

25TH ICRO DEHRADUN

STAGING OF GENITOURINARY MALIGNANCIES

SPEAKER

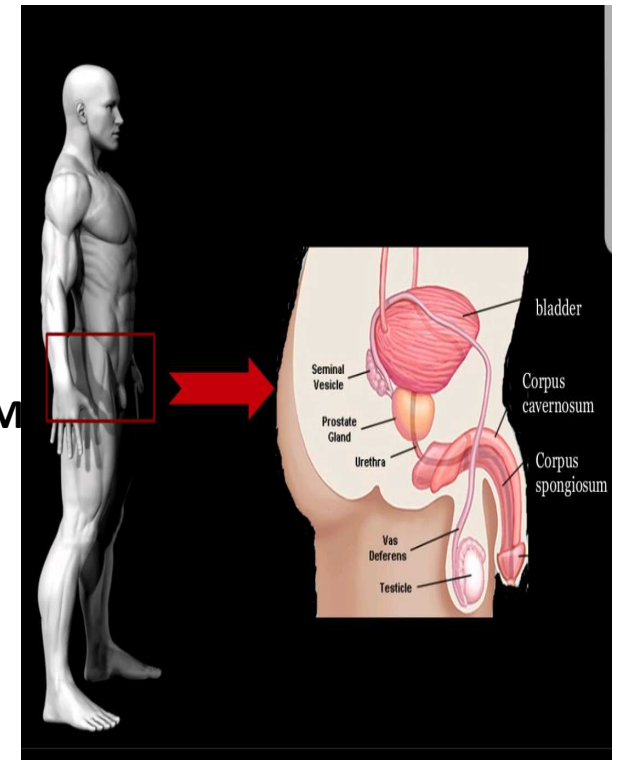
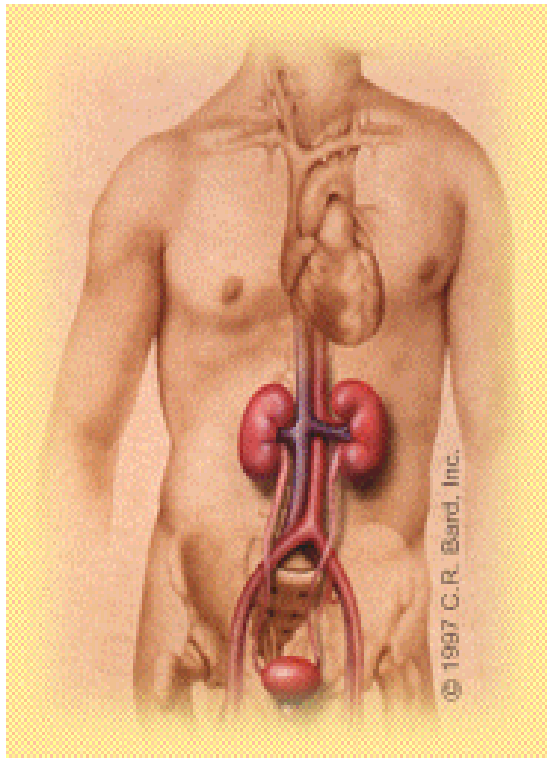
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Introduction

- What is staging?
- Why staging is important
- Staging systems
 - TNM

STAGING OF TUMORS

STAGE OF A TUMOR IS BASED ON

- SIZE OF PRIMARY TUMOR
- EXTENT OF INVASION INTO SURROUNDING TISSUES
- THE SPREAD TO REGIONAL LYMPH NODES
- PRESENCE OR ABSENCE OF BLOOD BORNE METASTASIS

Why is staging important?

- Selecting treatment



- Research



- Guidelines



STAGING SYSTEM

**AJCC/UICC STAGING
SYSTEM**

TNM

TNM CLASSIFICATION

WHERE

T IS TUMOR

N NODE

AND

M METASTASIS

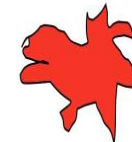
Tumour



Node



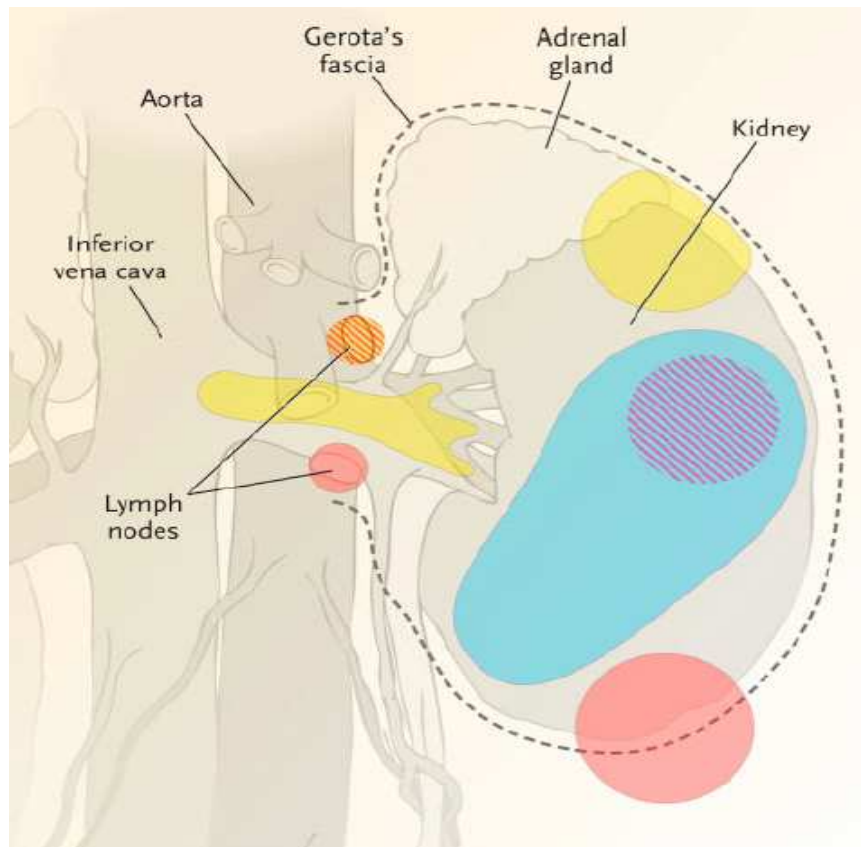
Metastasis



PLAN OF TODAY'S LECTURE

- Renal Cell Carcinoma
- Bladder Carcinoma
- Testicular Carcinoma
- Prostate Carcinoma
- Renal Pelvis and Ureter
- Urethra
- Penile Carcinoma

RENAL CANCER



DIAGNOSIS

- ◉ **Physical examination:**

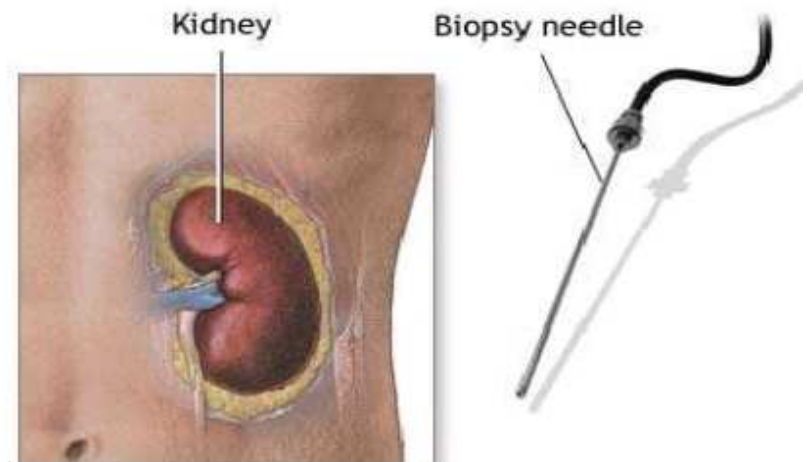
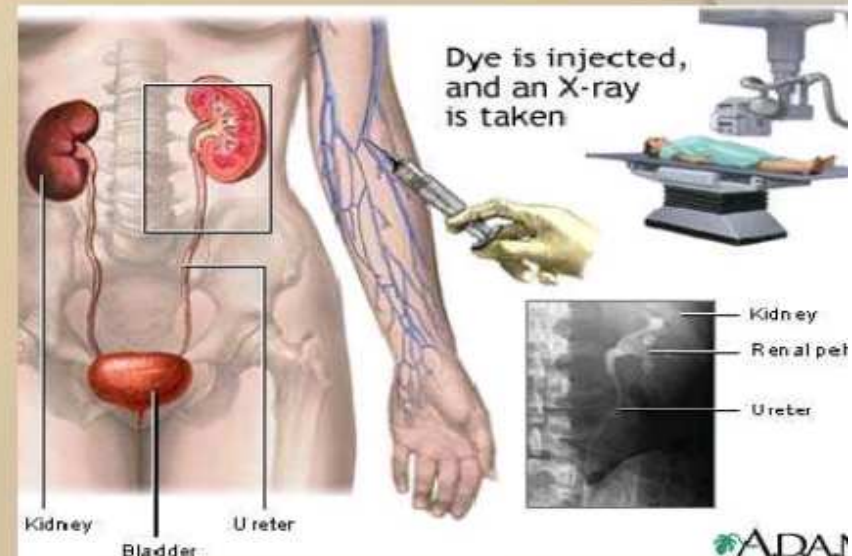
- ◉ Fever
- ◉ High blood pressure

- ◉ **Lab tests:**

- ◉ Complete blood count
- ◉ Urinalysis
- ◉ Serum calcium

- ◉ **Imaging tests:**

- ◉ Ultrasound abdomen
- ◉ Abdominal CT scan
- ◉ MRI scan
- ◉ PET scan
- ◉ Renal angiography
- ◉ Intravenous pyelogram
- ◉ Chest x ray
- ◉ Bone scan
- ◉ Biopsy
 - Fine needle aspiration
 - Core needle biopsy



**American Joint Committee on Cancer (AJCC)
TNM Staging System for Kidney Cancer (7th ed., 2010)**

Primary Tumor (T)

TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
T1	Tumor 7 cm or less in greatest dimension, limited to the kidney
T1a	Tumor 4 cm or less in greatest dimension, limited to the kidney
T1b	Tumor more than 4 cm but not more than 7 cm in greatest dimension, limited to the kidney
T2	Tumor more than 7 cm in greatest dimension, limited to the kidney
T2a	Tumor more than 7 cm but less than or equal to 10 cm in greatest dimension, limited to the kidney
T2b	Tumor more than 10 cm, limited to the kidney
T3	Tumor extends into major veins or perinephric tissues but not into the ipsilateral adrenal gland and not beyond Gerota's fascia
T3a	Tumor grossly extends into the renal vein or its segmental (muscle containing) branches, or tumor invades perirenal and/or renal sinus fat but not beyond Gerota's fascia
T3b	Tumor grossly extends into the vena cava below the diaphragm
T3c	Tumor grossly extends into the vena cava above the diaphragm or invades the wall of the vena cava
T4	Tumor invades beyond Gerota's fascia (including contiguous extension into the ipsilateral adrenal gland)

Regional Lymph Nodes (N)

- NX Regional lymph nodes cannot be assessed
- N0 No regional lymph node metastasis
- N1 Metastasis in regional lymph node(s)

Distant Metastasis (M)

- M0 No distant metastasis
- M1 Distant metastasis

MODIFICATIONS IN AJCC 8TH EDITION

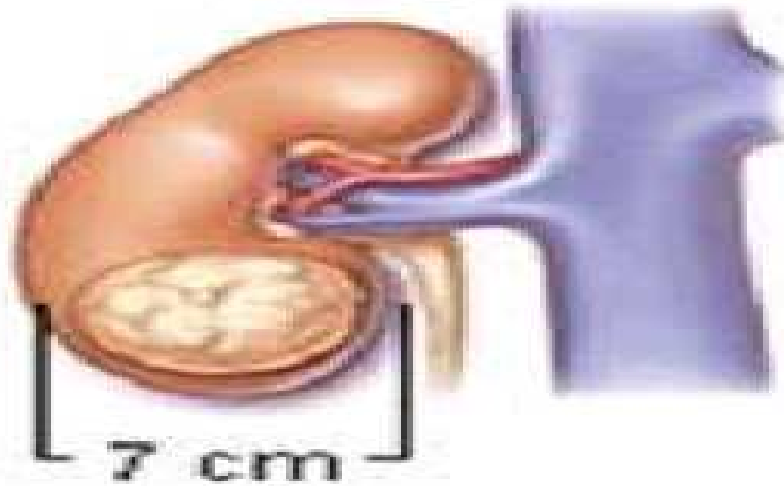
Kidney

N2 is eliminated

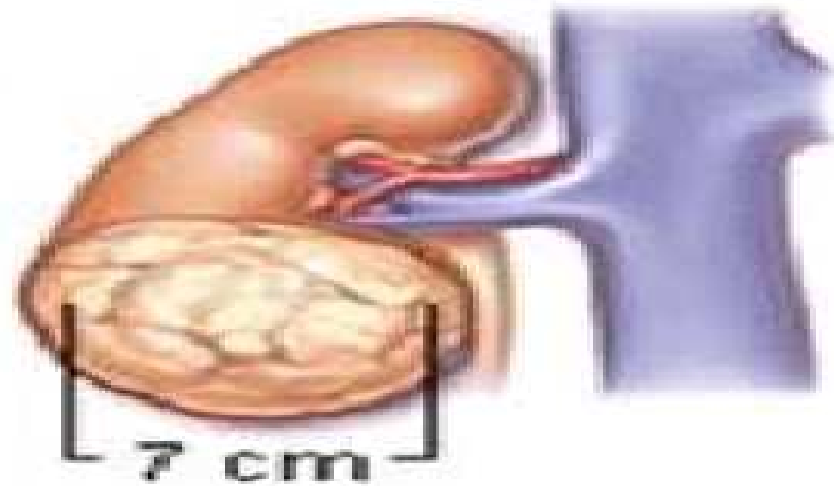
Anatomic Stage/Prognostic Groups

Stage I	T1	N0	M0
Stage II	T2	N0	M0
Stage III	T1 or T2	N1	M0
	T3	N0 or N1	M0
Stage IV	T4	Any N	M0
	Any T	Any N	M1

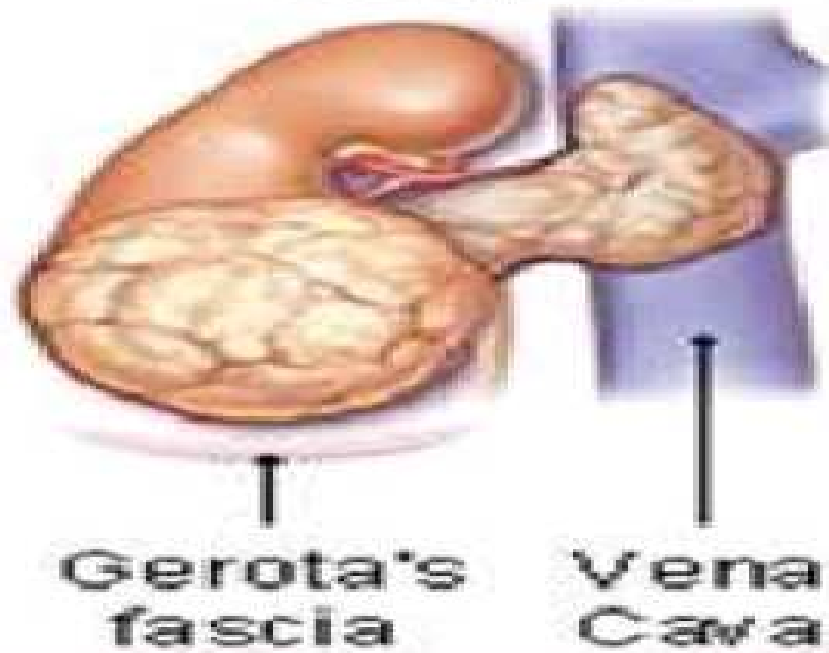
Stage I



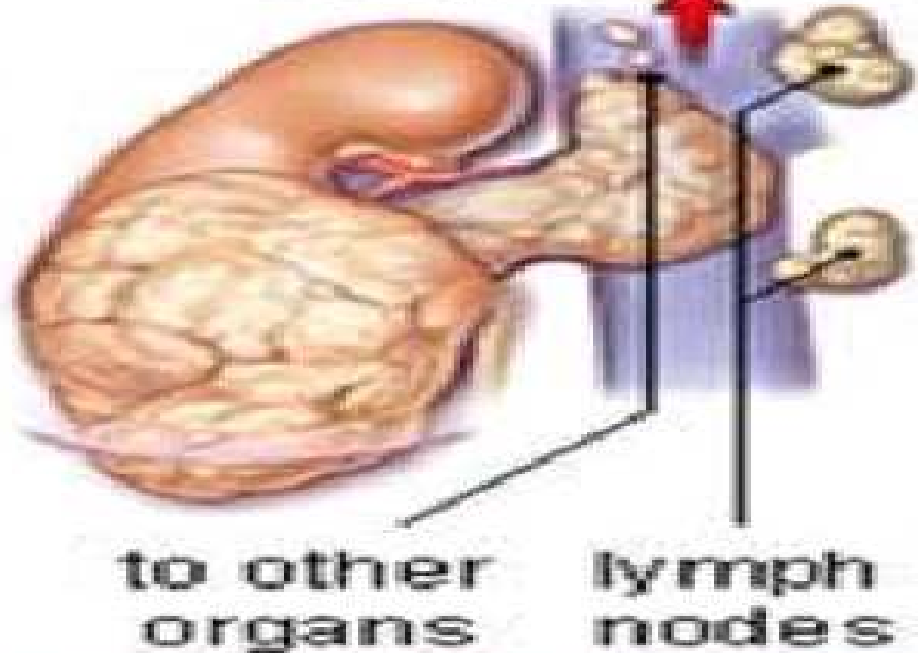
Stage II



Stage III

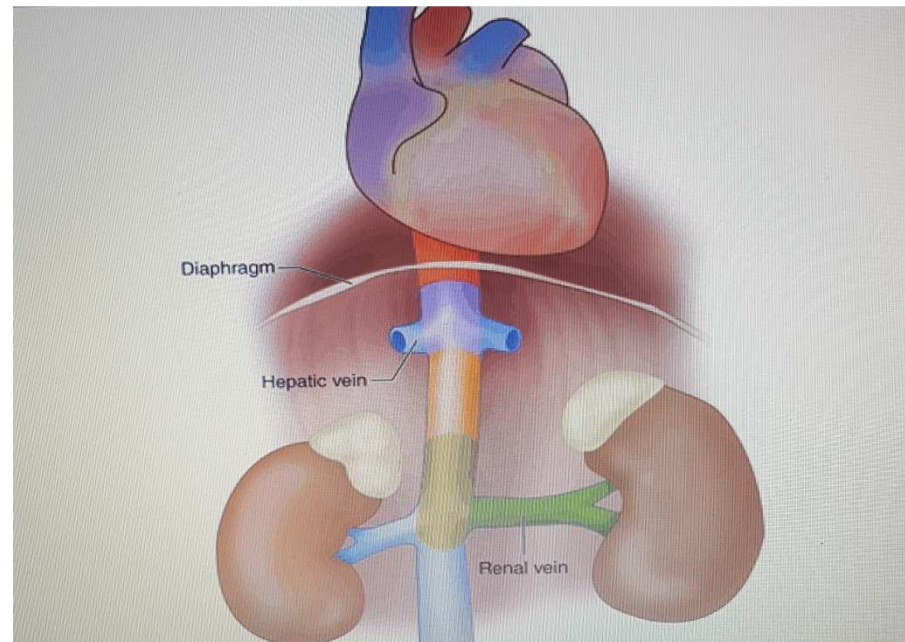


Stage IV



Robson staging

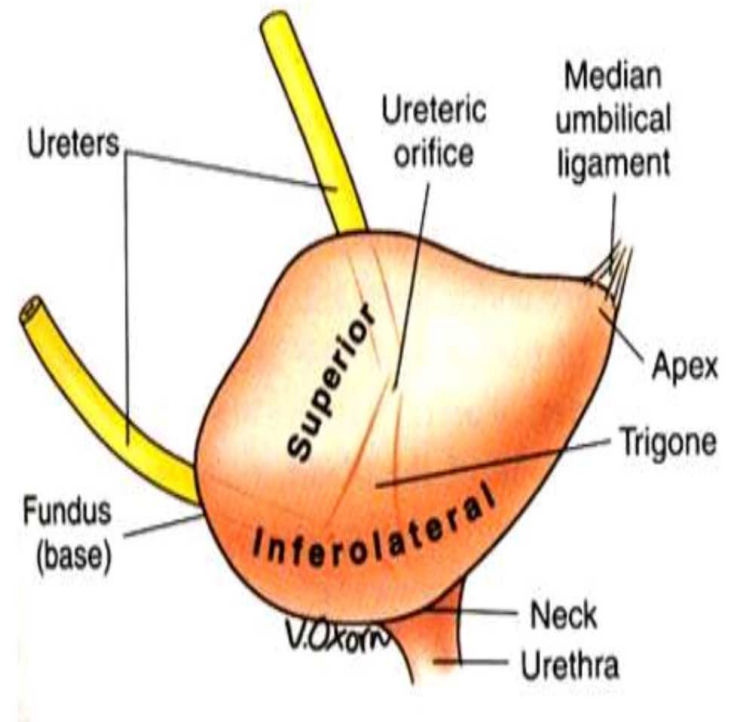
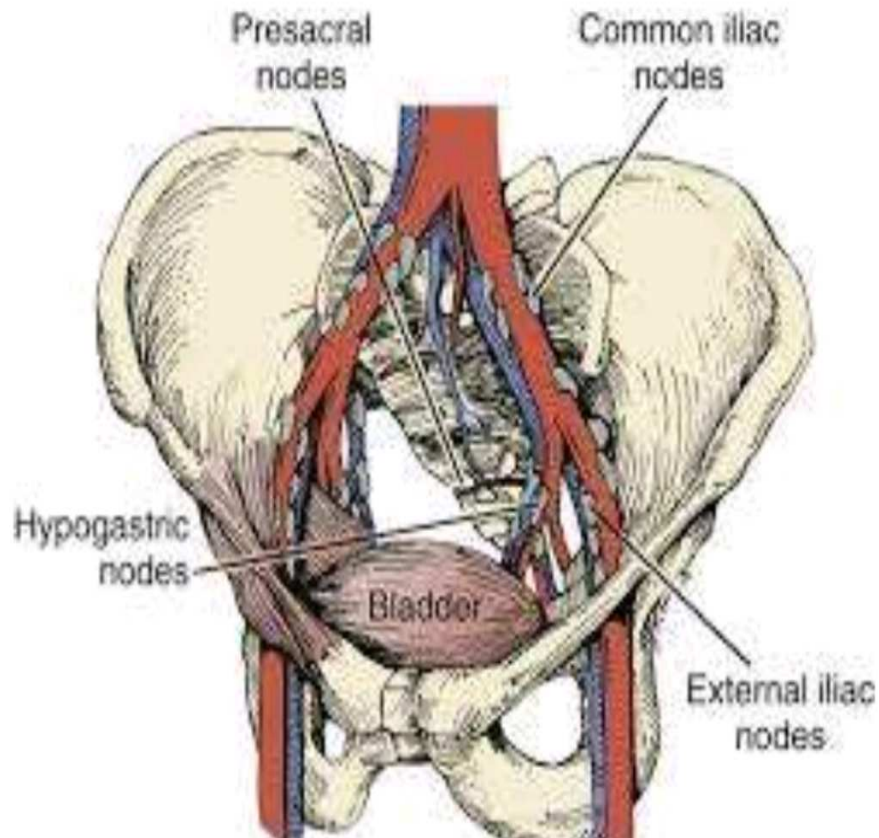
- Robson staging revolves around the relationship to Gerota's fascia, involvement of renal vein and regional nodes.
- **Stage I:** limited to kidney
- **Stage II:** involvement of perinephric fat but remains limited to Gerota's fascia
- **Stage III**
 - **IIIa:** renal vein involvement
 - **IIIb:** nodal involvement
 - **IIIc:** both IIIa and IIIb
- **Stage IV**
 - **IVa:** direct invasion of adjacent organs / structures
 - **IVb:** distant metastases



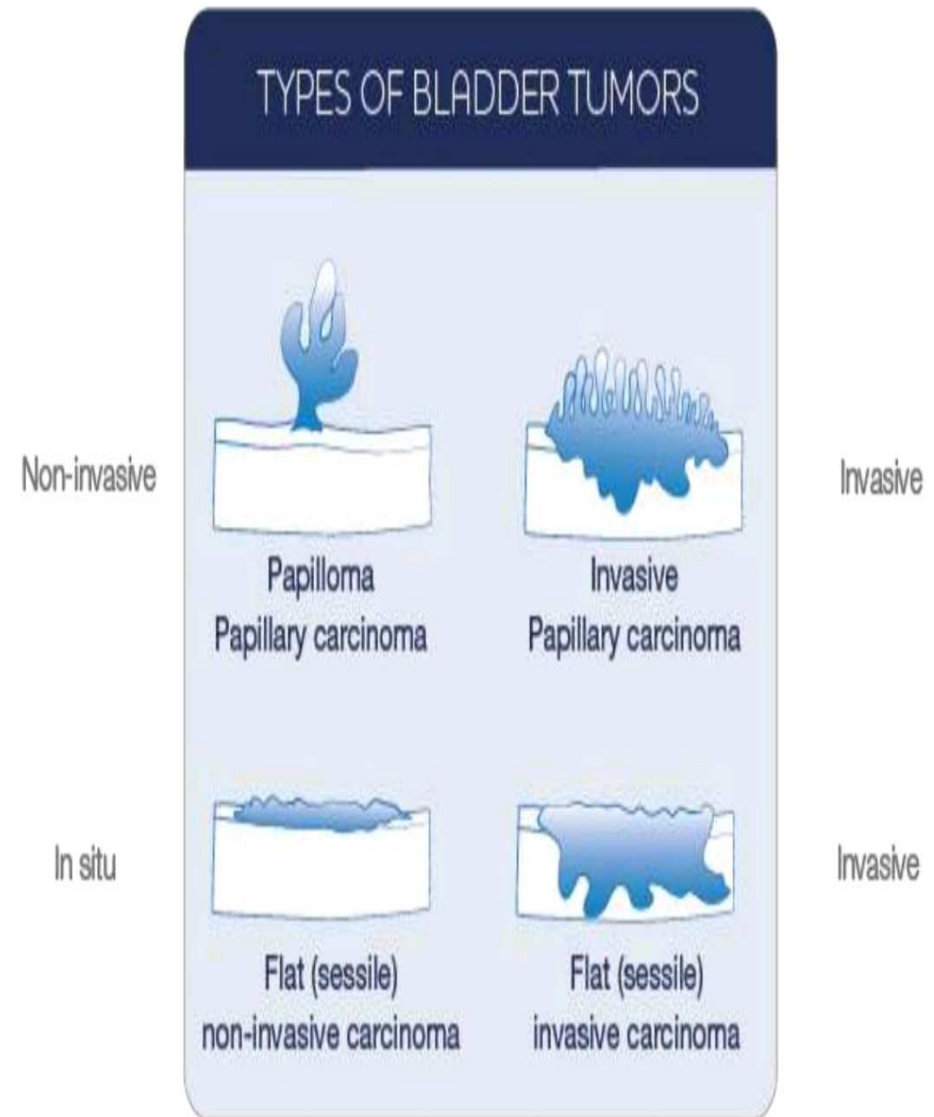
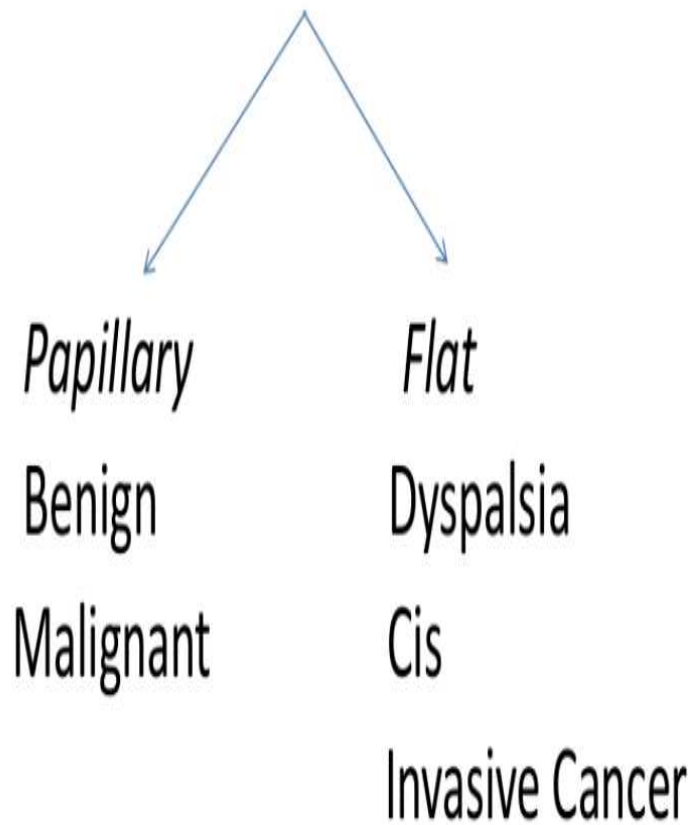
Prognostic and surgical staging systems of IVC tumor thrombus

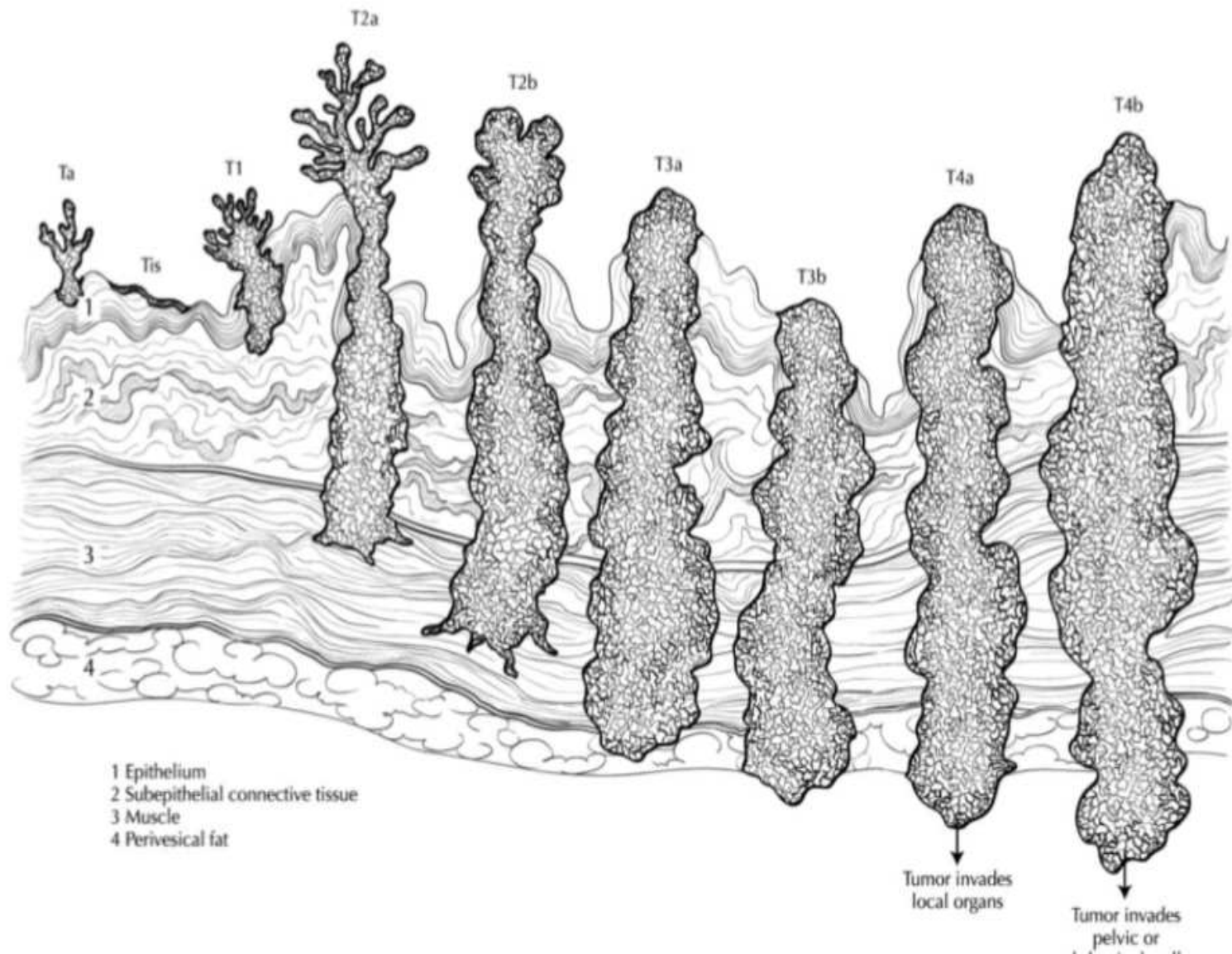
Anatomic landmark	Staging systems				
	TNM	Neves	Novick	Hinman	Robson
RV	T3b	0	I	I	IIIa
IVC <2 cm above RV		I	II		
IVC >2 cm above RV and below hepatic veins		II			
IVC above hepatic veins and below diaphragm		III	III	II	
IVC above diaphragm	T3c	IV	IV	III	

BLADDER CANCER



- Most Common Type is Transitional Cell Carcinoma 93%





American Joint Committee on Cancer (AJCC) TNM Staging System for Bladder Cancer (7th ed., 2010)

Primary Tumor (T)

TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
Ta	Noninvasive papillary carcinoma
Tis	Carcinoma in situ: "flat tumor"
T1	Tumor invades subepithelial connective tissue
T2	Tumor invades muscularis propria
pT2a	Tumor invades superficial muscularis propria (inner half)
pT2b	Tumor invades deep muscularis propria (outer half)
T3	Tumor invades perivesical tissue
pT3a	Microscopically
pT3b	Macroscopically (extravesical mass)
T4	Tumor invades any of the following: prostatic stroma, seminal vesicles, uterus, vagina, pelvic wall, abdominal wall
T4a	Tumor invades prostatic stroma, uterus, vagina
T4b	Tumor invades pelvic wall, abdominal wall

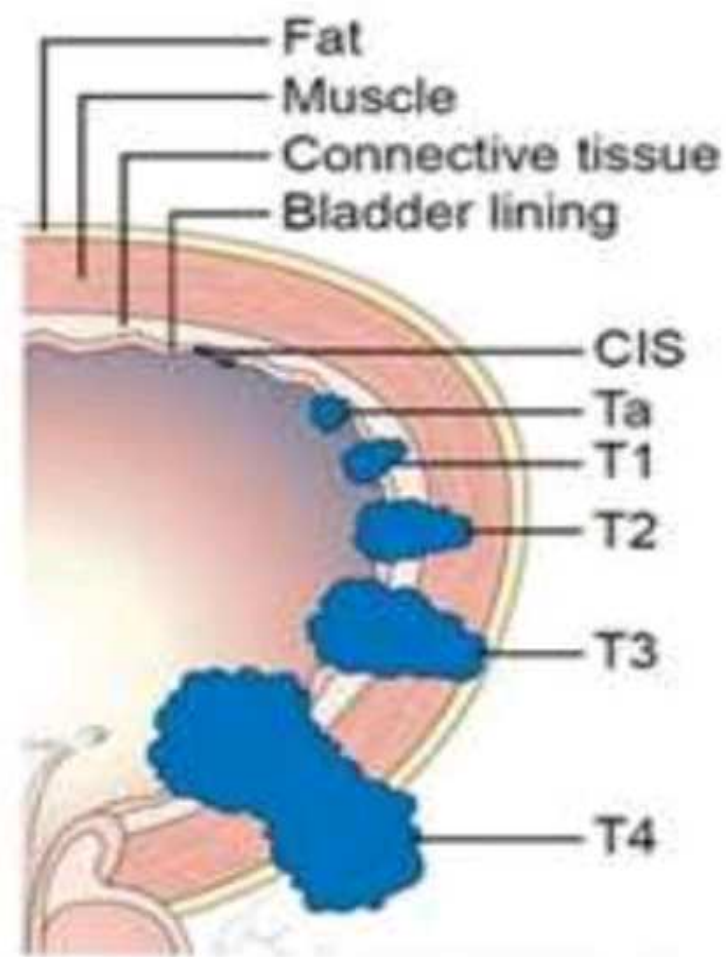
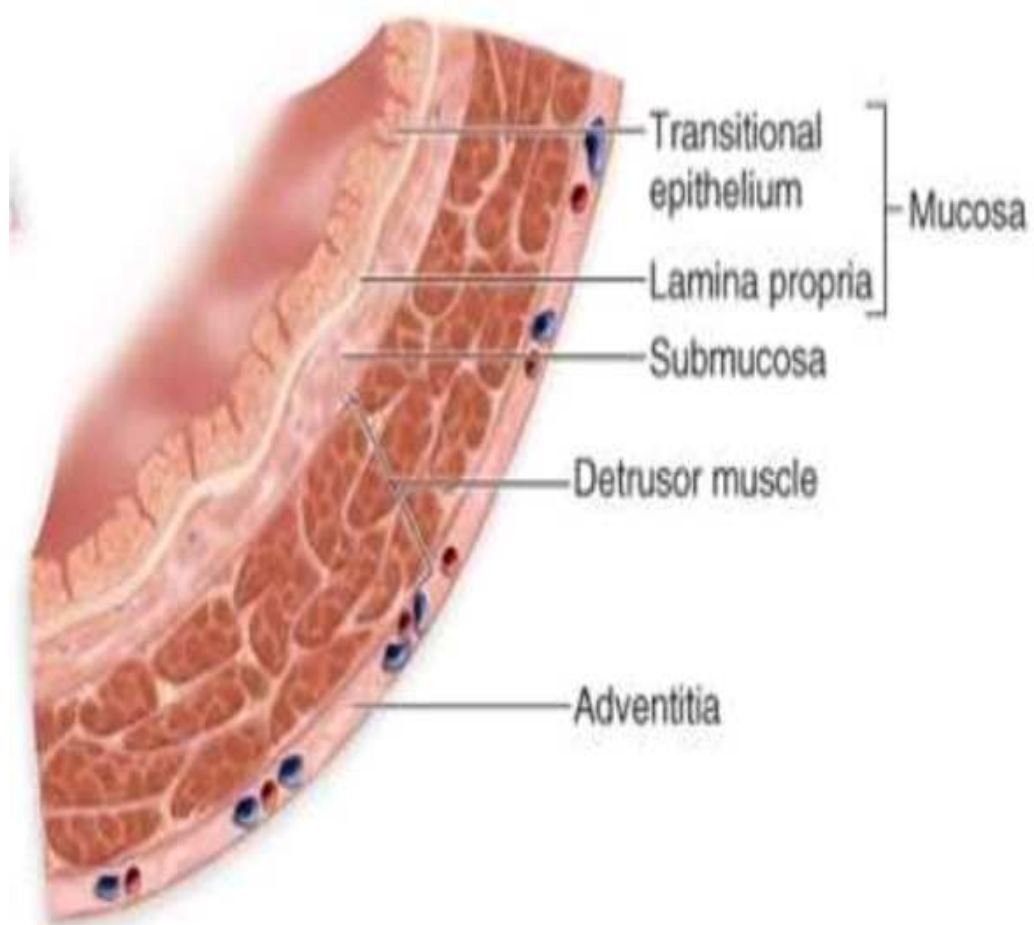
Regional Lymph Nodes (N)

Regional lymph nodes include both primary and secondary drainage regions. All other nodes above the aortic bifurcation are considered distant lymph nodes.

- NX** Lymph nodes cannot be assessed
- N0** No lymph node metastasis
- N1** Single regional lymph node metastasis in the true pelvis (hypogastric, obturator, external iliac, or presacral lymph node)
- N2** Multiple regional lymph node metastasis in the true pelvis (hypogastric, obturator, external iliac, or presacral lymph node metastasis)
- N3** Lymph node metastasis to the common iliac lymph nodes

Distant Metastasis (M)

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



HISTOLOGIC GRADE

- **LG** low grade
- **HG** high grade (WHO/ISUP)

IF NOT SPECIFIED

GX can not be assessed

G1 well differentiated

G2 moderately differentiated

G3 poorly differentiated

G4 undifferentiated

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

MODIFICATIONS IN AJCC 8TH EDITION

Urinary bladder

The M category is subdivided

M1a Non regional lymph nodes

M1b Other distant metastasis

Minor changes to **Stage**

Jewett-Marshall Staging(Clinical)

Stage A: Submucosal invasion but no muscle invasion

Stage B Bladder wall or muscle invasion

B1 Superficial

B2 Deep

Stage C Extension through serosa into perivesical fat

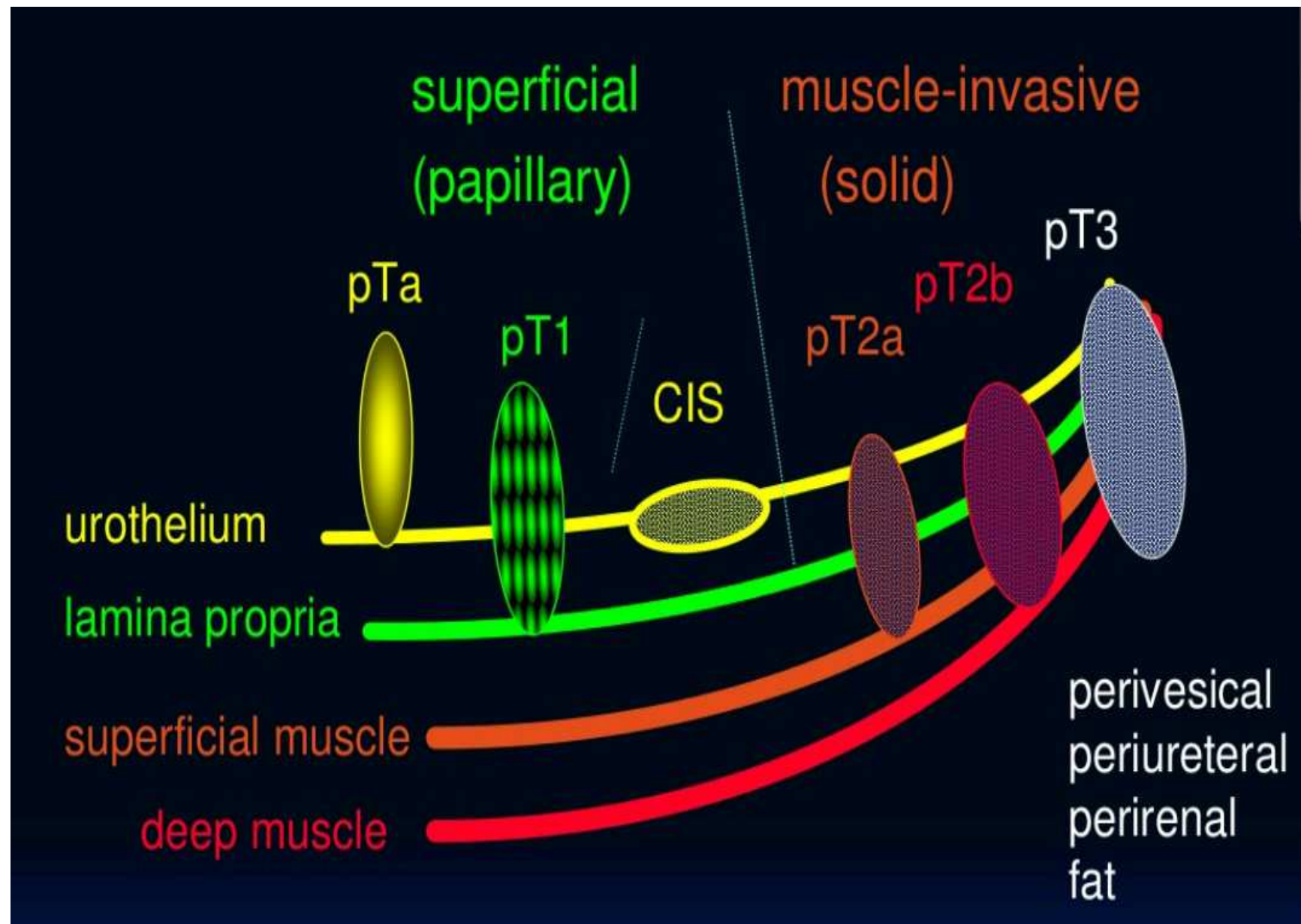
Stage D Lymph nodes and other distant metastasis

D1 regional nodes

D2 distant nodes and other distant mets

AJCC T1 TO T4 = JEWETT A TO D

N AND M PART OF STAGE D



APPROXIMATE PROBABILITY OF RECURRENCE AND PROGRESSION

<u>Pathology</u>	<u>Approximate Probability of Recurrence in 5 years</u>	<u>Approximate Probability of Progression to Muscle Invasion</u>
Ta, low grade	50%	Minimal
Ta, high grade	60%	Moderate
T1, low grade (rare)	50%	Moderate
T1, high grade	50%-70%	Moderate-High
Tis	50%-90%	High

Bladder Cancer Prognosis Calculator

Calculate

About

Prior recurrence rate:

Primary

≤ 1 per year

>1 per year

Number of tumours:

1

2 to 7

8 or more

T category:

Ta

T1

Tumour diameter:

< 3cm

≥ 3cm

Concomitant CIS:

No

Yes

Grade (WHO 1973):

G1

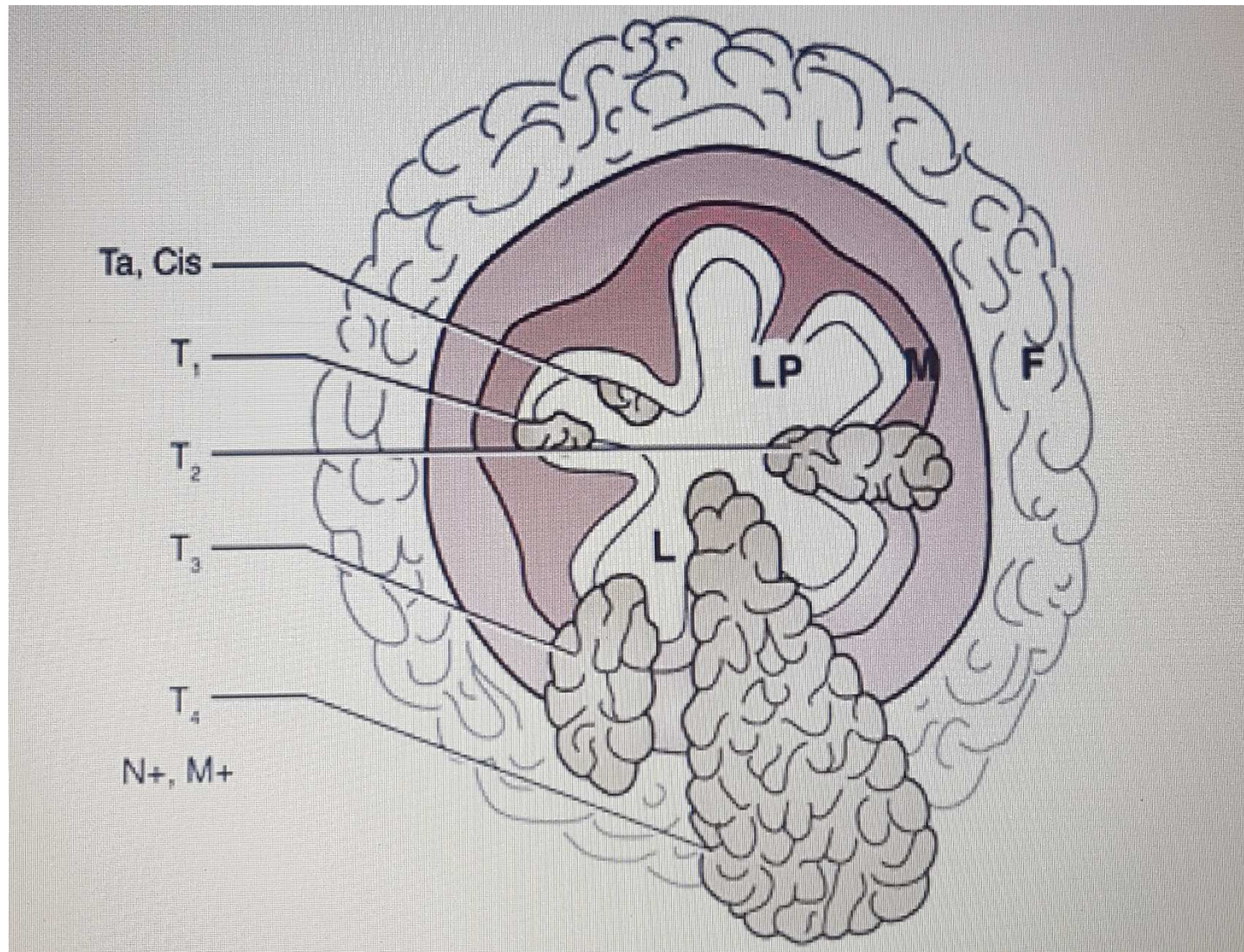
G2

G3

Back

Calculate

RENAL PELVIS AND URETER



American Joint Committee on Cancer (AJCC)

TNM Staging System for Renal Pelvis and Ureter Cancer (7th ed., 2010)

Primary Tumor (T)

- TX** Primary tumor cannot be assessed
- T0** No evidence of primary tumor
- Ta** Papillary noninvasive carcinoma
- Tis** Carcinoma in situ
- T1** Tumor invades subepithelial connective tissue
- T2** Tumor invades the muscularis
- T3** (For renal pelvis only) Tumor invades beyond muscularis into peripelvic fat or the renal parenchyma T3. (For ureter only) Tumor invades beyond muscularis into periureteric fat
- T4** Tumor invades adjacent organs, or through the kidney into the perinephric fat.

Regional Lymph Nodes (N)*

- NX** Regional lymph nodes cannot be assessed
- N0** No regional lymph node metastasis
- N1** Metastasis in a single lymph node, 2 cm or less in greatest dimension
- N2** Metastasis in a single lymph node, more than 2 cm but not more than 5 cm in greatest dimension; or multiple lymph nodes, none more than 5 cm in greatest dimension
- N3** Metastasis in a lymph node, more than 5 cm in greatest dimension

* Note: Laterality does not affect the N classification.

Distant Metastasis (M)

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

ANATOMIC STAGE/PROGNOSTIC GROUPS

Stage 0a	Ta	N0	M0
-----------------	----	----	----

Stage 0is	Tis	N0	M0
------------------	-----	----	----

Stage I	T1	N0	M0
----------------	----	----	----

Stage II	T2	N0	M0
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Stage III	T3	N0	M0
------------------	----	----	----

Stage IV	T4	N0	M0
-----------------	----	----	----

Any T	N1	M0
-------	----	----

Any T	N2	M0
-------	----	----

Any T	N3	M0
-------	----	----

Any T	Any N	M1
-------	-------	----

5 YEAR DISEASE UPPER URINARY	FREE SURVIVAL IN TRACT BY STAGE	TUMORS OF
STAGE	PERCENTAGE SURVIVAL	
pT1	92	
pT2	73	
pT3	41	
pT4	0	

**American Joint Committee on Cancer (AJCC)
TNM Staging System for Urethral Carcinoma (7th ed., 2010)**

Primary Tumor (T) (Male and Female)

TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
Ta	Noninvasive papillary, polypoid, or verrucous carcinoma
Tis	Carcinoma in situ
T1	Tumor invades subepithelial connective tissue
T2	Tumor invades any of the following: corpus spongiosum, prostate, periurethral muscle
T3	Tumor invades any of the following: corpus cavernosum, beyond prostatic capsule, anterior vagina, bladder neck
T4	Tumor invades other adjacent organs

Regional Lymph Nodes (N)

- NX** Regional lymph nodes cannot be assessed
- N0** No regional lymph node metastasis
- N1** Metastasis in a single lymph node 2 cm or less in greatest dimension
- N2** Metastasis in a single node more than 2 cm in greatest dimension, or in multiple nodes

Distant Metastasis (M)

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

Urothelial (Transitional Cell) Carcinoma of the Prostate

Tis pu Carcinoma in situ, involvement of the prostatic urethra

Tis pd Carcinoma in situ, involvement of the prostatic ducts

T1 Tumor invades urethral subepithelial connective tissue

T2 Tumor invades any of the following: prostatic stroma, corpus spongiosum, periurethral muscle

T3 Tumor invades any of the following: corpus cavernosum, beyond prostatic capsule, bladder neck (extraprostatic extension)

T4 Tumor invades other adjacent organs (invasion of the bladder)

ANATOMIC STAGE/PROGNOSTIC GROUPS

Stage 0a	Ta	N0	M0
Stage 0is	Tis	N0	M0
	Tis pu	N0	M0
	Tis pd	N0	M0
Stage I	T1	N0	M0
Stage II	T2	N0	M0
Stage III	T1	N1	M0
	T2	N1	M0
	T3	N0	M0
	T3	N1	M0
Stage IV	T4	N0	M0
	T4	N1	M0
	Any T	N2	M0
	Any T	Any N	M1

MODIFICATIONS IN AJCC 8TH EDITION

Urethra

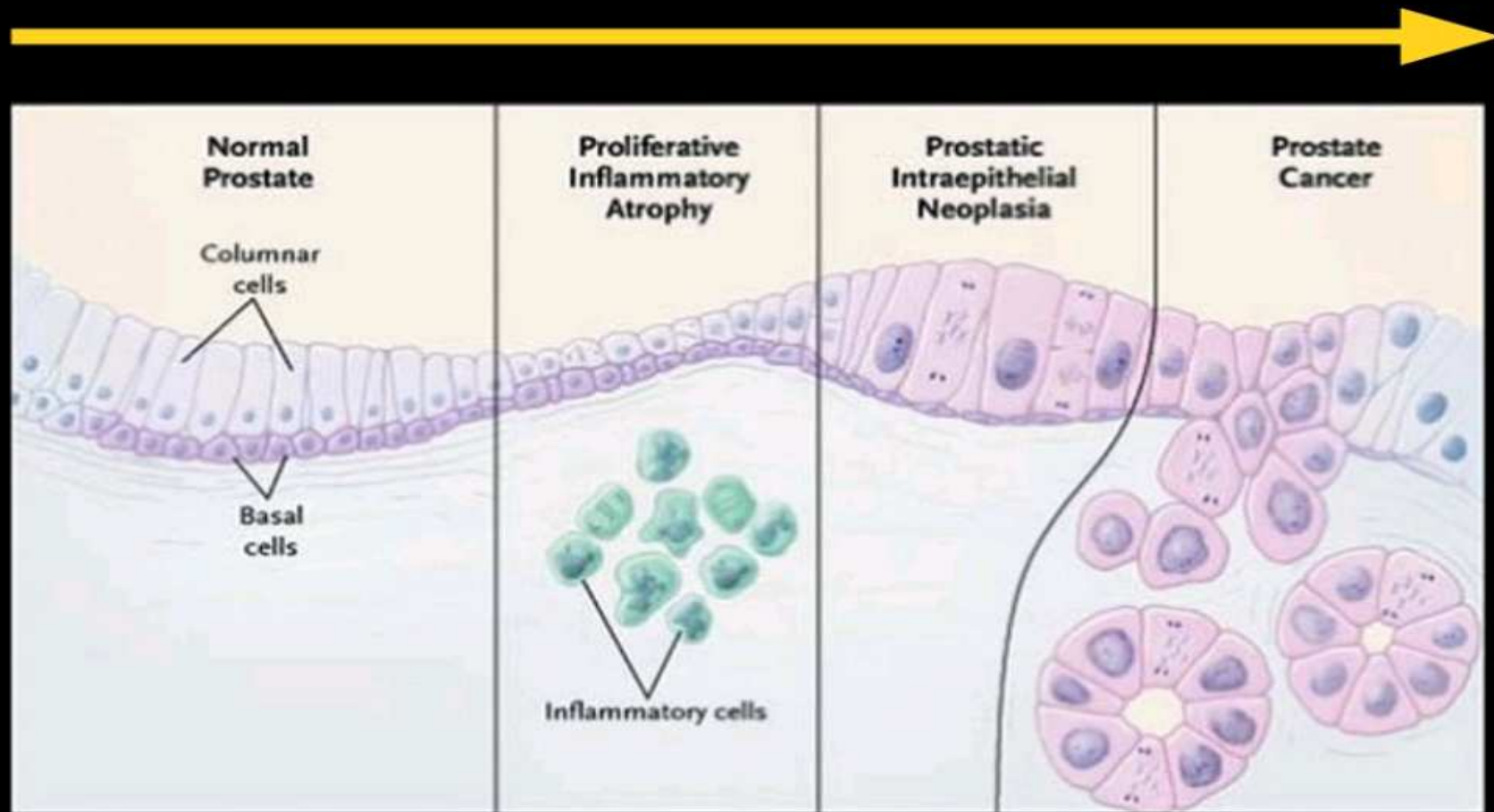
Changes to N category

N1 Metastasis in a single lymph node

N2 Metastasis in multiple lymph nodes

PROSTATE CANCER

Progression



St aging work up

- Baseline work up

Haemogram/LFT/KFT/CXR

- Essential work up

PSA/Biopsy/Gleason scoring

- Complimentary work up

CT/MRI(becomes essential in higher clinical stage)

PET CT

Bone Scan(essential if bone mets suspected)

Molecular testing

TNM Staging System For Prostate Cancer

Primary Tumor (T)

Clinical

TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
T1	Clinically inapparent tumor neither palpable nor visible by imaging
T1a	Tumor incidental histologic finding in 5% or less of tissue resected
T1b	Tumor incidental histologic finding in more than 5% of tissue resected
T1c	Tumor identified by needle biopsy (e.g., because of elevated PSA)
T2	Tumor confined within prostate*
T2a	Tumor involves one-half of one lobe or less
T2b	Tumor involves more than one-half of one lobe but not both lobes
T2c	Tumor involves both lobes
T3	Tumor extends through the prostatic capsule**
T3a	Extracapsular extension (unilateral or bilateral)
T3b	Tumor invades the seminal vesicle(s)
T4	Tumor is fixed or invades adjacent structures other than seminal vesicles: bladder, levator muscles, and/or pelvic wall.

*Note: Tumor found in one or both lobes by needle biopsy, but not palpable or reliably visible by imaging, is classified as T1c.

**Note: Invasion into the prostatic apex or into (but not beyond) the prostatic capsule is not classified as T3, but as T2.

Pathologic(pT)*

pT2	Organ confined
pT2a	Unilateral, involving one-half of one side or less
pT2b	Unilateral, involving more than one-half of one side but not both sides
pT2c	Bilateral disease
pT3	Extraprostatic extension
pT3a	Extraprostatic extension or microscopic invasion of the bladder neck**
pT3b	Seminal vesicle invasion
pT4	Invasion of bladder, rectum

*Note: There is no pathologic T1 classification.

**Note: Positive surgical margin should be indicated by an R1 descriptor (residual microscopic disease).

Regional Lymph Nodes (N)***Clinical***

NX	Regional lymph nodes were not assessed
N0	No regional lymph node metastasis
N1	Metastasis in regional lymph node(s)

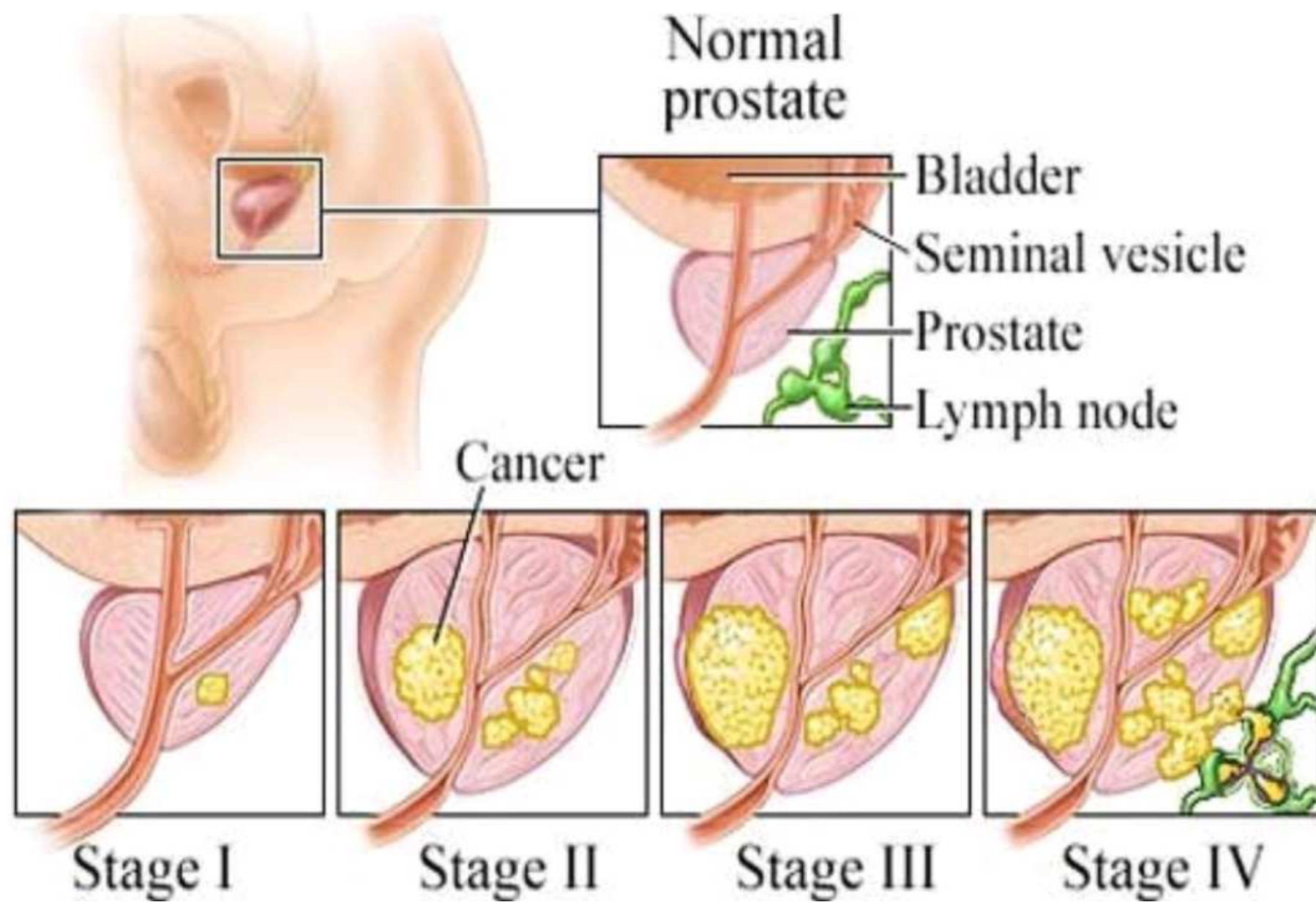
Pathologic

PNX	Regional nodes not sampled
pN0	No positive regional nodes
pN1	Metastases in regional nodes(s)

Distant Metastasis (M)*

M0	No distant metastasis
M1	Distant metastasis
M1a	Non-regional lymph node(s)
M1b	Bone(s)
M1c	Other site(s) with or without bone disease

*Note: When more than one site of metastasis is present, the most advanced category is used. pM1c is most advanced.



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
	T2c	N0	M0	Any PSA	Any Gleason
	T1-2	N0	M0	PSA ≥20	Any Gleason
IIB	T1-2	N0	M0	Any PSA	Gleason ≥8
	T3a-b	N0	M0	Any PSA	Any Gleason
III	T4	N0	M0	Any PSA	Any Gleason
IV	Any T	N1	M0	Any PSA	Any Gleason
	Any T	Any N	M1	Any PSA	Any Gleason

*Note: When either PSA or Gleason is not available, grouping should be determined by T stage and/or either PSA or Gleason as available.

MODIFICATIONS IN AJCC 8TH EDITION

Prostate

T4N0M0 is now stage III

WHO Grade should be used to record tumour grade

Stage

Stage I	T1, T2a	N0	M0
Stage II	T2b-2c	N0 M0	
Stage III	T3,T4	N0 M0	
Stage IV	Any T	N1 M0	
	Any T	Any N	M1

Whitmore-Jewett staging

- **A: Tumor is present, but not detectable clinically; found incidentally**
 - A1: tissue resembles normal cells; found in a few chips from one lobe
 - A2: more extensive involvement
- **B: Tumor can be felt on physical examination but has not spread outside the prostatic capsule**
 - BIN: the tumor can be felt, it does not occupy a whole lobe, and is surrounded by normal tissue
 - B1: the tumor can be felt and it does not occupy a whole lobe
 - B2: the tumor can be felt and it occupies a whole lobe or both lobes
- **C: Tumor has extended through the capsule**
 - C1: the tumor has extended through the capsule but does not involve the seminal vesicles
 - C2: the tumor involves the seminal vesicles
- **D: Tumor has spread to other organs**

Gleason Grade

- **Histological grading of prostate cancer 1-5**

However

- **Prostate cancer not uniform**
- **To aid calculations of prognosis, the sum of the 2 *most prevalent islands* of prostate cancer are used**
- **Therefore, gleason grade ranges 2-10**

Gleason X

Gleason score cannot be processed

Gleason ≤ 6

Well differentiated (slight anaplasia)

Gleason 7

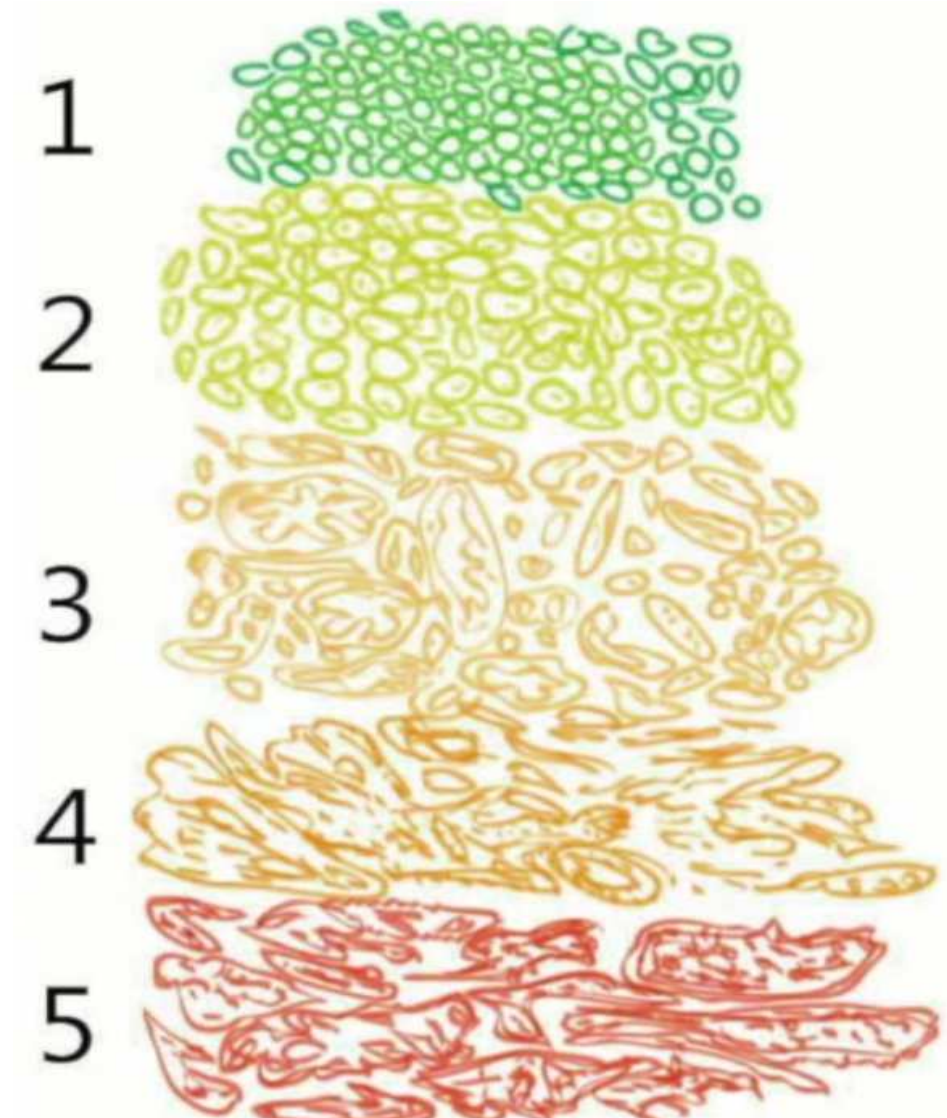
Moderately differentiated (moderate anaplasia)

Gleason 8-10

Poorly differentiated/undifferentiated
(marked anaplasia)

GLEASON PATTERN

1. SMALL UNIFORM GLANDS
2. MORE STROMA BETWEEN GLANDS
3. DISTINCTLY INFILTRATIVE MARGINS
4. IRREGULAR MASSES OF NEOPLASTIC GLANDS
5. ONLY OCCASIONAL GLAND FORMATION



GLEASON GRADE GROUP DEFINITIONS

Gleason grade group 1: Gleason score ≤ 6

Only individual discrete well-formed glands

Gleason grade group 2: Gleason score $3+4=7$

Predominantly well-formed glands with lesser component of poorly-formed/fused/cribriform glands

Gleason grade group 3: Gleason score $4+3=7$

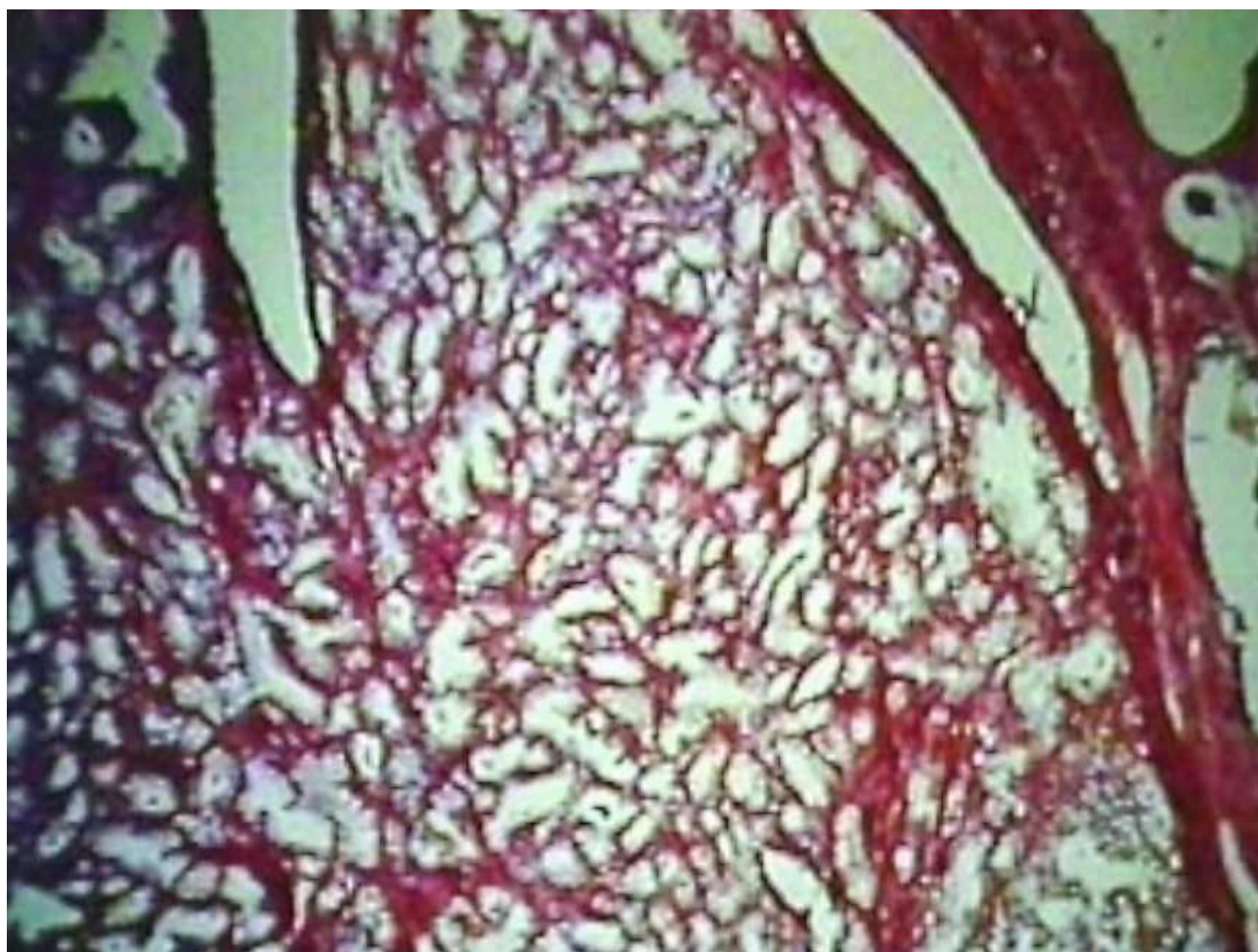
Predominantly poorly-formed/fused/cribriform glands with lesser component of well-formed glands*

Gleason grade group 4: Gleason score $4+4=8$; $3+5=8$; $5+3=8$

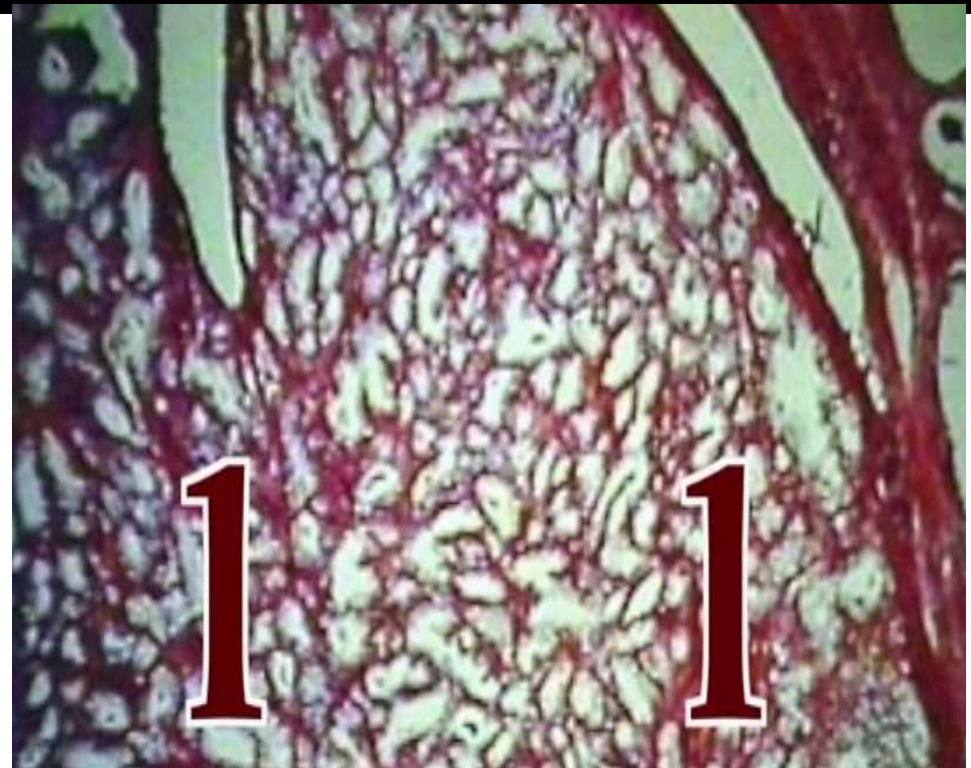
- Only poorly-formed/fused/cribriform glands or
- Predominantly well-formed glands and lesser component lacking glands¹ or
- Predominantly lacking glands and lesser component of well-formed glands¹

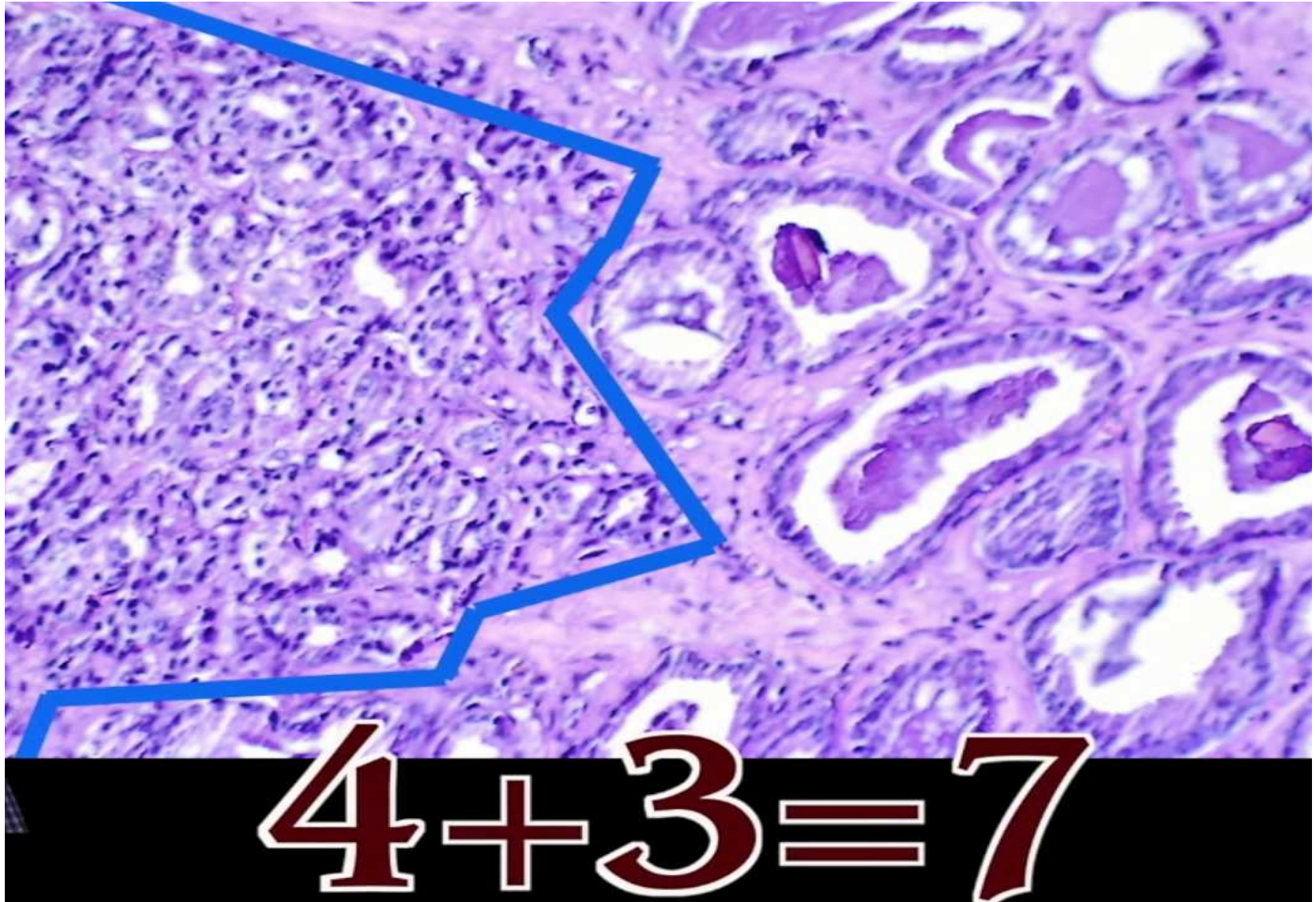
Gleason grade group 5: Gleason score 9-10

Lack gland formation (or with necrosis) with or without poorly formed/fused/cribriform glands²



**Gleason score =
Gleason grade +
Gleason grade**





RISK STRATIFICATION

D'Amico Risk Stratification

- First one to give concept
- Predicts about chances of recurrence after treatment
- Low risk- T1-T2a and GS ≤ 6 and PSA ≤ 10
- Intermediate risk- T2b and/or GS =7 and/or PSA >10–20
- High risk- $\geq T2c$ or PSA >20 or GS 8–10
- Does not take into account other parameters

PSA Level	Intermediate Risk of Recurrence 25-50% failure at 5 years post treatment.
<input type="radio"/> <10 ng/mL +1	
<input checked="" type="radio"/> 10-20 ng/mL +2	
<input type="radio"/> >20 ng/mL +3	
Gleason Score	
<input type="radio"/> <6 +1	
<input checked="" type="radio"/> 7 +2	
<input type="radio"/> ≥ 8 +3	
Clinical Stage	
<input checked="" type="radio"/> T1-T2a +1	
<input type="radio"/> T2b +2	
<input type="radio"/> $\geq T2c$ +3	

PARTIN TABLES

PSA: >10 ▼

Gleason Score: 4+3 ▼

Clinical Stage: T2a ▼

Find Results

OC: organ confined (22)	EPE: extraprostatic extension (22)	SV+: seminal vesicle involvement (10)	LN+: lymph node involvement (2)
25(20-31)	44(36-53)	20(12-29)	10(4-18)

Numbers represent percentage of patients with the specified PSA, clinical stage, and biopsy Gleason score who would have organ-confined disease (OC), extra-prostatic extension (EPE), cancer invading into the seminal vesicles (SV+), or cancer invading regional lymph nodes (LN+). Numbers in parentheses represent 95% confidence intervals.

- Uses Gleason score, serum PSA, and clinical stage – to predict whether the tumor will be confined to the prostate

The UCSF-CAPRA score

- UCSF developed the Cancer of the Prostate Risk Assessment score
- 0-2 low risk
3-5 intermediate risk
6-10 high risk

Variable	Specific patient's level	Points to be assigned
Age at diagnosis	Under 50	0
	50 or older	1
PSA at diagnosis (ng/ml)	less than or equal to 6	0
	between 6.1 and 10	1
	between 10.1 and 20	2
	between 20.1 and 30	3
	more than 30	4
Gleason score of the biopsy (primary/secondary)	no pattern 4 or 5	0
	secondary pattern 4 or 5	1
	primary pattern 4 or 5	3
Clinical stage (T-stage)	T1 or T2	0
	T3a	1
Percent of biopsy cores involved with cancer (positive for cancer)	less than 34 percent	0
	34 percent or more	1

Your CAPRA Score is 5 ✕

This indicates intermediate risk prostate cancer

Among 3,000 men with CAPRA 3-5 who underwent radical prostatectomy at UCSF since 2000, the likelihood of:

- metastasis or dying from prostate cancer within 5 years was 1%
- detectable PSA or needing a second cancer treatment within 5 years was 18%

Calculate Reset

NCCN Risk categories

5.1 Very low risk

Includes men with a T1c tumor, PSA level less than 10 ng/mL, PSA density less than 0.15 ng/mL/g, Gleason score 6 or less, and cancer in fewer than three biopsy cores and in half or less of any core.

5.2 Low risk

Includes men with a T1a, T1b, T1c, or T2a tumor, PSA level less than 10 ng/mL, and Gleason score 6 or less.

5.3 Intermediate risk

Includes men with a T2b or T2c tumor, PSA level between 10 and 20 ng/mL, or Gleason score 7. If you meet two or all three conditions, your risk is high.

5.4 High risk

Includes men with a T3a tumor, a PSA level greater than 20 ng/mL, or a Gleason score between 8 and 10. If you meet two or all three conditions, your risk is very high.

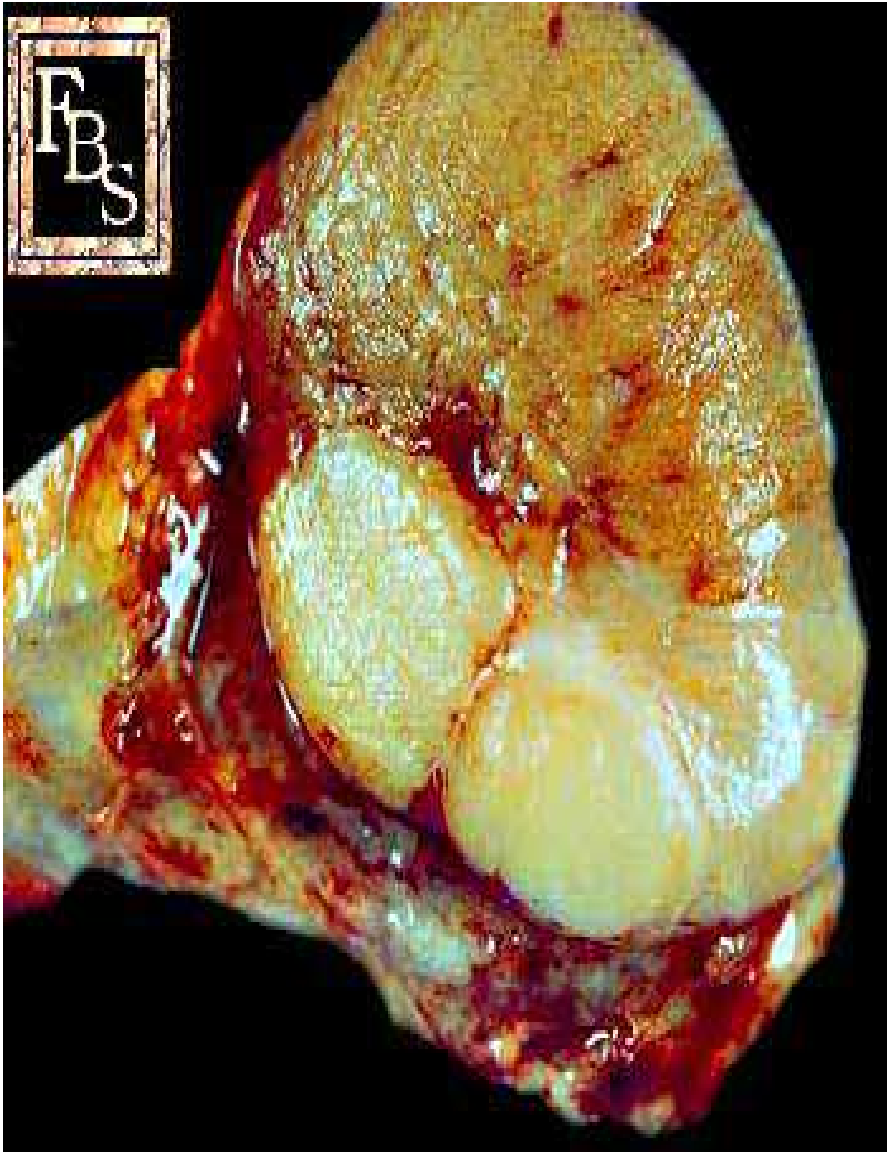
5.5 Very high risk

Includes men with a T3b or T4 tumor, primary Gleason grade 5, or more than 4 biopsy cores with Gleason scores between 8 and 10.

5.6 Metastatic disease

Includes men with N1 or M1 disease.

TESTICULAR CANCER



**American Joint Committee on Cancer (AJCC)
TNM Staging System for Testis Cancer (7th ed., 2010)**

Primary Tumor (T)*

The extent of primary tumor is usually classified after radical orchiectomy, and for this reason, a pathologic stage is assigned.

pTX	Primary tumor cannot be assessed
pT0	No evidence of primary tumor (e.g. histologic scar in testis)
pTis	Intratubular germ cell neoplasia (carcinoma in situ)
pT1	Tumor limited to the testis and epididymis without vascular/lymphatic invasion; tumor may invade into the tunica albuginea but not the tunica vaginalis
pT2	Tumor limited to the testis and epididymis with vascular/lymphatic invasion, or tumor extending through the tunica albuginea with involvement of the tunica vaginalis
pT3	Tumor invades the spermatic cord with or without vascular/lymphatic invasion
pT4	Tumor invades the scrotum with or without vascular/lymphatic invasion

Regional Lymph Nodes (N)

Clinical

- NX** Regional lymph nodes cannot be assessed
- N0** No regional lymph node metastasis
- N1** Metastasis with a lymph node mass 2 cm or less in greatest dimension; or multiple lymph nodes, none more than 2 cm in greatest dimension
- N2** Metastasis with a lymph node mass, more than 2 cm but not more than 5 cm in greatest dimension; or multiple lymph nodes, any one mass greater than 2 cm but not more than 5 cm in greatest dimension
- N3** Metastasis with a lymph node mass more than 5 cm in greatest dimension

Pathologic (pN)

- pNX** Regional lymph nodes cannot be assessed
- pN0** No regional lymph node metastasis
- pN1** Metastasis with a lymph node mass 2 cm or less in greatest dimension and less than or equal to five nodes positive, none more than 2 cm in greatest dimension
- pN2** Metastasis with a lymph node mass more than 2 cm but not more than 5 cm in greatest dimension; or more than five nodes positive, none more than 5 cm; or evidence of extranodal extension of tumor
- pN3** Metastasis with a lymph node mass more than 5 cm in greatest dimension

), Distant Metastasis (M)

- M0** No distant metastasis
- M1** Distant metastasis
 - M1a** Nonregional nodal or pulmonary metastasis
 - M1b** Distant metastasis other than to nonregional lymph nodes and lung



Serum Tumor Markers (S)

SX Marker studies not available or not performed

SO Marker study levels within normal limits

S1 LDH $< 1.5 \times N^*$ and
hCG (mlu/mL) $< 5,000$ and
AFP (ng/ml) $< 1,000$

S2 LDH $1.5-10 \times N$ or
hCG (mlu/mL) $5,000-50,000$ or
AFP (ng/ml) $1,000-10,000$

S3 LDH $> 10 \times N$ or
hCG (mlu/mL) $> 50,000$ or
AFP (ng/ml) $> 10,000$

***N indicates the upper limit of normal for the LDH assay.**

**American Joint Committee on Cancer (AJCC)
TNM Staging System for Testis Cancer (7th ed., 2010)**

ANATOMIC STAGE/PROGNOSTIC GROUPS

Group	T	N	M	S (Serum Tumor Markers)
Stage 0	pTis	N0	M0	S0
Stage I	pT1-4	N0	M0	SX
Stage IA	pT1	N0	M0	S0
Stage IB	pT2	N0	M0	S0
	PT3	N0	M0	S0
	PT4	N0	M0	S0
Stage IS	Any pT/TX	N0	M0	S1-3
Stage II	Any pT/Tx	N1-3	M0	SX
Stage IIA	Any pT/TX	N1	M0	S0
	Any pT/TX	N1	M0	S1
Stage IIB	Any pT/TX	N2	M0	S0
	Any pT/TX	N2	M0	S1
Stage IIC	Any pT/TX	N3	M0	S0
	Any pT/TX	N3	M0	S1
Stage III	Any pT/TX	Any N	M1	SX
Stage IIIA	Any pT/TX	Any N	M1a	S0
	Any pT/TX	Any N	M1a	S1
Stage IIIB	Any pT/TX	N1-3	M0	S2
	Any pT/TX	Any N	M1a	S2
Stage IIIC	Any pT/TX	N1-3	M0	S3
	Any pT/TX	Any N	M1a	S3
	Any pT/Tx	Any N	M1b	Any S

Staging and Classification

Test	Recommendation	GR
Serum tumour markers	Alpha-fetoprotein hCG LDH	A
Abdominopelvic CT	All patients	A
Chest CT	All patients	A
Testis ultrasound (bilateral)	All patients	A
Bone scan or MRI columna	In case of symptoms	
Brain scan (CT/MRI)	In case of symptoms and patients with metastatic disease with multiple lung metastases and/or high beta-hCG values.	
Further investigations		
Fertility investigations: Total testosterone LH FSH Semen analysis		B
Sperm banking	Should be offered	A

- The mean serum half-life of **AFP 5-7 days** and **hCG is 2-3days**

Staging and Classification

Good-prognosis group	
<i>Non-seminoma (56% of cases)</i> 5-year PFS 89% 5-year survival 92%	<i>All of the following criteria:</i> <ul style="list-style-type: none">• Testis/retroperitoneal primary• No non-pulmonary visceral metastases• AFP < 1,000 ng/mL• hCG < 5,000 IU/L (1,000 ng/mL)• LDH < 1.5 x ULN
<i>Seminoma (90% of cases)</i> 5-year PFS 82% 5-year survival 86%	<i>All of the following criteria:</i> <ul style="list-style-type: none">• Any primary site• No non-pulmonary visceral metastases• Normal AFP• Any hCG• Any LDH

Staging and Classification

Intermediate prognosis group	
<i>Non-seminoma (28% of cases)</i> 5-year PFS 75% 5-year survival 80%	<ul style="list-style-type: none"> • Testis/retroperitoneal primary • No non-pulmonary visceral metastases • AFP 1,000 - 10,000 ng/mL or • hCG 5,000 - 50,000 IU/L or • LDH 1.5 - 10 x ULN
<i>Seminoma (10% of cases)</i> 5-year PFS 67% 5-year survival 72%	<i>All of the following criteria:</i> <ul style="list-style-type: none"> • Any primary site • Non-pulmonary visceral metastases • Normal AFP • Any hCG • Any LDH
Poor prognosis group	
<i>Non-seminoma (16% of cases)</i> 5-year PFS 41% 5-year survival 48%	<i>Any of the following criteria:</i> <ul style="list-style-type: none"> • Mediastinal primary • Non-pulmonary visceral metastases • AFP > 10,000 ng/mL or • hCG > 50,000 IU/L (10,000 ng/mL) or • LDH > 10 x ULN
<i>Seminoma</i>	No patients classified as poor prognosis

	Seminoma		Non-seminoma		
	good	intermediate	Good	Intermediate	Poor
5 yr PFS	82%	67%	89%	75%	41%
5 yr survival	86%	72%	92%	80%	48%

PENILE CANCER

Natural History

COMMON SITE OF PRIMARY TUMOR

- within the preputial area
- in the glans
- coronal sulcus
- prepuce
- Lesions arising in the skin of the shaft are rare
- slow loco regional progression

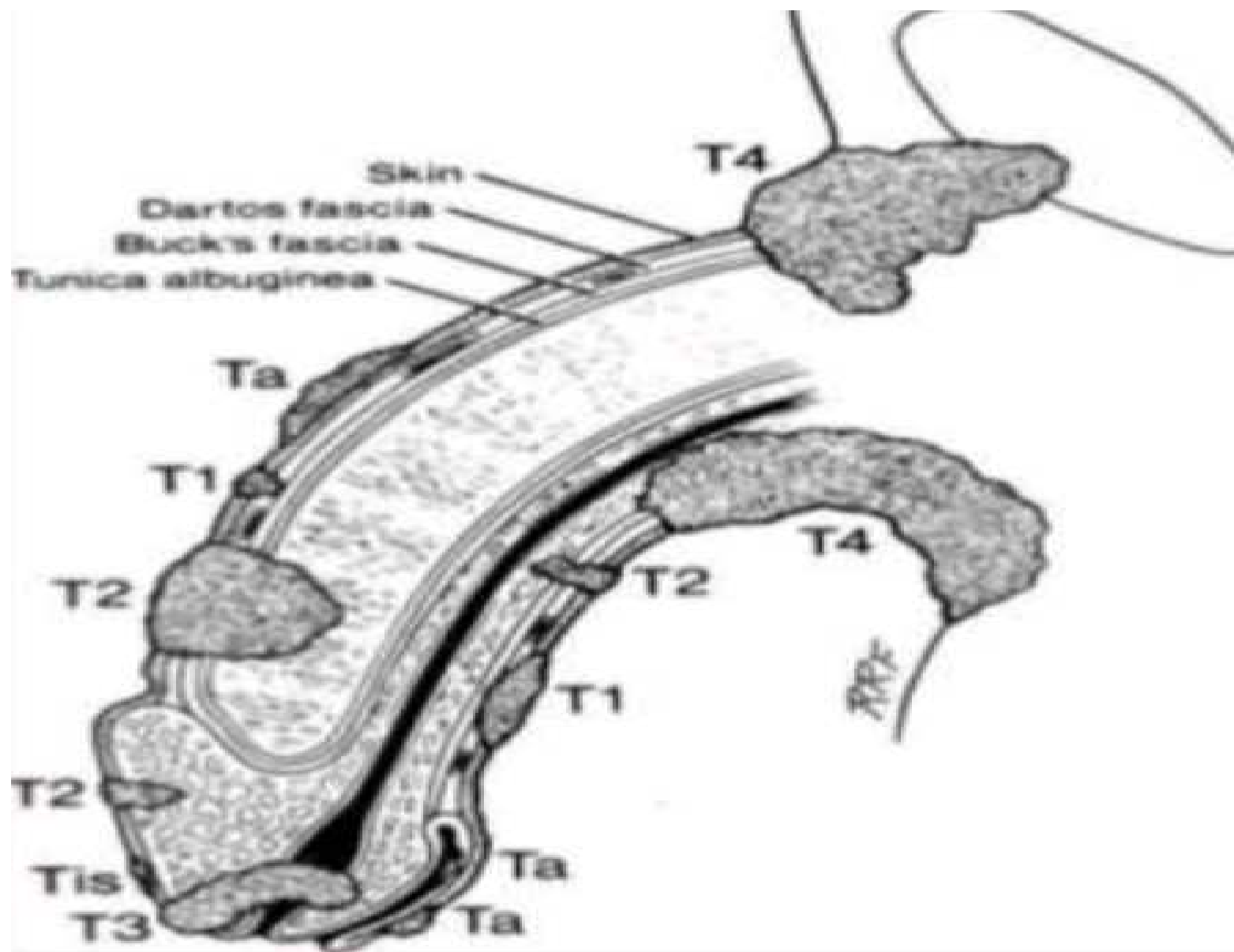
American Joint Committee on Cancer (AJCC)

TNM Staging System for Penile Cancer (7th ed., 2010)

Primary Tumor (T)

- TX** Primary tumor cannot be assessed
- T0** No evidence of primary tumor
- Ta** Noninvasive verrucous carcinoma*
- Tis** Carcinoma in situ
- T1a** Tumor invades subepithelial connective tissue without lymph vascular invasion and is not poorly differentiated (i.e., grade 3-4)
- T1b** Tumor invades subepithelial connective tissue with lymph vascular invasion or is poorly differentiated
- T2** Tumor invades corpus spongiosum or cavernosum
- T3** Tumor invades urethra
- T4** Tumor invades other adjacent structures

***Note:** Broad pushing penetration (invasion) is permitted; destructive invasion is against the diagnosis



Regional Lymph Nodes (N)

Clinical Stage Definition*

- cNX** Regional lymph nodes cannot be assessed
- cN0** No lymph node metastasis
- cN1** Palpable mobile unilateral inguinal lymph node
- cN2** Palpable mobile multiple or bilateral inguinal lymph nodes
- cN3** Palpable fixed inguinal nodal mass or pelvic lymphadenopathy unilateral or bilateral

Pathologic Stage Definition*

- pNX** Regional lymph nodes cannot be assessed
- pN0** No regional lymph node metastasis
- pN1** Metastasis in a single inguinal node
- pN2** Metastasis in multiple or bilateral inguinal lymph nodes
- pN3** Extranodal extension of lymph node metastasis or pelvic lymph node(s) unilateral or bilateral

*Note: Pathologic stage definition based on biopsy or surgical excision.

Distant Metastasis (M)

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

ANATOMIC STAGE/PROGNOSTIC GROUPS

Stage 0	Tis	N0	M0
	Ta	N0	M0
Stage I	T1a	N0	M0
Stage II	T1b	N0	M0
	T2	N0	M0
	T3	N0	M0
Stage IIIA	T1-3	N1	M0
Stage IIIB	T1-3	N2	M0
Stage IV	T4	Any N	M0
	Any T	N3	M0
	Any T	Any N	M1

MODIFICATIONS IN AJCC 8TH EDITION

Penis

Changes in T category and pathological N category

THANKS

*STUDENTS ARE THE REAL
BEARERS*

TORCH

