



Neoplasie uroteliali

Vincenzo Pagliarulo

Acquaviva delle Fonti 28 febbraio – 1 marzo

Indicazioni

Basso tratto

- Enucleazione laser di tumore vescicale
- Resezione en-block di tumore vescicale (L-EBRT)
- Distruzione/Vaporizzazione laser

Alto tratto

- Distruzione/Vaporizzazione laser
- Resezione

Vescica

TUR-BT

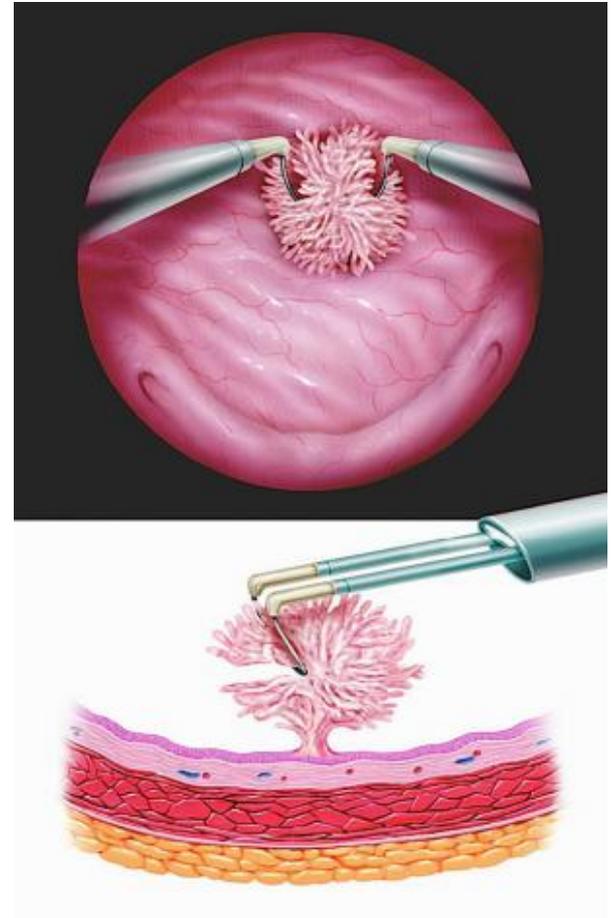
E' il gold standard.

E' una delle procedure più consolidate nella chirurgia urologica.

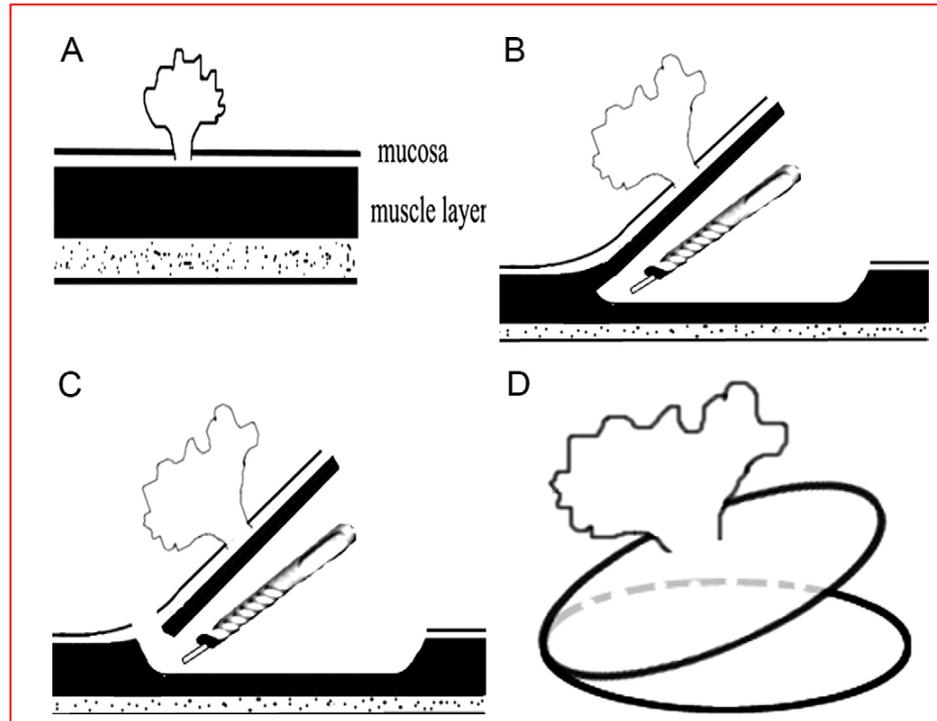
Diagnostica e terapeutica.

Variazioni negli anni con l'obiettivo di:

- Aumentare detection rate
- Migliorare la qualità del campione
- Ridurre il rischio di recidiva.



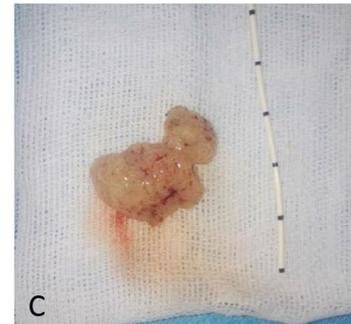
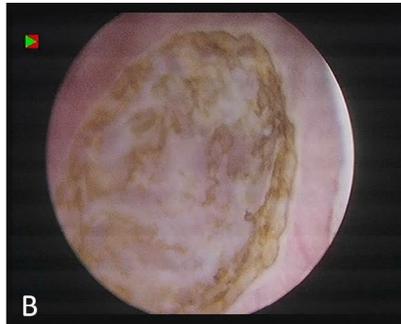
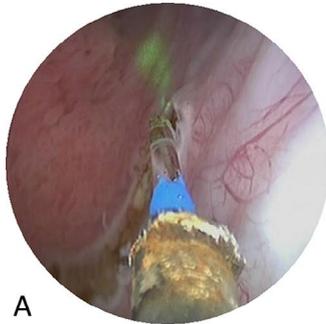
Enucleazione– EBRT



Migliorare la qualità della resezione,
Migliorare la qualità del pezzo anatomico
Ridurre la % delle complicanze perioperatorie,
Ridurre la % delle recidive in situ.

Laser EBRT

- A. Risale agli anni 70. Vaporizzazione mediante laser al neodimio:YAG.
- B. Introduzione del concetto di "*en bloc resection of bladder tumors (ERBT)*".

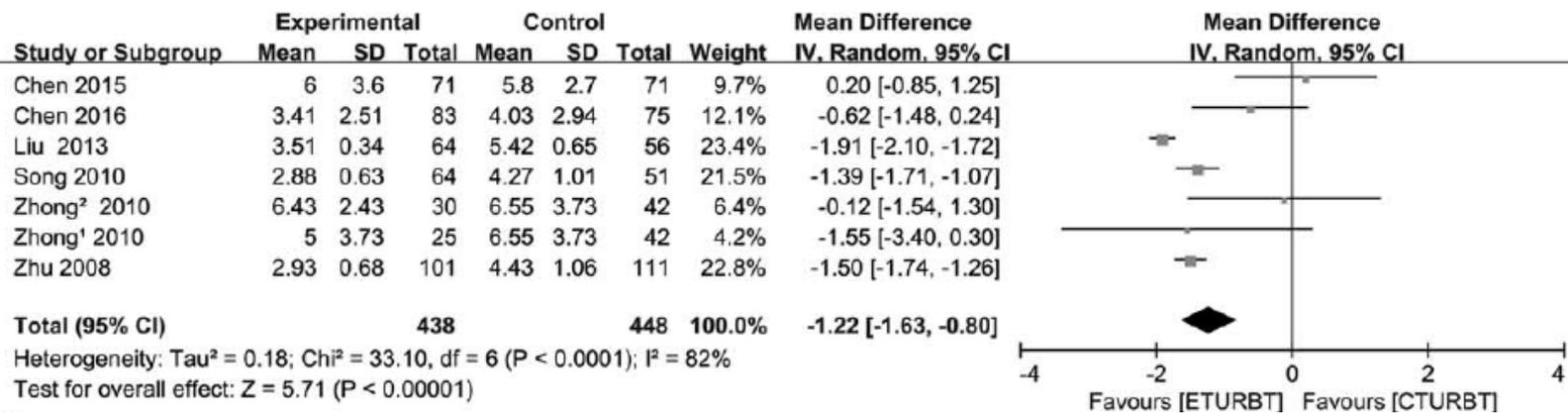


Stahler G. et al. 1978. *Helv Chir Acta* 1978; 45:307–311.
Gao X. et al, 2008. *BJU Int* 2008;102:1115e8.
Yang Y. et al. *J Urol* 2009;182:66e9.
Kramer MW. et al. *World J Urol* 2011; 29:433–442.

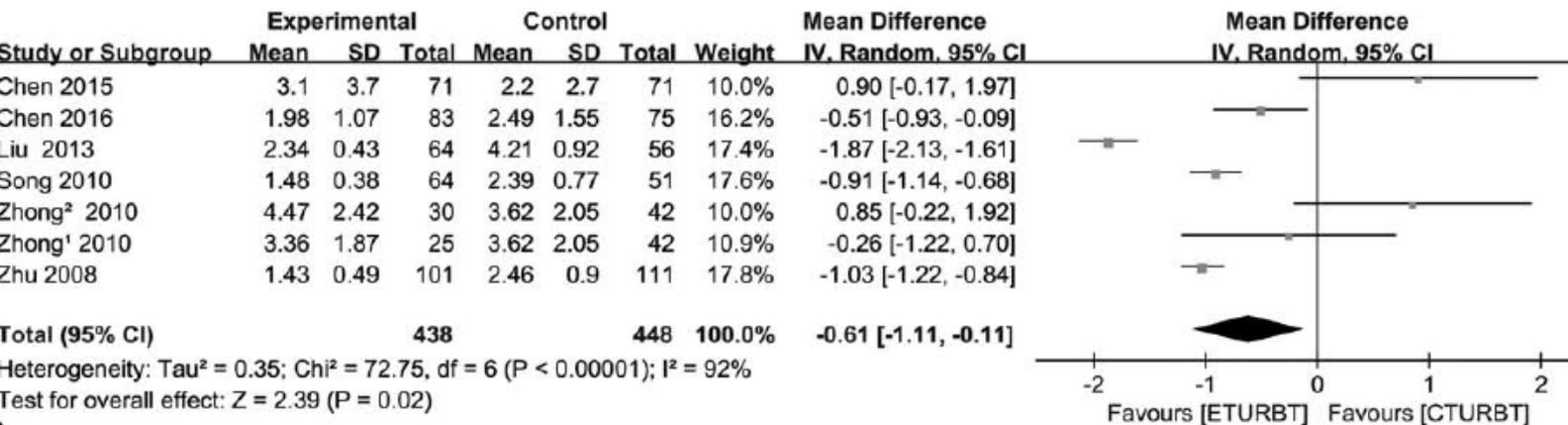
Metanalisi EBRT Vs TURBT

Characteristics of trials included in the meta-analysis.

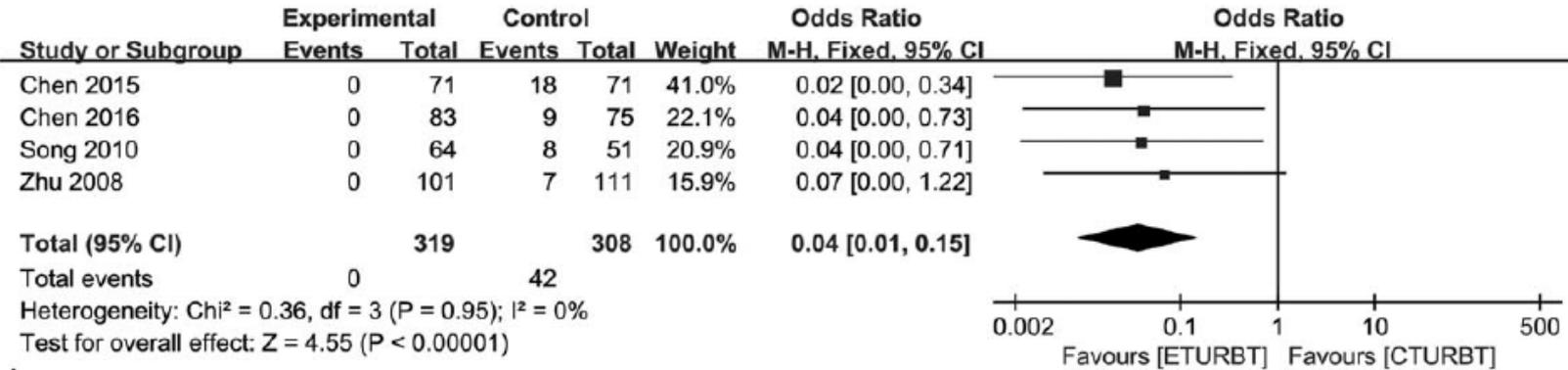
Study ID	Study type	Surgical method	N (T/C)	Male, % (T/C)	Age, y (T/C)	Follow-up, mo (T/C)	Outcomes					
							OT	HT	CT	RFS	RR	RC
Zhu 2008	Prospective	Ho:YAG	101/111	78.2/82.9	N	34/34	Y	Y	Y	Y	Y	Y
Song 2010	Prospective	Ho:YAG	64/51	81.3/78.4	72.5/74.5	24/24	N	Y	Y	N	Y	Y
Zhong ^[1] 2010	Retrospective	Ho:YAG	25/42	N	65.76/66.26	24/24	Y	Y	Y	N	Y	N
Zhong ^[2] 2010	Retrospective	Tm:YAG	30/42	N	68.3/66.26	24/24	Y	Y	Y	N	Y	N
Liu 2013	Prospective	Tm:YAG	64/56	71.9/71.4	67.1/66.3	36/36	Y	Y	Y	N	Y	Y
Chen 2015	RCT	Tm:YAG	71/71	76.1/71.8	63/62	18/18	Y	Y	Y	Y	N	N
Chen 2016	Prospective	LBO laser	83/75	72.3/68.0	63.43/65.31	36/36	Y	Y	Y	Y	Y	Y



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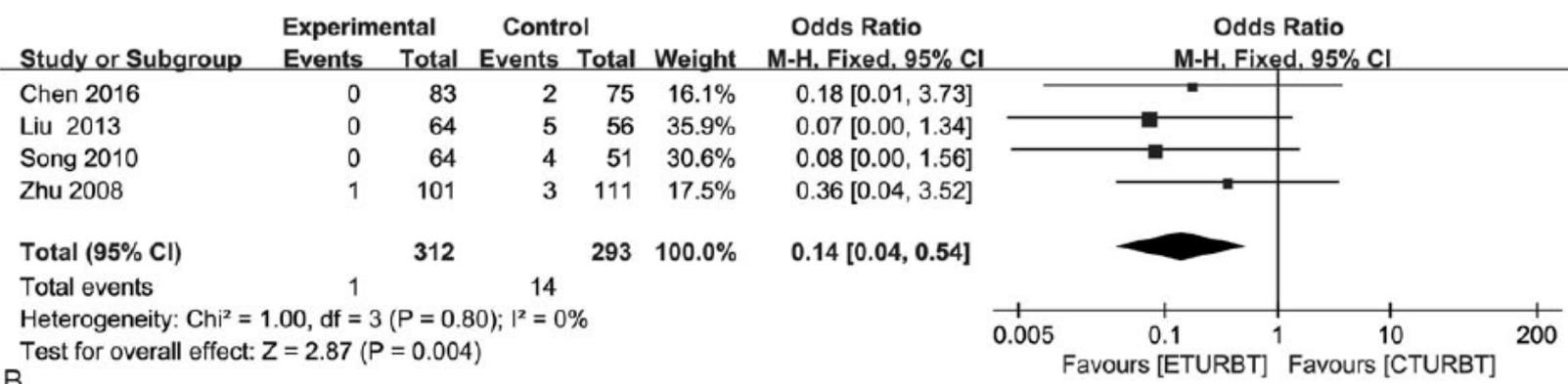


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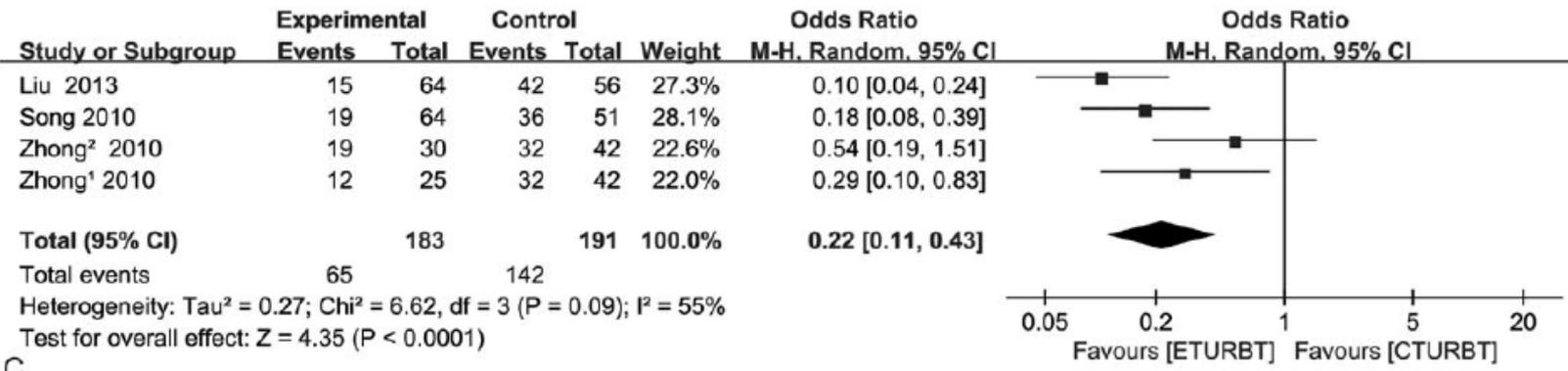
OB

A



BP

B



BI

C

Comparing the Safety and Efficiency of Conventional Monopolar, Plasmakinetic, and Holmium Laser Transurethral Resection of Primary Non-muscle Invasive Bladder Cancer

Song Xishuang, M.D.,¹ Yang Deyong, M.D.,¹ Che Xiangyu, M.D.,¹ Jiang Tao, M.D.,¹
Li Quanlin, M.D.,¹ Guan Hongwei, M.D.,² Yin Jibin, M.D.,¹ Wu Dongjun, M.D.,¹ He Zhongzhou, M.D.,¹
Wang Jianbo, M.D.,¹ Wang Lina, M.D.,¹ and Ye Lin, M.D.¹

<i>Variable</i>		<i>CM-TURBT</i>	<i>PK-TURBT</i>	<i>HoL-TURBT</i>
Brand		Richard Wolf	Gyrus	Lumenis
Power	Cutting Coagulation	120 W	160 W	30 W
		60 W	80 W	
Treatment site temperature		100–300°C	40–70°C	40–75°C
Current		Pass through patient's body	Do not pass through patient's body	No current
Medium		Glycine	Physiologic saline	Physiologic saline
Cutting precision		Medium	High	High
Hemostatic property		Good	Better	Best

TABLE 1. PATIENT AND TUMOR CHARACTERISTICS

<i>Variable</i>		<i>CM-TURBT (n = 51)</i>	<i>PK-TURBT (n = 58)</i>	<i>HoL-TURBT (n = 64)</i>	<i>P value</i>
Sex	Male	40 (78.4%)	47 (81.0%)	52 (81.3%)	0.919
	Female	11 (21.6%)	11 (19.0%)	12 (18.7%)	
Mean age (year)		74.5 (58–88)	73 (60–87)	72.5 (59–91)	0.903
Mean tumor number		1.9 (1–4)	2.2 (1–6)	2.0 (1–4)	0.894
Mean tumor size (mm)		17.4 (6–38)	15.2 (4–41)	18.5 (5–36)	0.721
Location	Lateral	20 (39.2%)	26 (44.8%)	25 (39.1%)	0.772
	Other	31 (60.8%)	32 (55.2%)	39 (60.9%)	
Stage	T _a	30 (58.8%)	35 (60.3%)	36 (56.3%)	0.898
	T ₁	17 (33.4%)	19 (32.8%)	23 (35.9%)	
	CIS	4 (7.8%)	4 (6.9%)	5 (7.8%)	
	PUNLMP	4 (7.8%)	5 (8.7%)	5 (7.8%)	
Grade (WHO2004)	Low	33 (64.7%)	33 (56.8%)	39 (60.9%)	0.706
	High	14 (27.5%)	20 (34.5%)	20 (31.3%)	
Grade (WHO1973)	1	21 (41.2%)	22 (37.9%)	22 (34.4%)	0.754
	2	25 (49.0%)	31 (53.4%)	35 (54.7%)	
	3	5 (9.8%)	5 (8.7%)	7 (10.9%)	
Risk	Low	14 (27.5%)	18 (31.0%)	20 (31.3%)	0.889
	Intermediate	26 (51.0%)	28 (48.3%)	27 (42.2%)	
	High	11 (21.5%)	12 (20.7%)	17 (26.5%)	

<i>Variable</i>	<i>CM-TURBT</i>	<i>PK-TURBT</i>	<i>HoL-TURBT</i>	<i>P value</i>
Resection time (min)	18.36 ± 4.45	17 ± 5.18	16.54 ± 3.81	0.827
Obturator nerve reflex	8 (18 times)	0	0	<0.01*
Bladder perforation	4	0	0	<0.01*
TUR syndrome	0	0	0	
Transfusion	1	0	0	0.300
Postoperative urethral stricture	1	2	1	0.772
Postoperative irrigation	11	4	3	<0.01*
Bladder irritation	36	18	19	<0.01*
Catheterization time (d)	2.39 ± 0.77	1.52 ± 0.62	1.48 ± 0.38	<0.01*
Hospitalization time (d)	4.27 ± 1.01	2.91 ± 0.98	2.88 ± 0.63	<0.01*

TABLE 3. THE 2-YEAR RECURRENCE RATE ACCORDING TO THE RISK SUBGROUPS

<i>Variable</i>	<i>CM-TURBT</i>	<i>PK-TURBT</i>	<i>HoL-TURBT</i>	<i>P value</i>
Low risk	4/14 (28.6%)	2/16 (12.5%)	3/20 (15.0 %)	0.470
Intermediate risk	12/26 (46.2%)	11/28 (39.3%)	9/26 (34.6%)	0.694
High risk	7/11 (63.6%)	8/12 (66.7%)	8/17 (47.1%)	0.512
Total	23/51 (45.1%)	21/56 (37.5%)	20/63 (31.7%)	0.343

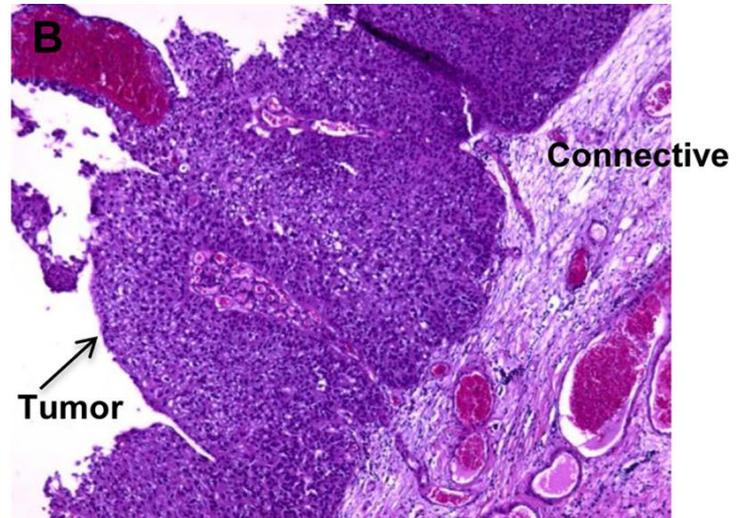
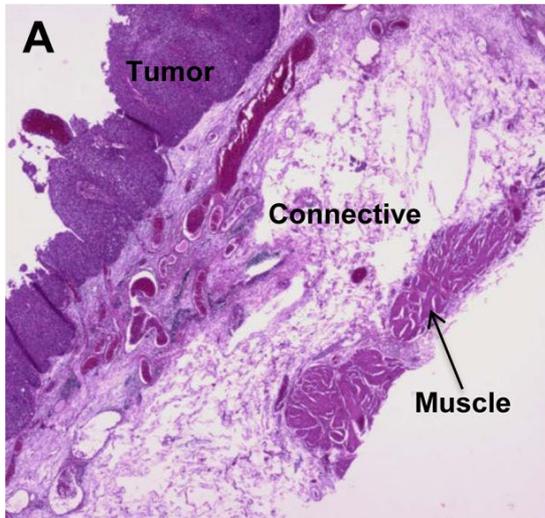
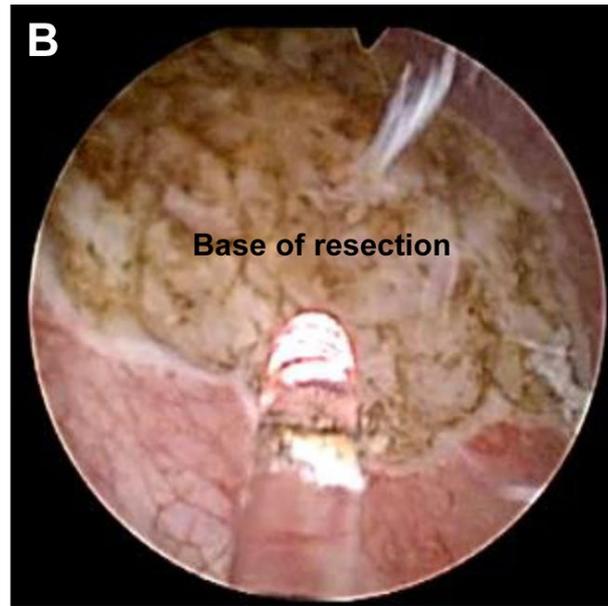
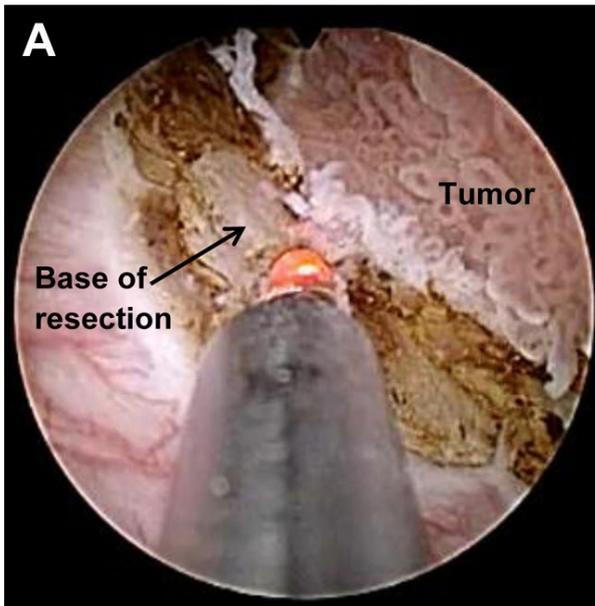
Ho:YAG – Tm:YAG

Vantaggi del Tullio:

- LAMBDA del fascio elettromagnetico è modulabile (1.75–2.22 μm),
- Maggiore assorbimento della radiazione da parte del tessuto= migliori proprietà di taglio,
- Minore danno termico laterale,
- Laser a diodi: può essere operato sia in modo pulsato che continuo.
- Il fascio continuo garantisce migliore emostasi,, stabilità della fibra, minore produzione di bolle di cavitazione.

Table 1. Thulium:yttrium-aluminum-garnet laser resection of bladder tumor series reported in the literature

Author	Pts	Operative Time (min)	Complications	Catheterization Time (d)	Follow-up (mo)	Recurrence Rate (%)		
						Local	Out of Field	All
Gao et al ⁷	32	25	None	1	12	9	19	28
Zhong et al ¹⁷	30	29.1	None	4.47	24	n.r.	n.r.	29.9
Yang et al ¹⁶	9	8.7	1 Bladder perforation	8	7.5	0	n.r.	n.r.
Wolters et al ¹²	6	36	None	n.r.	2	0	n.r.	n.r.
Our series	55	33	None	1.4	16	2	14.5	16.3



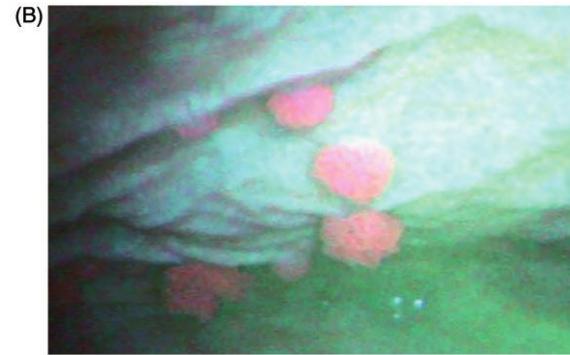
Laser EBRT Vs Electric EBRT

Table 2 Intra- and postoperative characteristics of patients undergoing en bloc resection of bladder tumors with electrical current (E-ERBT) versus laser energy (L-ERBT)

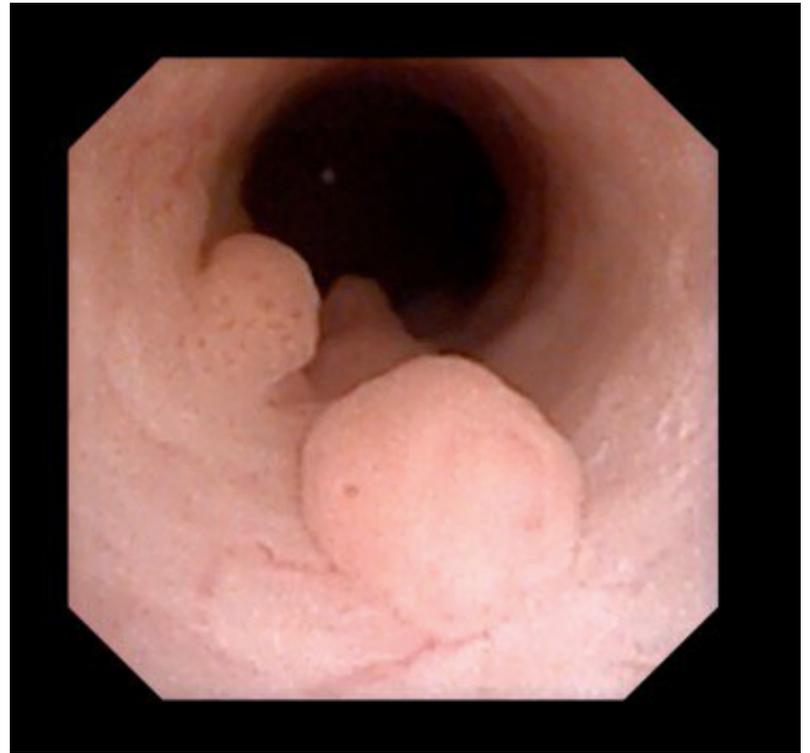
Variable	E-ERBT <i>n</i> = 156	L-ERBT <i>n</i> = 65	<i>p</i>
Tumor size (cm)	2.18 ± 0.90	2.40 ± 0.87	0.046
Switch to cTURBT	41 (26.3)	1 (1.5)	<0.001
Detrusor muscle	150 (96.2)	65 (100)	0.18
Operative duration (min)	27.19 ± 11.96	29.65 ± 12.46	0.16
Complications			
Clavien > 1	6 (3.9)	4 (6.2)	0.49
Clavien > 2	3 (1.9)	3 (4.6)	0.36
Acute bleeding	6 (3.9)	1 (1.5)	0.68
Loss of hemoglobin (g/dl)	0.46 ± 0.69	0.15 ± 0.49	0.0013
Period of irrigation time (days)	0.76 ± 0.64	0.63 ± 0.74	0.21
Period of catheterization (days)	1.74 ± 1.28	2.03 ± 1.42	0.16
Period of hospitalization (days)	2.73 ± 1.27	3.01 ± 1.43	0.15

Table 3 Cumulative recurrence rates of patients undergoing en bloc resection with either electrical current (E-ERBT) or laser energy (L-ERBT) after 3, 6, and 12 months

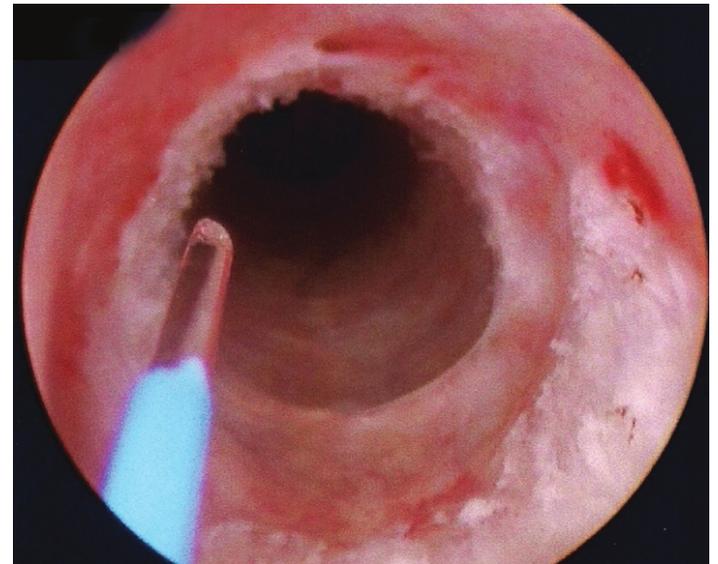
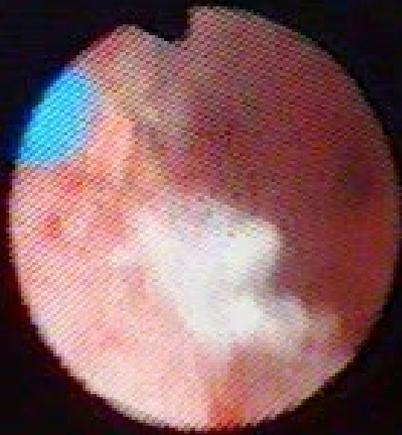
Time frame	E-ERBT <i>n</i> = 94	L-ERBT <i>n</i> = 54	<i>p</i>
3 months	5 (5.3)	1 (1.9)	0.67
6 months	11 (11.7)	6 (11.1)	>0.9
12 months	23 (24.5)	10 (18.5)	0.54



Alto Tratto

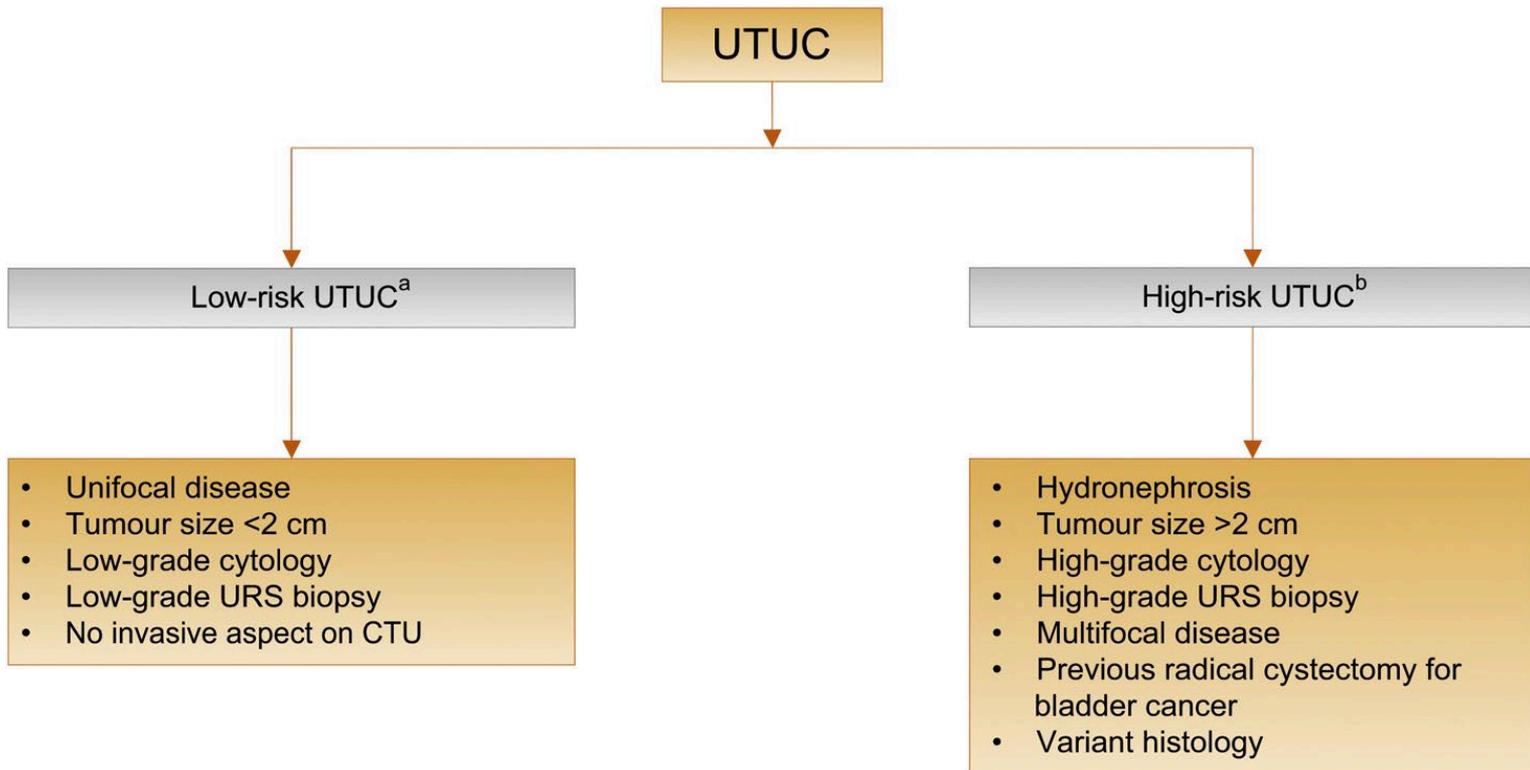


Alto Tratto



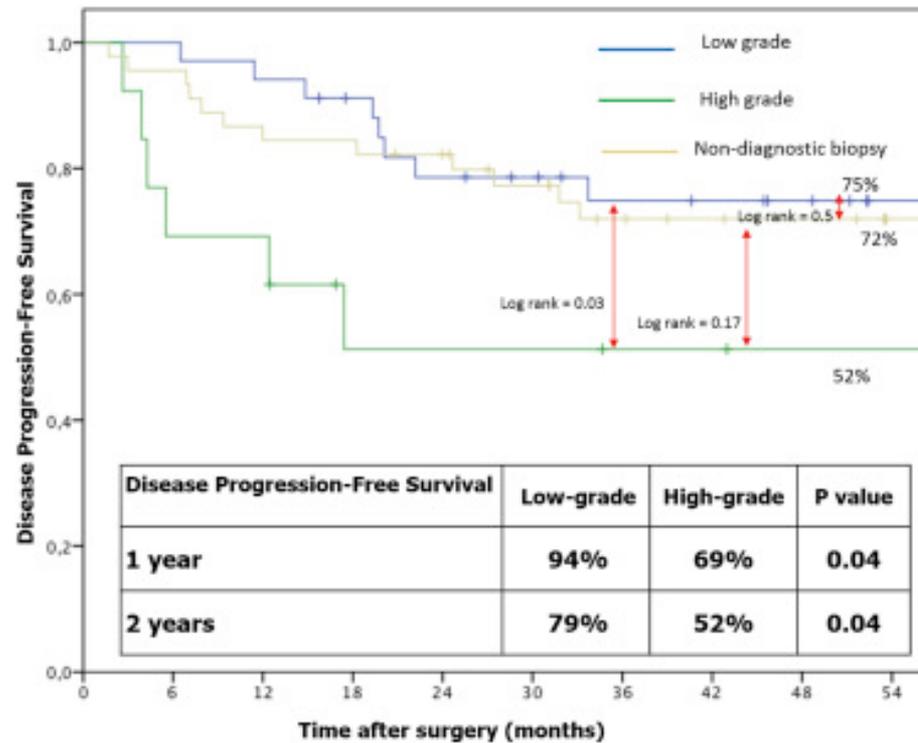


Alto Tratto



Adult Urology
Oncology: Adrenal/Renal/Upper Tract/Bladder

Which Patients with Upper Tract Urothelial Carcinoma Can be Safely Treated with Flexible Ureteroscopy with Holmium:YAG Laser Photoablation? Long-Term Results from a High Volume Institution



Limiti Ureteroscopia

La ureteroscopia può mappare accuratamente le UTUC nella maggior parte dei pazienti a basso rischio. Ma nei pazienti ad alto rischio:

Understaging

Il 25% delle lesioni non sono riconosciute.

Undergrading

Quasi il 50% dei pazienti con carcinoma in situ non sono riconosciuti.

Kidney sparing Vs NU Radicale

Studi non randomizzati e retrospettivi

Kidney sparing		Nefroureterectomia	N studi
Chirurgia endoscopica	162	367	5
Kidney sparing n.d.	547	1376	7

Kidney sparing Vs NU Radicale

				Overall	KSS	RNU	Elective	Imperative	Overall	KSS	RNU	p value
Pedrosa et al [9]	USA	Retrospective Monocentric	3	131 (100)	SU = 35 (26.7)	96 (73.3)	+	+	Median (range) = 56.9 (0.2-181.1)	NR	NR	NR
Simhan et al [10]	USA	Retrospective SEER database	3	1227 (100)	KSS = 320 (26.1)	907 (73.9)	NR	NR	Median (IQR) = 61 (25-111)	NR	NR	NR
Hung et al [11]	Taiwan	Retrospective Monocentric	3	112 (100)	SU = 35 (31.3)	77 (68.7)	+	+	NR	Mean (SD) = 48.3 (26.97)	Mean (SD) = 43.8 (20.64)	0.344
Dalpiazz et al [12]	Austria	Retrospective Monocentric	3	91 (100)	SU = 49 (53.8)	42 (46.2)	+	+	NR	Mean (range) = 51.1 (4-279)	Mean (range) = 51.5 (4-290)	NR
Hoffman et al [13]	Israel	Retrospective Monocentric	3	47 (100)	URS = 25 (53.2)	22 (46.8)	NR	NR	NR	Median (range) = 26 (12-126)	Median (range) = 57 (12-149)	NR
Fukushima et al [14]	Japan	Retrospective Multicentric	3	129 (100)	SU = 43 (33.3)	86 (66.7)	NR	NR	Median (IQR) = 50 (16-103)	NR	NR	NR
Fajkovic et al [15]	Austria	Retrospective Multicentric	3	198 (100)	URS = 20 (10.1)	178 (89.9)	NR	NR	NR	Mean (SD) = 20.4 (30)	NR	NR
Cutress et al [16]	UK	Retrospective Monocentric	3	129 (100)	URS and PC = 59 (45.7)	70 (54.3)	30 (50.8)	29 (49.2)	NR	Median (IQR) = 50 (NR)	Median (IQR) = 50 (NR)	0.902
Bagrodia et al [17]	USA	Retrospective Multicentric	3	835 (100)	SU = 81 (9.7)	754 (90.3)	NR	NR	Median (range) = 34 (1-246)	NR	NR	NR
Colin et al [18]	France	Retrospective Multicentric	3	468 (100)	SU = 52 (11.1)	416 (88.9)	+	+	Median (range) = 26 (10-48)	NR	NR	NR
Bin et al [19]	USA	Retrospective Monocentric	3	60 (100)	URS = 10 (16.7) SU = 17 (28.3)	33 (55.0)	+	+	Median (IQR) = 29 (11.8-44.4)	NR	NR	NR
Grasso et al [20]	USA	Retrospective Monocentric	3	160 (100)	URS for LG = 66 (41.3) URS for HG = 14 (8.7)	80 (50.0)	66 (82.5)	14 (17.5)	Mean (range) = 38.2 (1-185.3)	Mean (range) LG = 51.5 (3-166.4) Mean (range) HG = 25.1 (6.5-47.8)	Mean (range) = 30.4 (1-185.3)	NR
Bing-bing et al [21]	China	Retrospective Multicentric	3	139 (100)	KSS = 64 (46.0)	75 (54.0)	NR	NR	Mean (range) = 43.4 (0.2-120)	NR	NR	NR
Silberstein et al [22]	USA	Retrospective Monocentric	3	120 (100)	SU = 33 (27.5)	87 (72.5)	NR	NR	Median (IQR) = 50.4 (NR)	NR	NR	NR
Raymundo et al [23]	USA	Retrospective Monocentric	3	120 (100)	URS and PC = 21 (17.5)	99 (82.5)	+	+	Mean (range) = 17.9 (13.2-24.6)	NR	NR	NR
Gadzinski et al [24]	USA	Retrospective Monocentric	3	93 (100)	URS and PC = 31 (33.3)	62 (66.7)	15 (48.4)	16 (51.6)	Median (range) = 76.9 (13-146.7)	NR	NR	NR
Lughezzani et al [25]	Canada	Retrospective SEER database	3	2299 (100)	SU = 222 (9.7)	2077 (90.3)	NR	NR	Median (IQR) = 39 (0.1-203)	NR	NR	NR
Dragicovic et al [26]	Serbia	Retrospective Multicentric	3	107 (100)	SU and URS = 21 (19.6)	86 (80.4)	9 (42.9)	12 (57.1)	Median (range) = 67 (46-88)	NR	NR	NR
Lucas et al [27]	USA	Retrospective Monocentric	3	108 (100)	SU and URS = 31 (28.7)	77 (71.3)	+	+	Median (range) = 45.8 (0.5-129)	Median (IQR) = 33 (NR)	Median (IQR) = 46 (NR)	NR
Giannarini et al [28]	Switzerland	Retrospective Monocentric	3	43 (100)	SU = 19 (44.2)	24 (55.8)	0 (0.0)	19 (100)	Median (range) = 58 (3-260)	NR	NR	NR
Rouprêt et al [29]	France	Retrospective Multicentric	3	97 (100)	URS = 27 (27.8) PC = 16 (16.5)	54 (55.7)	+	+	Mean (SD) = 54 (21)	Mean (SD) URS = 52 (22) Mean (SD) PC = 49 (25)	Mean (SD) = 61 (19)	NS
Lee et al [30]	USA	Retrospective Multicentric	3	110 (100)	PC = 50 (45.5)	60 (54.5)	+	+	Median (IQR) = 15.6 (NR)	NR	NR	NR

HG = high grade; IQR = interquartile range; KSS = kidney-sparing surgery; LE = level of evidence; LG = low grade; NR = not reported; NS = nonsignificant; PC = percutaneous management; RNU = radical nephroureterectomy; SD = standard deviation; SEER = Surveillance Epidemiology and End Results; SU = segmental ureterectomy; URS = ureteroscopic management.

Kidney sparing Vs NU Radicale

- La chirurgia kidney sparing va bene in casi selezionati di pazienti a basso rischio.
- La chirurgia kidney sparing è una opzione solo quando è realmente fattibile.
- Alta compliance del paziente a follow-up endoscopico
- Rischio di understaging e undergrading limitano la chirurgia endoscopica

Recommendations

GR

Offer kidney-sparing management as primary treatment option to patients with low-risk tumours and two functional kidneys.

C

Offer kidney-sparing management in patients with solitary kidney and/or impaired renal function, provided that it will not compromise the oncological outcome. This decision will have to be made on a case-by-case basis, engaging the patient in a shared decision-making process.

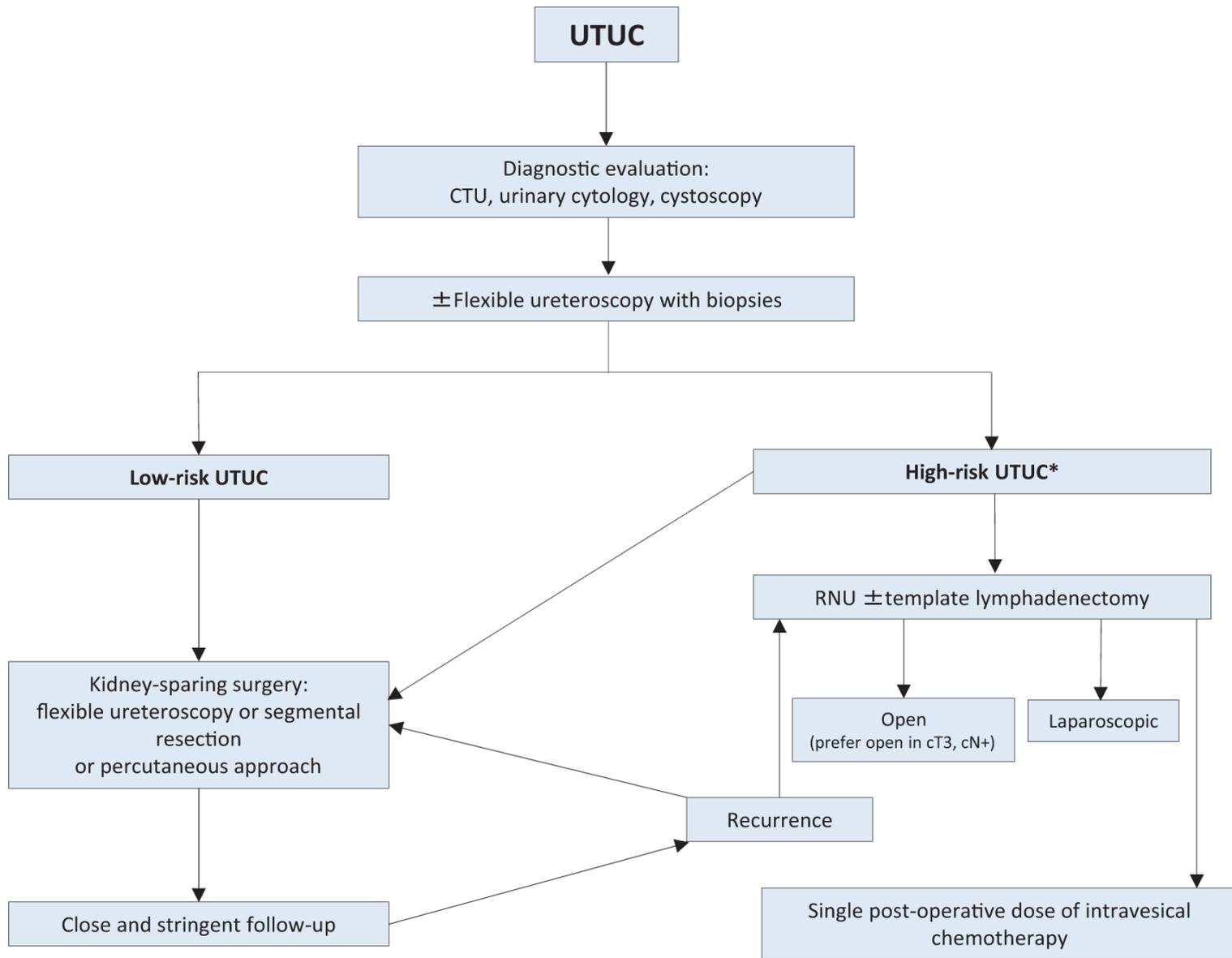
C

Offer a kidney-sparing approach in high-risk cancers for distal ureteral tumours and in imperative cases (solitary kidney and/or impaired renal function).

C

Use a laser for endoscopic treatment of upper tract urothelial carcinoma.

C



Conclusioni

Basso tratto

- Alternativa alla TURBT
- Non sempre applicabile
- Applicazione ambulatoriale potenziale

Alto tratto

- Applicabile in casi selezionati
- Esperienza del chirurgo

