



QUALITY PROGRAMS
of the AMERICAN COLLEGE
OF SURGEONS



AJCC

American Joint Committee on Cancer

Validating science. Improving patient care.

Staging of Testicular Cancer

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AMERICAN COLLEGE OF SURGEONS

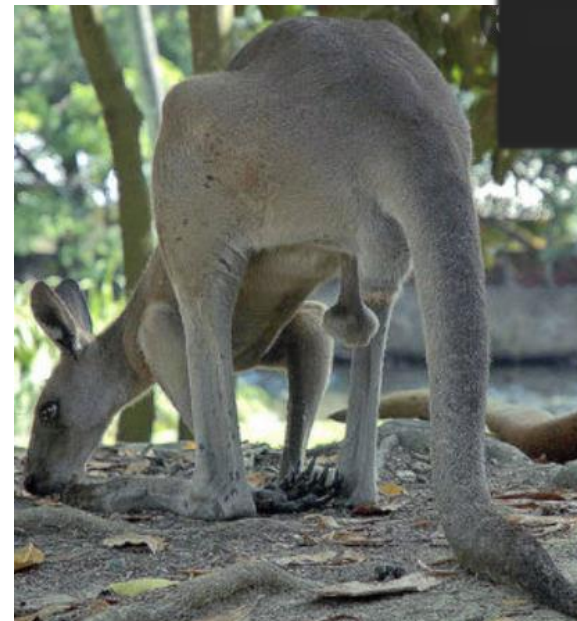
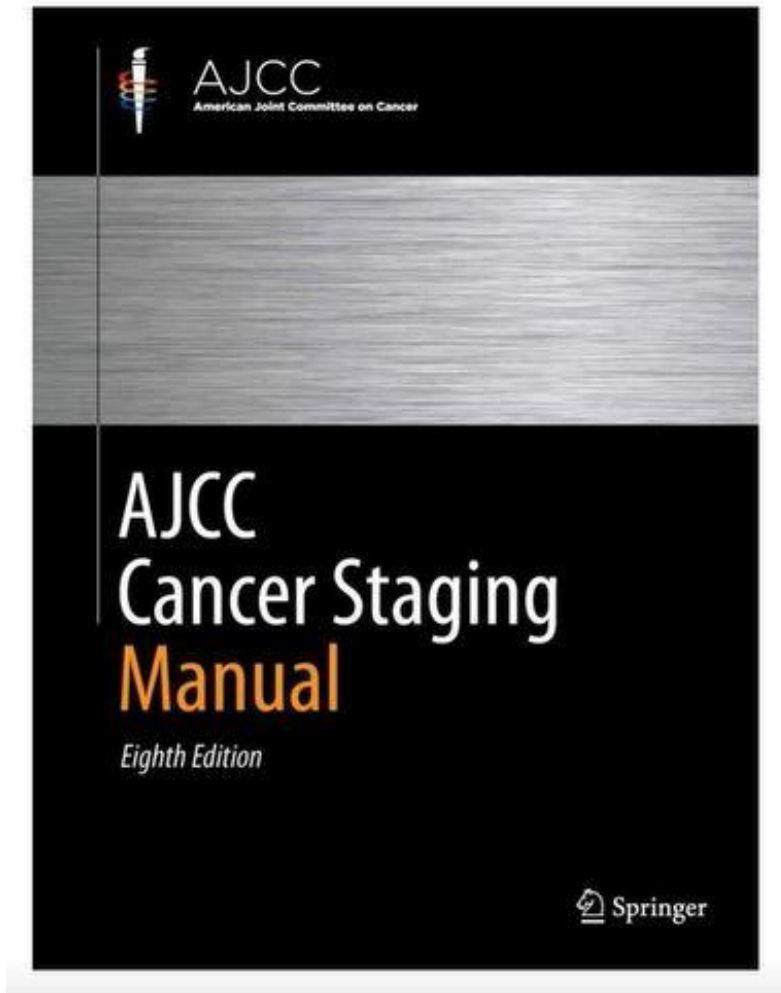
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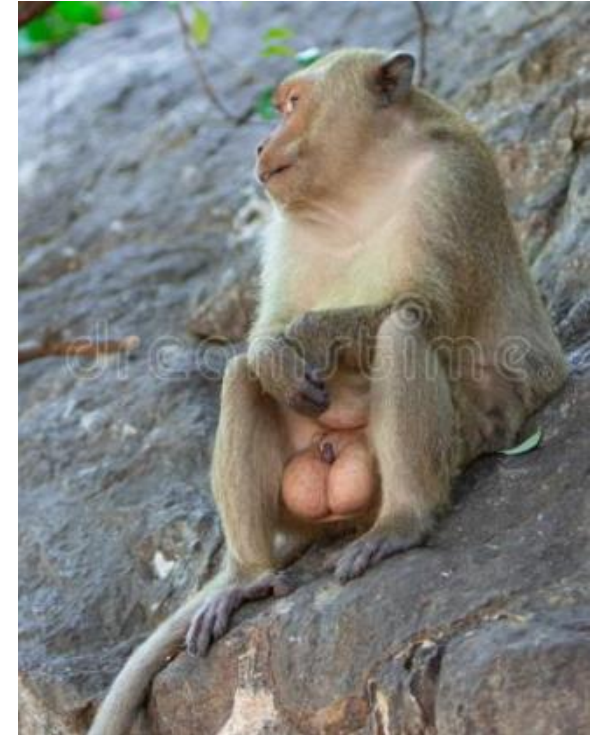


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the American Cancer Society.

Stage of Testicular Cancers



- More than 99% arise from germ cells
- <1% of all cancers in males
- Early age at presentation common
- Undescended (cryptorchid) testes predisposed to cancer
- Germ cell neoplasia *in situ* is a precursor

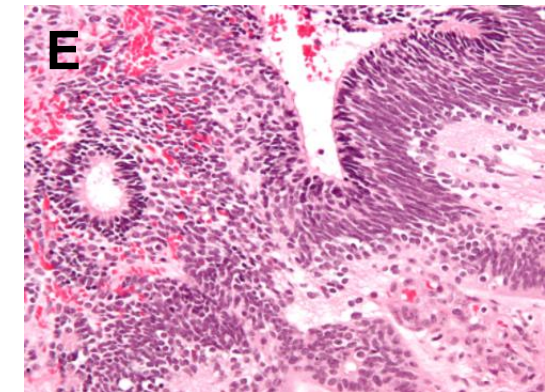
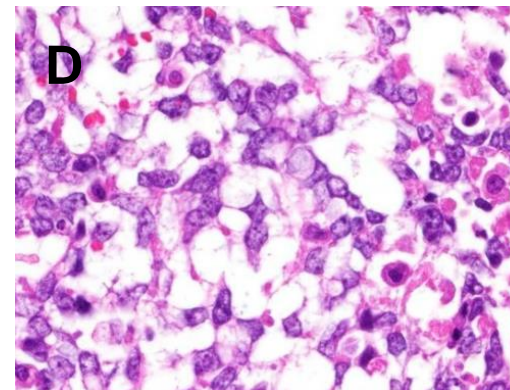
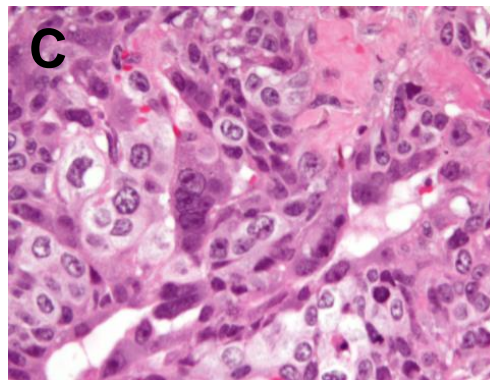
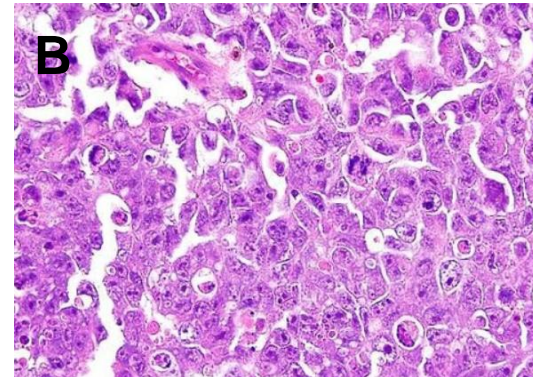
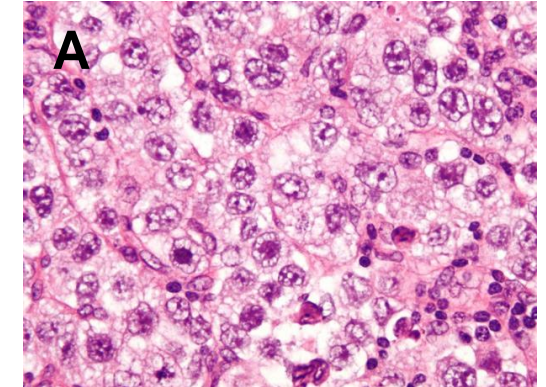


- Staging applies to:
 - Germ cells tumors
 - Leydig cell tumors—malignant only
 - Sertoli cell tumors—malignant only
 - Sex cord-stromal tumors
- Not included:
 - Spermatocytic tumors
 - paratesticular neoplasms
 - hematolymphoid tumors (staged elsewhere)
 - Non-malignant stromal tumors
 - prepubertal germ cell tumors



Histologic Subtypes

- Seminoma (A)
- Non-seminoma (NSGCT)
 - Embryonal cell (B)
 - Teratoma (C)
 - Choriocarcinoma (D)
 - Yolk sac tumor (E)
 - Seminoma (A)

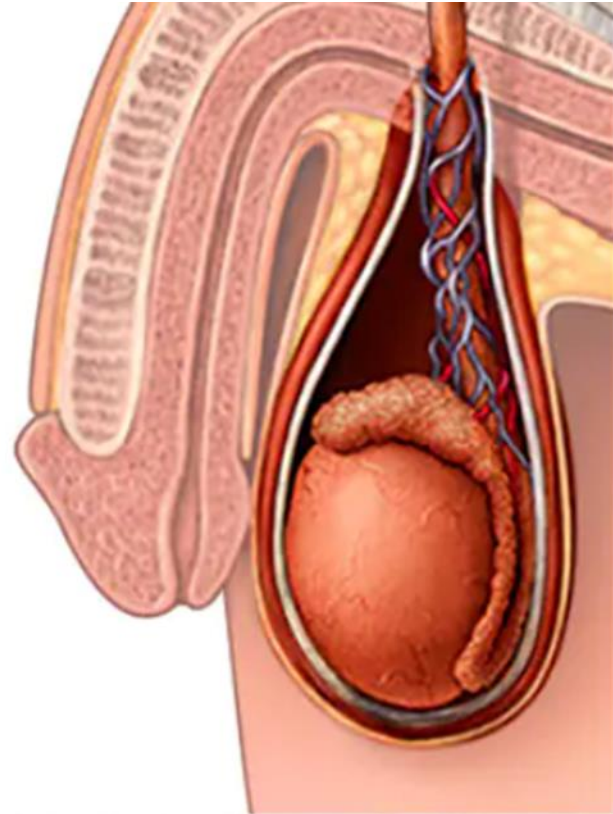
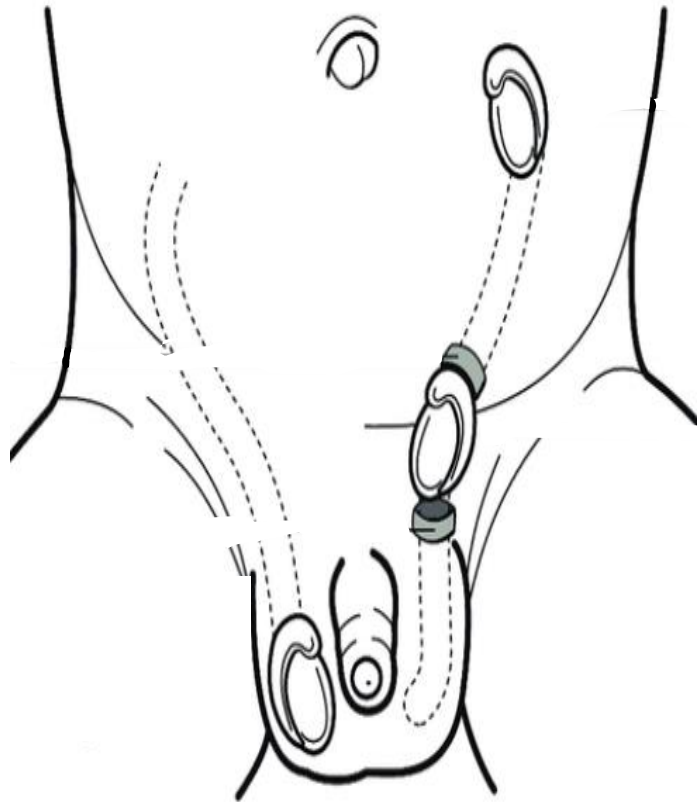


Features specific to testis cancer staging

- Addition of serum markers as a separate staging category (TNMS)
- No Stage IV disease (IIIC is the highest)
- Tumor grade not included



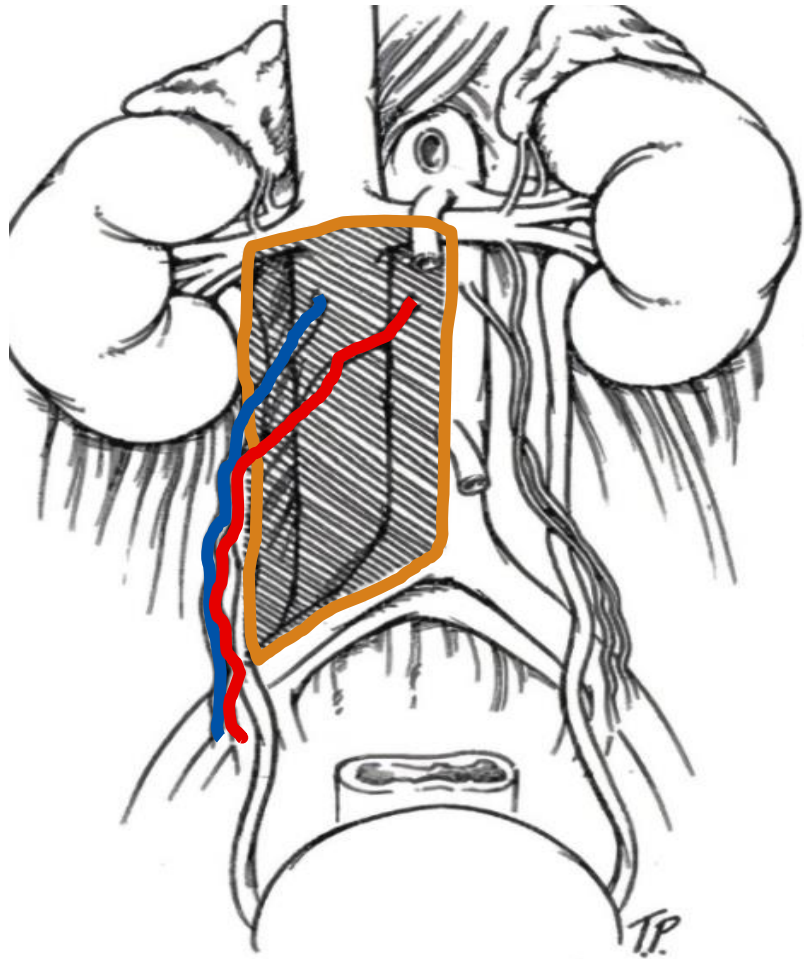
Testicular Development and Migration



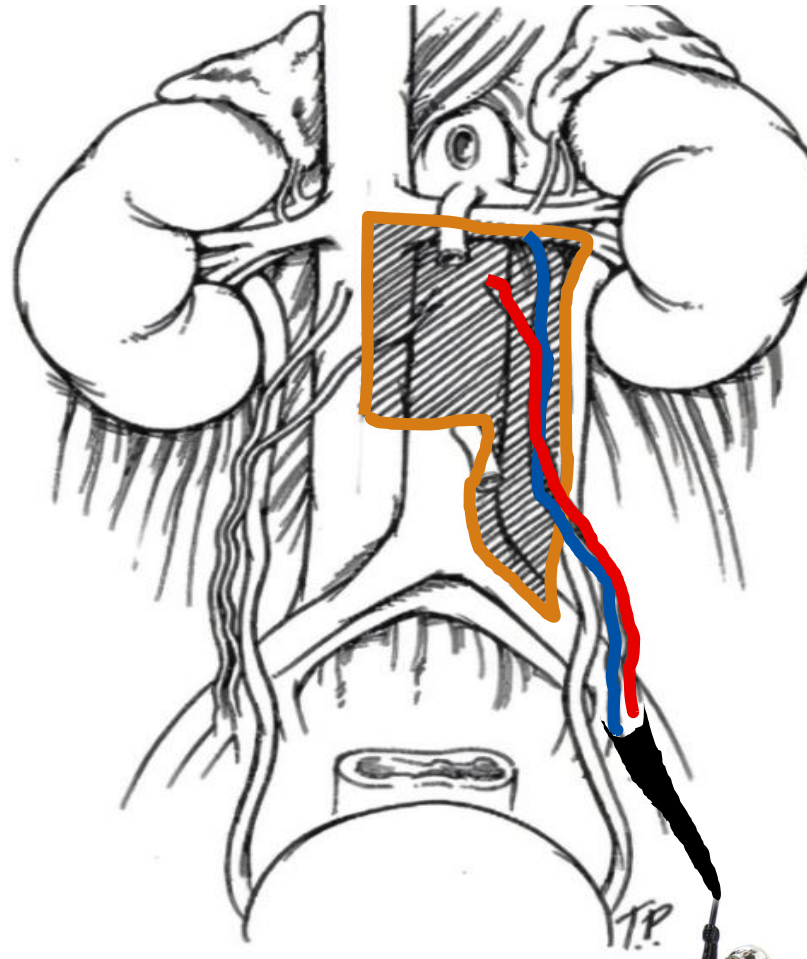
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Testicular Cancer “Landing Zones”



Right

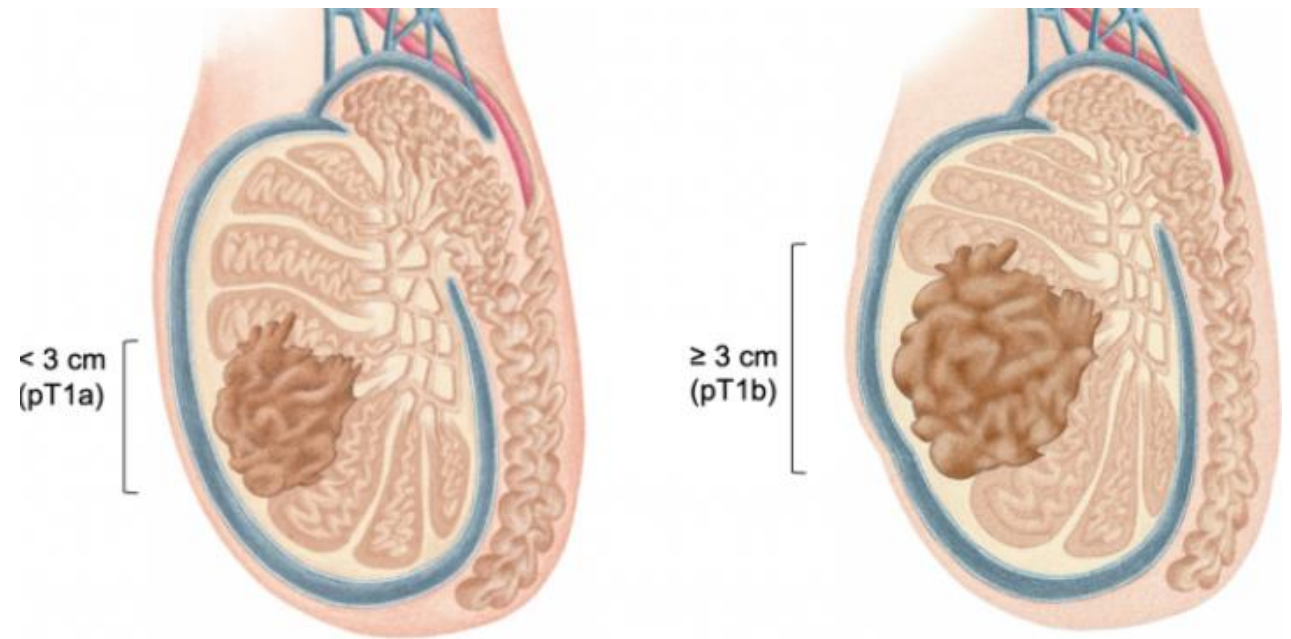


Left



Changes to pT stage 8th Edition

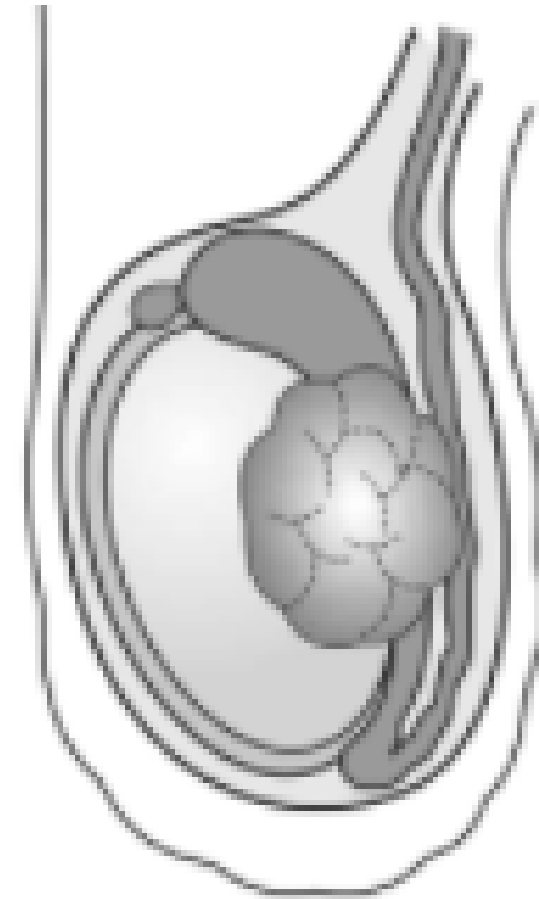
- Tumor size has prognostic significance for Seminoma
- pT1 subdivided into
 - pT1a <3cm
 - pT1b <3cm
- Maximal diameter of largest lesion
- Applicable to pure seminoma only.



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Changes to pT stage 8th Edition

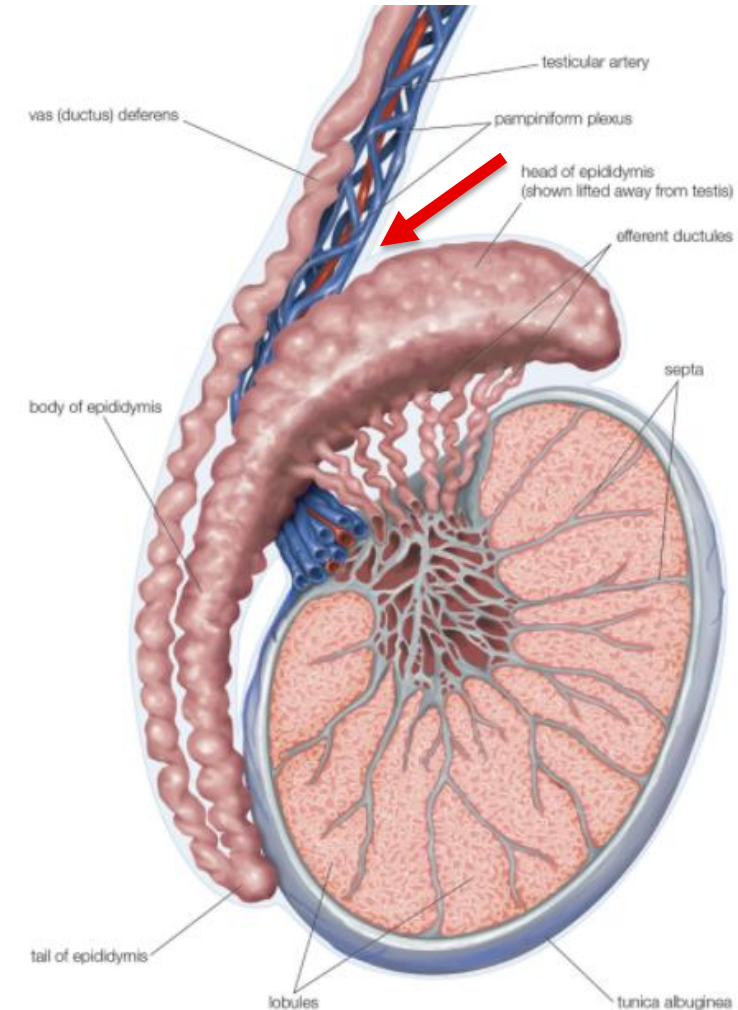
- Invasion into the epididymis has been upstaged to pT2
- Reflects progression beyond the vascular hilum or through the tunica albuginea



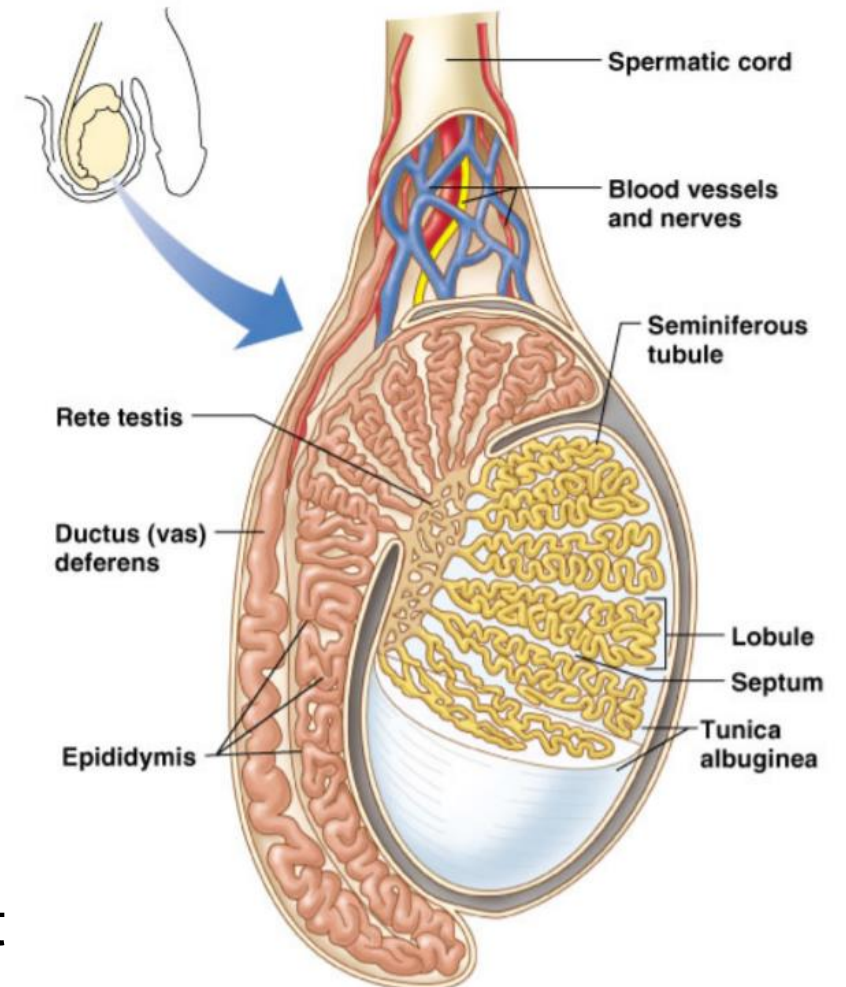
pT2

Changes to pT stage 8th Edition

- Soft tissue invasion of the testicular hilum has specifically addressed as stage pT2
- Prevent confusion with spermatic cord involvement.
- Spermatic cord (pT3) defined as “tumor extending beyond the angle between the epididymis and cord”

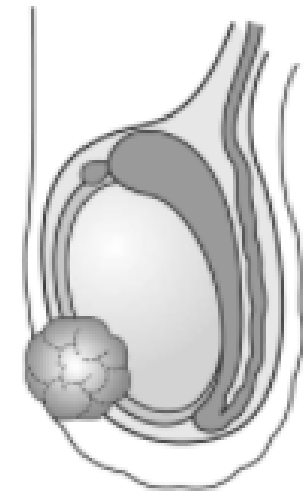
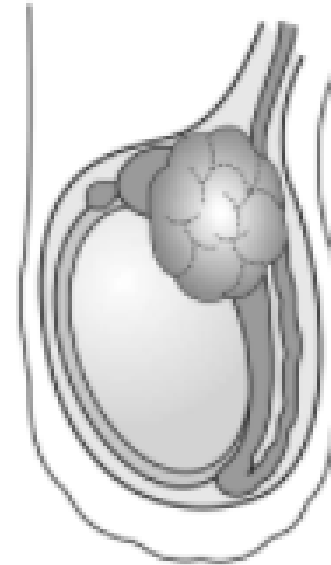


- Determined by pathology, not imaging
- pT1
 - Confined to testis **including Rete Testis**
 - No lymphovascular invasion
- pT2
 - Lymphovascular invasion
 - Invasion tunica albuginea (outer layer)
 - Invasion epididymis
 - Invasion hilar soft tissue
 - Intravascular-only spermatic cord involvement



pT Category

- pT3
 - Invasion of spermatic cord stroma
 - Continuous only
- pT4
 - Invasion of the scrotal wall



- Alpha fetoprotein (AFP)
 - half-life 5-7 days
 - 60% non-seminomas
 - *Never* expressed by pure seminoma
- Beta human chorionic gonadotropin (BHCG)
 - Half-life 36-48 hours
 - 40% non-seminomas
 - 15% seminomas
- Lactate dehydrogenase
 - Non-specific
 - Correlate with tumor burden



Prognosis	Serum Markers	5-year Survival
Good	LDH < 1.5 x normal hCG < 5,000 AFP < 1,000	90% S1
Intermediate	LDH 1.5-10 x normal OR hCG 5,000-50,000 OR AFP 1,000-10,000	75% S2
Poor	LDH > 10 x normal hCG > 50,000 AFP > 10,000	45% S3

- Should be drawn before and after orchiectomy.
- Monitored over time for predicted decline
- Assign S-stage if:
 - do not normalize as expected *or*
 - begin to rise



N Category

pN Category	Criteria
pNx	Not assessed
pN0	No regional lymph node metastasis
pN1	5 or fewer nodes, all less than 2cm
pN2	>5 nodes <i>OR</i> any node >2 but <5cm
pN3	Any node >5cm

M Category

pM Category	Criteria
pM0	No distant metastases
pM1a	Non-regional lymph nodes or pulmonary metastases
pM1b	Non-pulmonary visceral metastases

AJCC Prognostic Stage Groups

- **Stage I**
 - No lymph nodes or mets
- **Stage IS**
 - Elevated/rising markers in the absence of clinical disease (any S)
- **Stage II**
 - Any N with S0-1
- **Stage III**
 - Any M *OR*
 - Any S > 1

Stage Grouping				
Stage	T	N	M	S
Stage I	pT1-4	N0	M0	SX
IA	pT1	N0	M0	S0
IB	pT2	N0	M0	S0
	pT3	N0	M0	S0
	pT4	N0	M0	S0
IS	Any pT	N0	M0	S1-3
Stage II	Any pT	N1-3	M0	SX
IIA	Any pT	N1	M0	S0-1
IIB	Any pT	N2	M0	S0-1
IIC	Any pT	N3	M0	S0-1
Stage III	Any pT	Any N	M1	SX
IIIA	Any pT	Any N	M1a	S0-1
IIIB	Any pT	N1-3	M0	S2
	Any pT	Any N	M1a	S2
IIIC	Any pT	N1-3	M0	S3
	Any pT	Any N	M1a	S3
	Any pT	Any N	M1b	Any S

- 24 y/o male, scrotal mass
- AFP 146, hCG 15, LDH < 1.5 x ULN
- CT chest and abdomen normal
- Orchiectomy
 - 3.5 cm tumor confined within tunica albuginea, involving rete testis
 - Lymphovascular invasion seen
 - Histology pure seminoma
- Markers 5 weeks later: AFP 5, hCG 1, LDH normal

Case 1

Stage Grouping				
Stage	T	N	M	S
Stage I	pT1-4	N0	M0	SX
IA	pT1	N0	M0	S0
IB	pT2	N0	M0	S0
	pT3	N0	M0	S0
	pT4	N0	M0	S0
IS	Any pT	N0	M0	S1-3
Stage II	Any pT	N1-3	M0	SX
IIA	Any pT	N1	M0	S0-1
IIB	Any pT	N2	M0	S0-1
IIC	Any pT	N3	M0	S0-1
Stage III	Any pT	Any N	M1	SX
IIIA	Any pT	Any N	M1a	S0-1
IIIB	Any pT	N1-3	M0	S2
	Any pT	Any N	M1a	S2
IIIC	Any pT	N1-3	M0	S3
	Any pT	Any N	M1a	S3
	Any pT	Any N	M1b	Any S

- pT2
- cN0
- cM0
- S0

Case 2

- 39 y/o male with back and abdominal pain and weight loss
- AFP 277, hCG >200,00, LDH 573
- CT chest and abdomen and pelvis:
- 12 cm interaorto-caval mass
- Bilateral pulmonary nodules



- Right Orchiectomy
 - 0.9 cm tumor, involving hilar soft tissue
 - No lymphovascular invasion
 - Histology 99% teratoma, 1% seminoma)
- Summary:
 - pT2 (hilar soft tissue invasion)
 - cN3 (>5cm regional nodes)
 - cM1a (pulmonary only)
 - S3 (hCG > 50,000)



Scrotal ultrasound right testis

Case 2

Stage Grouping				
Stage	T	N	M	S
Stage I	pT1-4	N0	M0	SX
IA	pT1	N0	M0	S0
IB	pT2	N0	M0	S0
	pT3	N0	M0	S0
	pT4	N0	M0	S0
IS	Any pT	N0	M0	S1-3
Stage II	Any pT	N1-3	M0	SX
IIA	Any pT	N1	M0	S0-1
IIB	Any pT	N2	M0	S0-1
IIC	Any pT	N3	M0	S0-1
Stage III	Any pT	Any N	M1	SX
IIIA	Any pT	Any N	M1a	S0-1
IIIB	Any pT	N1-3	M0	S2
	Any pT	Any N	M1a	S2
IIIC	Any pT	N1-3	M0	S3
	Any pT	Any N	M1a	S3
	Any pT	Any N	M1b	Any S

- pT2
- cN3
- cM1a
- S3

Thank you!

Submit questions to AJCC Forum: <http://cancerbulletin.facs.org/forums/>

or

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