

Amsterdam UMC
Universitair Medisch Centrum

Do we always need a biopsy to treat UTUC

PROS ST →

← CONS ^{DR}

Joyce Baard | BAU 2019

Disclosures



Advancing science for life™












WE BRING UROLOGISTS TOGETHER

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What do we know...

- Relatively rare disease
- 5-10% all UC
- Western countries 2:100.000 inhabitants
- 10-20% multifocal
- 60% invasive at diagnosis



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What do we know...

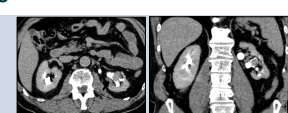
- Lack of high level evidence recommendations
- Decision-making largely extrapolated of high evidence trials on UC of the lower tract




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Diagnostics & guidelines

	Sensitivity	Specificity
CT Urography	96%	99%
MR Urography	69%	97%
Excretory Urography	80%	81%
Retrograde Urography	96%	96%




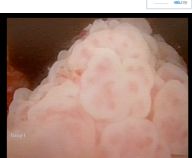
Ravazzi et al 2012

Imaging (strong)
CTU: highest diagnostic accuracy

Capital tests to define local stage, nodal invasion and presence of metastasis.


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Diagnostics & guidelines

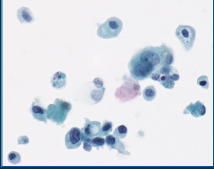
Cystoscopy (strong)
Concurrent bladder UC (17%)
Positive urine cytology is highly suggestive of UTUC when cystoscopy is normal

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Cytology

Detection yield of cytology 40-80%
 Large variability in accuracy
 FN rate up to 50% for LG disease
 Sensitivity highly depended on tumour grade

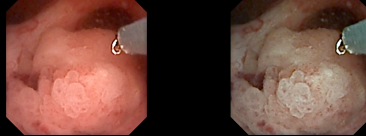


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Diagnostics & guidelines



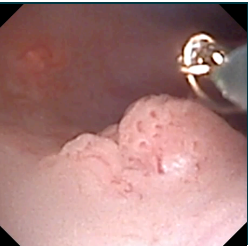
Diagnostic ureteroscopy (strong)
 Use dURS and biopsy *only* if the result will influence the type of treatment.

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Biopsy

Forceps/ baskets
 90% determination tumor *grade*
 Independent of sample size

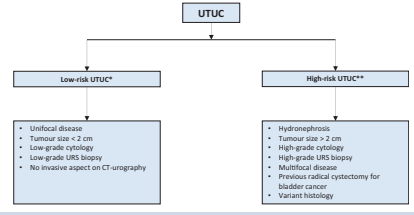


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Papan, C.F. et al. Low biopsy volume in ureteroscopy does not affect tumor biopsy grading in upper tract urothelial carcinoma. *Urol Oncol*. 2013; 31: 1886.




Type of treatment = Risk stratification




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graph TD
    UTUC[UTUC] --> LowRisk[Low-risk UTUC*]
    UTUC --> HighRisk[High-risk UTUC**]
    
    LowRisk --> LowRiskList["• Unifocal disease  
• Tumour size < 2 cm  
• Low grade cytology  
• Low grade URS biopsy  
• No invasive aspect on CT-urography"]
    
    HighRisk --> HighRiskList["• Hydronephrosis  
• Tumour size > 2 cm  
• High-grade cytology  
• High-grade URS biopsy  
• Multifocal disease  
• Previous radical cystectomy for bladder cancer  
• Variant histology"]
  
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Type of Treatment


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Risk Stratification

Imaging (CTU/MRU) is the best diagnostic instrument we currently have for tumour **staging**

Pathohistology is the best diagnostic instrument we currently have for tumour **grading**



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Concerns dURS and oncological outcomes

The oncologic impact of a delay between diagnosis and radical nephroureterectomy due to diagnostic ureteroscopy in upper urinary tract urothelial carcinoma: results from a large collaborative database

Impact of Ureteroscopy Before Nephroureterectomy for Upper Tract Urothelial Carcinoma on Oncologic Outcomes

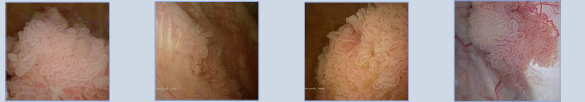
No impact on OS, RFS, MFS

Impact of ureteroscopy before radical nephroureterectomy for upper tract urothelial carcinomas on oncological outcomes: a meta-analysis

The Impact of Previous Ureteroscopic Tumor Ablation on Oncologic Outcomes After Radical Nephroureterectomy for Upper Urinary Tract Urothelial Carcinoma

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Concerns dURS and IVR



SR and MA:

- 7 studies in SR, 6 studies in MA
- n= 2372; 765 dURS prior to RNU

IVR rate:

- without dURS 16,7-46%
- with dURS: 39,2-60,7%

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Do we need Bx...

- ...we have our imaging
- ...we have our experience
- ...we have our endoscopic inspection



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Imaging



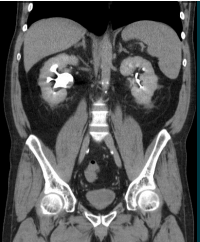
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Pitfalls imaging

Sensitivity decreases in smaller lesions

- 89% for lesions <5 mm
- 40% for lesions <3 mm

No distinction benign/ malignant lesions



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Pitfalls Bx

Staging difficult

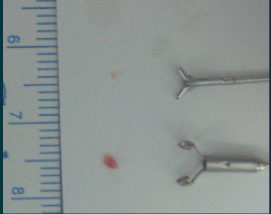
Small samples, often no lamina propria

Undergrading may occur

Heterogeneity tumors

Effect instrumentation

Misinterpretation




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Diagnostic accuracy grade

9 urologists, 64 UTUC
No clinical patient information

- Rate tumor grade: HG/ LG
- Rate video quality (1-3)
- Questionnaire repeated

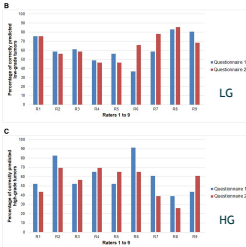


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Diagnostic accuracy grade

- LG: median concordance 59%/66%
- HG: median concordance 52%/ 61%
- Overall: median concordance 59%/ 64%

- No correlation total experience and overall accuracy
- Grade prediction based on visual appearance = limited!



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Diagnostic accuracy CTU and dURS

174 renal units in 148 patients suspected UTUC

104 UTUC's
Reference standard: cytological or histopathological results

	MCTU (95% CI)	URS (95% CI)	P
RIUs	103	163	
Accuracy	0.74 (0.66-0.82)	0.84 (0.79-0.89)	0.0412
Sensitivity	0.89 (0.81-0.96)	0.84 (0.77-0.90)	0.3628
Specificity	0.51 (0.36-0.66)	0.85 (0.77-0.93)	<0.001
PPV	0.73 (0.64-0.83)	0.89 (0.83-0.95)	0.009
NPV	0.72 (0.59-0.81)	0.78 (0.69-0.87)	0.767

Diagnostic accuracy of computed tomography urography and visual assessment during ureterorenoscopy in upper tract urothelial carcinoma
Alexandra Grahm*, Miden Melle-Hannoh*, Camilla Malm*, Fredrik Jodesting*, Eva Roddeck*, Mats Beckman* and Marianne Brehmer**

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Diagnostic accuracy CTU and dURS

Combining both methods for optimum precision

Combination CTU, dURS and sampling mandatory in diagnostics

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Diagnostic accuracy UTUC and sample collection

Prospective study, 45 consecutive patients
Cytology: barbotage, histopathology: Bx
Reference: RNU specimen

Barbotage cytology: 91%
Bx: 94%

Table 2. Tumours identified by barbotage for cytology and by biopsy for histopathology.

Grade in nephroureterocystometry specimen (n)	Cytology of barbotage specimens positive for malignancy		Histology of biopsy specimen positive for malignancy	
	n (total)	%	n (total)	%
Low				
G1 (10)	7 (10)	70	8 (8)	100
G2 (13)	13 (13)	100	11 (12)	92
High				
G3 (20)	19 (20)	95	15 (16)	94
G3 (43)	39 (43)	91	34 (36)	94

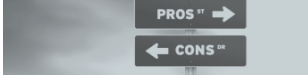
Diagnostic accuracy of upper tract urothelial carcinoma: how samples are collected matters
Source: GPM, International Society of Urological Pathology, Beckman et al. 2018

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Personalized Medicine

Risk stratification = patient selection = treatment strategy
Challenge to select those patients with low risk disease eligible for KSS
Tumor *grade* and *stage* are decisive factors for the risk stratification

Pro: inspection, cytology, histopathology
Con: invasive, higher IVR, upgrading



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