]	1	35	1	35	6.0%	0.00 [-0.08, 0.08]
Nuhoglu 2006 [22]	0	26	0	24	4.2%	0.00 [-0.07, 0.07]
Erturhan 2007 [30]	1	120	0	120	20.4%	0.01 [-0.01, 0.03]
Iori 2008 [34]	1	26	1	27	4.5%	0.00 [-0.10, 0.10]
Subtotal (95% CI)		225		228	38.5%	0.01 [-0.02, 0.04]
Total events	4		2			
Heterogeneity: $\chi^2 = 0.60$, df = 4 (p = 0.96); $I^2 = 0\%$						
Test for overall effect: Z = 0.72 (p = 0.47)						
Patients with meatal stenosis within 12 mo						
Nuhoglu 2006 [22]	0	26	1	24	4.2%	-0.04 [-0.15, 0.06]
Erturhan 2007 [30]	2	120	3	120	20.4%	-0.01 [-0.04, 0.03]
Subtotal (95% CI)		146		144	24.7%	-0.01 [-0.05, 0.02]
Total events	2		4			
Heterogeneity: $\chi^2 = 0.36$, df = 1 (p = 0.55); $I^2 = 0\%$						
Test for overall effect: Z = 0.78 (p = 0.44)						
Total (95% CI)		590		587	100.0%	-0.00 [-0.02, 0.01]
Total events	10		13			
Heterogeneity: $\chi^2 = 3.87$, df = 10 (p = 0.95); $I^2 = 0\%$						
Test for overall effect: Z = 0.56 (p = 0.58)						



Κύρια ανάλυση (όλες οι μελέτες)

- Κύρια καταληκτικά σημεία:
  1. Αποτελεσματικότητα (Qmax, IPSS)
  2. Ασφάλεια
     - Ελάττωση Na^+ ορού
     - TUR - syndrome
     - Ελάττωση Hb
     - Μεταγγίσεις
     - Επίσχεση από πήγματα
     - AUR
     - Στενώματα

- Δευτερεύοντα καταληκτικά σημεία:
  1. Διάρκεια χειρουργείου
  2. Διάρκεια πλύσεων
  3. Διάρκεια καθετ/σμού
  4. Διάρκεια νοσηλείας

- Διάρκεια πλύσεων: σημαντικά βραχύτερη μετά B-TURP (WMD: 8,75 h - 95% CI: 6,8 -10,7 - p < 0,00001)

Ανάλυση ευαισθησία (μείωση της ετερογένειας)

- Δευτερεύοντα καταληκτικά σημεία:
  1. Διάρκεια χειρουργείου → Ένας χειρουργός
  2. Διάρκεια πλύσεων
  3. Διάρκεια καθετ/σμού
  4. Διάρκεια νοσηλείας → Εκτιμητές τυφλοί

- Διάρκεια χειρουργείου: καμία διαφορά

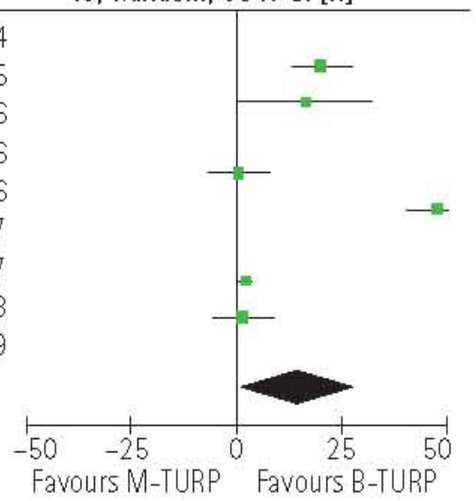
- Διάρκεια καθετ/σμού: σημαντικά βραχύτερη για B-TURP (WMD: 21,77 h - 95% CI: 19,22 – 24,32 - p < 0,00001)

- Διάρκεια νοσηλείας: σημαντικά βραχύτερη για B-TURP

FIG. 1. Forest plot of hospitalisation time: bTURP vs mTURP. IV, inverse variance.

Study or Subgroup	M-TURP Mean [H]	M-TURP SD [H]	M-TURP Total	B-TURP Mean [H]	B-TURP SD [H]	B-TURP Total	Weight, %	Mean Difference IV, Random, 95% CI [h]	Year
Yang 2004 *et al.* [4]	91.2	0	59	76.8	0	58		Not estimable	2004
Singh 2005 *et al.* [5]	93.12	13.92	30	72.48	13.2	30	17.0	20.64 [13.78, 27.50]	2005
Kim 2006 *et al.* [6]	96	31.2	25	79.2	26.4	25	14.3	16.80 [0.78, 32.82]	2006
de Sio 2006 *et al.* [7]	107	0	35	78.2	0	35	17.0	Not estimable	2006
Abascal Junquera 2006 *et al.* [8]	88.08	12	21	87.12	12	24	16.9	0.96 [–6.07, 799]	2006
Erturhan 2007 *et al.* [9]	120	28.8	120	72	28.8	120		48.00 [40.71, 55.29]	2007
Mischielsen 2007 *et al.* [10]	122.4	0	120	117.6	0	118	17.8	Not estimable	2007
Iori 2008 *et al.* [11]	50.6	3	26	48	1	27	17.0	2.60 [1.39, 3.81]	2008
Bhansali 2009 *et al.* [12]	81.09	15.438	33	79.21	14.251	34		1.88 [–5.24, 9.00]	2009
Total (95% CI)			**469**			**471**	**100.0**	**14.99 [1.25, 28.73]**	

Heterogeneity: $Tau^2 = 276.27$; $Chi^2 = 171.09$, df = 5 (P <0.00001); $I^2 = 97\%$
Test for overall effect: Z = 2.14 (P = 0.03)



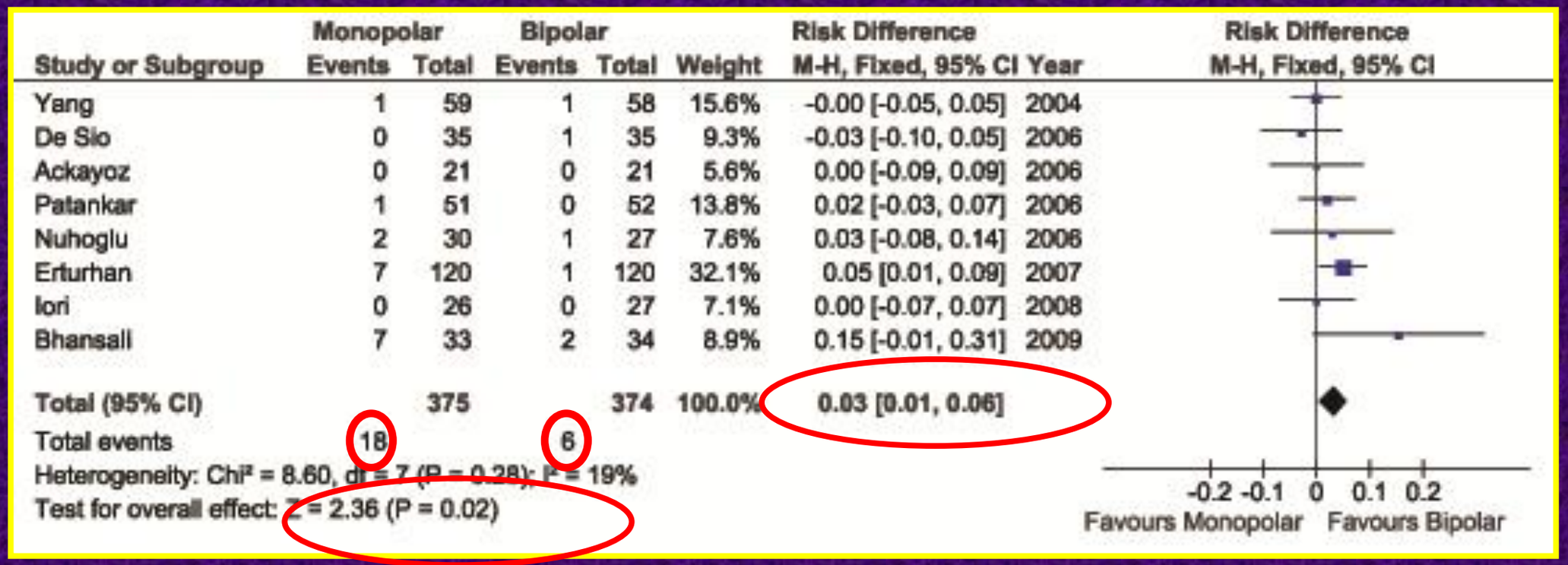
Mamoulakis et al. BJU Int 2012;109:E38-40

Ανάλυση υπο-ομάδων (ανά σύστημα)

- Χωρίς σημαντικές διαφορές από την κύρια ανάλυση
- TURis: αδύνατη εξαγωγή ασφαλών συμπερασμάτων
- Gyrus: λίγο καλύτερα αποτελέσματα:

  - Επίσχεση από πήγματα: NNH:11 (7-33, p= 0,004)

  - Μεταγγίσεις: NNH: 33 (17-100, p = 0,020)



Mamoulakis et al. Urology. 2010;75:1235-6

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 perioperative 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 6 χρόνια;

Συνεδρία ΕΟΕ, 20 Απριλίου 2016 Χ. Μαμουλάκης: moulaki@uoc.gr

- 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 !

- 1 Μετα-ανάλυση υπό δημοσίευση (Cochrane)

- Μεσοπρόθεσμα δεδομένα παρακολούθησης >12–60 μήνες)
- Δεδομένα επίδρασης στη σεξουαλική λειτουργία
- Δεδομένα κόστους
- Υποαναλύσεις Συστημάτων (Μετα-ανάλυση για το TURis)
- Ειδικοί υποπληθυσμοί ασθενών ?
- B-TURP vs. Other Technologies to treat LUTs/BPH?

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
2.	**Xie, 2012**	**China**	**220**	**Gyrus**	**60**	**Similar long term efficacy and safety** Shorter operation time, irrigation time, lower Na/Hb drop shorter cathterization/hospitalization time, less clot retentions	**NONE** **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**
	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/cathterization/hospitalization time	B-TURP

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	

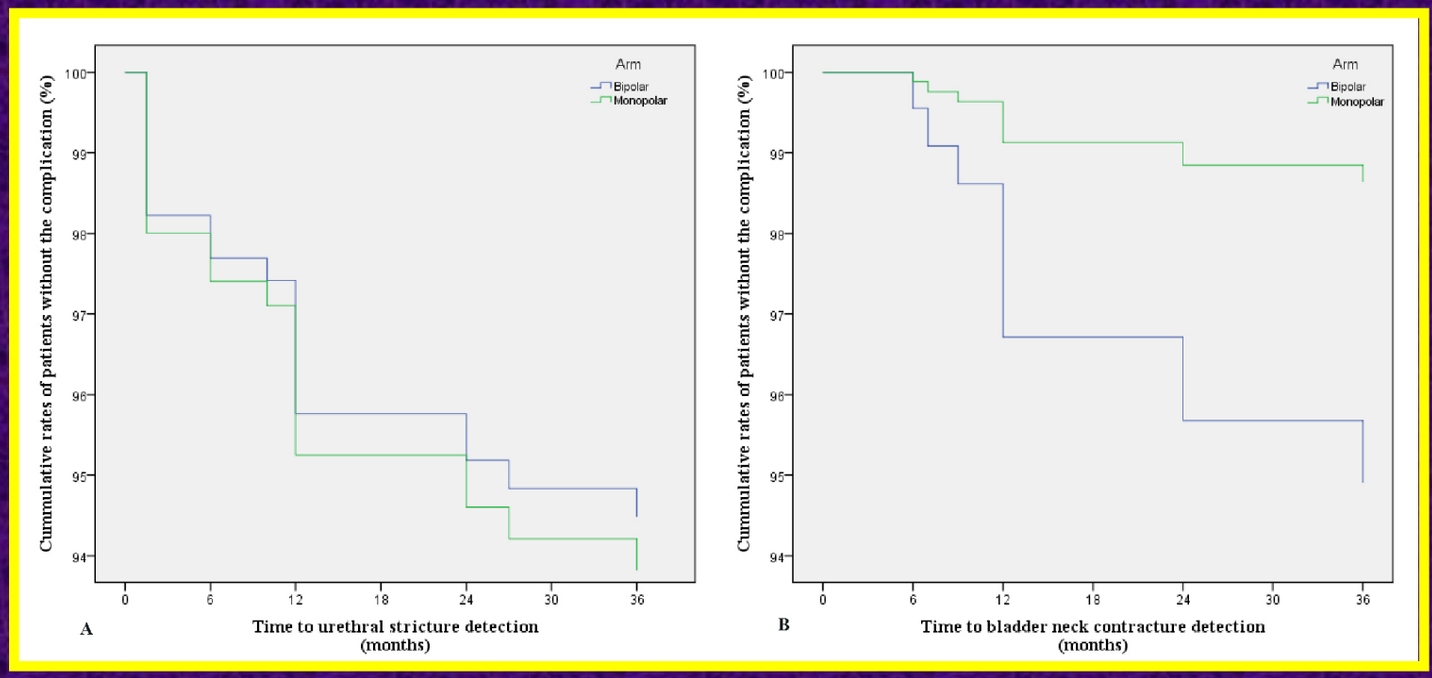
EAU Guidelines, 2016

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]*

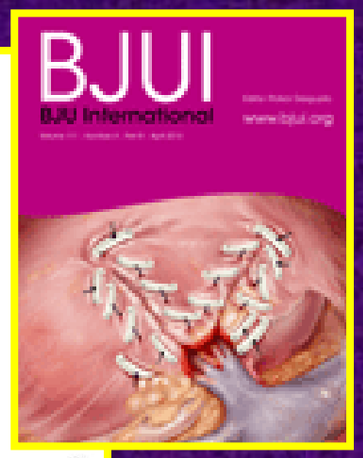
- Μεσοπρόθεσμη (36 μήνες) ασφάλεια (US, BNC rates)
- Αποτελεσματικότητα, ποσοστά επανεπέμβασης
- Μή στατιστικά σημαντικές διαφορές



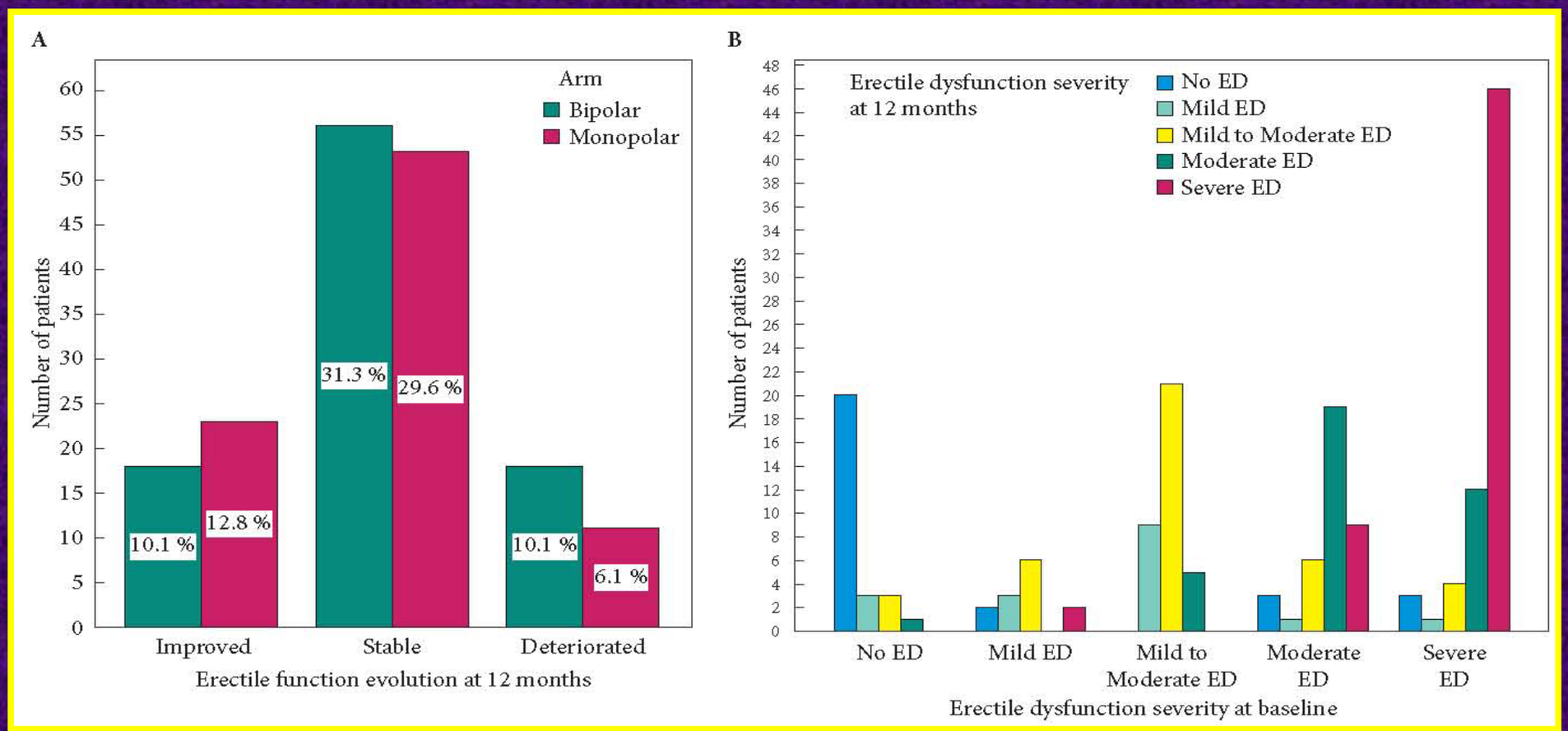
Mamoulakis et al. Eur Urol. 2013;63:667-76

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 Skolarikos[3], Michael Schulze[4], Cesare M. Scoffone[5], Jens J. Rassweiler[4], Gerasimos Alivizatos[3], Roberto M. Scarpa[5] and Jean J.M.C.H. de la Rosette[1]



- 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) ώφελος 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

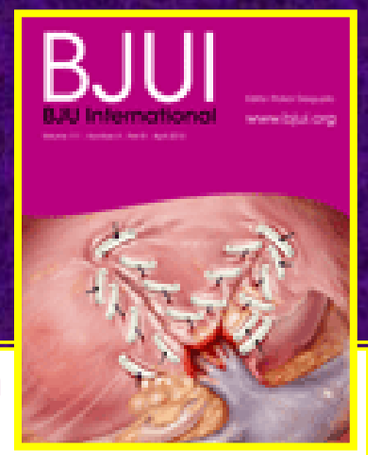
PURPOSE: We compare bipolar vs monopolar transurethral prostate resection safety/secondary outcomes including efficacy in patients with large prostate volume or severe lower urinary tract symptoms.

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.



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)

B-TURP vs. Other Technologies to treat LUTs/BPH?

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

European Association of Urology

Platinum Priority – Collaborative Review – Benign Prostatic Obstruction

Editorial by Hashim Hashim and Paul Abrams on pp. 1097–1098 of this issue

A Systematic Review and Meta-analysis of Functional Outcomes and Complications Following Transurethral Procedures for Lower Urinary Tract Symptoms Resulting from Benign Prostatic Obstruction: An Update

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

B-TURP has been compared with HoLEP [23,47], thulium laser enucleation of the prostate (ThuLEP) [22], Eraser laser enucleation of the prostate (ELEP) [44], B-TUVP [32,34], and PKEP [58]. Chen et al. showed similar functional results (on

None of these comparisons was suitable for meta-analysis, and the paucity of the data must lead to cautious interpretation of the results.

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, 2016

Υποαναλύσεις Συστημάτων (Μετα-ανάλυση για TURis)

NICE National Institute for Health and Care Excellence

The TURis system for transurethral resection of the prostate

Issued: February 2015

NICE medical technology guidance 23

guidance.nice.org.uk/mtg23

"TURis reduces the risk of TUR-syndrome and the need for blood transfusion compared to M-TURP. It is plausible that TURis reduces length of hospital stay and readmissions after surgery, although the evidence on these outcomes is limited."

Bipolar versus monopolar transurethral resection of the prostate for lower urinary tract symptoms secondary to benign prostatic obstruction (Protocol)

Mamoulakis C, Sofras F, de la Rosette J, Omar MI, Lam TBL, N'Dow JMO, Ubbink DT

THE COCHRANE COLLABORATION®

Mamoulakis et al. Cochr. Database Syst Rev 2014 (1): CD009629

Bipolar versus monopolar transurethral resection of the prostate for lower urinary tract symptoms secondary to benign prostatic obstruction

Review information

Authors

Cameron Edwin Alexander[1], Malo MF Scullion[1], Muhammad Imran Omar[1], Yuhong Yuan[2], Charalampos Mamoulakis[3], James MO N'Dow[4], Thomas BL Lam[1]

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[4]Urology Department, NHS Grampian, Aberdeen Royal Infirmary, Aberdeen, UK

Records identified through electronic database searching (n = 1927)

- Medline (n = 854)
- Embase (n = 605)
- Web of Science (n = 371)
- Cochrane Library (n = 97 trials)

Records identified through other (electronic) sources (n = 34)

Records screened after dupplicates removed (n = 1585)

Records excluded (n = 1486)

Reports assessed for eligibility (n = 34)

Reports excluded, with reasons (n = 3)

- Design not relevant (n = 3)

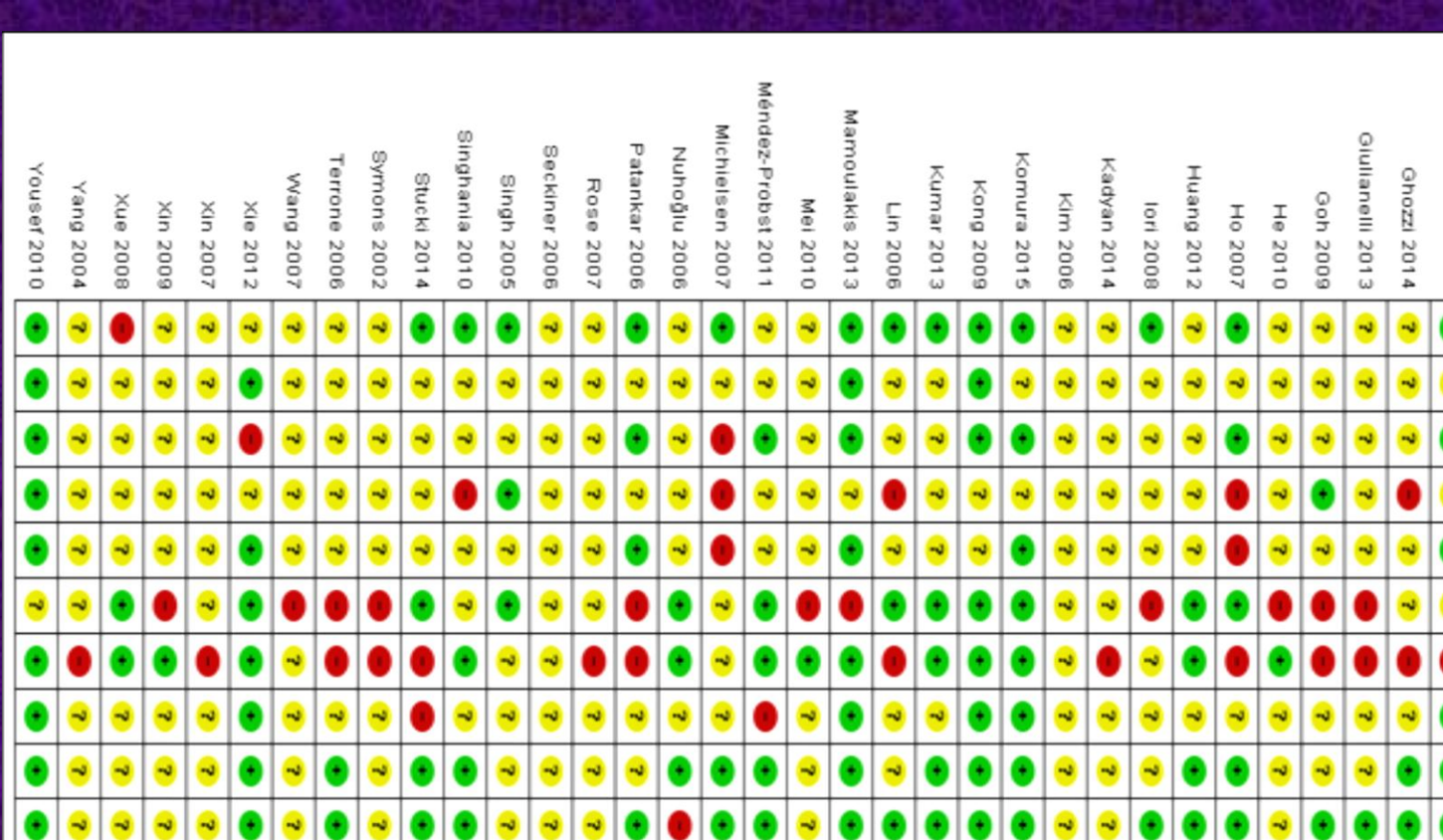
Reports excluded, with reasons (n = 16)

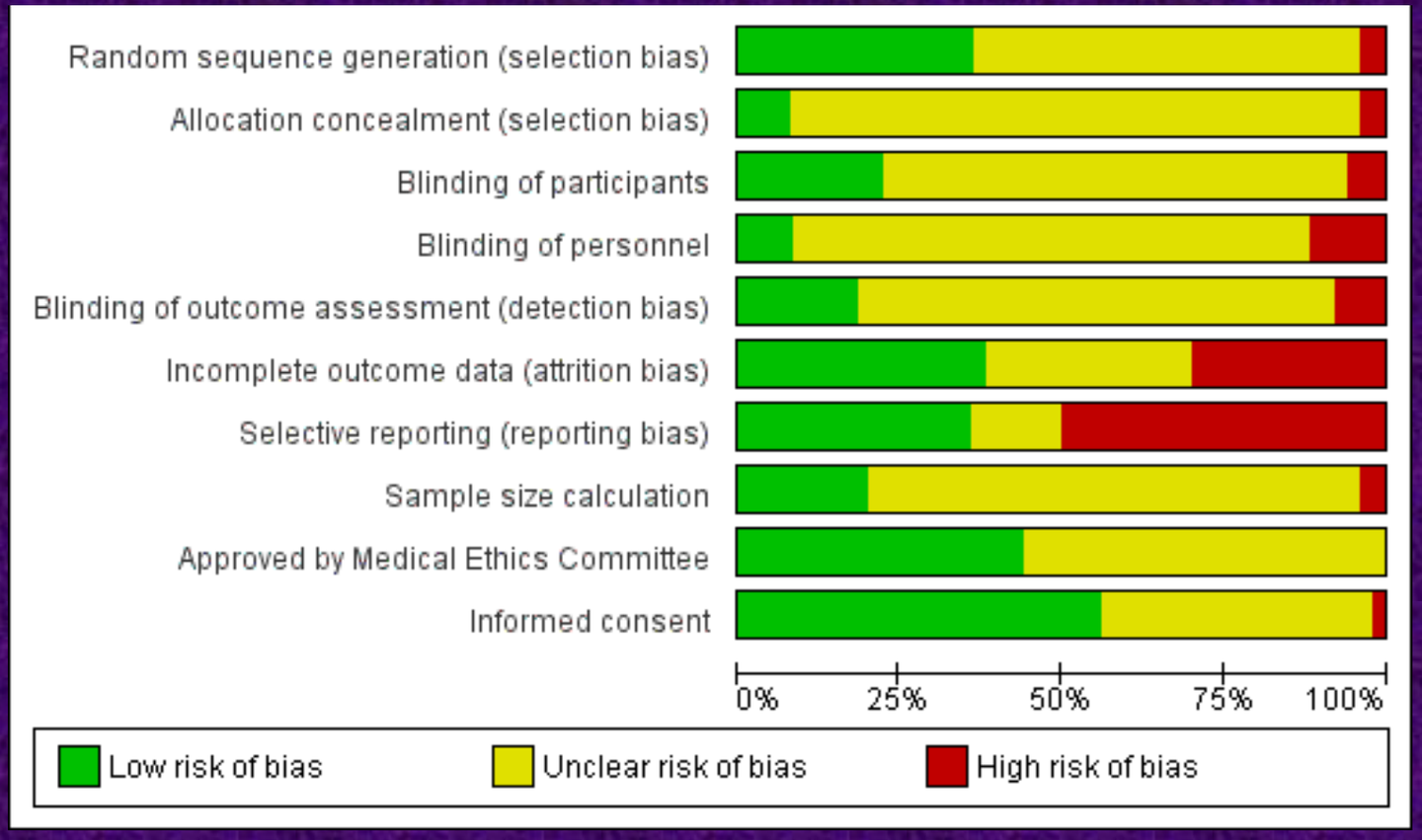
- Design not relevant (n = 13)
- Intervention not relevant (n = 3)

Reports assessed for eligibility (n = 99)

RCTs included in SR and meta-analysis (n = 50) [from 114 reports]

- Full text form (n = 40)
- Abstract form (n = 10)





Η σχετικά χαμηλή ποιότητα μελετών παραμένει θέμα

ΕΥΧΑΡΙΣΤΩ