

**Critical Review and Appraisal of the Latest  
AJCC System and/or WHO Classification :**  
**Genitourinary Sites**

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# Genitourinary Sites

- **Kidney**
- **Urinary bladder, renal pelvis, ureter, urethra**
- **Prostate**
- **Testis**
- **Penis**

# TNM Staging of Kidney Tumor

AJCC 7<sup>th</sup>

## Primary tumor (T)

- TX** Primary tumor cannot be assessed
- T0** No primary tumor
- T1** Limited to kidney  $\leq 7$ cm,  
T1a,  $\leq 4$ cm ; T1b,  $>4 - \leq 7$ cm
- T2** Limited to kidney  $> 7$ cm  
T2a,  $>7 - \leq 10$ cm; T2b,  $>10$ cm
- T3** T3a: gross extension to renal vein & segmental (muscle containing) branches, perirenal/renal sinus fat  
T3b: vena cava below diaphragm  
T3c: vena cava above diaphragm, or wall of vena cava
- T4** Beyond Gerota's fascia or direct or invasion to ipsilateral adrenal

AJCC 8<sup>th</sup>

## Primary tumor (T)

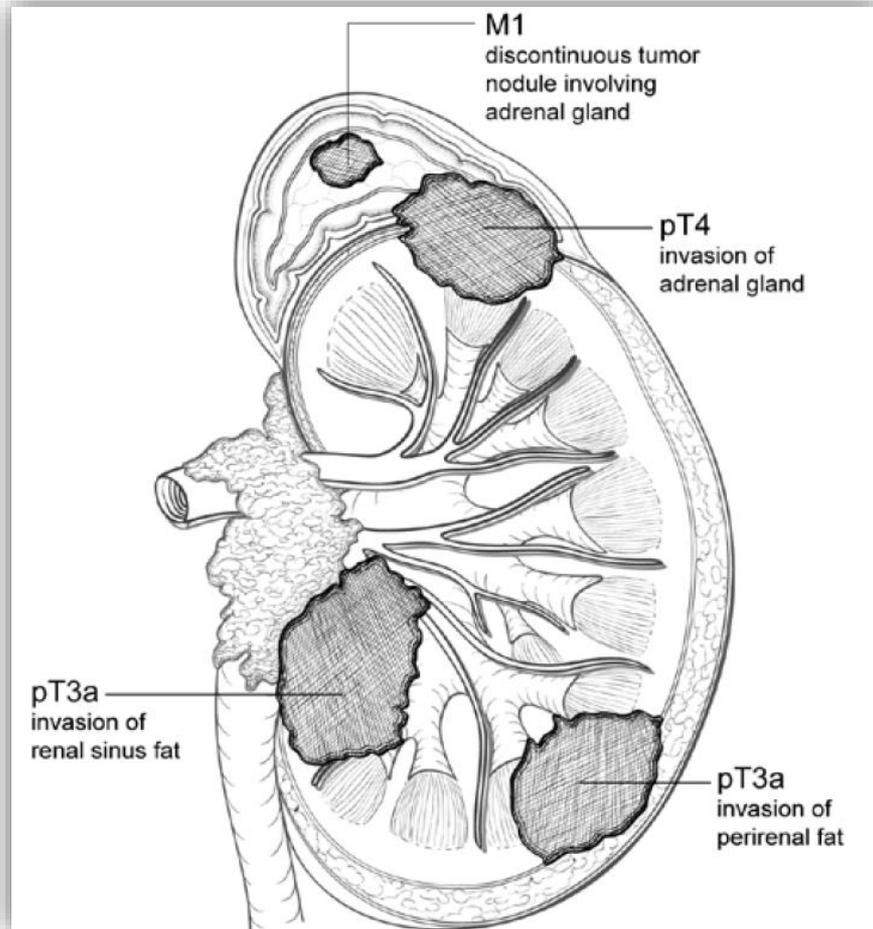
- TX** Primary tumor cannot be assessed
- T0** No primary tumor
- T1** Limited to kidney  $\leq 7$ cm,  
T1a,  $\leq 4$ cm ; T1b,  $>4 - \leq 7$ cm
- T2** Limited to kidney  $> 7$ cm  
T2a,  $>7 - \leq 10$ cm; T2b,  $>10$ cm
- T3** T3a: extension to renal vein & segmental branches, pelvicalyceal system, perirenal/renal sinus fat  
T3b: vena cava below diaphragm  
T3c: vena cava above diaphragm, or wall of vena cava
- T4** Beyond Gerota's fascia or direct or invasion to ipsilateral adrenal

# TNM Staging of Kidney Tumor

AJCC 8<sup>th</sup>

## Ipsilateral adrenal gland involvement

- Direct extension: T4
- Noncontiguous: M1



## Primary tumor (T)

**TX** Primary tumor cannot be assessed

**T0** No primary tumor

**T1** Limited to kidney  $\leq 7$ cm,  
T1a,  $\leq 4$ cm ; T1b,  $>4 - \leq 7$ cm

**T2** Limited to kidney  $> 7$ cm  
T2a,  $>7 - \leq 10$ cm; T2b,  $>10$ cm

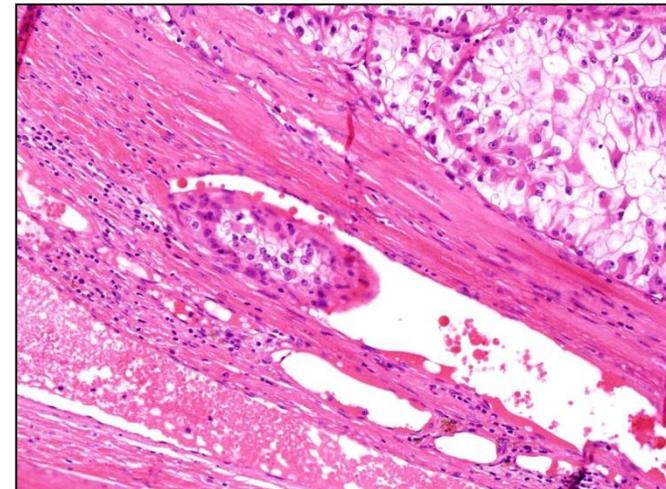
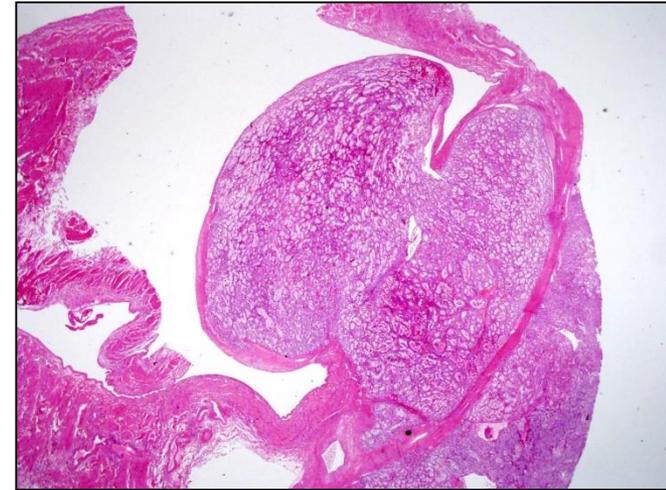
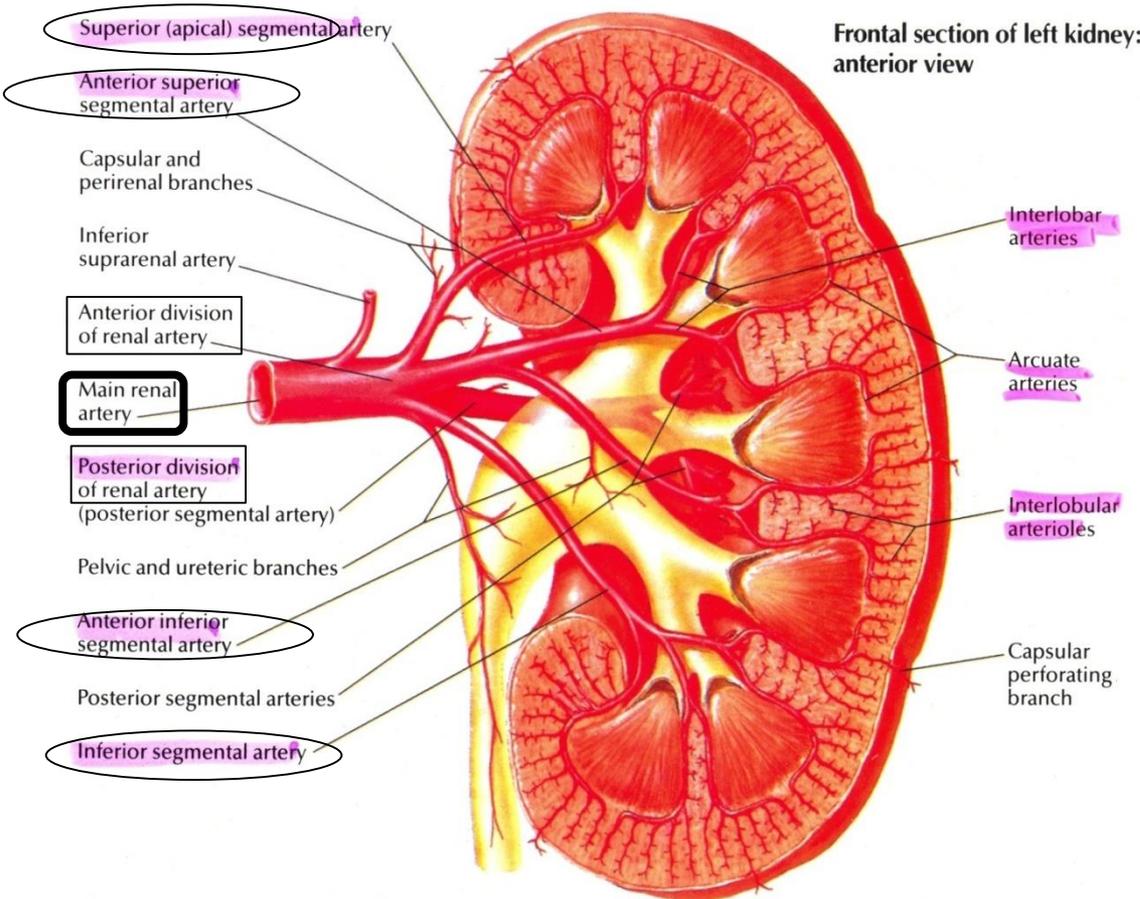
**T3** T3a: **extension to renal vein & segmental branches, pelvicalyceal system**, perirenal/renal sinus fat

T3b: vena cava below diaphragm

T3c: vena cava above diaphragm, or wall of vena cava

**T4** Beyond Gerota's fascia or direct or invasion to ipsilateral adrenal

# Vascular Invasion: T3a vs LVI



# Handling of Radical Nephrectomy

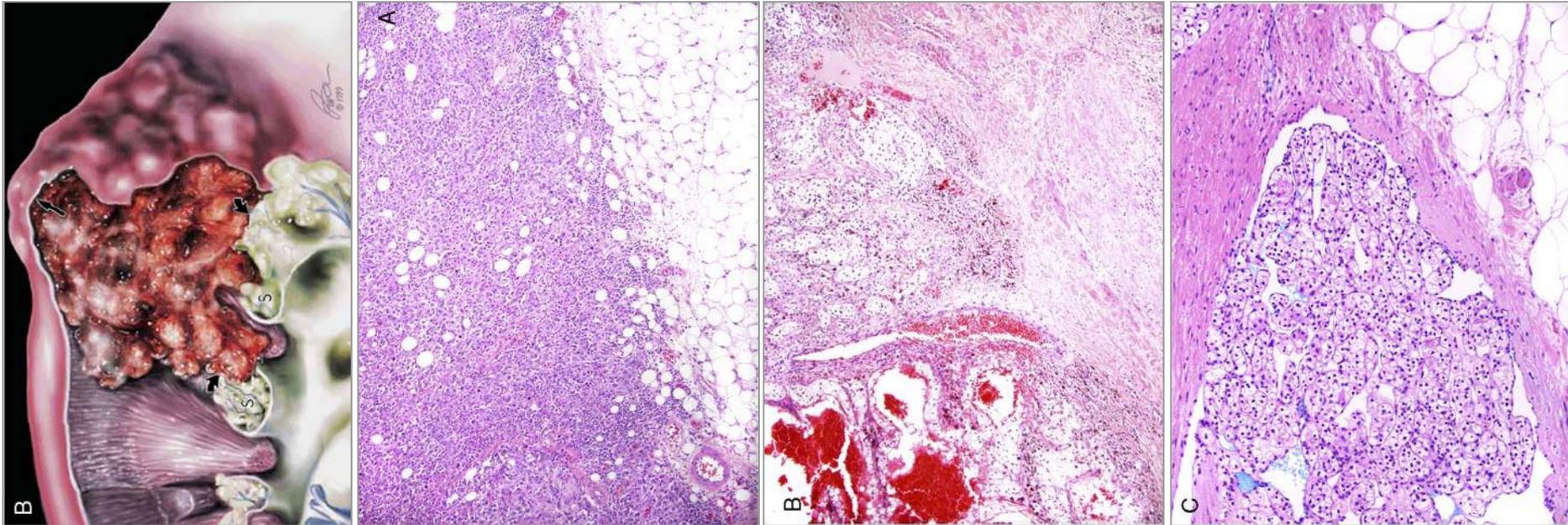
## ➤ Renal tumor measurement

- Renal vein and caval thrombi and satellite nodules **not be included** in measurement of the main tumor mass.



# Definition of Renal Sinus Involvement (T3a)

1. Tumor in contact with renal sinus fat
2. Tumor in loose connective tissue of sinus clearly beyond the renal parenchyma
3. Involvement of **endothelial lined spaces** (with or without mural smooth muscle), including lymphatics.



# Handling of Radical Nephrectomy

## ➤ Assessment of renal sinus invasion (T3a)

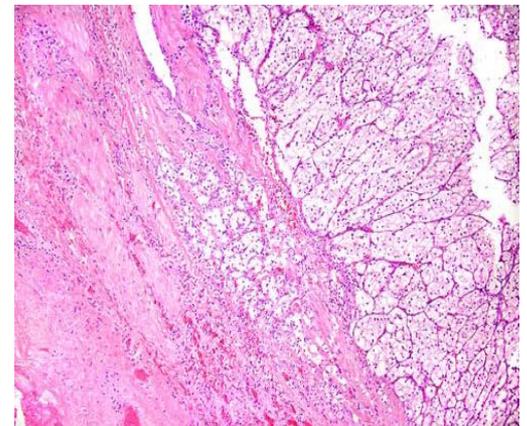
- **At least 3 blocks** of the tumor-renal sinus interface
- 1 block when grossly evident invasion or no invasion

## ➤ Vena cava invasion of caval thrombus (T3c)

- Search for adherent caval wall tissue
- **≥ 2 sections** to look for caval wall invasion

## ➤ Assessment of lymph nodes

- Palpation and dissection to the renal hilar area fat



# TNM Staging of Kidney Tumor

**AJCC 7<sup>th</sup>**

**AJCC 8<sup>th</sup>**

## Regional Lymph node (N)

**NX** Regional node cannot be assessed

**N0** No metastasis

**pN1** Metastasis present

## Regional Lymph node (N)

**NX** Regional node cannot be assessed

**N0** No metastasis

**pN1** Metastasis present

## Distant metastasis (M)

**M0** No metastasis

**M1** Metastasis present

## Distant metastasis (M)

**M0** No metastasis

**M1** Metastasis present

\*Regional LN      Renal hilar, aortic (para/pre/retro), caval (para/pre/retro),  
interaortocarval

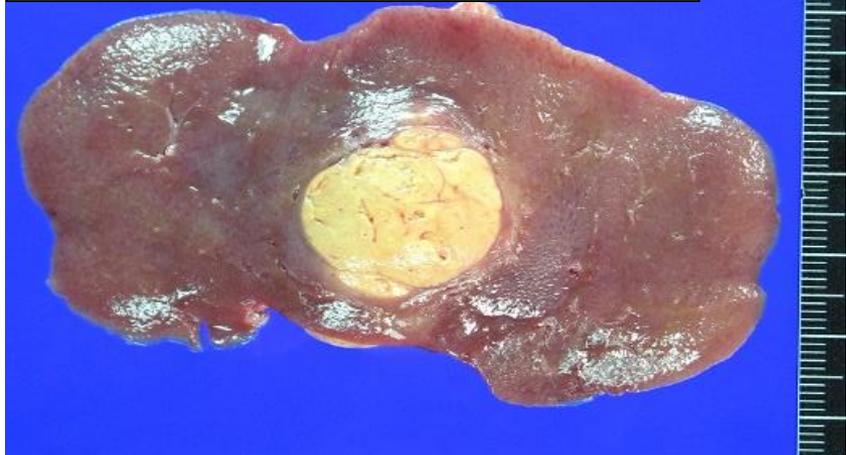
**Break time**

# Gross Pattern in Renal Cell Carcinoma

**Simple nodular**



**Nodular with perinodular extension**



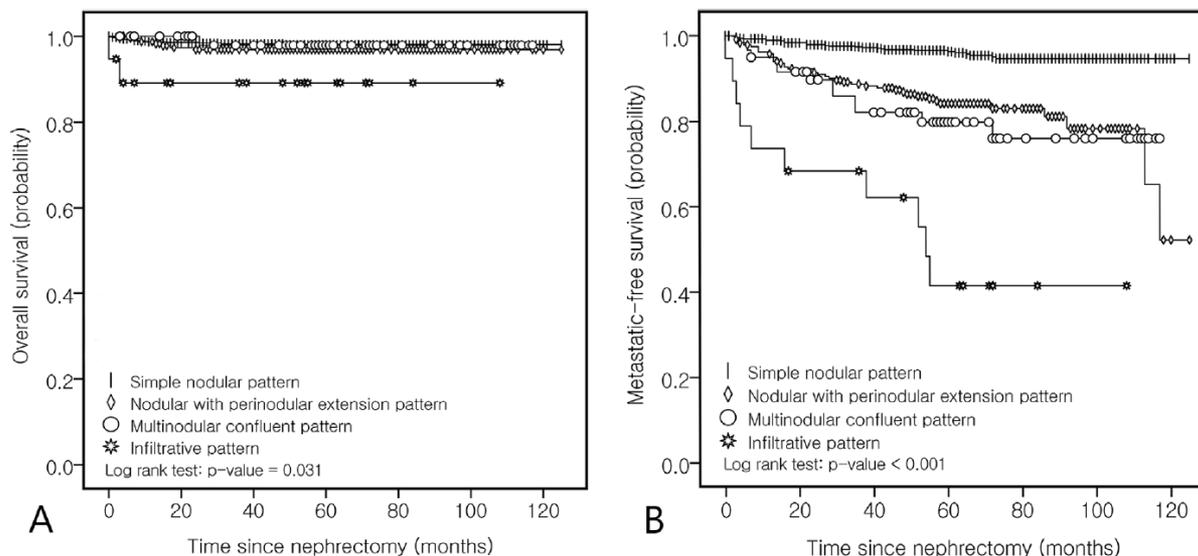
**Multinodular confluent**



**Infiltrative**



# Break time



**Table 3** Univariate and multivariate analyses of the effects of clinicopathologic features on metastasis-free survival.

	Univariate analysis			Multivariate analysis		
	HR	95%CI	P-value	HR	95%CI	P-value
Age, >50 years	2.537	1.546–4.163	<0.001	1.791	1.100–2.915	0.019
Sex, female	1.402	0.928–2.118	0.108			
Tumor size (cm)						
5 < size ≤ 8	5.366	3.244–8.876	<0.001	4.565	2.732–7.627	<0.001
>8	11.712	7.065–19.415	<0.001	8.993	5.282–15.31	<0.001
Operation, radical nephrectomy	0.232	0.120–0.447	<0.001			
Fuhrman grades, 3 and 4	1.977	1.321–2.960	<0.001			
Tumor thrombus	1.021	0.473–2.204	0.958			
Lymphovascular invasion	1.866	0.966–3.602	0.063			
Perirenal fat invasion	1.141	0.647–2.013	0.649			
pT stages 3 and 4	2.083	1.327–3.270	<0.001			
Irregular outline group	5.230	3.372–8.112	<0.001	2.891	1.807–4.624	<0.001

# TNM Staging of Urinary Bladder Tumor

AJCC 7<sup>th</sup>

## ANATOMIC STAGE/PROGNOSTIC GROUPS

Stage 0a	Ta	N0	M0
Stage 0is	Tis	N0	M0
Stage I	T1	N0	M0
Stage II	T2a	N0	M0
	T2b	N0	M0
Stage III	T3a	N0	M0
	T3b	N0	M0
	T4a	N0	M0
Stage IV	T4b	N0	M0
	Any T	N1-3	M0
	Any T	Any N	M1

**Stage III and IV:  
no subclassification**

# TNM Staging of Urinary Bladder Tumor

AJCC 8<sup>th</sup>

When T is...	And N is...	And M is...	Then the stage group is...
Ta	N0	M0	0a
Tis	N0	M0	0is
T1	N0	M0	I
T2a	N0	M0	II
T2b	N0	M0	II
T3a, T3b, T4a	N0	M0	IIIA
T1-T4a	N1	M0	IIIA
T1-T4a	N2, N3	M0	IIIB
T4b	Any N	M0	IVA
Any T	Any N	M1a	IVA
Any T	Any N	M1b	IVB

# TNM Staging of Bladder Tumor

AJCC 7<sup>th</sup>

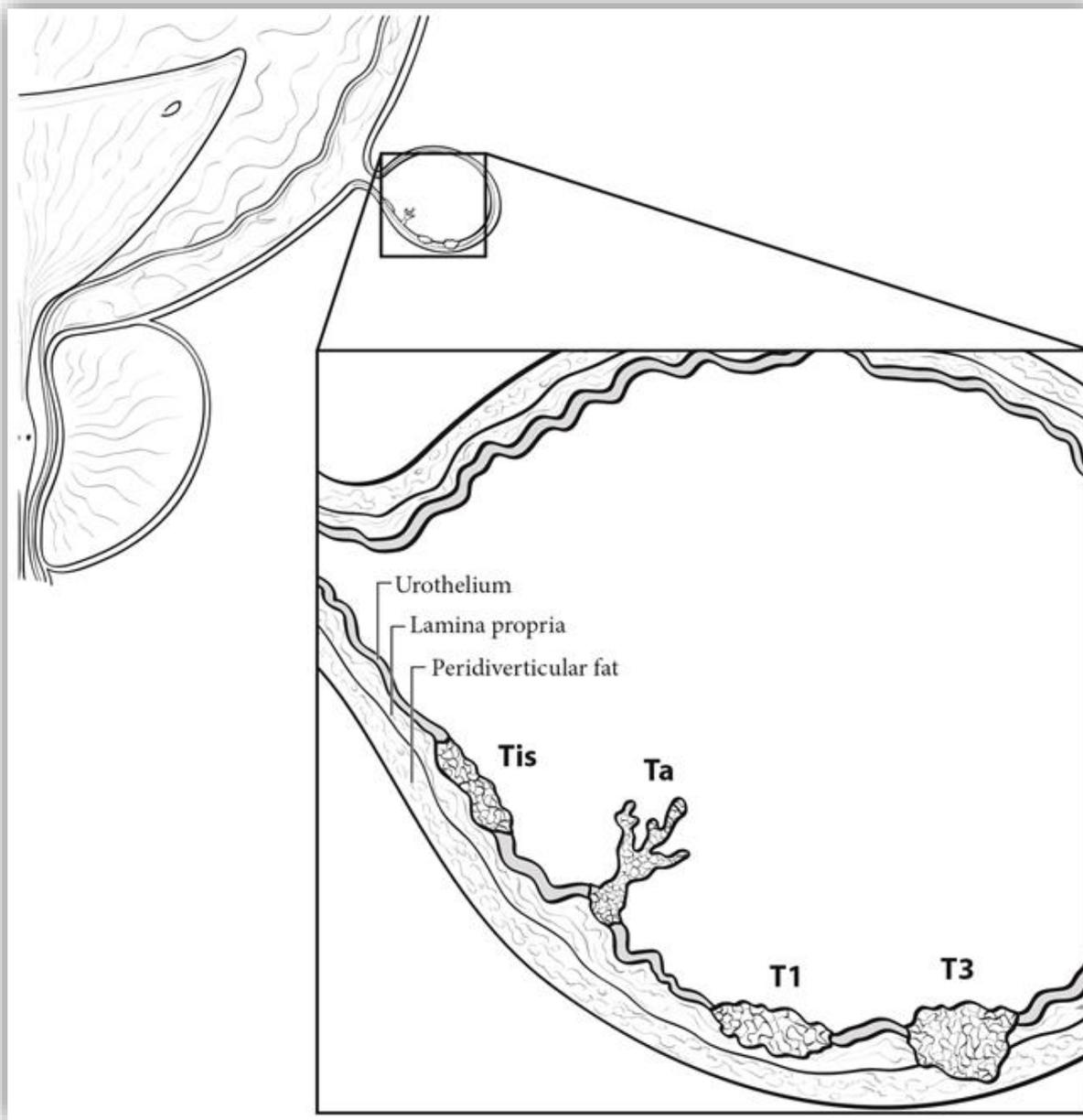
- TX** Primary tumor cannot be assessed
- T0** No evidence of primary tumor
- Ta** Non-invasive papillary carcinoma
- Tis** Carcinoma *in situ*: "flat tumor"
- T1** Lamina propria
- T2** Muscularis propria
  - T2a** superficial muscle (inner half)
  - T2b** deep muscle (outer half)
- T3** Perivesical soft tissue
  - T3a** microscopically
  - T3b** macroscopically (extravesical mass)
- T4** Adjacent organs
  - T4a** Prostatic stroma, seminal vesicle, uterus, vagina
  - T4b** Pelvic wall, abdominal wall

AJCC 8<sup>th</sup>

- TX** Primary tumor cannot be assessed
- T0** No evidence of primary tumor
- Ta** Non-invasive papillary carcinoma
- Tis** Carcinoma *in situ*: "flat tumor"
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  - T3b** macroscopically (extravesical mass)
- T4** Adjacent organs
  - T4a** Prostatic stroma, seminal vesicle, uterus, vagina
  - T4b** Pelvic wall, abdominal wall

# T Stage of Bladder Tumor : Diverticulum

AJCC 8<sup>th</sup>



# TNM Staging of Bladder Tumor

AJCC 7<sup>th</sup>

AJCC 8<sup>th</sup>

## Regional Lymph node (N)

- NX** Regional node cannot be assessed
- N0** No metastasis
- N1** Single, primary drainage site
- N2** Multiple, primary drainage site
- N3** Secondary drainage site

## Regional Lymph node (N)

- NX** Regional node cannot be assessed
- N0** No metastasis
- N1** Single, primary drainage site including **perivesical LN**
- N2** Multiple, primary drainage site
- N3** Secondary drainage site

## Regional lymph nodes

### Primary drainage

- Perivesical pelvic, NOS
- Iliac (internal, external)
- Sacral (lateral, sacral promontory)
- Obturator

### Secondary drainage

- Common iliac

# TNM Staging of Bladder Tumor

**AJCC 7<sup>th</sup>**

**Distant metastasis (M)**

**M0 No metastasis**

**M1 Metastasis present**

**AJCC 8<sup>th</sup>**

**Distant metastasis (M)**

**M0 No metastasis**

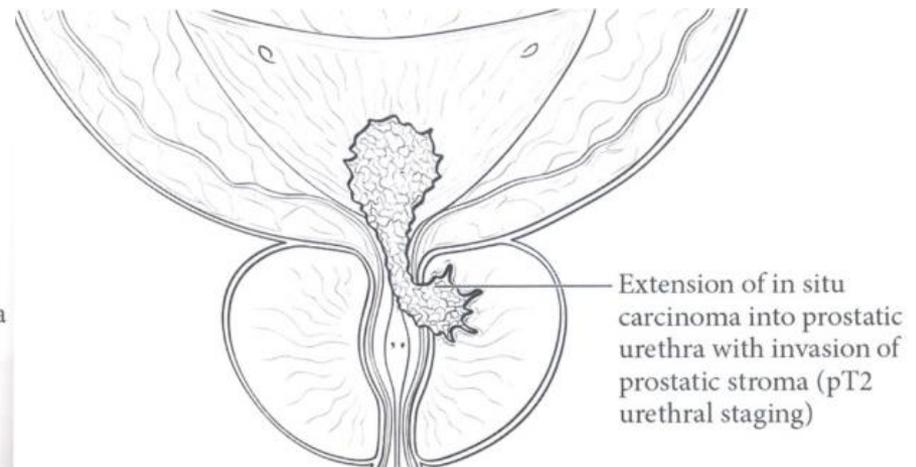
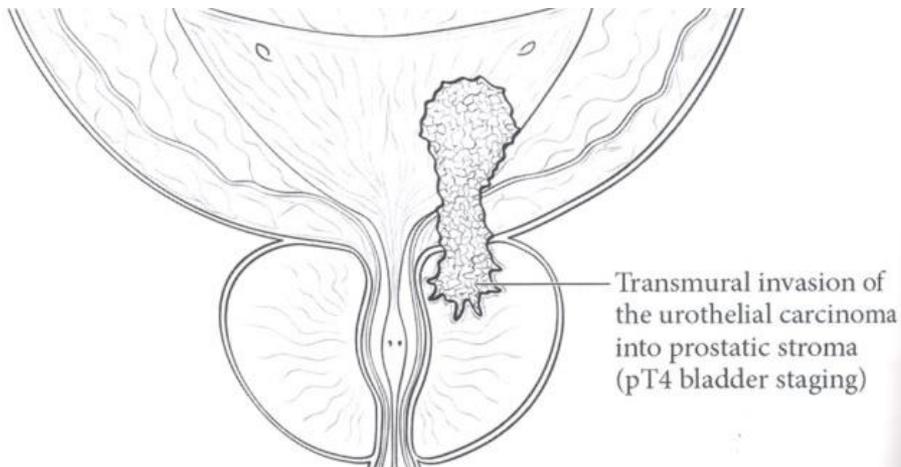
**M1 Metastasis present**

**M1a non-regional LN**

**M1b Non-LN distant metastasis**

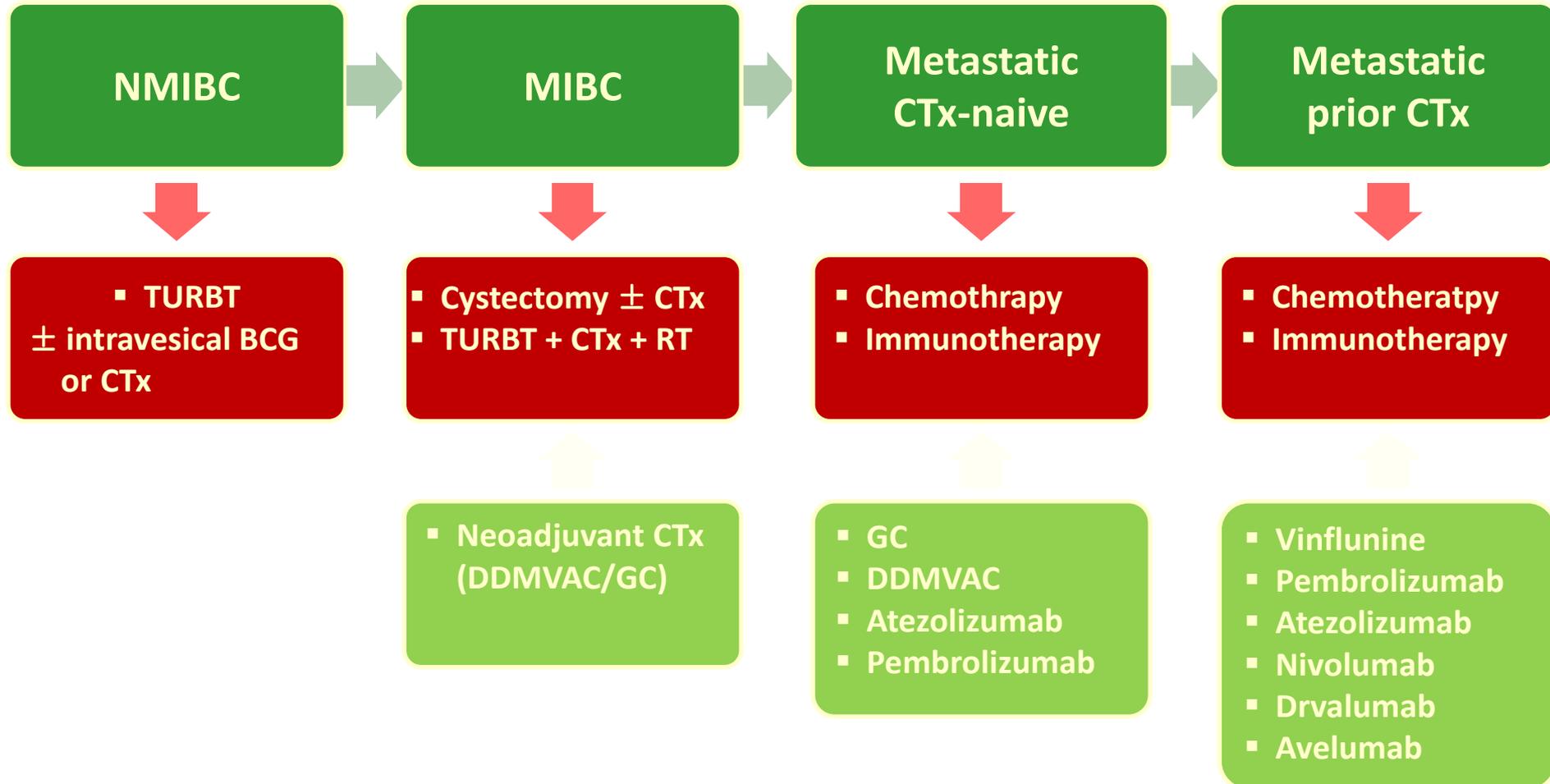
# TNM Staging of Bladder Tumor

- pT: based on radical / partial cystectomy, neither biopsy **nor TURBT**
- Prostatic invasion of bladder tumor:
  - Stromal invasion directly from bladder: T4
  - Pagetoid spread to prostatic ducts: Tis
  - Stromal invasion via prostatic urethra: T2



**Break time**

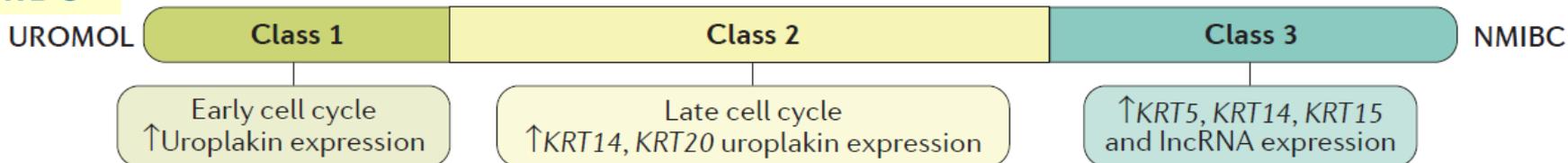
# Bladder Cancer Treatment Strategies



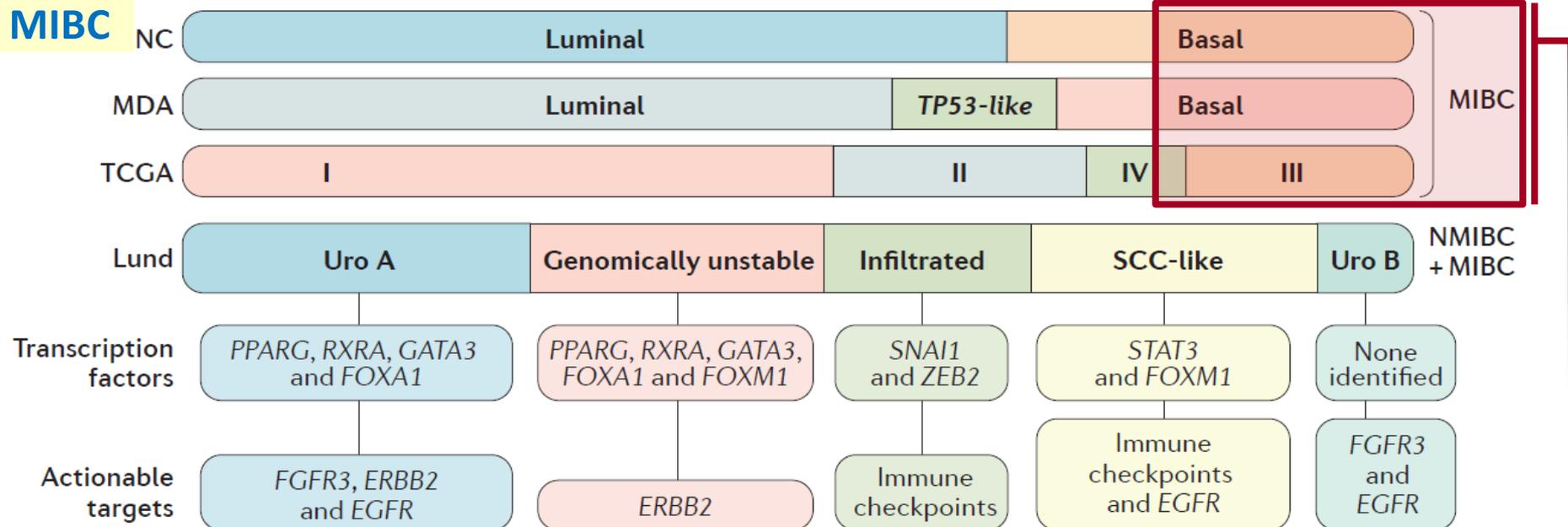
# Break time

## Molecular Subtypes of BC

### NMIBC



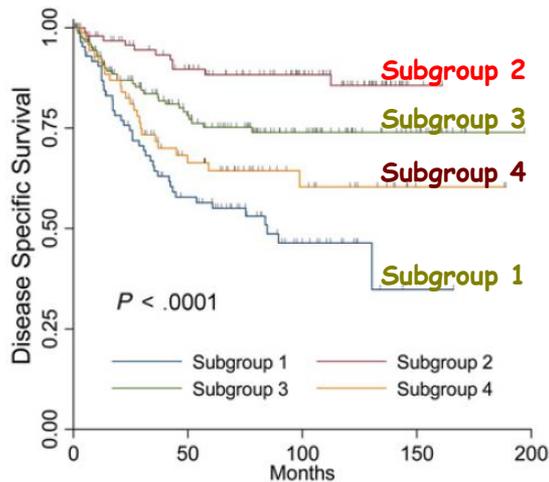
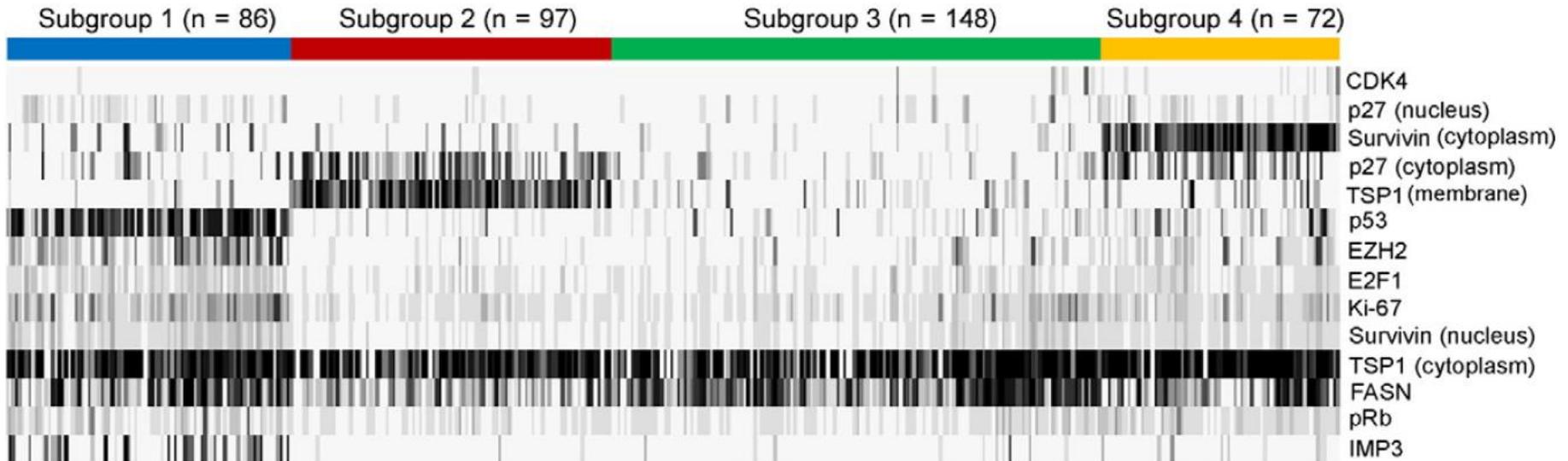
### MIBC



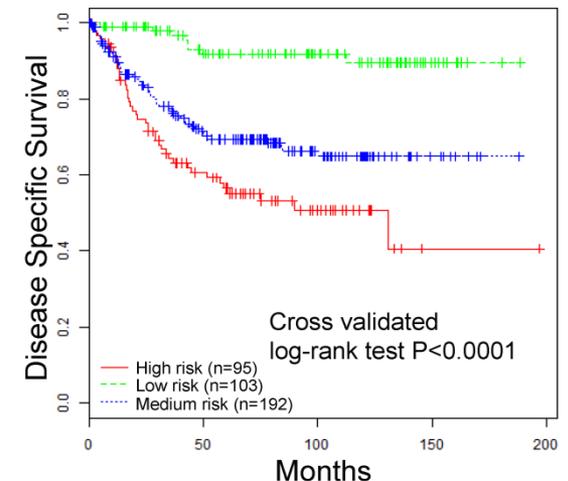
**BASQ tumor IHC markers: CK5/6(+), CK14(+), FOXA1(-), GATA3(-)**

# Break time

## AMC : 4 Immunoprofile Subgroups



Protein	p-value	% CV Support	Weights ( $w_i$ )
E2F1	< 1e-07	100	0.008011
TSP_Mb	6.00E-07	100	-0.020106
p53	6.10E-06	100	0.015336
EZH2	8.30E-06	100	0.011897
Survivin_N	2.23E-05	100	0.012942
IMP3	4.22E-05	100	0.008171
Ki67	0.0131774	100	0.005518
Survivin_C	0.026489	100	0.000643



# TNM Staging of Renal Pelvis and Ureter Tumor

**AJCC 7<sup>th</sup>**

- TX Cannot be assessed**
- T0 No evidence of primary tumor**
- Ta Papillary noninvasive carcinoma**
- Tis Flat carcinoma in situ**
- T1 Subepithelial connective tissue**
- T2 Muscularis**
- T3 Renal pelvis: peripelvic fat or renal  
parenchyma**  
**Ureter: periureteric fat**
- T4 Adjacent organs or perinephric fat**

**AJCC 8<sup>th</sup>**

- TX Cannot be assessed**
- T0 No evidence of primary tumor**
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parenchyma**  
**Ureter: periureteric fat**
- T4 Adjacent organs or perinephric fat**

# TNM Staging of Renal Pelvis and Ureter Tumor

AJCC 8<sup>th</sup>

- Simultaneous tumor at renal pelvis and ureter should be staged separately.

## Renal pelvis tumor

- No subepithelial connective tissue at renal papilla ( no T1 and T2)
- Intratubular spread in renal tubules without stromal invasion: non-invasive disease

**TX Cannot be assessed**

**T0 No evidence of primary tumor**

**Ta Papillary noninvasive carcinoma**

**Tis Flat carcinoma in situ**

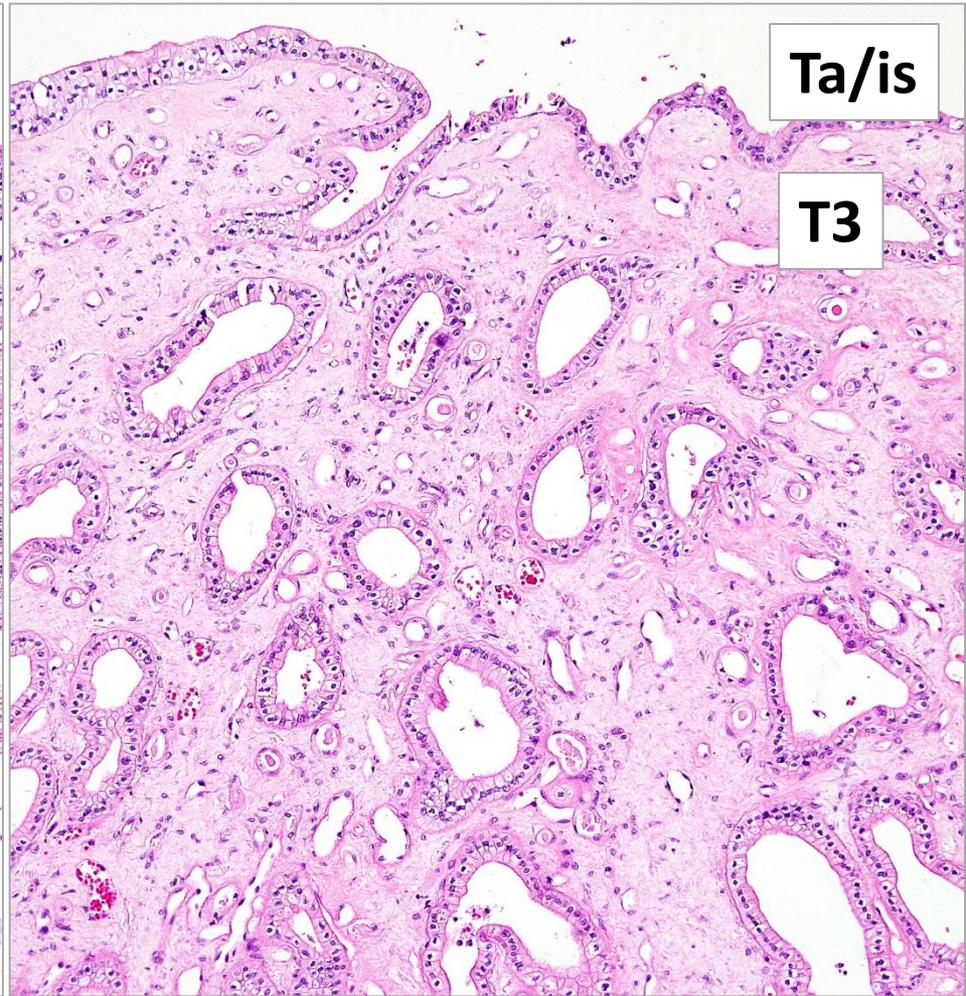
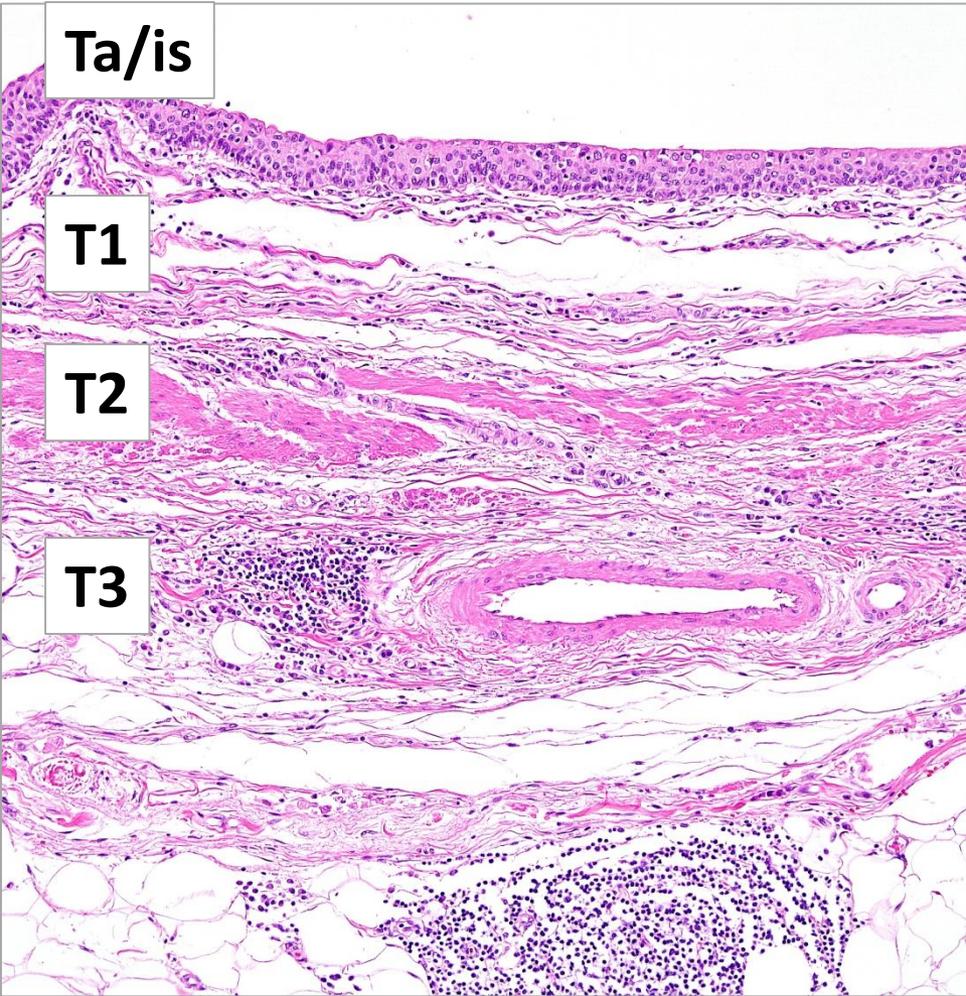
**T1 Subepithelial connective tissue**

**T2 Muscularis**

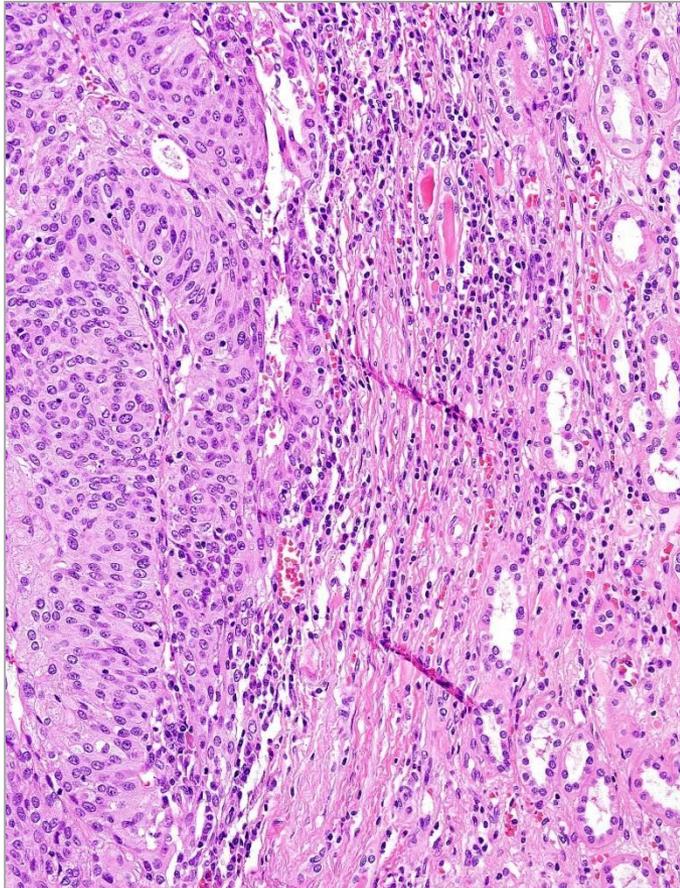
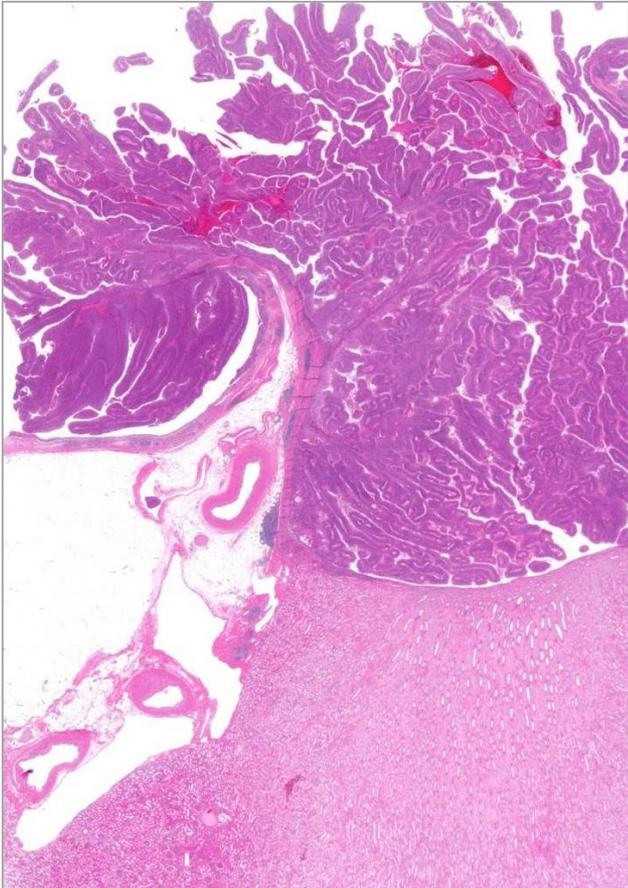
**T3 Renal pelvis: peripelvic fat or renal  
parenchyma**

**Ureter: periureteric fat**

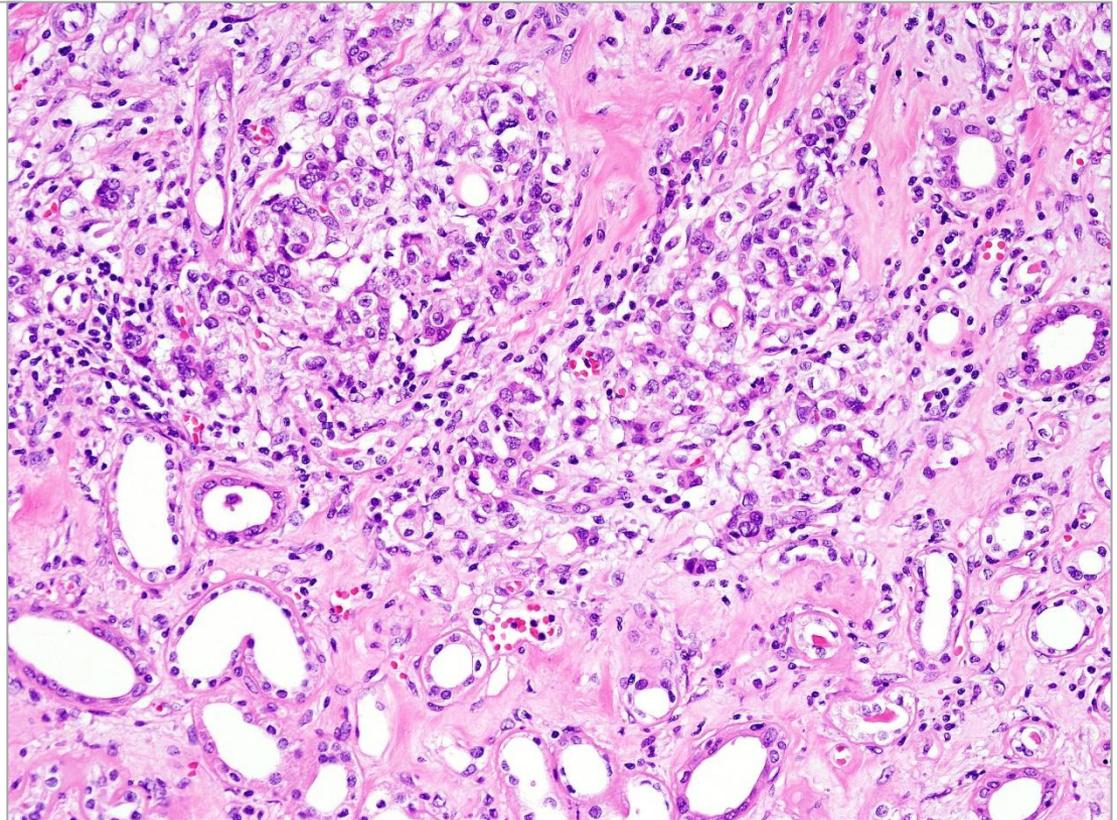
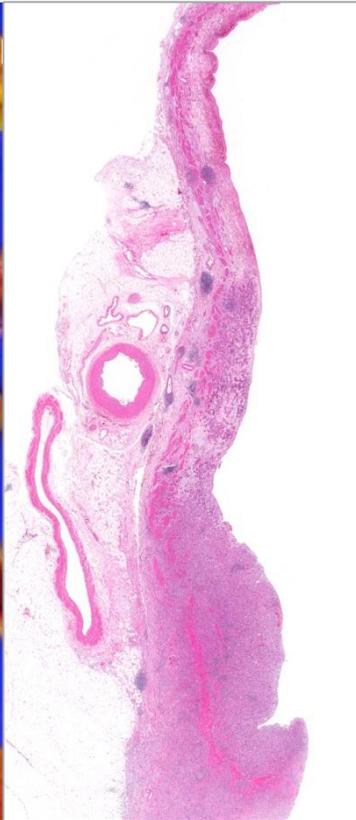
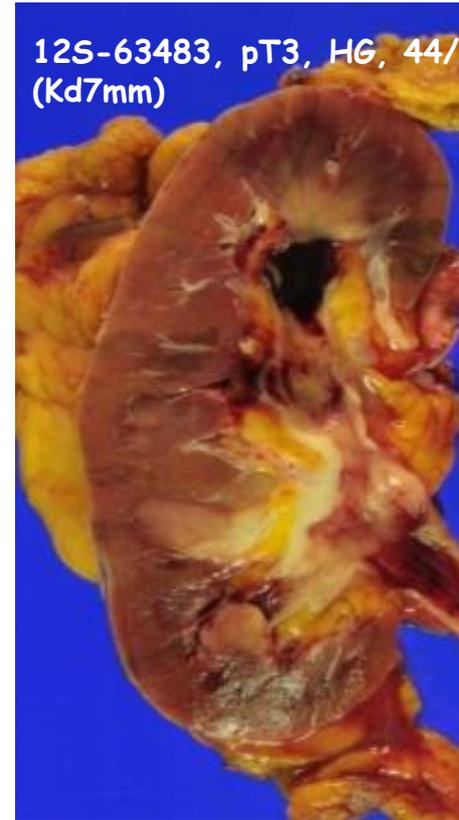
**T4 Adjacent organs or perinephric fat**



12S-51357 pTa HG (50/M)



12S-63483, pT3, HG, 44/  
(Kd7mm)



# TNM Staging of Renal Pelvis and Ureter Tumor

AJCC 7<sup>th</sup>

AJCC 8<sup>th</sup>

## Regional Lymph node (N)

**NX** Regional node cannot be assessed

**N0** No metastasis

**N1** ≤2cm single

**N2** >2 – ≤ 5cm single, ≤ 5cm multiple

**N3** > 5 cm

## Regional Lymph node (N)

**NX** Regional node cannot be assessed

**N0** No metastasis

**N1** ≤ 2cm in single LN

**N2** > 2cm in single LN or multiple LNs

## Regional lymph nodes

Renal pelvis	Renal hilar	Ureter	Renal hilar
	Paracaval		Paracaval
	Aortic		Iliac (common, internal, external)
	Retroperitoneal, NOS		Retroperitoneal, NOS
			Periureteral
			Pelvic, NOS

# TNM Staging of Renal Pelvis and Ureter Tumor

**AJCC 7<sup>th</sup>**

**Distant metastasis (M)**

**M0 No metastasis**

**M1 Distant metastasis**

**AJCC 8<sup>th</sup>**

**Distant metastasis (M)**

**M0 No metastasis**

**M1 Distant metastasis**

# Prostatic Urethra

AJCC 7<sup>th</sup>

AJCC 8<sup>th</sup>

**Tis pu:** CIS, prostatic urethra  
**Tis pd:** CIS, prostatic ducts  
**T1:** Subepithelial connective tissue  
**T2:** Prostatic stroma, corpus spongiosum, periurethral muscle  
**T3:** Corpus cavernosum, bladder neck, extraprostatic extension,  
**T4:** Other adjacent organs (invasion of the bladder wall)

**TX:** Cannot be assessed  
**T0:** No evidence of primary tumor  
**Ta:** Noninvasive papillary carcinoma  
**Tis:** CIS, prostatic urethra, periurethral , prostatic ducts  
**T1:** Subepithelial connective tissue  
**T2:** Prostatic stroma  
**T3:** Extraprostatic extension  
**T4:** Other adjacent organs (invasion of the bladder or rectal wall)

# Male Penile Urethra and Female Urethra

AJCC 7<sup>th</sup>

AJCC 8<sup>th</sup>

**TX:** Cannot be assessed

**T0:** No evidence of primary tumor

**Ta:** Noninvasive papillary, **polypoid, or verrucous** carcinoma

**Tis:** Carcinoma *in situ*

**T1:** Subepithelial connective tissue

**T2:** Corpus spongiosum, **prostate, periurethral muscle**

**T3:** Corpus cavernosum, **extraprostatic extension, anterior vagina, bladder neck**

**T4:** Other adjacent organs

**TX:** Cannot be assessed

**T0:** No evidence of primary tumor

**Ta:** Noninvasive papillary carcinoma

**Tis:** Carcinoma *in situ*

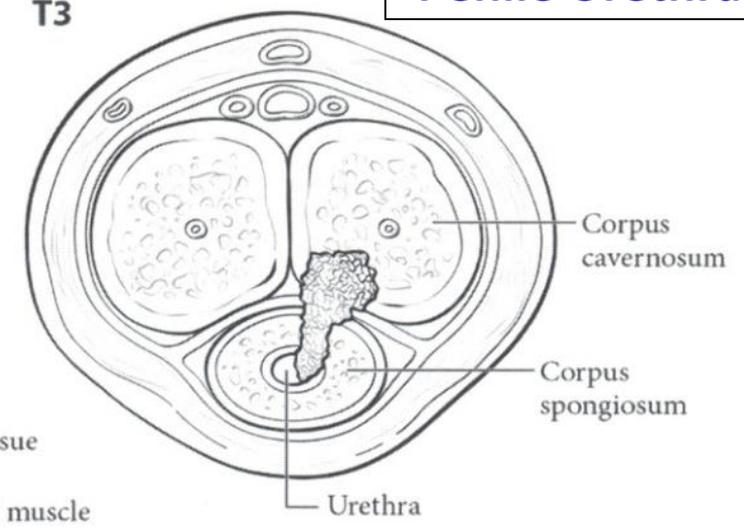
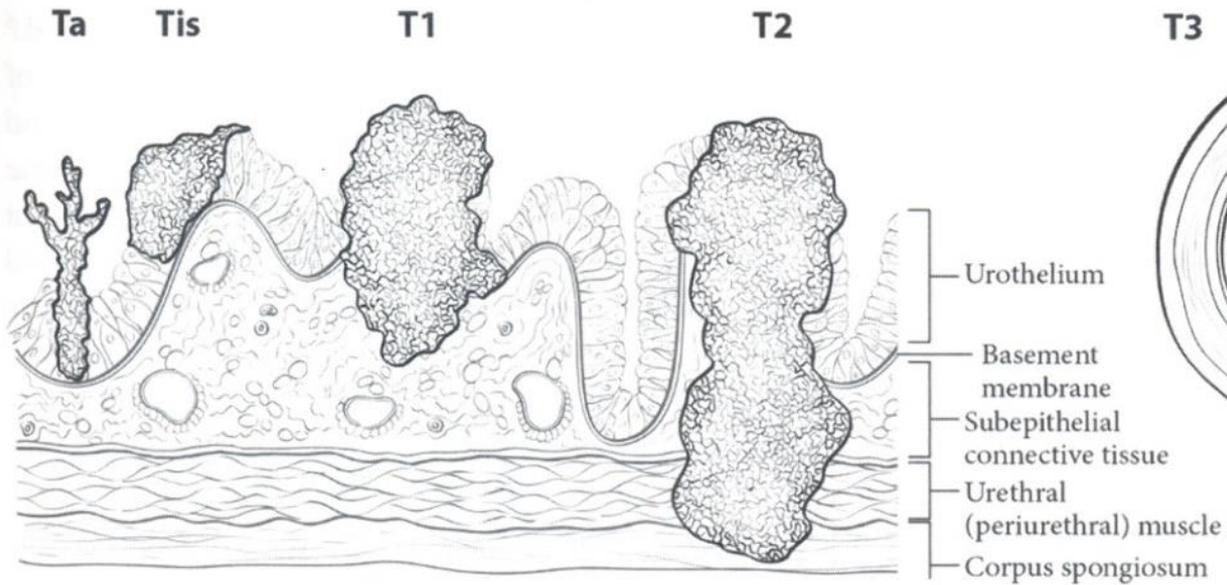
**T1:** Subepithelial connective tissue

**T2:** Corpus spongiosum, periurethral muscle

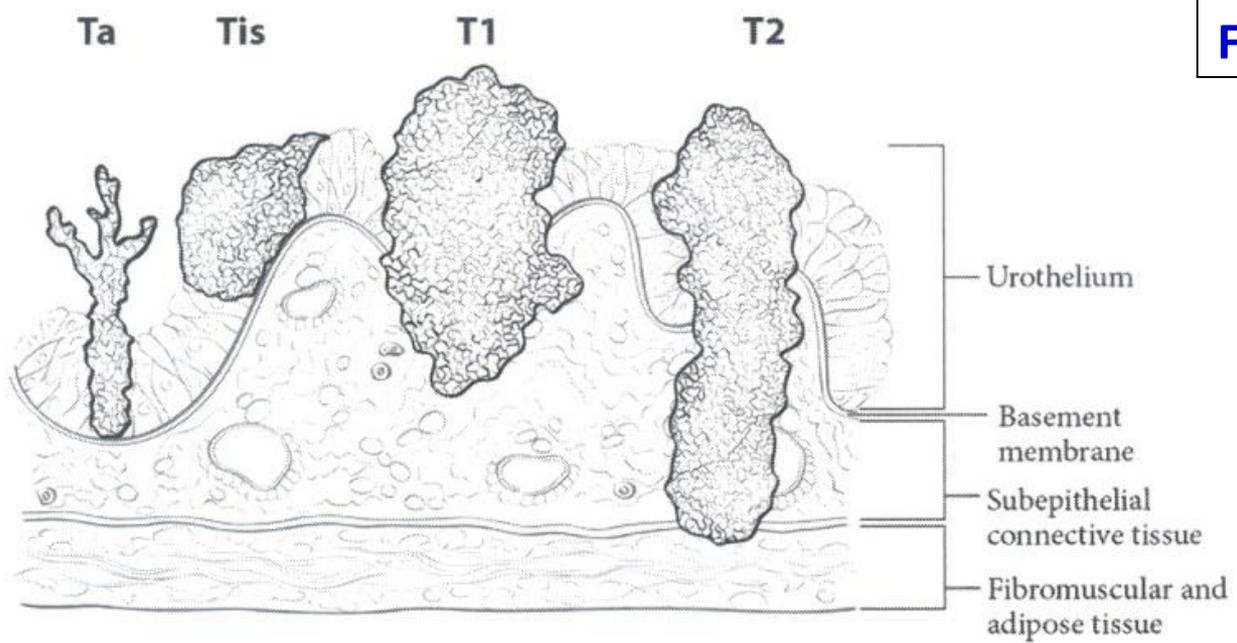
**T3:** Corpus cavernosum, anterior vagina

**T4:** Adjacent organs (invasion of the bladder wall)

# Penile Urethra



# Female Urethra



# TNM Staging of Urethra Tumor

AJCC 7<sup>th</sup>

AJCC 8<sup>th</sup>

## Regional Lymph node (N)

- NX** Regional node cannot be assessed
- N0** No metastasis
- N1** ≤2cm single
- N2** >2cm single or multiple

## Regional Lymph node (N)

- NX** Regional node cannot be assessed
- N0** No metastasis
- N1** **Single**
- N2** **Multiple**

## Distant metastasis (M)

- M0** No metastasis
- M1** Distant metastasis

## Distant metastasis (M)

- M0** No metastasis
- M1** Distant metastasis

### Regional lymph nodes

- Inguinal (superficial or deep)
- True pelvis (perivesical, obturator, or internal and external iliac)
- Presacral
- Sacral, NOS
- Pelvic, NOS

# TNM Staging of Prostate Cancer

AJCC 7<sup>th</sup>

## ANATOMIC STAGE/PROGNOSTIC GROUPS\*

Group	T	N	M	PSA	Gleason
I	T1a – c	N0	M0	PSA < 10	Gleason ≤ 6
	T2a	N0	M0	PSA < 10	Gleason ≤ 6
	T1 – 2a	N0	M0	PSA X	Gleason X
IIA	T1a – c	N0	M0	PSA < 20	Gleason 7
	T1a – c	N0	M0	PSA ≥ 10 < 20	Gleason ≤ 6
	T2a	N0	M0	PSA < 20	Gleason ≤ 7
	T2b	N0	M0	PSA < 20	Gleason ≤ 7
	T2b	N0	M0	PSA X	Gleason X
IIB	T2c	N0	M0	Any PSA	Any Gleason
	T1 – 2	N0	M0	PSA ≥ 20	Any Gleason
	T1 – 2	N0	M0	Any PSA	Gleason ≥ 8
III	T3a – b	N0	M0	Any PSA	Any Gleason
IV	T4	N0	M0	Any PSA	Any Gleason
	Any T	N1	M0	Any PSA	Any Gleason
	Any T	Any N	M1	Any PSA	Any Gleason

# TNM Staging of Prostate Cancer

AJCC 8<sup>th</sup>

When T is...	And N is...	And M is...	And PSA is...	And Grade Group is...	Then the stage group is...
cT1a-c, cT2a	N0	M0	< 10	1	I
pT2	N0	M0	< 10	1	I
cT1a-c, cT2a, pT2	N0	M0	≥ 10 < 20	1	IIA
cT2b-c	N0	M0	<20	1	IIA
T1-2	N0	M0	<20	2	IIB
T1-2	N0	M0	<20	3	IIC
T1-2	N0	M0	<20	4	IIC
T1-2	N0	M0	≥20	1-4	IIIA
T3-4	N0	M0	Any	1-4	IIIB
Any T	N0	M0	Any	5	IIIC
Any T	N1	M0	Any	Any	IVA
Any T	Any N	M1	Any	Any	IVB

# TNM Staging of Prostate Cancer

AJCC 7<sup>th</sup>

AJCC 8<sup>th</sup>

**Primary tumor (pT)**

**TX** Primary tumor cannot be assessed

**T0** No primary tumor

**T2** Organ confined

**T2a** ≤ ½ of one lobe

**T2b** > ½ of one lobe,

**T2c** Both lobes

**T3** Extraprostatic extension

**T3a** Extracapsular extension or  
microscopic bladder neck  
invasion

**T3b** Seminal vesicle invasion

**T4** Fixed or invades adjacent structures

**Primary tumor (pT)**

**TX** Primary tumor cannot be assessed

**T0** No primary tumor

**T2** **Organ confined**

**T3** Extraprostatic extension

**T3a** Extracapsular extension or  
microscopic bladder neck  
invasion

**T3b** Seminal vesicle invasion

**T4** Fixed or invades adjacent structures

# TNM Staging of Prostate Cancer

AJCC 8<sup>th</sup>

**cT1 Clinically inapparent, not palpable**

**cT1a** ≤ 5% of TURP & GG 1

**cT1b** > 5% of TURP or GG ≥ 2

**cT1c** Identified by needle biopsy

**Primary tumor (T)**

**TX** Primary tumor cannot be assessed

**T0** No primary tumor

**T2** **Organ confined**

**T3** **Extraprostatic extension**

**T3a** Extracapsular extension or  
**microscopic** bladder neck  
invasion

**T3b** Seminal vesicle invasion

**T4** Fixed or invades adjacent structures

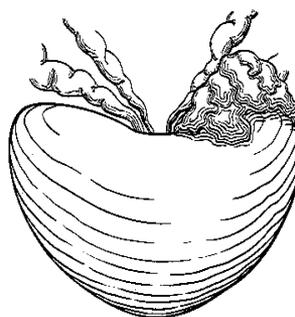
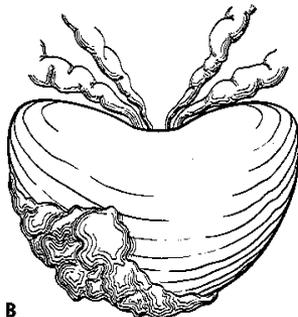
**T4 adjacent structure :**

External sphincter, rectum, **bladder**,  
levator muscles, pelvic wall

T3a

T3a

T3b



# TNM Staging of Prostate Cancer

**AJCC 7<sup>th</sup>**

**AJCC 8<sup>th</sup>**

**Regional Lymph node (N)**

**pNX Regional node not sampled**

**pN0 No metastasis**

**pN1 Metastasis present**

**Regional Lymph node (N)**

**pNX Regional node not sampled**

**pN0 No metastasis**

**pN1 Metastasis present**

**Distant metastasis (M)**

**M0 No metastasis**

**M1 Metastasis present**

**M1a Non-regional LN**

**M1b Bones**

**M1c Other sites**

**Distant metastasis (M)**

**M0 No metastasis**

**M1 Metastasis present**

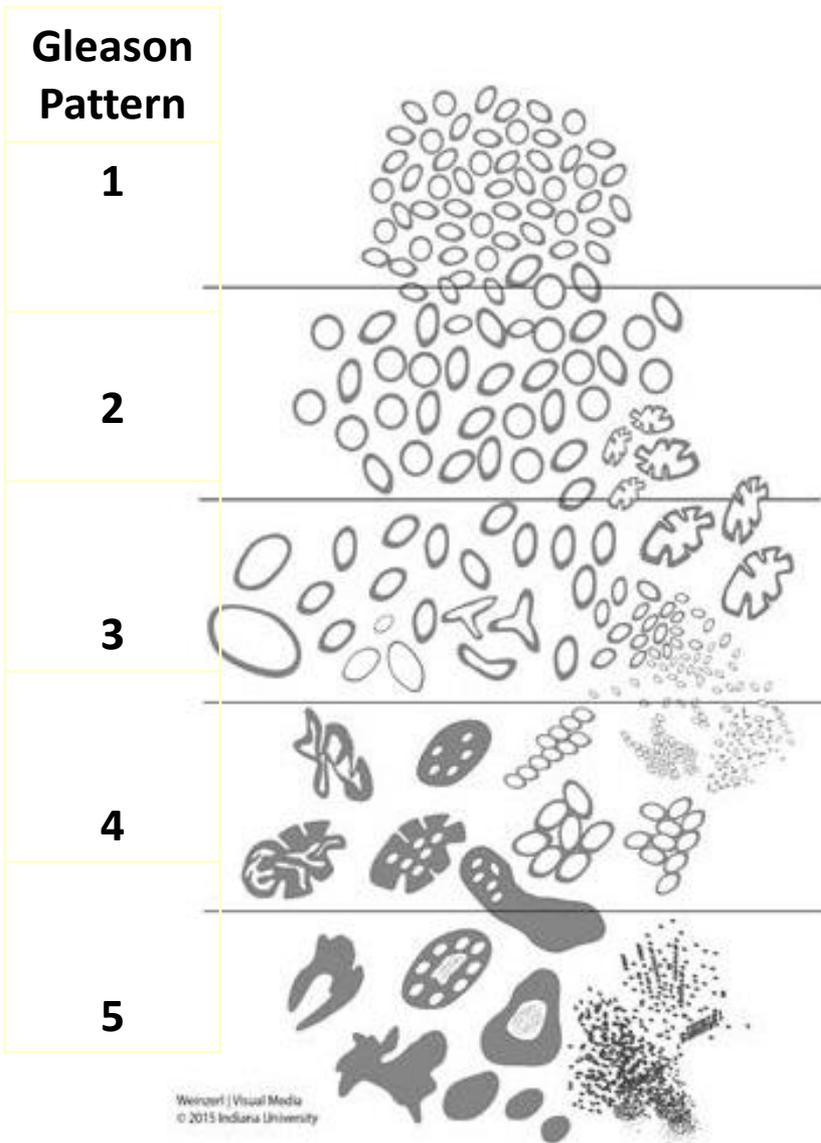
**M1a Non-regional LN**

**M1b Bones**

**M1c Other sites**

\*Regional LN      pelvic, hypogastric, obturator, iliac (internal and external), sacral

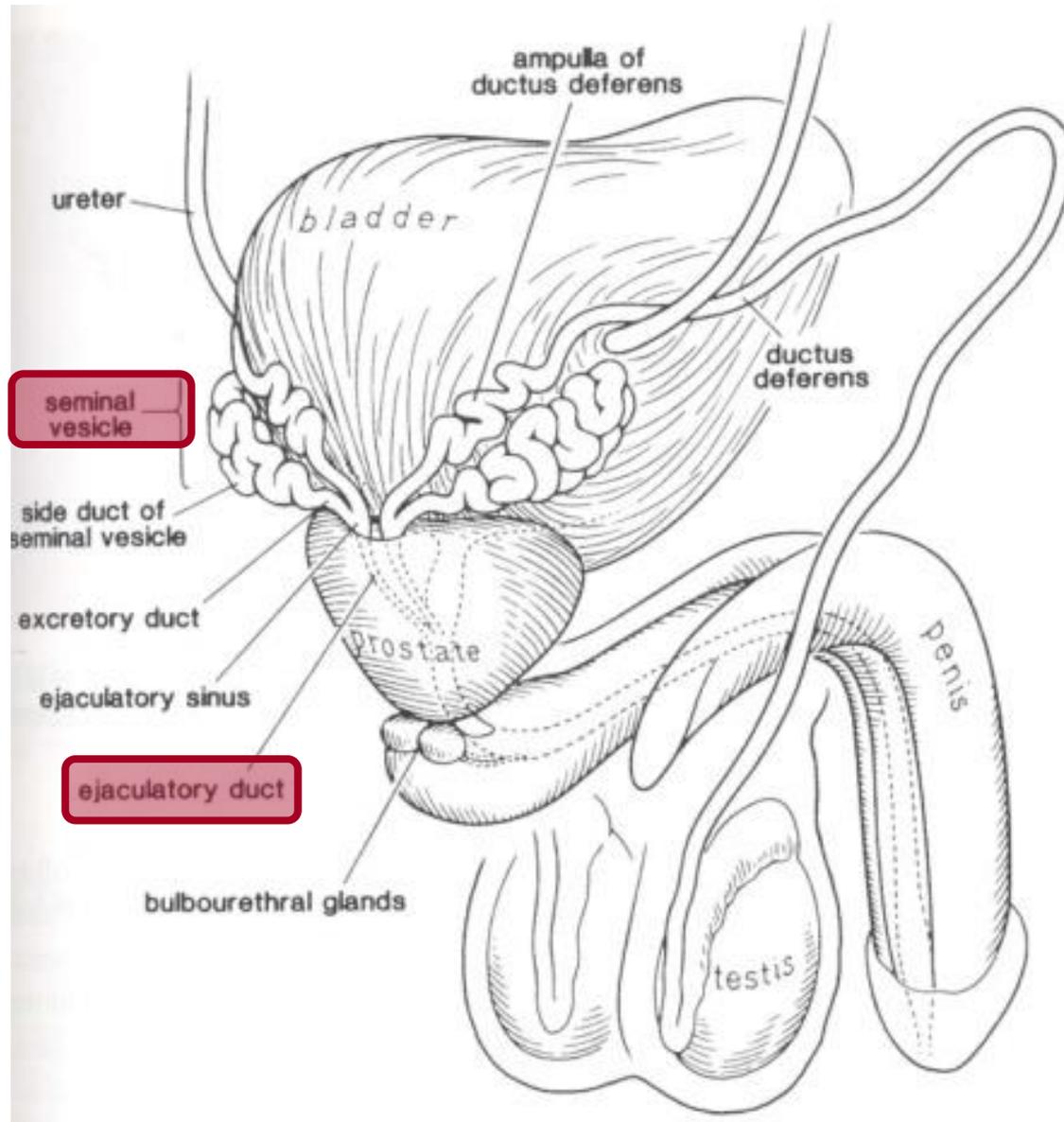
# Histologic Grade Group



Grade Group	Gleason Score	Gleason Pattern
1	≤ 6	≤ 3+3
2	7	3+4
3	7	4+3
4	8	4+4, 3+5, 5+3
5	9 or 10	4+5, 5+4, 5+5

Weinert | Visual Media  
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# Seminal Vesicle (T3b) versus Ejaculatory Duct (T2)



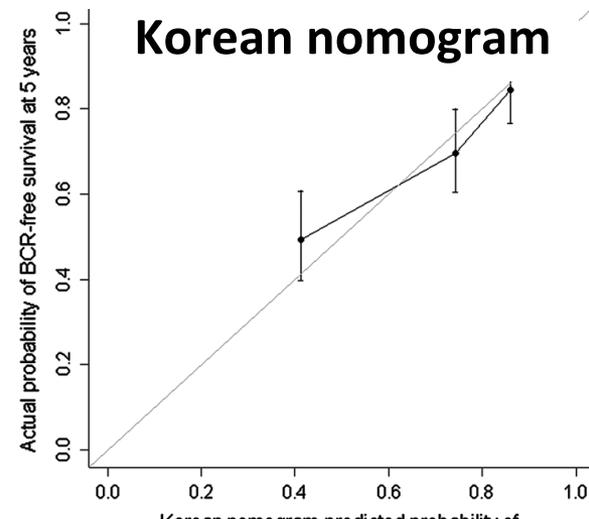
**Break time**

# Western vs Asian Prostate Cancer

Variables		Korean nomogram (n=549)		Updated Kattan nomogram (n=1881)	
		Value	(%)	Value	(%)
Age (years)	Median (range)	64 (40-85)		66 (38-77)	
PSA, ng/mL	Median (range)	9.5 (1-98.5)		6.0 (1-113)	
Gleason score	2-6	112	(20)	902	(48)
	7	286	(52)	865	(46)
	8-10	150	(28)	114	(6)
Extraprostatic extension		203	(37)	576	(31)
Positive surgical margins		234	(43)	234	(13)
Seminal vesicle involvement		82	(15)	159	(9)
Lymph node involvement		18	(3)	96	(5)
BCR-free survival, months	Median (range)	23 (1-135)		25 (1-193)	

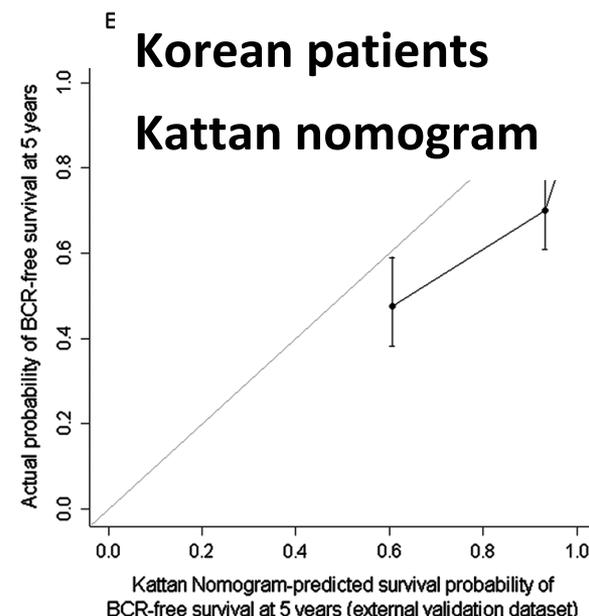
**Korean patients**

**Korean nomogram**



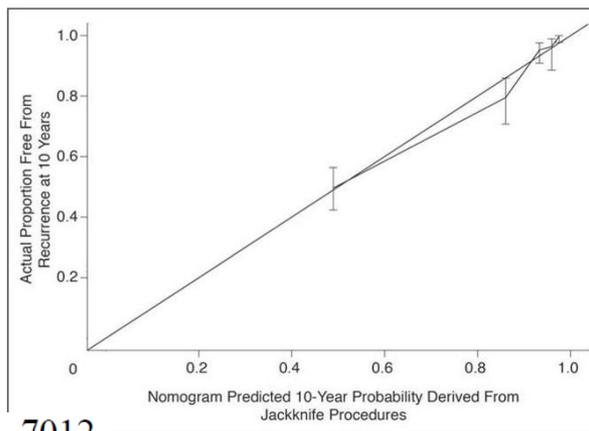
**Korean patients**

**Kattan nomogram**



**USA patients**

**Kattan nomogram**



# TNM Staging of Testis Tumor

AJCC 7<sup>th</sup>

## Primary tumor (pT)

pTX Primary tumor cannot be assessed

pT0 No primary tumor

pTis Intratubular germ cell neoplasia

pT1 Limited to testis and epididymis  
without LVI

pT2 Limited to testis with LVI  
Tunica vaginalis

pT3 Spermatic cord soft tissue

pT4 Scrotum

AJCC 8<sup>th</sup>

## Primary tumor (pT)

pTX Primary tumor cannot be assessed

pT0 No primary tumor

pTis **Germ cell neoplasia in situ**

pT1 Limited to testis without LVI

**T1a: < 3cm**

**T1b: ≥ 3cm**

pT2 Limited to testis with LVI

**Hilar soft tissue, epididymis, or  
tunica vaginalis**

pT3 **Directly** to spermatic cord soft  
tissue

pT4 Scrotum

# of Testis Tumor

AJCC 8<sup>th</sup>

Rete testis involvement in seminoma:  
aw advanced stage but not confirmed  
in large contemporary cohorts

pT1 subclassification:  
for pure seminoma only

- Hilar soft tissue (T2): Beyond boundaries of rete
- Spermatic cord (T3): Beyond the angle (notch) btwn epididymis and spermatic cord

## Spermatic cord involvement

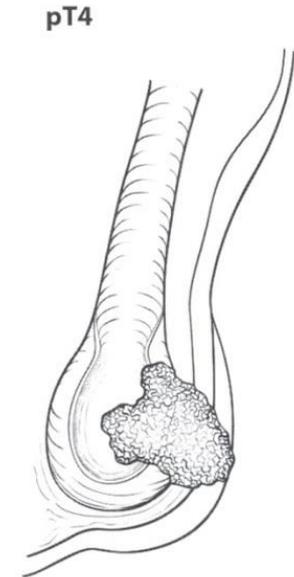
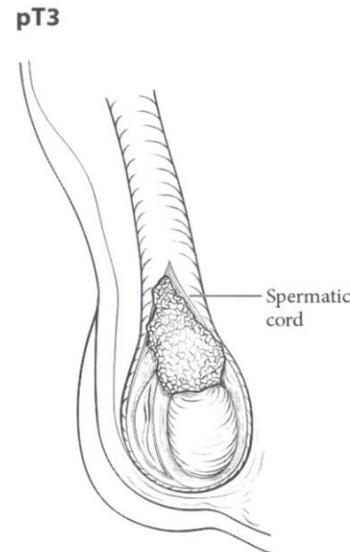
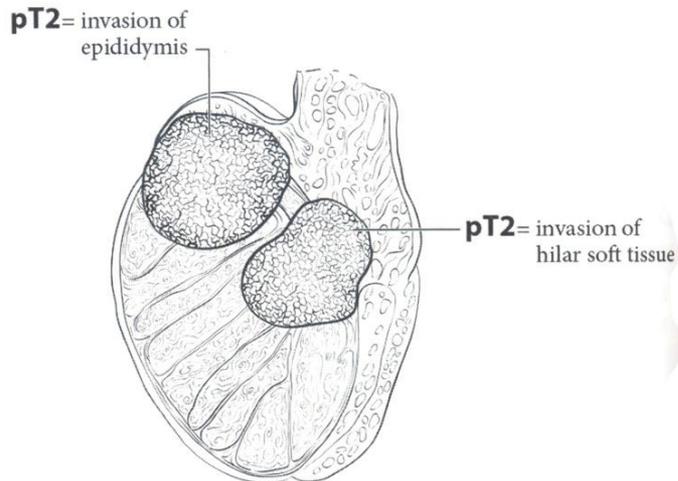
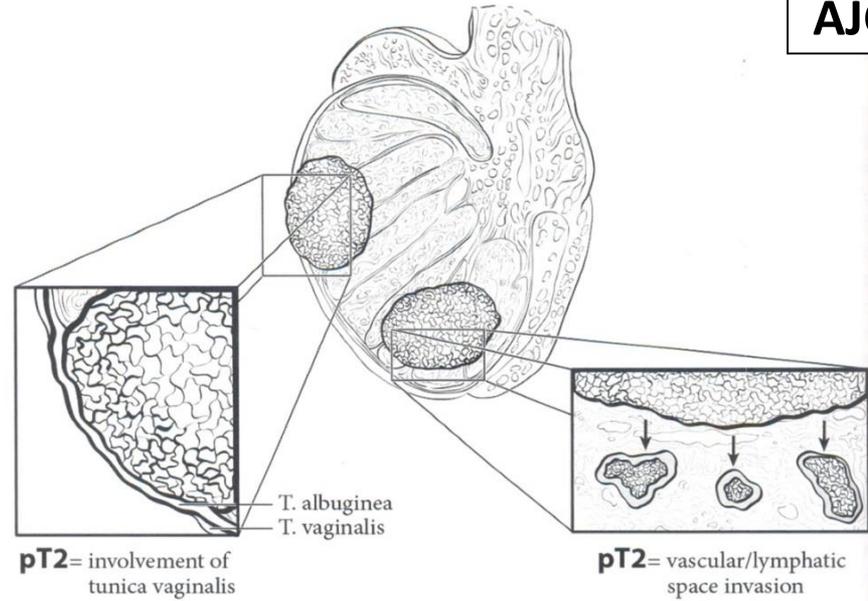
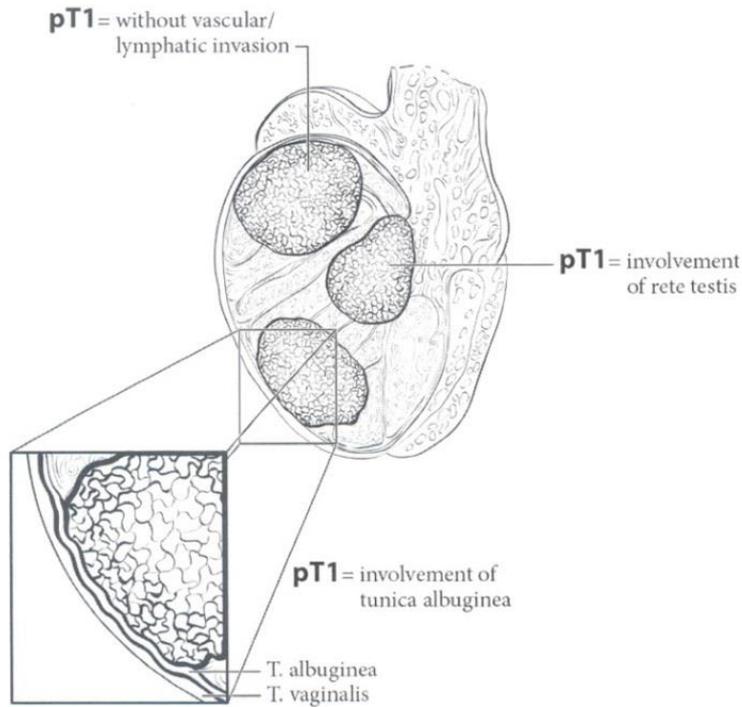
- LVI only: T2
- Direct soft tissue invasion: T3
- Discontinuous soft tissue invasion via LVI: M1

## Primary tumor (pT)

- pTX Primary tumor cannot be assessed
- pT0 No primary tumor
- pTis **Germ cell neoplasia in situ**
- pT1 Limited to testis without LVI
  - T1a: < 3cm**
  - T1b: ≥ 3cm**
- pT2 Limited to testis with LVI
  - Hilar soft tissue, epididymis, or tunica vaginalis**
- pT3 **Directly** to spermatic cord soft tissue
- pT4 Scrotum

# TNM Staging of Testis Tumor

AJCC 8<sup>th</sup>



# TNM Staging of Testis Tumor

**AJCC 7<sup>th</sup>**

**AJCC 8<sup>th</sup>**

## **Regional Lymph node (N)**

**pNX** Regional node cannot be assessed

**pN0** No metastasis

**pN1** ≤ 2 cm in ≤ 5 LNs

**pN2** > 2 cm ~ ≤ 5 cm, > 5 LNs, ENE

**pN3** > 5 cm

## **Regional Lymph node (N)**

**pNX** Regional node cannot be assessed

**pN0** No metastasis

**pN1** ≤ 2 cm in ≤ 5 LNs

**pN2** > 2 cm ~ ≤ 5 cm, > 5 LNs, ENE

**pN3** > 5 cm

## **Distant metastasis (M)**

**M0** No metastasis

**M1** Metastasis present

**M1a:** non-retroperitoneal LN, lung

**M1b:** non-pulmonary visceral

## **Distant metastasis (M)**

**M0** No metastasis

**M1** Metastasis present

**M1a:** non-retroperitoneal LN, lung

**M1b:** non-pulmonary visceral

\*Regional LN aortic (para/pre/retro), caval (para/pre/retro), interaortocarval

# TNM Staging of Testis Tumor

AJCC 8<sup>th</sup>

- **pN: size of the involved LN, not metastatic deposits**

- **Rt testicle: to interaortocaval LN**
- **Lt testicle: to paraaortic LN**

## **Regional Lymph node (N)**

**pNX** Regional node cannot be assessed

**pN0** No metastasis

**pN1** ≤ 2 cm in ≤ 5 LNs

**pN2** > 2 cm ~ ≤ 5 cm, > 5 LNs, ENE

**pN3** > 5 cm

## **Distant metastasis (M)**

**M0** No metastasis

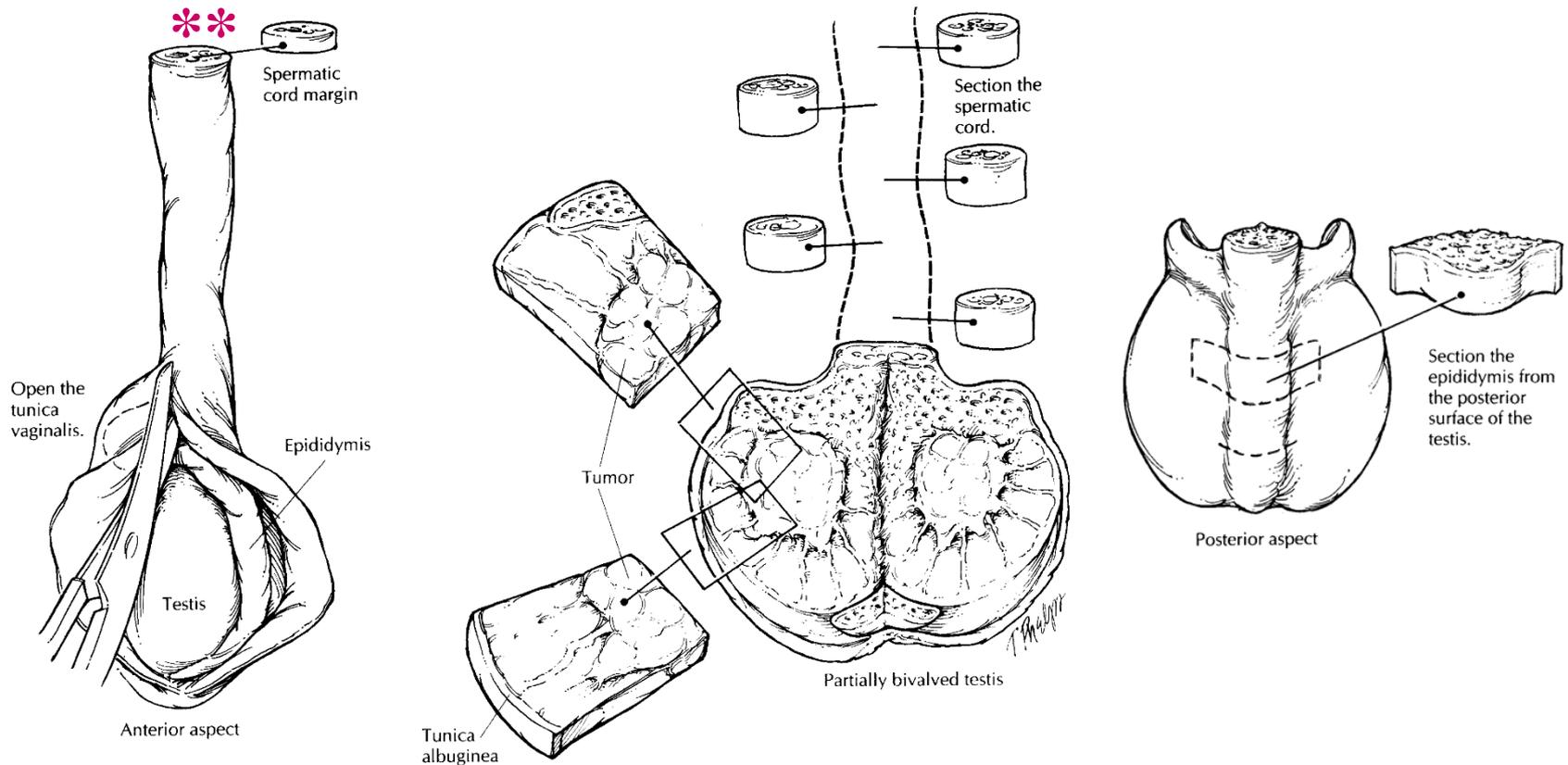
**M1** Metastasis present

**M1a: non-retroperitoneal LN, lung**

**M1b: non-pulmonary visceral**

\*Regional LN      aortic (para/pre/retro), caval (para/pre/retro), interaortocarval

# Handling of Radical Orchiectomy



- Hilar soft tissue, epididymis, or tunica vaginalis, spermatic cord for pT
- Peritumoral tissue and tunica albuginea for LVI

# TNM Staging of Penile Cancer

AJCC 7<sup>th</sup>

AJCC 8<sup>th</sup>

## Primary tumor (T)

TX	Primary tumor cannot be assessed
T0	No primary tumor
Tis	Carcinoma in situ
Ta	Noninvasive verrucous carcinoma
T1	Subepithelial connective tissue
	T1a: without LVI and P/D cpnt
	T1b: with LVI or P/D cpnt
T2	Corpus spongiosum or cavernosum
T3	Urethra
T4	Adjacent structures

## Primary tumor (T)

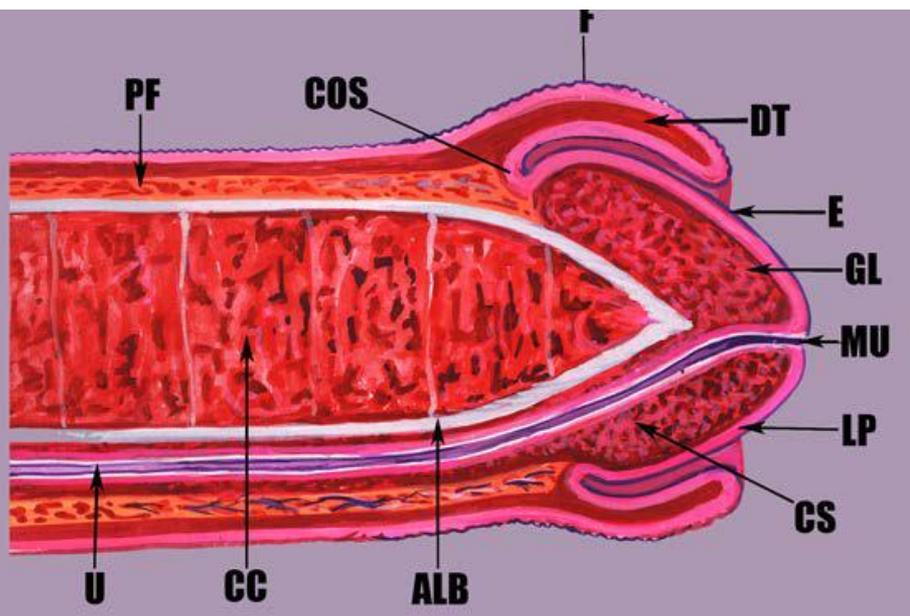
TX	Primary tumor cannot be assessed
T0	No primary tumor
Tis	Carcinoma in situ
Ta	Noninvasive <b>localized Sq. cell ca.</b>
T1	Subepithelial connective tissue
	T1a: without LVI, <b>PNI</b> , high grade
	T1b: with LVI, <b>PNI</b> , high grade
T2	Corpus spongiosum
T3	<b>Corpus cavernosum</b>
T4	Adjacent structures

# TNM Staging of Penile Cancer

AJCC 8<sup>th</sup>

## Anatomic layers for T1 invasion

- Glans: lamina propria
- Foreskin: dermis, dartos fascia, lamina propria
- Shaft: connective tissue btwn epidermis and corpora



## Primary tumor (T)

- TX Primary tumor cannot be assessed
- T0 No primary tumor
- Tis Carcinoma in situ
- Ta Noninvasive **localized Sq. cell ca.**
- T1 Subepithelial connective tissue
- T1a: without LVI, **PNI**, high grade
- T1b: with LVI, **PNI**, high grade
- T2 Corpus spongiosum
- T3 **Corpus cavernosum**
- T4 Adjacent structures

# TNM Staging of Penile Cancer

AJCC 8<sup>th</sup>

## Primary tumor (T)

TX	Primary tumor cannot be assessed
T0	No primary tumor
Tis	Carcinoma in situ
Ta	Noninvasive <b>localized Sq. cell ca.</b>
T1	Subepithelial connective tissue T1a: without LVI, <b>PNI</b> , high grade T1b: with LVI, <b>PNI</b> , high grade
T2	Corpus spongiosum
T3	<b>Corpus cavernosum</b>
T4	Adjacent structures

### Any proportion of high grade

- Grade 3
- Sarcomatoid

### Adjacent structures

- Scrotum
- Prostate
- Pubic bone

# TNM Staging of Penile Cancer

AJCC 7<sup>th</sup>

AJCC 8<sup>th</sup>

## Regional Lymph node (N)

**pNX** Cannot be assessed

**pN0** No metastasis

**pN1** Single inguinal node

**pN2** Multiple or bilateral inguinal node

**pN3** Extranodal extension or pelvic nodes unilateral or bilateral

## Regional Lymph node (N)

**pNX** Cannot be assessed

**pN0** No metastasis

**pN1**  $\leq 2$  unilateral inguinal

**pN2**  $\geq 3$  unilateral inguinal or bilateral

**pN3** Extranodal extension or pelvic nodes

## Distant metastasis (M)

**M0** No metastasis

**M1** Metastasis present

## Distant metastasis (M)

**M0** No metastasis

**M1** Metastasis present

\*Regional LN      inguinal (superficial, deep)  
                             pelvic (external iliac, internal iliac, obturator)

# Summary 1

## Kidney

Definition of Primary Tumor (T)	For T3a disease: The word “grossly” was eliminated from the description of renal vein involvement, and “muscle containing” was changed to “segmental veins.”
Definition of Primary Tumor (T)	For T3a disease: Invasion of the pelvicalyceal system was added.

## Urinary bladder

Definition of Regional Lymph Node (N)	Perivesical lymph node involvement is classified as N1.
Definition of Distant Metastasis (M)	M1 is subdivided into M1a and M1b. M1a refers to a non-regional lymph node only. M1b refers to non-lymph-node distant metastases.
AJCC Prognostic Stage Groups	Stage III is subdivided into IIIA and IIIB. Stage IV is subdivided into IVA and IVB.

## Renal pelvis and ureter

Definition of Regional Lymph Node (N)	The N3 category of a metastasis in a single lymph node larger than 5 cm in greatest dimension has been collapsed into the N2 category.
---------------------------------------	--

# Summary 2

## Urethra

Definition of Primary Tumor (T)	TX, T0, Ta have been added to the classification for urothelial carcinoma of the prostatic urethra.
Definition of Primary Tumor (T)	In urothelial carcinoma of the prostate: Carcinoma <i>in situ</i> , involvement of the prostatic urethra (previously designated as Tis pu) and Carcinoma <i>in situ</i> , involvement of the prostatic ducts and acini (previously designated as Tis pd) will be collapsed into a single stage designation: Tis: carcinoma <i>in situ</i> involving the prostatic urethra, periurethral or prostatic ducts and acini without stromal invasion
Definition of Primary Tumor (T)	Clarification: For urothelial carcinoma of the prostate, T1 category is defined as tumors invading subepithelial connective tissue of prostatic urethra.
Definition of Primary Tumor (T)	Clarification: Extension of urethral cancer to the bladder wall proper will be classified as T4 disease to maintain consistency with bladder cancer staging in which direct extension to the prostate also is classified as T4. This applies to both urethral cancers in the female and urethral cancers arising in the male prostatic urethra or prostatic ducts.
Definition of Regional Lymph Node (N)	N1: Single regional lymph node metastasis in the inguinal region or true pelvis [perivesical, obturator, internal (hypogastric) and external iliac], or presacral lymph node
Definition of Regional Lymph Node (N)	N2: Multiple regional lymph node metastasis in the inguinal region or true pelvis [perivesical, obturator, internal (hypogastric) and external iliac], or presacral lymph node

## Prostate

Definition of Primary Tumor (T)	Pathologically organ-confined disease is considered pT2 and no longer subclassified by extent of involvement or laterality.
Histologic Grade (G)	The Gleason score (2014 criteria) and the Grade Group should both be reported.
AJCC Prognostic Stage Groups	Stage III includes select organ-confined disease tumors based on prostate-specific antigen (PSA) and Gleason/Grade Group status.

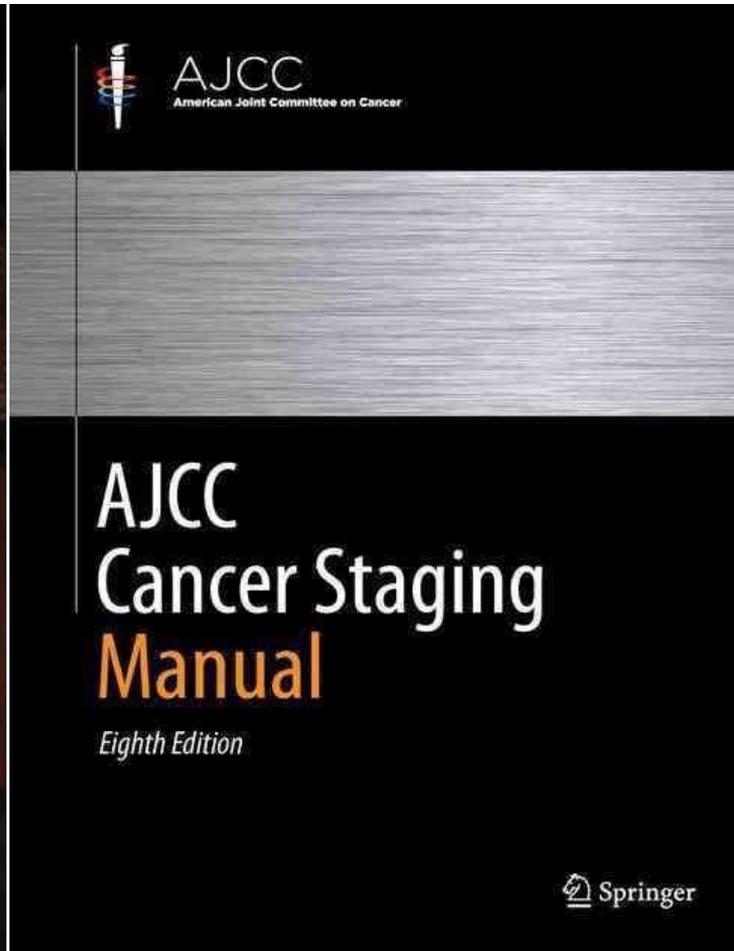
# Summary 3

## Testis

Definition of Primary Tumor (T)	In pure seminoma, T1 is subclassified to T1a and T1b according to tumor's size using a 3 cm cutoff.
Definition of Primary Tumor (T)	Epididymal invasion is considered T2 rather than T1.
Definition of Primary Tumor (T)	Hilar soft tissue invasion is considered T2.
Definition of Distant Metastasis (M)	Discontinuous involvement of the spermatic cord soft tissue via vascular-lymphatic invasion represents M1 disease.

## Penis

Histologic Grade (G)	The three-tiered World Health Organization (WHO)/ International Society of Urological Pathology (ISUP) grading system has been adopted. Any proportion of anaplastic cells is sufficient to categorize a tumor as grade 3.
Definition of Primary Tumor (T)	Ta definition is now broadened to include noninvasive localized squamous carcinoma.
Definition of Primary Tumor (T)	T1a and T1b have been separated by an additional prognostic indicator-the presence or absence of perineural invasion.
Definition of Primary Tumor (T)	T1a or T1b are described by the site where they occur on the penis and are designated glans, foreskin, or shaft. Anatomic layers invaded are described for the three locations.
Definition of Primary Tumor (T)	T2 definition includes corpus spongiosum invasion.
Definition of Primary Tumor (T)	T3 definition now involves corpora cavernosum invasion.
Definition of Regional Lymph Nodes (N)	pN1 is defined as $\leq 2$ unilateral inguinal metastases, no extranodal extension.
Definition of Regional Lymph Nodes (N)	pN2 is defined as $\geq 3$ unilateral inguinal metastases or bilateral metastases



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### CANCER PROTOCOL TEMPLATES

Genitourinary		
Kidney	<b>Current Version</b>	<b>Previous Version</b>
	<a href="#">PDF</a> (v4.0.1.1)	<a href="#">2017</a> (v4.0.1.0)
	<a href="#">WORD</a> (v4.0.1.1) June 2017	<a href="#">2017</a> (v3.3.0.0) <a href="#">2013</a> (v3.2.0.0)
Penis	<b>Current Version</b>	<b>Previous Version</b>
	<a href="#">PDF</a> (v4.0.1.0)	<a href="#">2017</a> (v3.3.1.0)
	<a href="#">WORD</a> (v4.0.1.0) June 2017	<a href="#">2013</a> (v3.2.0.0)
Prostate Gland	<b>Current Version</b>	<b>Previous Version</b>
	<a href="#">PDF</a> (v4.0.2.0)	<a href="#">2017</a> (v4.0.1.0)
	<a href="#">WORD</a> (v4.0.2.0) June 2017	<a href="#">2017</a> (v3.3.0.0) <a href="#">2012</a> (v3.2.0.0)
Testis	<b>Current Version</b>	<b>Previous Version</b>
	<a href="#">PDF</a> (v4.0.1.0)	<a href="#">2017</a> (v3.4.1.0)
	<a href="#">WORD</a> (v4.0.1.0) June 2017	<a href="#">2013</a> (v3.3.0.0)
Ureter, Renal Pelvis	<b>Current Version</b>	<b>Previous Version</b>
	<a href="#">PDF</a> (v2.1.0.0)	<a href="#">2017</a> (v1.0.0.0)
	<a href="#">WORD</a> (v2.1.0.0) June 2017	<a href="#">2013</a> (v3.4.0.0)
Urethra	<b>Current Version</b>	<b>Previous Version</b>
	<a href="#">PDF</a> (v4.0.1.1)	<a href="#">2017</a> (v4.0.1.0)
	<a href="#">WORD</a> (v4.0.1.1) June 2017	<a href="#">2017</a> (v3.3.0.0) <a href="#">2012</a> (v3.2.1.0)
Urinary Bladder	<b>Current Version</b>	<b>Previous Version</b>
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	<a href="#">WORD</a> (v4.0.1.0) June 2017	<a href="#">2012</a> (v3.2.1.0)