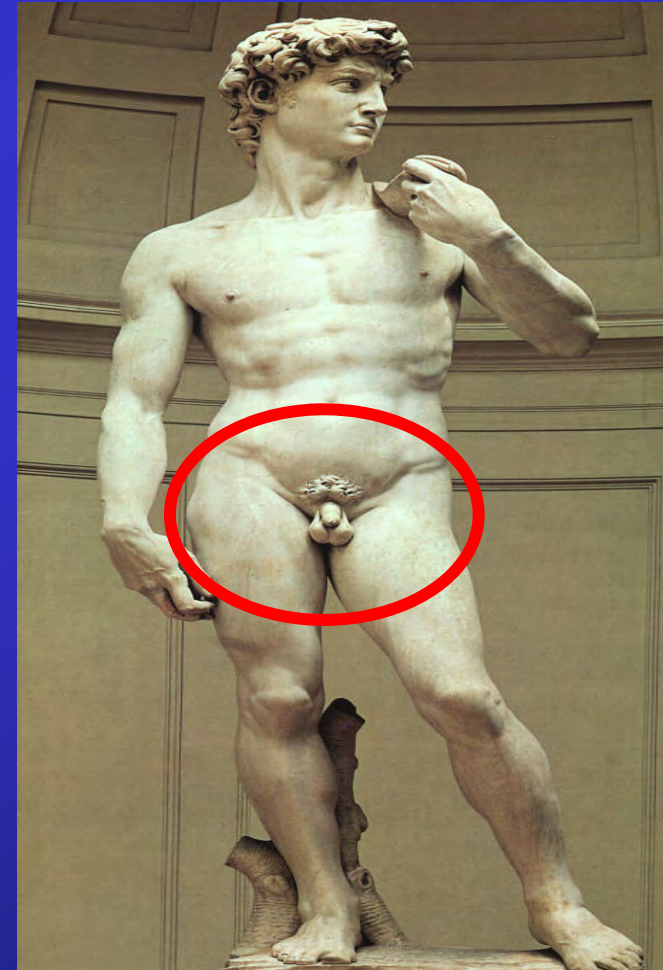


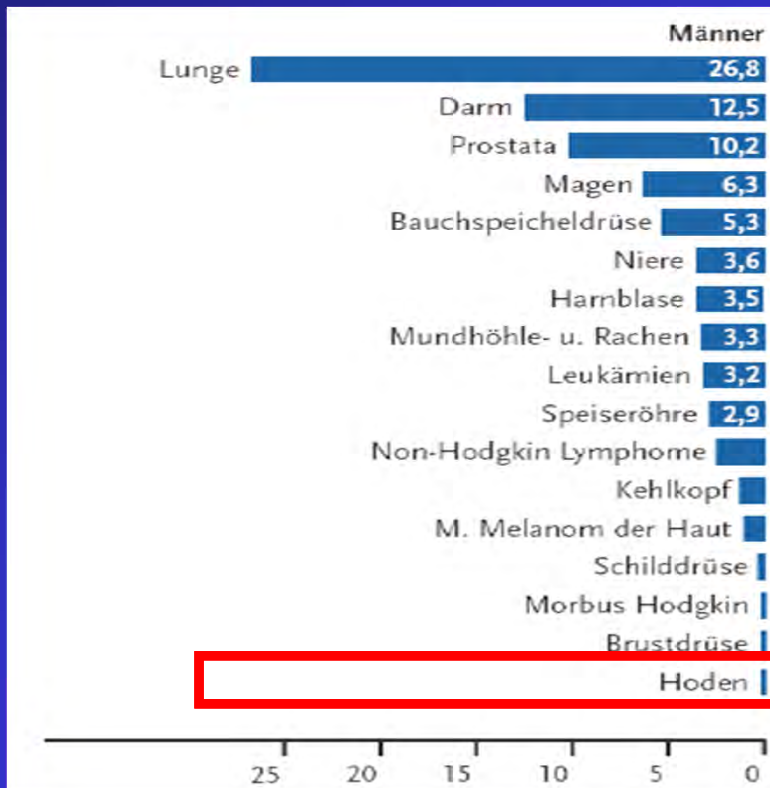
Hodentumor: Diagnose, Klassifikation, Prognose und Therapie

PD Jens Bedke
Universitätsklinik Tübingen
Klinik für Urologie

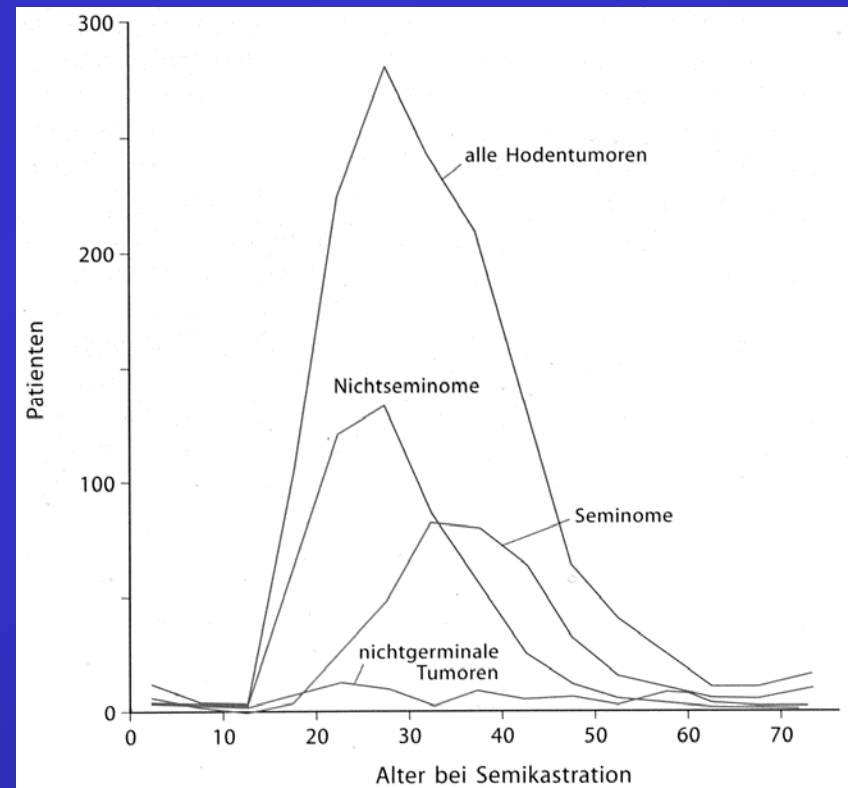


Patientenvorstellung

Gerne hätten wir Ihnen einen Patienten „live“ vorgestellt, aber ...



Krebsinzidenz, Deutschland
2004

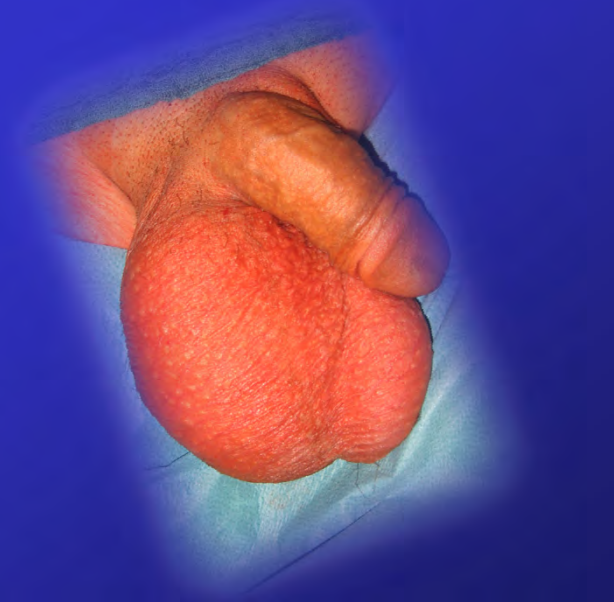


Altersverteilung von Hodentumoren
(Sommerhoff 1982)

Fallpräsentation

- Pat. , männlich, 24 J. alt
- Schmerzlose, harte Schwellung des Hodens seit 2 Mo.
- 1. Vorstellung beim niedergelassenen Urologen

**Ihre
Fragen?**



Anamnese - Risikofaktoren

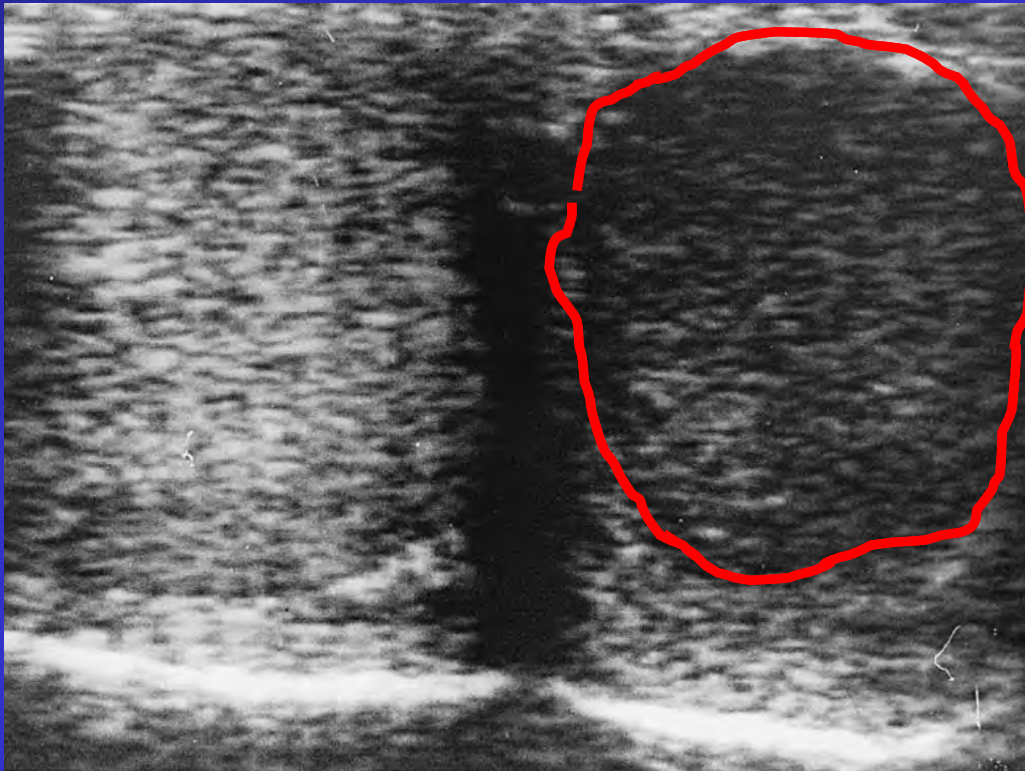
- **Familienanamnese:**
 - Brüder rel. Risiko 10
 - Söhne rR 5.7
 - Väter rR 2-4.3
- **Kontralateraler Hodentumor**
- **Testikuläre intraepitheliale Neoplasie (TIN)**
- **Maldezensus testis (rR >10)**

Differentialdiagnosen?

- Epididymitis: Schmerz, Fieber, Prehn negativ, Hyperperfusion
- Hydrozele: prall-elastisch, Diaphanoskopie positiv
- Indirekte Leistenhernie
- Spermatozele
- Gutartiger Hodentumor
- Trauma mit Hämatom
- Zystische Hodenveränderungen

Diagnostik?

- **Palpation** (Sensitivität 97%)
- **Sonographie** (Sensitivität 98%)



Tumormarker?

Tumormarker

AFP (HWZ 5-7 d): nicht beim reinen Seminom

HCG (HWZ 24-36 h): Nicht-Seminom und selten Seminom

LDH (HWZ 24 h): nicht spezifisch

	LDH (U/l)	hCG (mIU/ml)	AFP (ng/ml)
S1	< 1.5 x N and	< 5,000 and	< 1,000
S2	1.5-10 x N or	5,000-50,000 or	1,000-10,000
S3	> 10 x N or	> 50,000 or	> 10,000

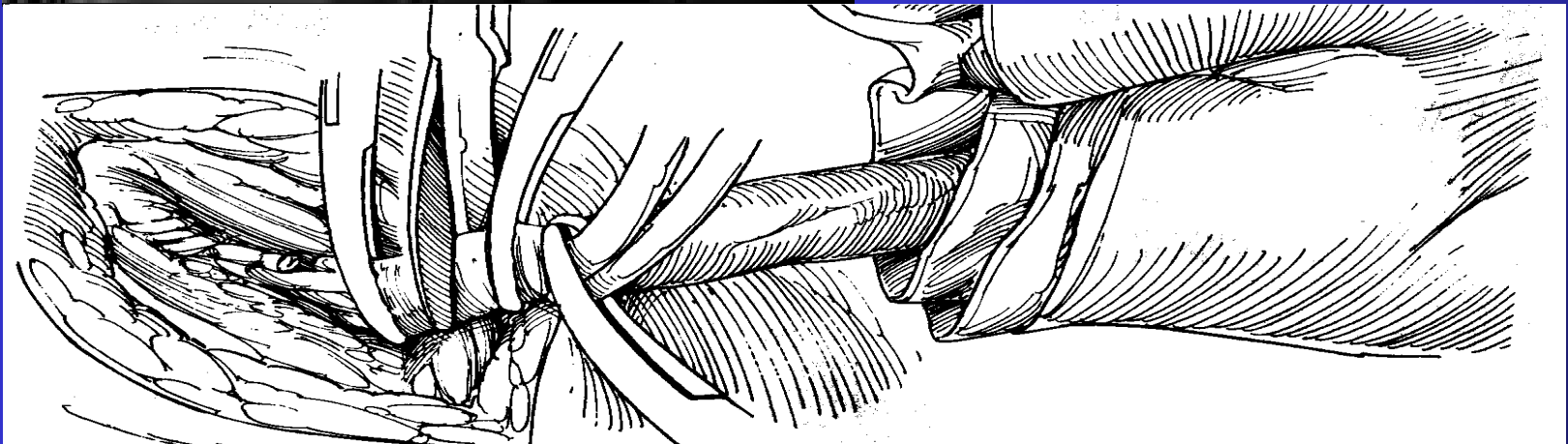
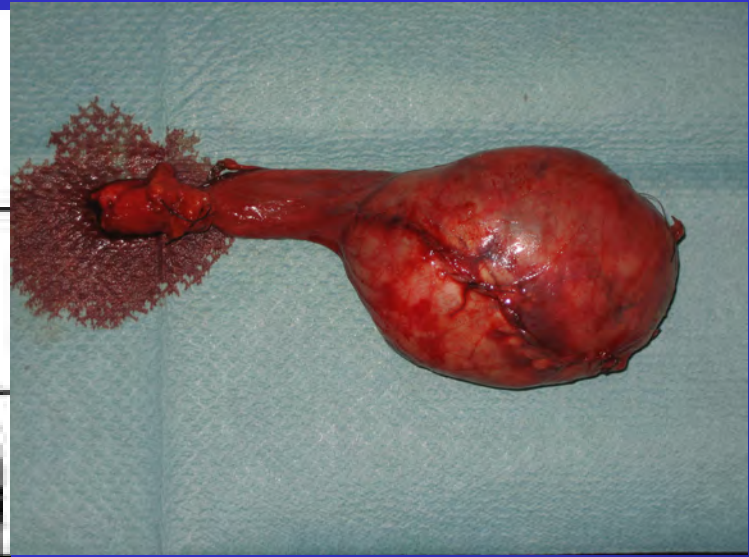
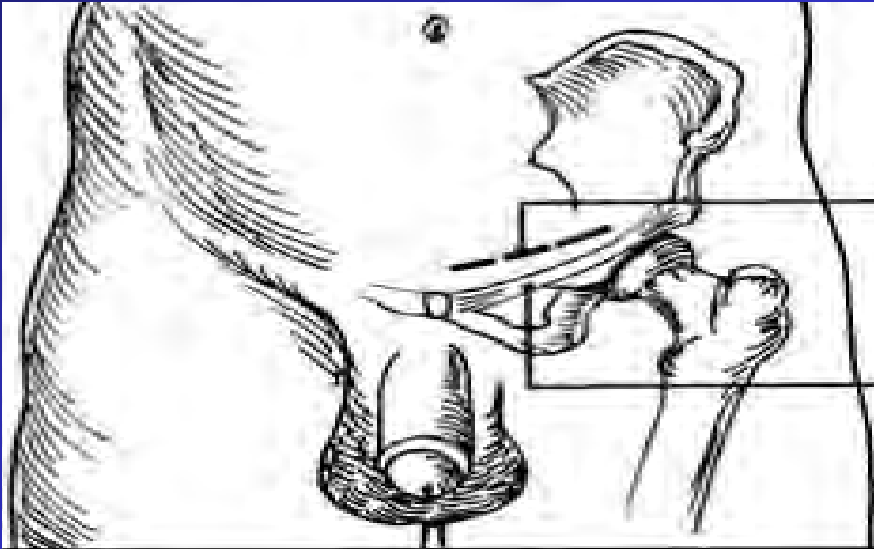
Unser Patient:

Prä-OP: AFP: 578 ng/ml, HCG: 4370 mU/ml, LDH: 357 U/l

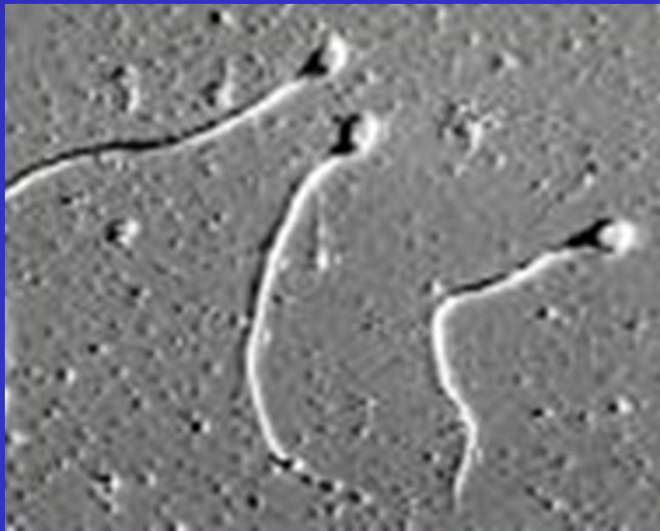
WICHTIG: Nadir/Normalisierung für Stadieneinteilung abwarten

2 Wo. Post-OP: AFP: 480 ng/ml, HCG: 3300 mU/ml, LDH: 379 U/l

Primärtumor-Therapie?



Aber stets an Sperma- Kryokonservierung denken!!!



Skrotale Hodenbiopsie Gegenseite

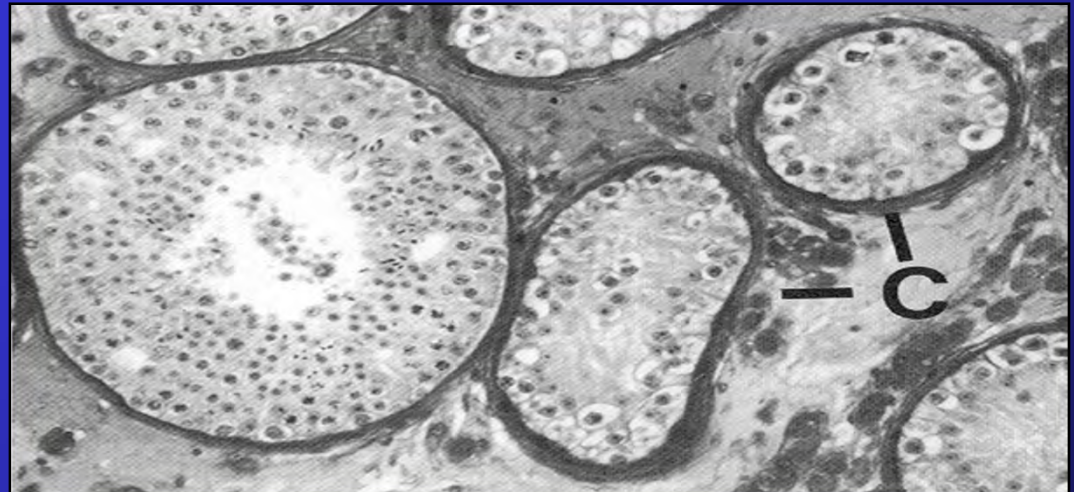
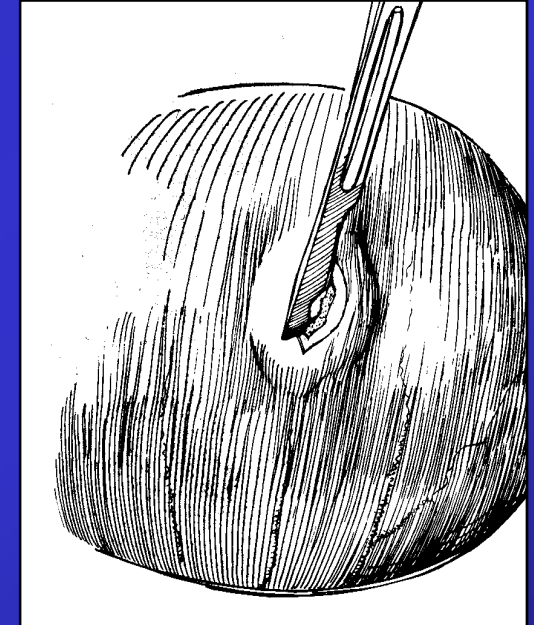
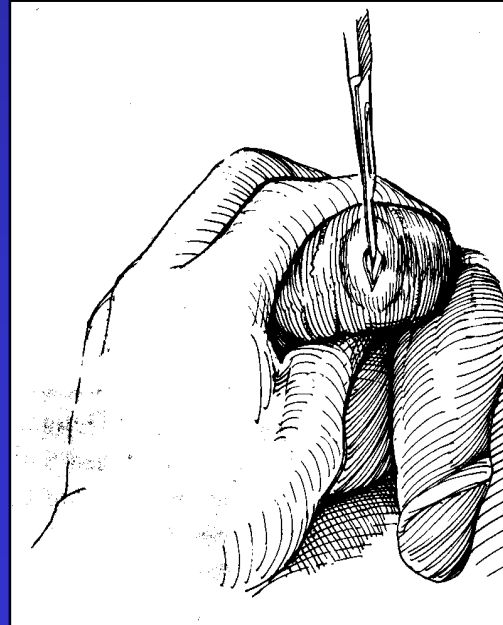
Ausschluss TIN
(bis 9 % beschrieben)

Kontralateraler
metachoner Tumor: 2,5%

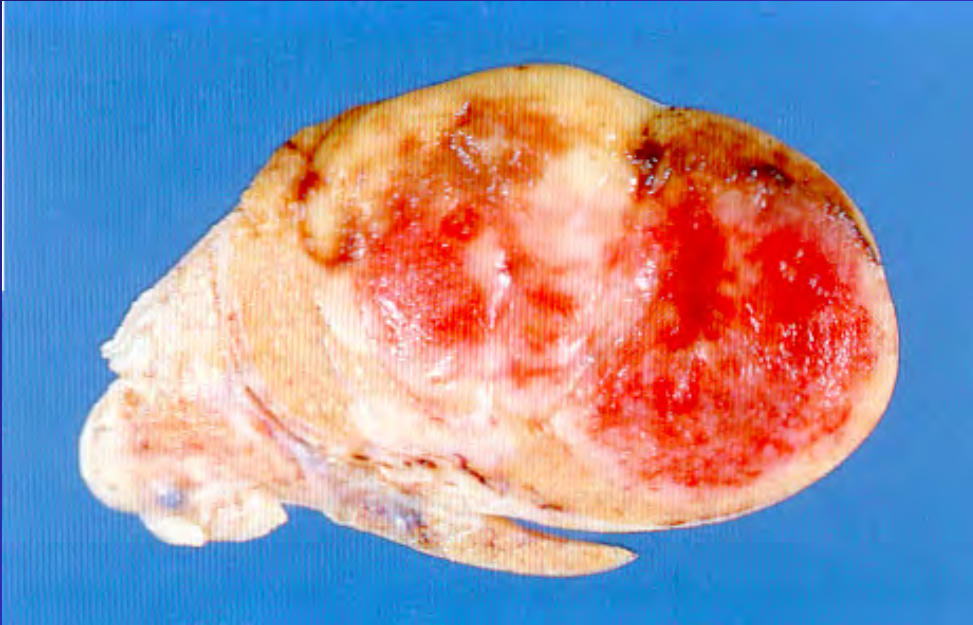
Doppelbiopsie empfohlen
(Sensitivität!)

Obligat bei:

- Vol. < 12 ccm
- Kryptorchismus
- Alter < 40 J.

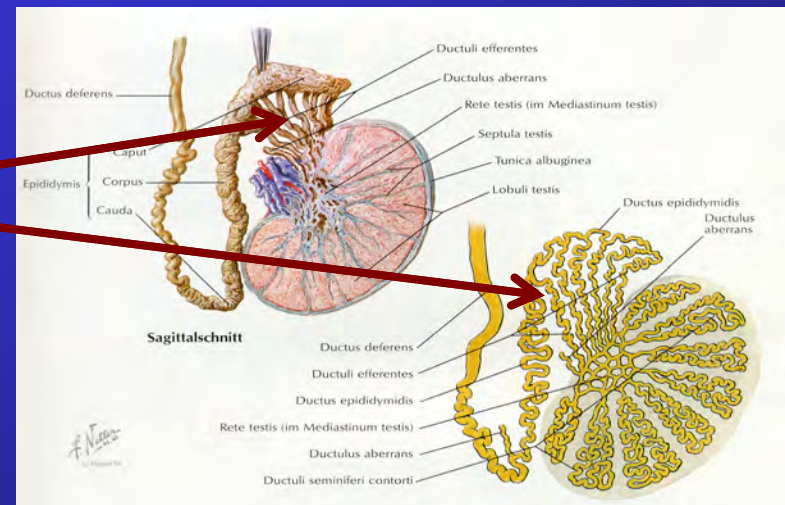


Histo: Orchiektomiepräparat



1. Seminom
2. Nicht-Seminom
 - embryonales Ca
 - Teratom
 - Teratokarzinom
 - Chorionkarzinom
 - Dottersacktumor
3. Andere: Leydigzell, ...

- Beurteilung nach TNM
- Infiltration Rete testis?
- Vorhandensein TIN?
- Gefäßinvasion?



TNM

pT Primary tumour¹

- pTX Primary tumour cannot be assessed (see note 1)
- pT0 No evidence of primary tumour (e.g. histological scar in testis)
- pTis Intratubular germ cell neoplasia (carcinoma in situ)
- pT1 Tumour limited to testis and epididymis without vascular/lymphatic invasion: tumour may invade tunica albuginea but not tunica vaginalis
- pT2 Tumour limited to testis and epididymis with vascular/lymphatic invasion, or tumour extending through tunica albuginea with involvement of tunica vaginalis
- pT3 Tumour invades spermatic cord with or without vascular/lymphatic invasion
- pT4 Tumour invades scrotum with or without vascular/lymphatic invasion

N Regional lymph nodes clinical

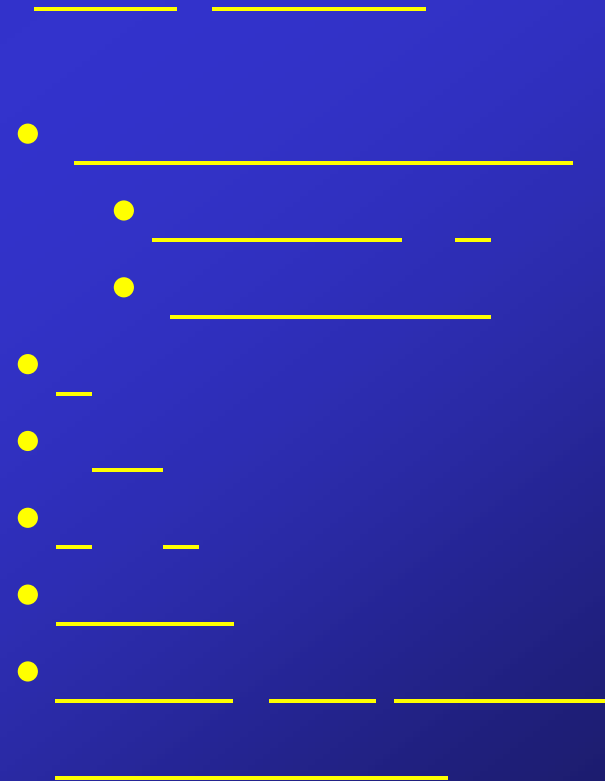
- NX Regional lymph nodes cannot be assessed
- N0 No regional lymph node metastasis
- N1 Metastasis with a lymph node mass 2 cm or less in greatest dimension or multiple lymph nodes, none more than 2 cm in greatest dimension
- N2 Metastasis with a lymph node mass more than 2 cm but not more than 5 cm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

pN Pathological

- 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 5 or fewer positive nodes, 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 5 nodes positive, none more than 5 cm; or evidence of extranodal extension of tumour
- pN3 Metastasis with a lymph node mass more than 5 cm in greatest dimension

M Distant metastasis

- MX Distant metastasis cannot be assessed
- M0 No distant metastasis
- M1 Distant metastasis
- M1a Non-regional lymph node(s) or lung
- M1b Other sites



Weitere Diagnostik?

Test	Recommendation grade B	Recommendation grade C
Serum tumour markers	Alpha-fetoprotein hCG LDH (for advanced tumours)	
Abdominopelvic CT scan	All patients	Slim adolescent
Chest X-ray	Seminoma ^a	
Chest CT scan	NSGCT	
Testis ultrasound	Clinical suspicion and normal scrotum at palpation	
MRI	When abdominal CT is inconclusive	All cases
PET scan ^b	Follow-up residual masses in seminoma	
Other	If clinical suspicion	

hCG = human chorionic gonadotrophin; LDH = lactate dehydrogenase; CT = computed tomography; NSGCT = non-seminomatous germ cell tumour; MRI = magnetic resonance imaging; PET = positron emission tomography.

Albers et al. EAU Guidelines on Testicular Cancer 2008

Kurzversion:

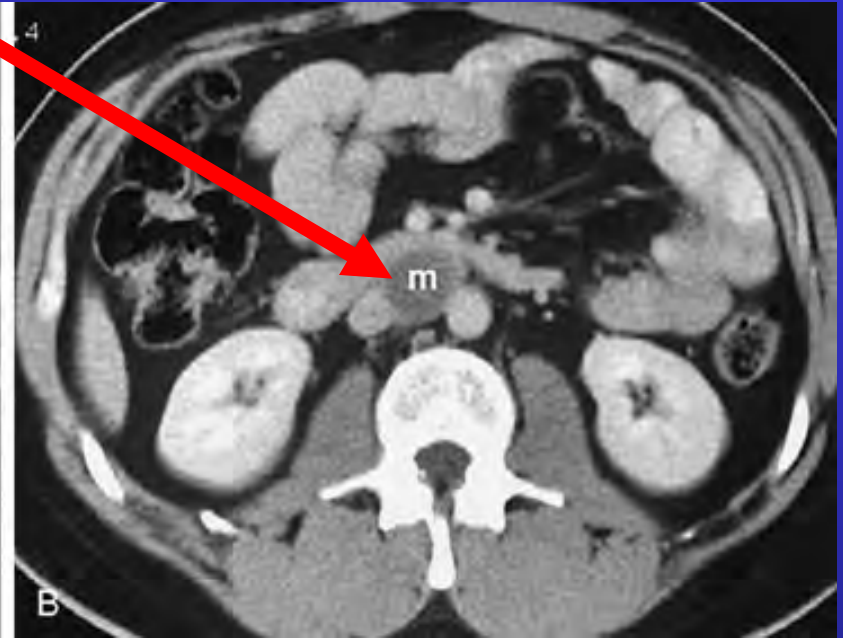
- primär CT-T/A/B
- Schädelbildgebung/GKS NUR bei Symptomatik
- PET-CT nur in der Seminomnachsorge

Staging unseres Patienten

Lymphknotenmetastasen



Prä-caval



Inter-aortocaval

pN Pathological

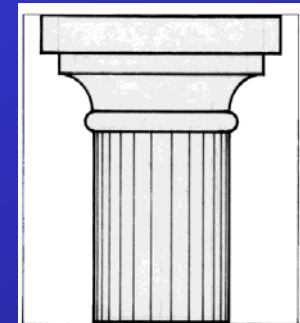
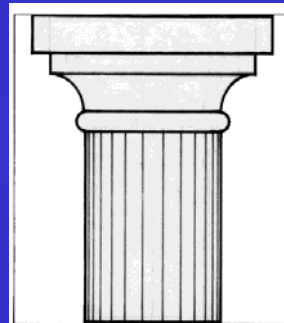
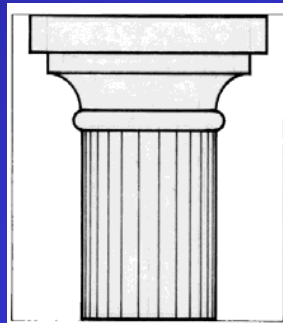
- pNX Regional lymph nodes cannot be assessed
- pN0 No regional lymph node metastasis
- pN1 Metastasis with a lymph node mass 2 cm or less in greatest dimension and 5 or fewer positive nodes, none more than 2 cm in greatest dimension
- pN2 Metastasis with a lymph node mass more than 2 cm but not more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

M Distant metastasis

- MX Distant metastasis cannot be assessed
- M0 No distant metastasis
- M1 Distant metastasis
- M1a Non-regional lymph node(s) or lung
- M1b Other sites

LKN >5 cm = cN3
Lunge frei = cM0

Stadieneinteilung



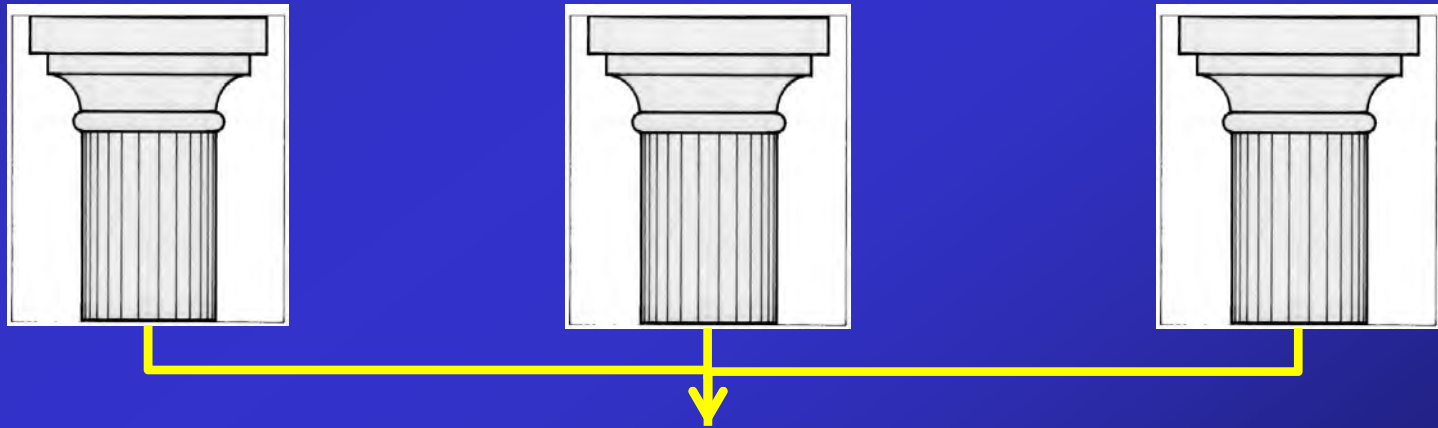
Tumorstadium

Unser Patient

Nicht Seminom
pT1 pV1 pL1 pR0

Tumormarker:
S1

cN3, cM0



Tumorstadium ???

Klinische Stadien

(hervorgegangen aus der Lugano 1979)

- **Stadium I: Hodentumor ohne LKN- oder Fernmetastasen**
- **Stadium II**
 - Lymphknotenmetastasen befinden sich unterhalb des Zwerchfells
 - **A: <2cm, B: 2-5cm, C: > 5cm**
- **Stadium III**
 - Lymphknotenmetastasen befinden sich oberhalb des Zwerchfells
 - **A: supraklavikuläre oder mediastinale Ln**
 - **B: Lunge**
 - **C: viscerale / hämatogene Metas. außerhalb der Lunge**

Stadieneinteilung nach IGCCCG für metast. Hodentumoren

Good-prognosis group

Non-seminoma (56% of cases)

5-year PFS 89%

5-year survival 92%

All of the following criteria:

- 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

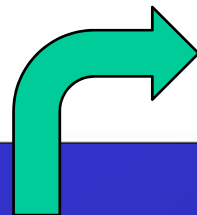
Seminoma (90% of cases)

5-year PFS 82%

5-year survival 86%

All of the following criteria:

- Any primary site
- No non-pulmonary visceral metastases
- Normal AFP
- Any hCG
- Any LDH



Wichtig: Seminom unabhängig von TM

Stadieneinteilung nach IGCCCG für metast. Hodentumoren

Intermediate prognosis group

Non-seminoma (28% of cases)

5 years PFS 75%
5-year survival 80%

All of the following criteria:

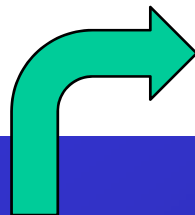
- Testis/retroperitoneal primary
- No non-pulmonary visceral metastases
- AFP > 1,000 and < 10,000 ng/mL or
- hCG > 5,000 and < 50,000 IU/L or

Seminoma (10% of cases)

5-year PFS 67%
5-year survival 72%

Any of the following criteria:

- Any primary site
- Non-pulmonary visceral metastases
- Normal AFP
- Any hCG
- Any LDH



Wichtig: Seminom nicht pulmonale Metast.

Stadieneinteilung nach IGCCCG für metast. Hodentumoren

Poor prognosis group

Non-seminoma (16% of cases)

5-year PFS 41%

5-year survival 48%

Any of the following criteria:

- 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

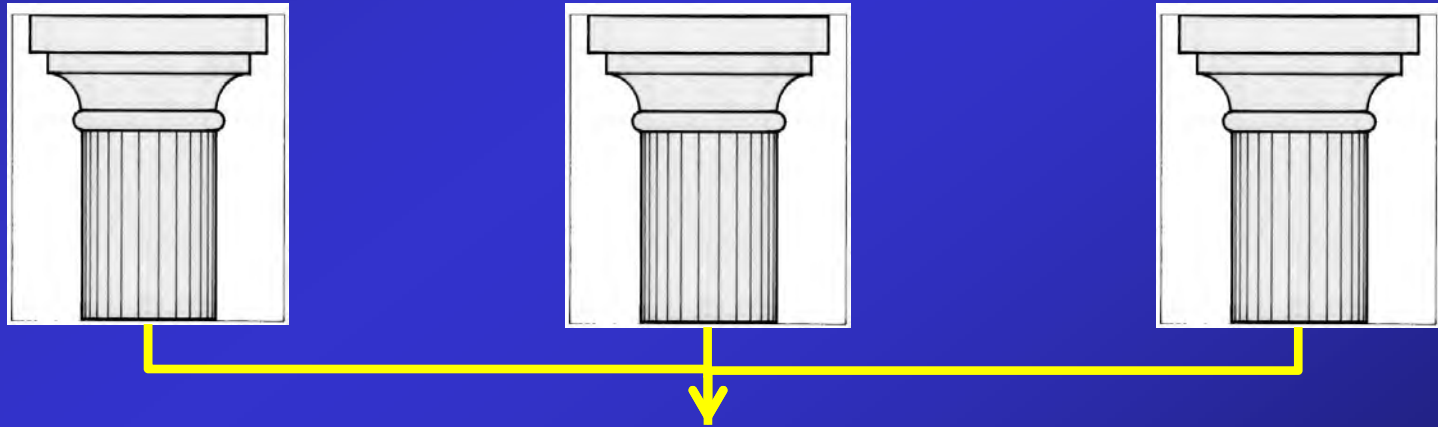
Wichtig: nur Nicht-Seminome aufgrund
nicht-pulmonale Metast. oder TM S3

Unser Patient

Nicht Seminom
pT1 pV1 pL1 pR0

Tumormarker:
S1

cN3, cM0



Tumorstadium ???

Nicht Seminom, CS IIC, good prognosis

Wie schätzen Sie die Prognose unseres Patienten ein?

5 Jahres Überlebenschance im Jahre 1969:

< 50%

5 Jahres Überlebenschance im Jahre 2009:

92 %


Stadiengerechte Therapie

TIN - Therapie

- Organerhalt
 - Einzelhoden: Radiatio 18 Gy(9x 2)
 - Surveillance bei Kinderwunsch
- Orchiektomie
 - gesunder kontralateraler Hoden

Hodentumor = Hodentumor ?

	Nichtseminome 60%	Seminom 40%
Alter	20-30	30-45
Biologie	schnelles Wachstum	langsames Wachstum
Tumormarker	AFP,HCG	keine (HCG ?; PLAP)
Organmetastasen	häufig	selten



Klinische Stadium I

Risikofaktoren für okkulte Metastasierung

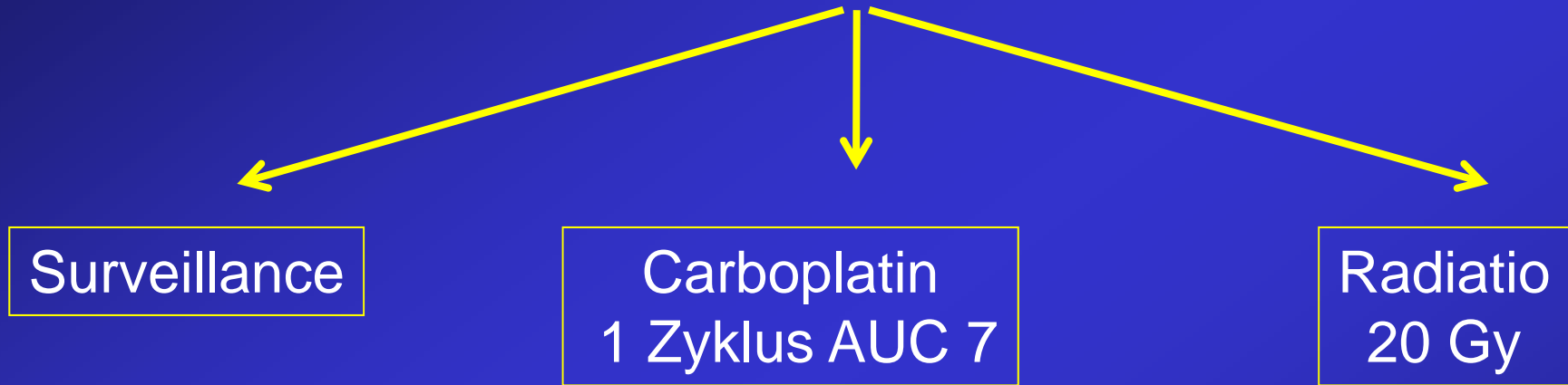
Seminom – high risk 32% vs. low risk 12%

- TU > 4 cm
- Infiltration Rete testis

Nicht-Seminom – high risk - overall 30%

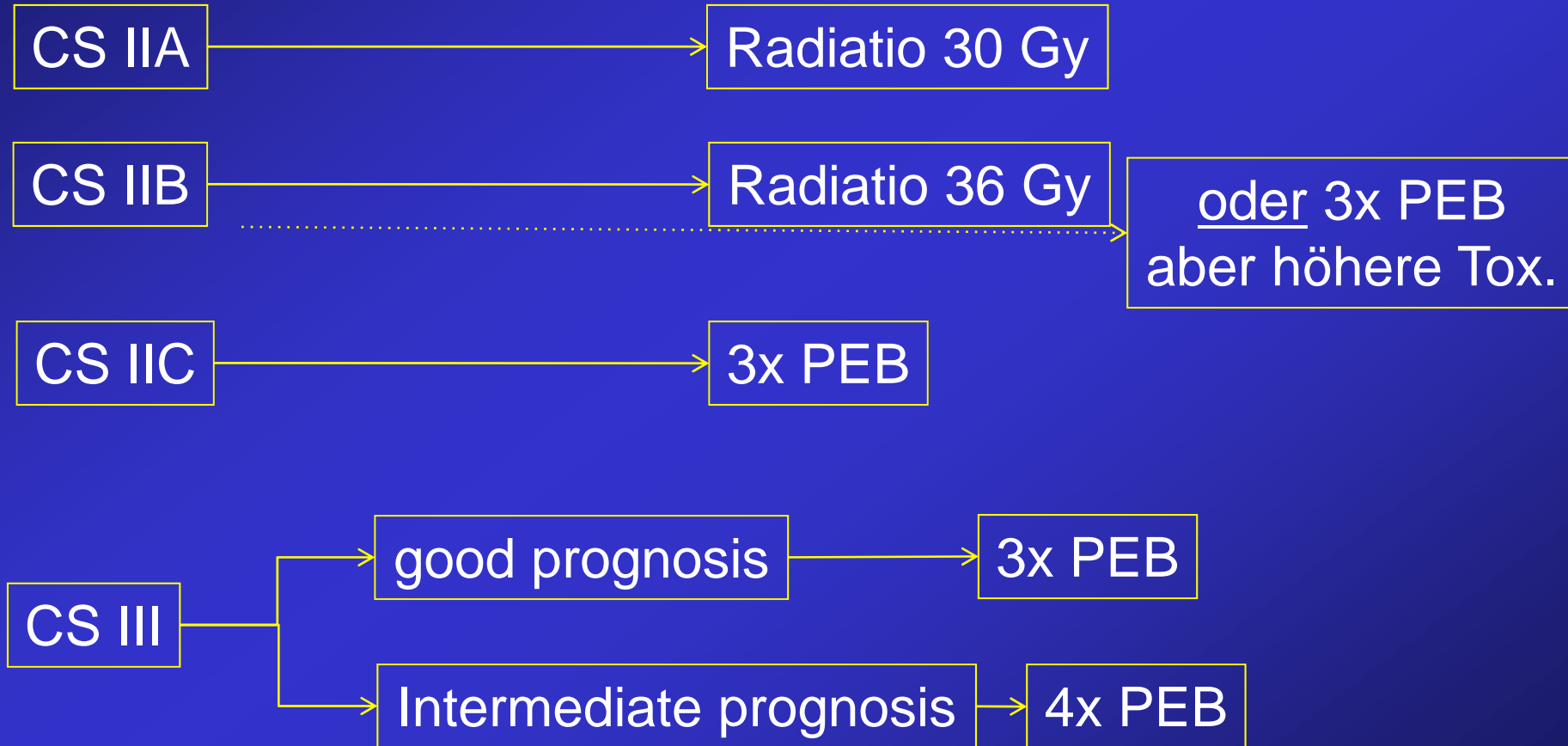
- Gefäßinvasion (pV1)
- Embryonales Ca > 50%
- Proliferationsrate > 70%

Stadiengerechte Therapie Seminom CS I

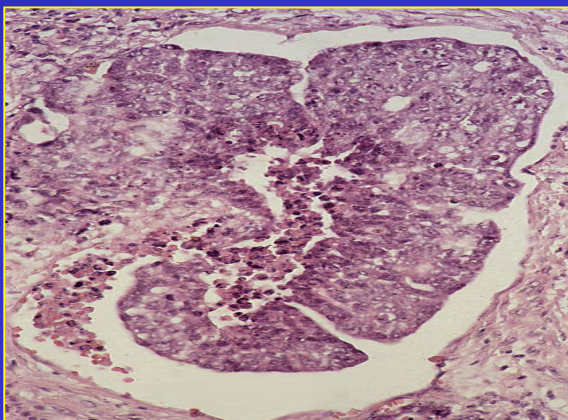
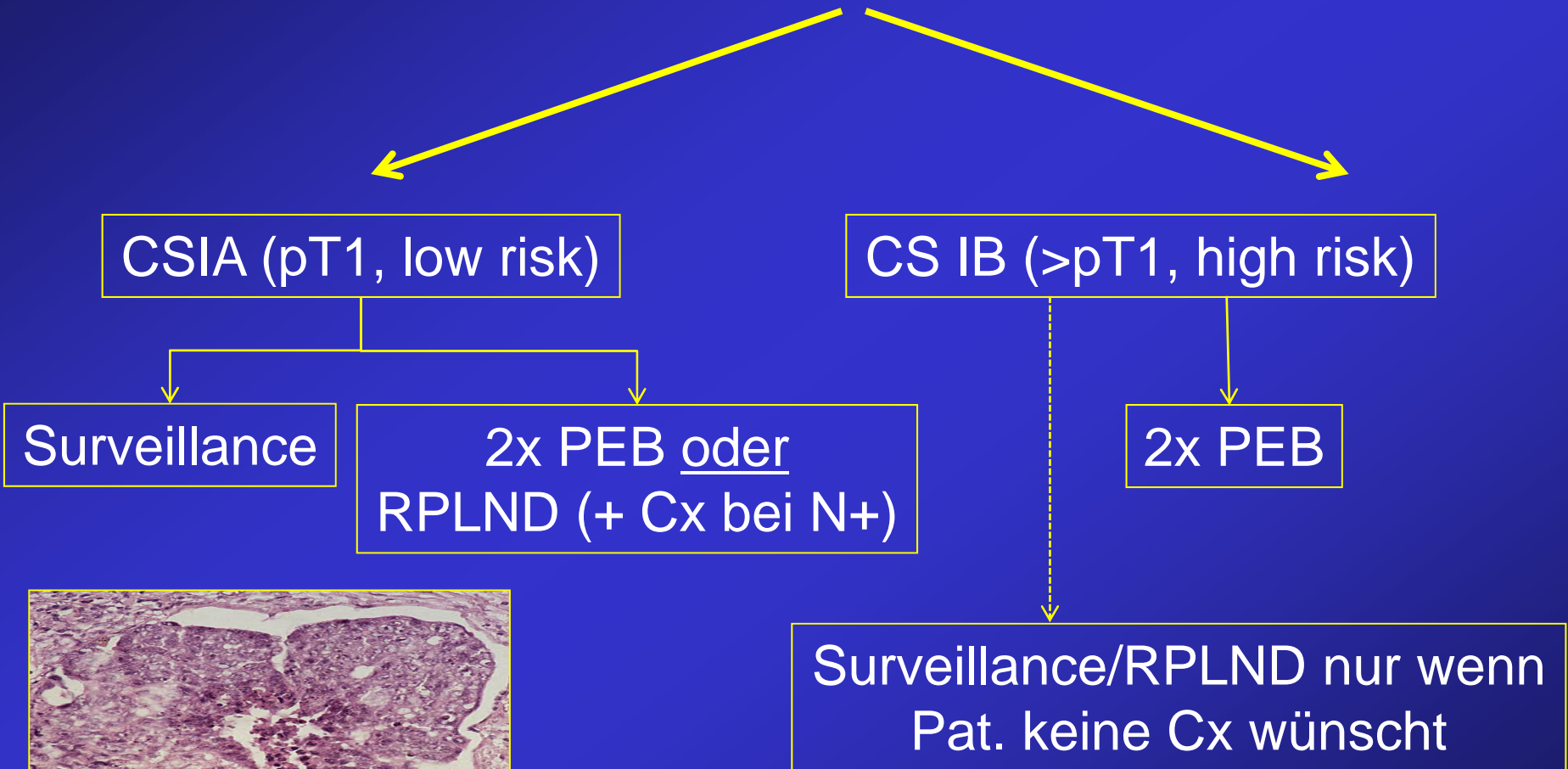


- Risikostratifizierung (Rete testis, 4 cm)
- Compliance bei Surveillance vorhanden?

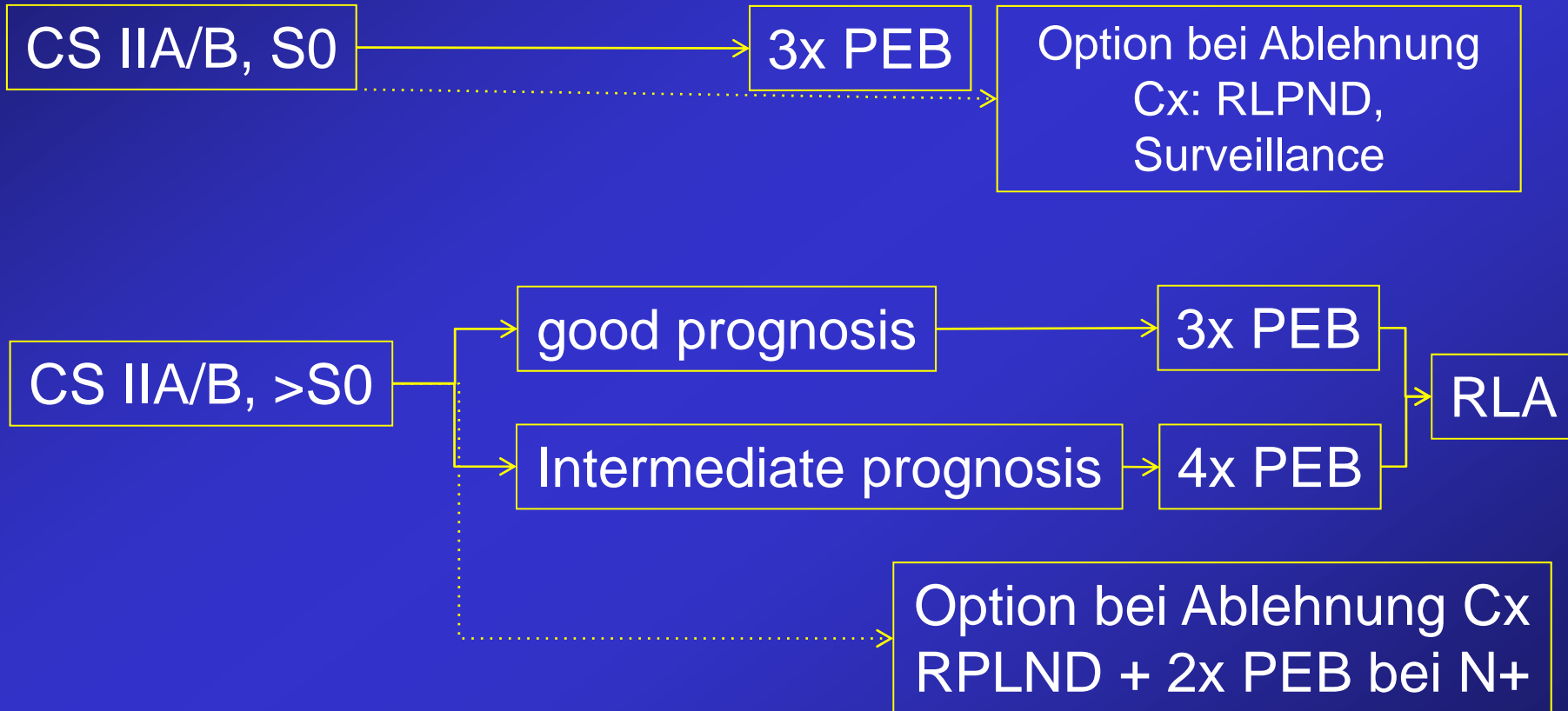
Stadiengerechte Therapie Seminom CS II/III



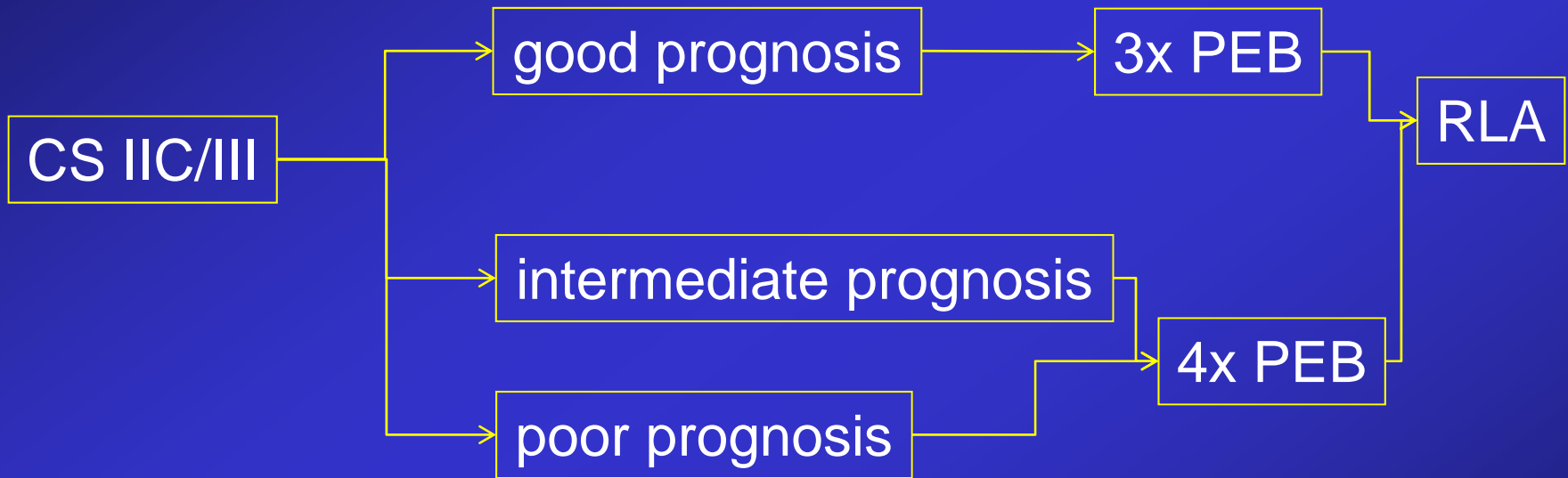
Stadiengerechte Therapie NICHT-Seminom CS I



Stadiengerechte Therapie NICHT-Seminom CS IIA/B



Stadiengerechte Therapie NICHT-Seminom CS IIC/III

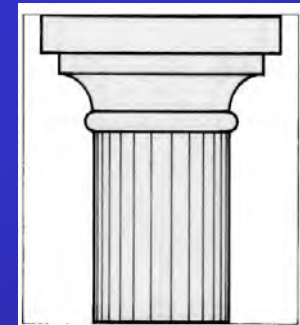
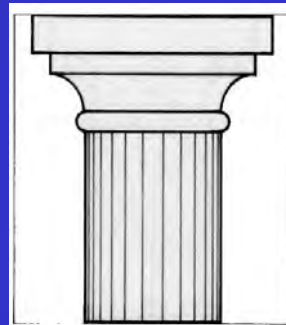
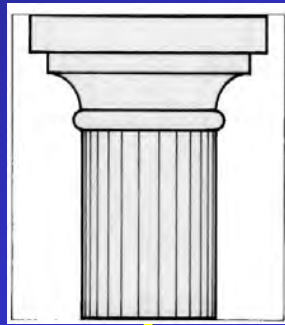


Unser Patient

Nicht Seminom
pT1 pV1 pL1 pR0

Tumormarker:
S1

cN3, cM0



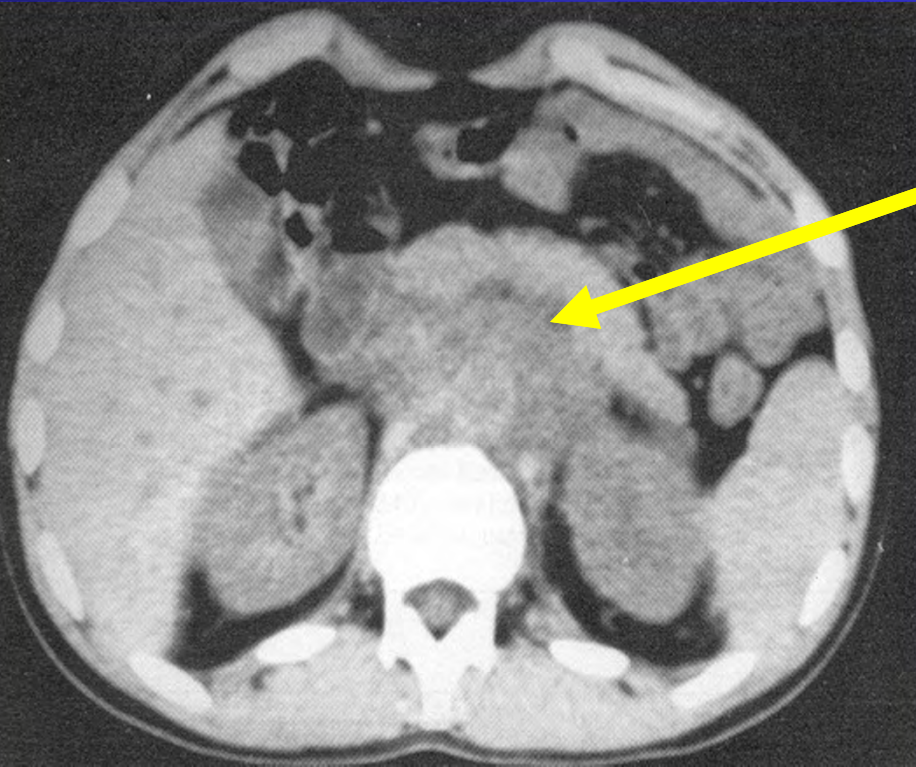
Nicht Seminom, CS IIC, good prognosis

Unsere Empfehlung?

Gedächtnisstütze



Unser Patient: Bildgebung nach Chemo

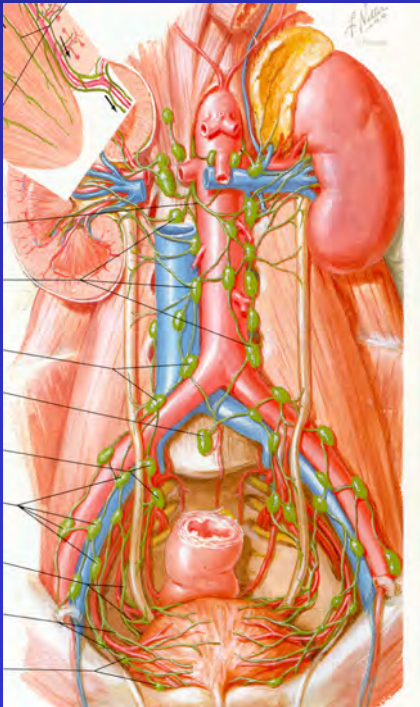


**Retroperitoneale
Restmanifestationen**

Was nun?

Gedächtnisstütze

CS IIC/III



good prognosis

3x PEB

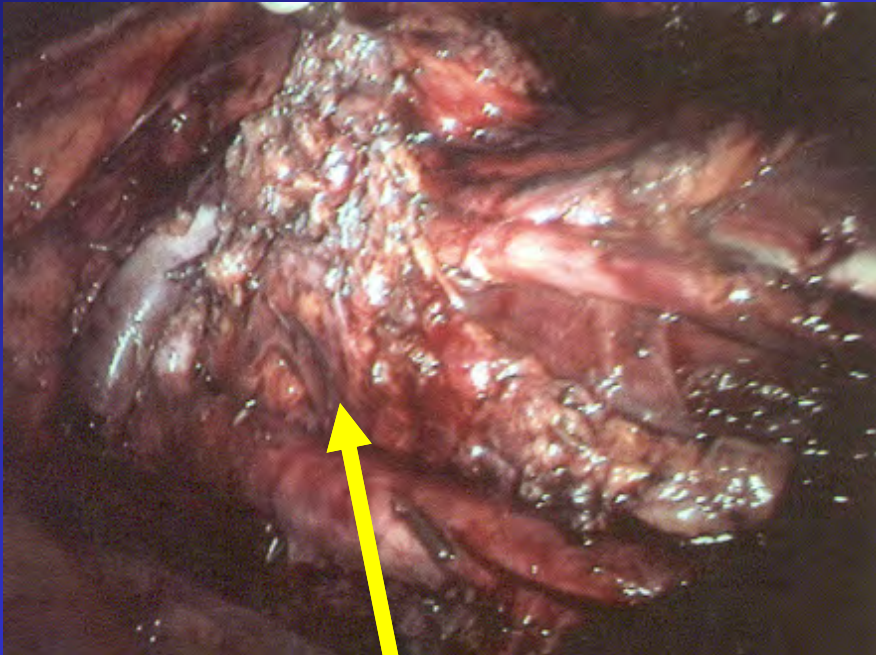
RLA

intermediate prognosis

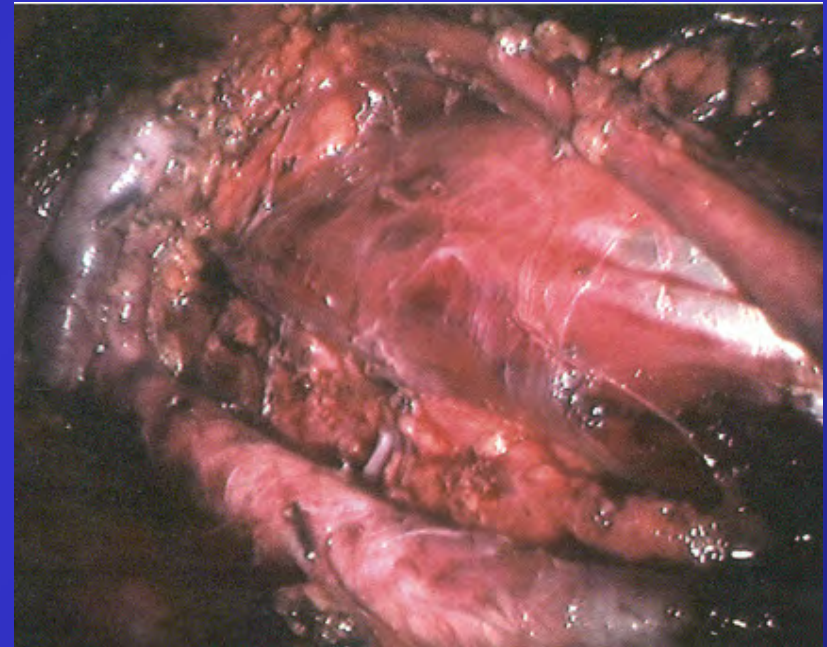
4x PEB

poor prognosis

Unser Patient: Sekundäre RLA

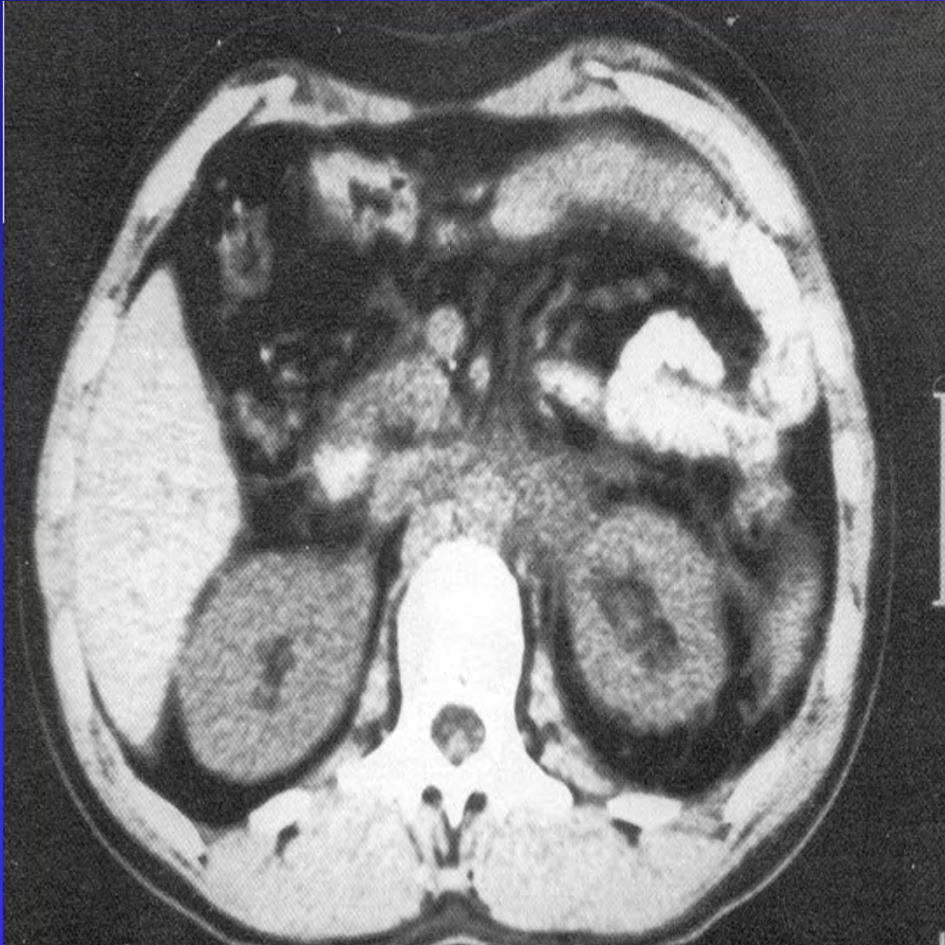


**Retroperitoneale
Restmanifestationen**



**Klinisch tumorfreier
Situs**

Unser Patient: Bildgebung nach RLA



Wären Sie im Falle
eines Seminoms
nach Chemo
Ebenso
vorgegangen?



Indikation für PET-CT

Take Home Message

- Kurative Therapie in $> 90\%$ aller Fälle
- Strikte Einhaltung der Algorithmen
- Zweitmeinungsbildung & Behandlung komplexer Fälle an Zentren
- Spermakonservierung
- Anleitung zur Vorsorge

- Lance was diagnosed with an aggressive form of testicular cancer, containing 60% choriocarcinoma, 40% embryonal and less than 1% teratoma.
- Lance's treatment lasted from October to December 1996.
- Lance underwent two surgeries, one to remove his cancerous testicle and another to remove two cancerous lesions on his brain.
- Lance received one round of BEP (Bleomycin, Etoposide and Platinol) chemotherapy, followed by three rounds of VIP chemotherapy (Ifosfamide, Etoposide and Platinol.)



- Yes, we can!