

# WHICH URINARY DIVERSION AFTER CYSTECTOMY FOR BLADDER CANCER ?

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## ***DISCLOSURE***

Patrick Coloby

CHRD Pontoise

- **Grants, Honoraria, Ad Boards**

Amgen, AMS, AstraZeneca, Astellas, Bouchara Recordati, Ferring, Ipsen, Janssen, Lilly, Novartis, Pierre Fabre, Viatris

# Outline

1. Which choice for the patients
2. How to choose
  - a) Carcinologic criteria
  - b) Functional criteria
  - c) General patient criteria
  - d) Quality of life
  - e) Patient preference
3. The reality of practice
4. Conclusion

# URINARY DIVERSION

goals of a good urinary diversion :

- Protection of upper urinary tract
- Good quality of life
- Without compromising the oncological outcome
- Low morbidity

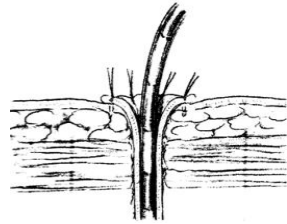
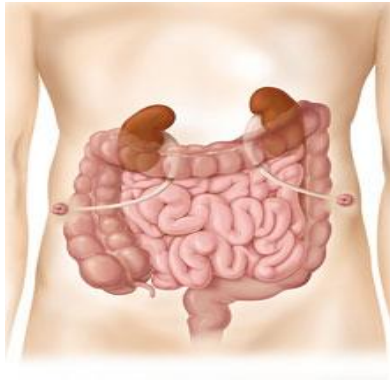


**WHICH CHOICE**

# URINARY DIVERSION

- CUTANEOUS URINARY DIVERSION

- non continent :



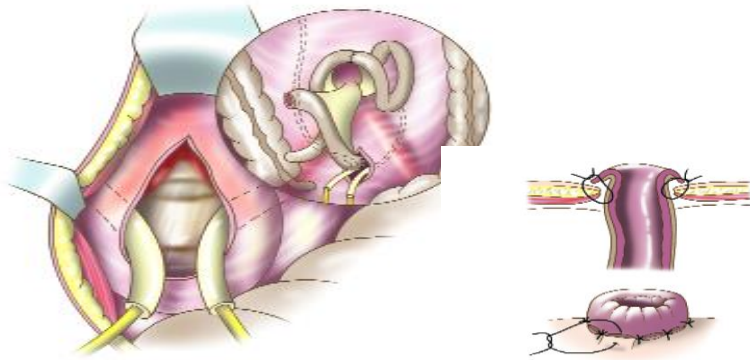
*Ureterocutaneostomy*

- simple and safe procedure
- no risk of bowel complication
- preferred in older,
- **stoma stenosis** stricturing on skin level  
(Deliveliotis C, et al. Urology 2005 Aug;66(2):299-304)
- **ascending UTI more frequent** complications in comparison to an ileal conduit diversion.
- **continuous stenting**

# URINARY DIVERSION

- CUTANEOUS URINARY DIVERSION

- non continent :



*Transileal cutaneous Ureterostomy or Ileal conduit (Bricker)*

## Early complications (48%) :

Nieuwenhuijzen JA et al. Eur Urol 2008 Apr;53:834-42

- UTIs, pyelonephritis,
- bowel complication
- uretero-ileal leakage
- stenosis

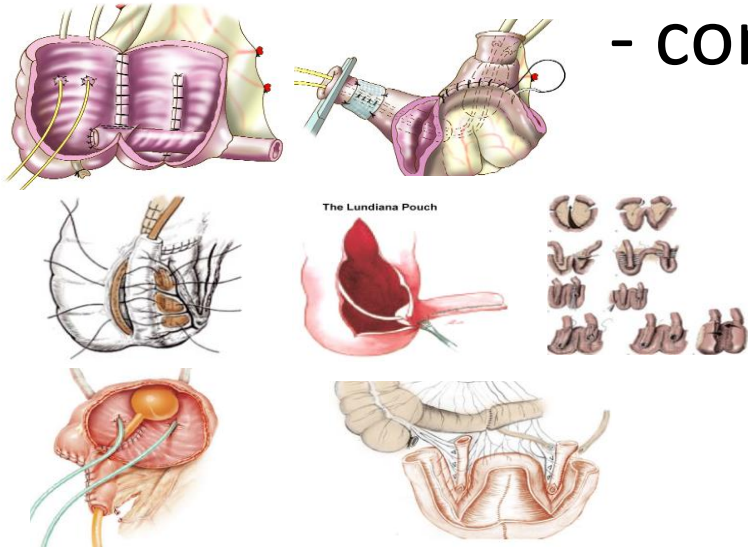
## Late complications :

Madersbacher S et al. J Urol 2003 Mar;169(3):985-90

- Stomal (24%)
- functional and/or morphological changes of the UUT in up to 30%
- complications increase from 45% at 5 years to 94% in those surviving longer than 15 years.

# URINARY DIVERSION

- CUTANEOUS URINARY DIVERSION



## - continent :

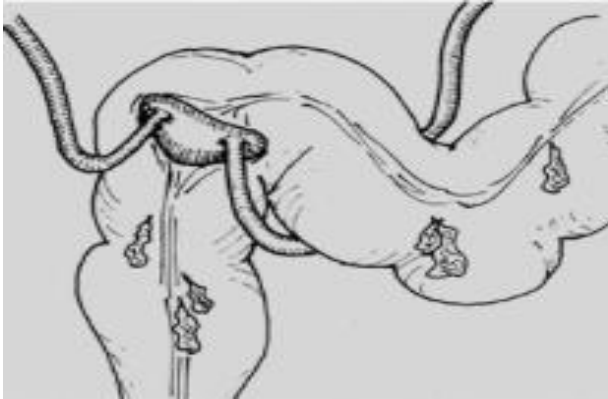
- Multiple techniques
- Not often used after cystectomy for bladder cancer
- Overall complication rates range between 28% and 57%  
catheterizing difficulties,  
stoma stenosis,  
stones in the reservoir,  
incontinence (2–16%)  
stenosis of the uretero-intestinal implantation.
- Surgical revision

continent reservoir : Kock, Mainz 1, 2, 3,  
Indiana, Lundiana, Mansoura, T pouch....

# URINARY DIVERSION

## INTERNAL URINARY DIVERSION

### - rectosigmoid pouch



recto-sigmoid pouch

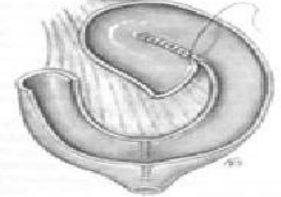
- **obsolete**
- high incidence of upper urinary tract infections
- long-term risk of developing colon cancer

# URINARY DIVERSION

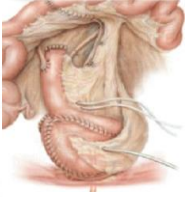
## INTERNAL URINARY DIVERSION

- orthotopic reservoir : terminal ileum

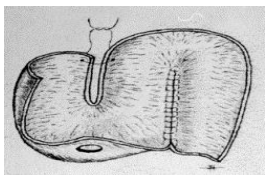
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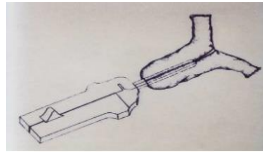
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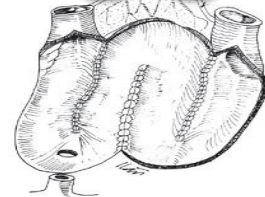
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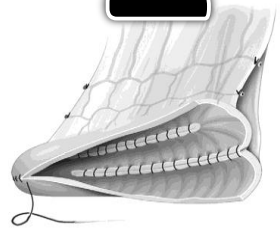
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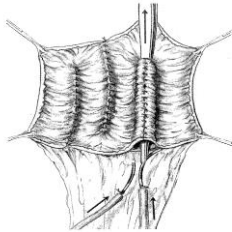
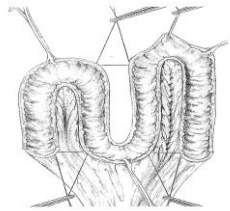
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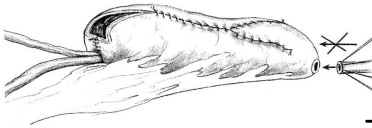
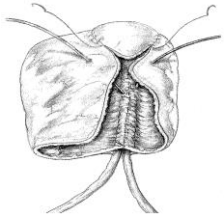
# URINARY DIVERSION

## INTERNAL URINARY DIVERSION

### - orthotopic reservoir



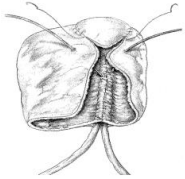
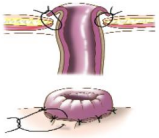
- Early and late morbidity in up to 22%
- Long-term complications
  - diurnal (8-10%) and nocturnal incontinence (20-30%)
  - urinary retention (4-12%) both in males and female patients
  - ureterointestinal stenosis (3-18%),
  - metabolic disorders and vitamin B12 deficiency
  - Urethral recurrence rare (1.5-7% in male and female patients)



*orthotopic reservoir*

# URINARY DIVERSION

- The main choice is between ileal conduit and orthotopic neobladder



- The orthotopic neobladder reconstruction is recognized as a standard operation, in male and female patient, after radical cystectomy for bladder cancer

# URINARY DIVERSION



European Association of Urology 2017-2018

Recommendations	GR
Do not delay cystectomy for > 3 months as it increases the risk of progression and cancer-specific mortality.	B
Before cystectomy, fully inform the patient about the benefits and potential risks of all	B

Offer an orthotopic bladder substitute or ileal conduit diversion to male and female patients lacking any contraindications and who have no tumour in the urethra or at the level of urethral dissection.	B
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Do not offer pre-operative radiotherapy when subsequent cystectomy with urinary diversion is planned.	A
Pre-operative bowel preparation is not mandatory. "Fast track" measurements may reduce the time of bowel recovery.	C
Offer radical cystectomy in T2-T4a, N0M0, and high-risk non-MIBC (as outlined above).	A*
Perform a lymph node dissection as an integral part of cystectomy.	A
Preserve the urethra if margins are negative.	B
Check the urethra regularly if no bladder substitution is attached.	B

\*Upgraded following EAU Working Panel consensus.



**HOW**

**What influence the choice  
to do or not to do  
an orthotopic neobladder ?**

# 2a

**What influence the choice to do or not to do  
an orthotopic neobladder ?**

**Carcinologic criteria and results :**  
To keep the radicality of cystectomy



# Carcinologic criteria



Orthotopic diversion and :

- Lymph Node invasion
- Urethral invasion
- Risk of urethral recurrence
- Risk of pelvic recurrence that could potentially affect the function of the neobladder or the therapy of this recurrence



# Lymph Node Invasion

- In the presence of positive LNs, orthotopic neobladder can be considered in case of N1 disease, but not in N2 or N3 tumours

*Lebret, T., et al. Eur Urol, 2002. 42: 344*

# URETHRAL INVASION

 European Association of Urology 2024

Do not offer an orthotopic bladder substitute diversion to patients who have an invasive tumour in the urethra or at the level of urethral dissection.	Strong
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# Urethral recurrence in men

- Overall risk of urethral recurrence : 10%

*(Freeman, 1994)*

- Risk factors of urethral recurrence: **prostatic invasion (25 to 67%) and specially stroma (20 to 64%)**

*(Freeman, 1994; Hardeman, 1990; Levinson, 1990)*

- Risk of prostatic invasion : 15,6% to 40%

*(Schelhammer 1977, Wood 1989, Nixon 2002)*

- Risk factors of prostatic invasion : CIS, Multifocality, High stage, Bladder neck

*(Tobisu 1991, Tongaonkar 1993, Nixon 2002)*

# Urethral recurrence in men



- Overall risk of urethral recurrence : 10%

(Freeman, 1994)

- Risk factors of urethral recurrence

- **Prostatic stromal invasion**

is the single important predictor of urethral recurrence

- CIS, Multifocality, Bladder neck

are not individually considered as risk factors of urethral recurrence

- Risk factors for prostatic stromal invasion : CIS, Multifocality, High stage, Bladder

# How to select male patient?



- A precise knowledge of characteristics of bladder cancer before cystectomy is necessary to appreciate better the true risk to preserve or not the urethra for an OD.
- **Preoperative prostatic biopsies**, still, have a role.

• **Frozen-section analysis on the prostatic urethral apex**, with an experienced pathologist, will give the last and important information for an appropriate selection



# Urethral recurrence in women

- Risk of urethral involvement: 6,4 to 36%

*(De Paepe 1990, Coloby 1994, Stein 1994)*

- Risk factors of urethral recurrence :

- Bladder neck involvement
- Anterior vaginal wall

*(Coloby 1994, Stein 1994,1995, Stenzl 1995 ,Chen 1997)*

- Risk of bladder neck invasion : 19 to 25%
- 47 to 67 % of BNI have no urethral tumor.
- Bladder neck involvement should not preclude OD



# Urethral recurrence in women

- Risk of urethral involvement: 6,4 to 36%

*(De Paepe 1990, Coloby 1990)*

- Risk of

## • Bladder neck involvement

is the single important predictor of urethral recurrence

*(Suzuki 1994,1995, Stenzl 1995 ,Chen 1997)*

- Risk of bladder neck invasion : 19 to 25%
- 47 to 67 % of BNI have no urethral tumor.
- Bladder neck involvement should not preclude OD



# How to diagnose



## urethral and bladder neck invasion?

- A precise knowledge of characteristics of bladder cancer before cystectomy is necessary to appreciate better the true risk to preserve or not the urethra for an OD.
- **Preoperative bladder neck biopsies**, still, have a role.

• **Frozen-section analysis on the distal surgical margin (proximal urethra and anterior vaginal wall)**, with an experienced pathologist, will give the last and important information for an appropriate selection



# Pelvic recurrence

- Local recurrence rates are low (even in a high risk patient)
- In case of pelvic recurrence, **the type of diversion do not affect :**
  - risk of complication
  - the type of salvage treatment
  - overall survival

# Carcinologic criteria



- Oncological results after orthotopic neobladder substitution or conduit diversion are similar in terms of local or distant metastasis recurrence,
- But secondary urethral tumours seem less common in patients with neobladder compared to those with conduits or continent cutaneous diversions.

*Gerharz, E.W., et al. Metabolic and functional consequences of urinary reconstruction with bowel. BJU Int, 2003. 91: 143.*



**What influence the choice to do or not to do  
an orthotopic neobladder ?**

**Functional criteria and results :**

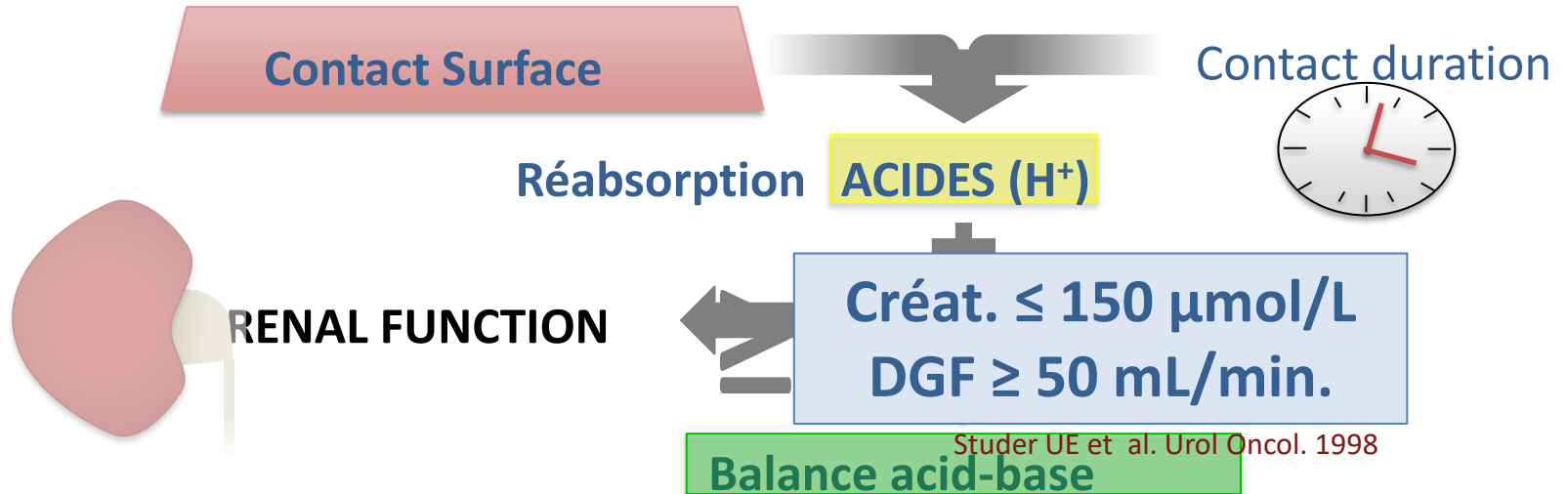
Upper urinary tract  
Urethral competence



# Functional criteria



- Renal function criteria and OD



# Functional criteria



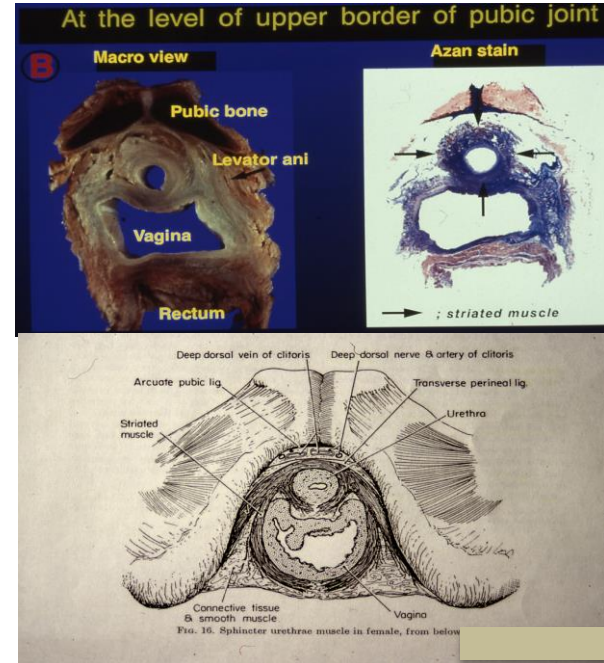
## Urethral competence

Patient history (USP)

Clinical examination

Urodynamic study

$UPP \geq 30 \text{ cm H}_2\text{O}$



# Functional results



- Orthotopic neobladder (male and female)

Day / Night Continence / Retention

87 to 98 (93)% / 70 to 95 (83)% / 5 to 15%

Réf.	n =	Suivi médian	Taux de continence			AS
			Diurne	Nocturne	Délai d'évaluation	
Barre P.	110	32	93%	74%	NR	1%

Good understanding of neobladder function (micturition, continence)

Good motivation

Close monitoring post operatively

Sevin G.	124	NR	92%	90%	NR	NR
Stein J.	209	33	87%	92%	4 ans	25%
<b>Total</b>	<b>2127</b>		<b>93%</b>	<b>83%</b>		



**What influence the choice to do or not to do  
an orthotopic neobladder ?**

**General patient criteria**



# General patient criteria



- **Morbidity**

Age

Life expectancy

Age alone is not a criterion for offering continent diversion

Comorbidity, cardiac and pulmonary function, and cognitive function, are all important factors that should be considered, along with the patient's social support and preference.

important risk factor is a score  $ASA \geq III$

no difference between

orthotopic, heterotopic continent diversion and ileal conduit (operating time, hospitalization, complications)

*(Malavaud, Eur Urol, 2001, 39: 79-84)*

# General patient criteria



- **Motivation :**

ability to understand and handle specific problems of neobladder such as

- possible retention (self intermittent catheterization),
- initial diurnal and nocturnal incontinence,
- timed voiding,
- nycturia



**What influence the choice to do or not to do  
an orthotopic neobladder ?**

Quality of life



# QUALITY OF LIFE



## orthotopic versus ileal conduit

Quality of life after cystectomy: French national survey conducted by the French Association of Urology (AFU), the French Federation of Stoma Patients (FSF) and the French Association of Enterostomy Patients (AFET) in patients with ileal conduit urinary diversion or orthotopic neobladder

*Mottet N, Castagnola C, Rischmann P, Deixonne M, Guyot M, Coloby P, Mangin P. Prog Urol. 2008 May;18(5):292-8*

National multicentre study  
Specific self-administered quality of life questionnaire  
Distributed by 3 associations  
General questions and specific questions

Cystectomy with either ileal conduit urinary diversion or orthotopic neobladder alters many aspects of the patient's life, but patients finally accept and adapt to their new way of life.

# QUALITY OF LIFE



## orthotopic versus ileal conduit

### 2 meta analyses

- Yang et al, Surg Oncol 2016 (29 studies)
- Porter et al, J Urol 2016

no convincing evidence that superior HRQOL is achieved with a particular type of urinary diversion after cystectomy for bladder cancer.

### 1 meta

- Cozzitelli et al, Surg Oncol 2016 (18 studies)

**orthotopic > ileal conduit**





# PATIENT INFORMATION

 European Association of Urology 2024

Ensuring that patients are well informed about the various urinary diversion options prior to making a decision may help prevent or reduce decision regret, independent of the method of diversion selected.

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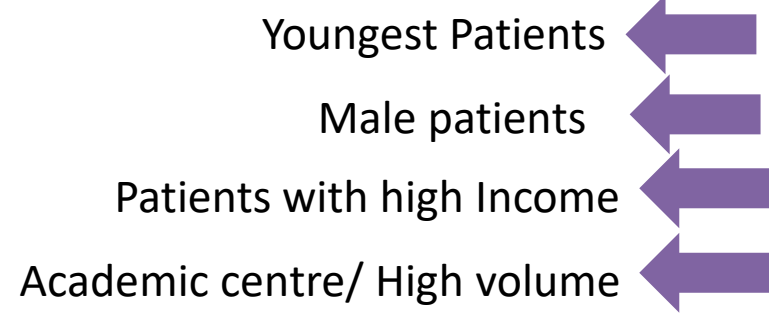




# Orthotopic neobladder versus ileal conduit choice

- *National Cancer Database*  
(n=4538 patients T1-2NOM0)

→ 89,6% of Ileal Conduit



→ **ORTHOTOPIC NEOBLADDER**

**Table 2** Predictors of urinary diversion type

Variables	CCR versus IC		ON versus IC		p value
	OR	95 % CI	OR	95 % CI	
Age (per decade)	0.6	0.5–0.7	0.5	0.4–0.5	<0.01
Female versus male	1.6	1.1–2.1	0.6	0.3–1.0	<0.01
Nonwhite versus white	1.4	1.0–2.0	1.0	0.6–1.8	0.22
Income					<0.01
Middle low versus lowest	1.6	1.0–2.5	1.4	0.7–2.5	
Middle high versus lowest	1.6	1.0–2.5	1.7	0.9–3.1	
Highest versus lowest	2.2	1.5–3.4	2.9	1.6–5.1	
CCI ≥ 2 versus <2	0.7	0.4–1.2	0.6	0.2–1.3	0.19
Clinical T stage					0.81
2 versus 1	1.1	0.8–1.4	0.9	0.7–1.3	
Academic versus non-academic center	1.2	0.9–1.6	1.7	1.1–2.7	0.04
Hospital volume					<0.01
Intermediate versus low	1.2	0.8–1.7	1.0	0.6–1.7	
High versus low	2.2	1.5–3.2	3.3	2.0–5.7	
Approach, n (%)					0.48
Laparoscopic versus open	1.1	0.8–1.6	1.4	0.9–2.3	
Robotic versus open	1.0	0.7–1.3	0.9	0.6–1.3	

CCI Charlson comorbidity index, CCR continent cutaneous reservoir,

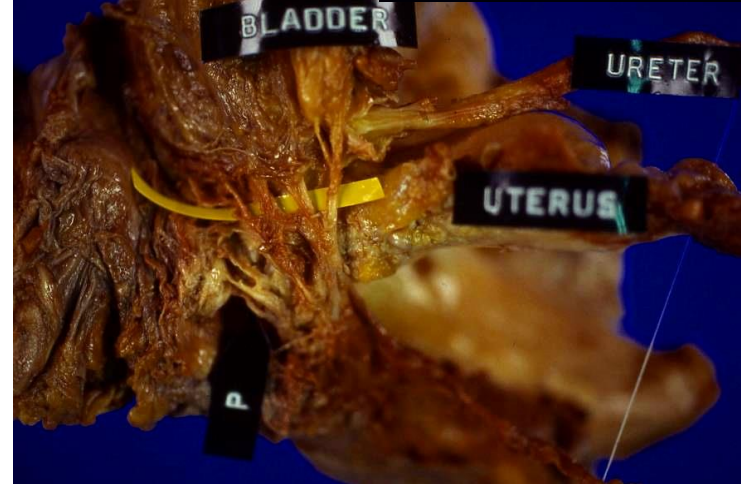
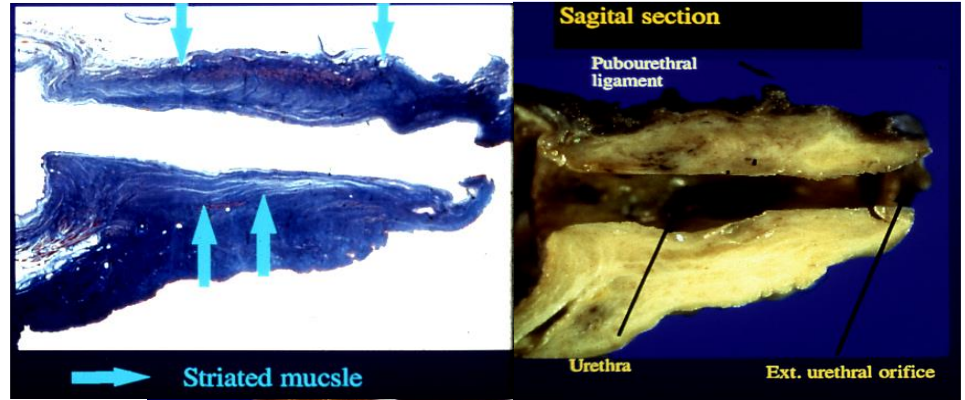




# Technical Aspects in female patient

## Cystectomy time

- Urethral preservation (smooth muscle, sphincter, urethral support)
- Pelvic nerve sparing dissection (micturition, sex)



# Technical Aspects in female patient

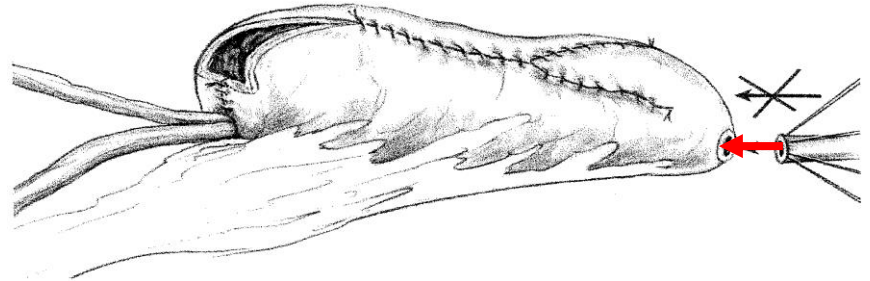
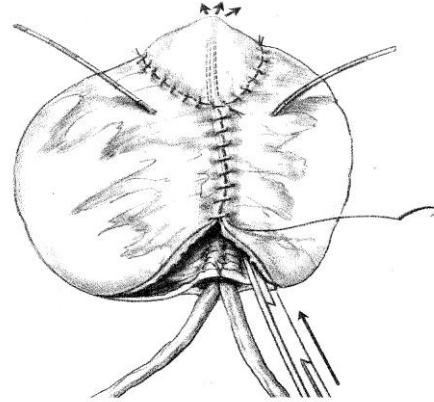
## Bladder reconstruction

Ileal detubularized pouch :

- W-Bladder with ureteral implantation in a common subserous extramural tunnel

**Urethral orifice :**

- The most posterior and deepest end of the neobladder and close to the mesenterium, a fixed part of the reservoir



4

# Conclusion



# Conclusion



- Tumor status
  - Clinical factors
  - Patient anatomy
  - Patient preference.
  - Honest information
  - Urologist and hospital expertise
- 
- If OD chosen, mark the place for an appropriate cutaneous stoma site
  - Even, if OD is decided preoperatively, the last decision is determined during the surgery.
  - If OD chosen : Close monitoring post operatively



Thank you



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UROLOGISTS  
TOGETHER

