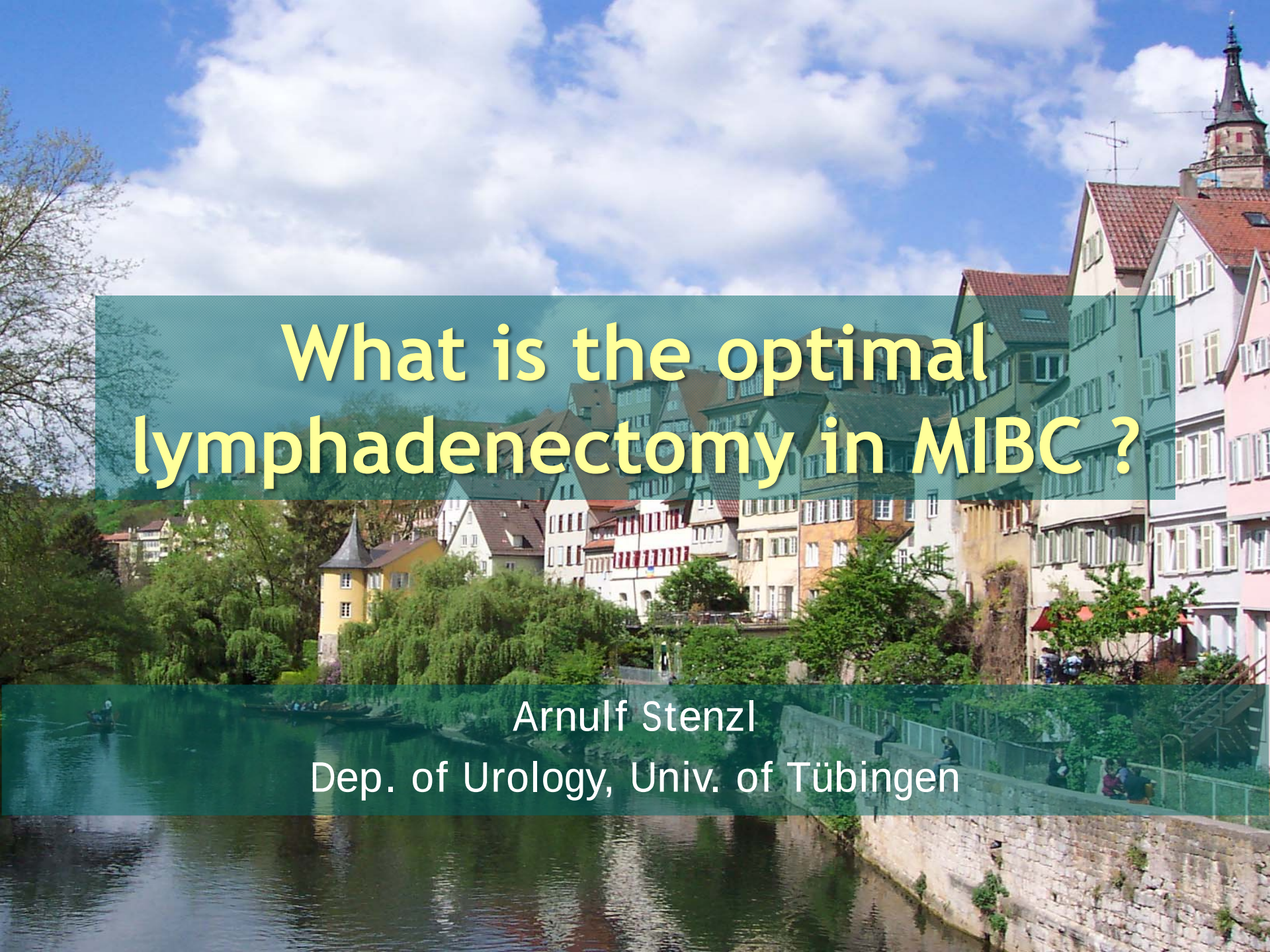
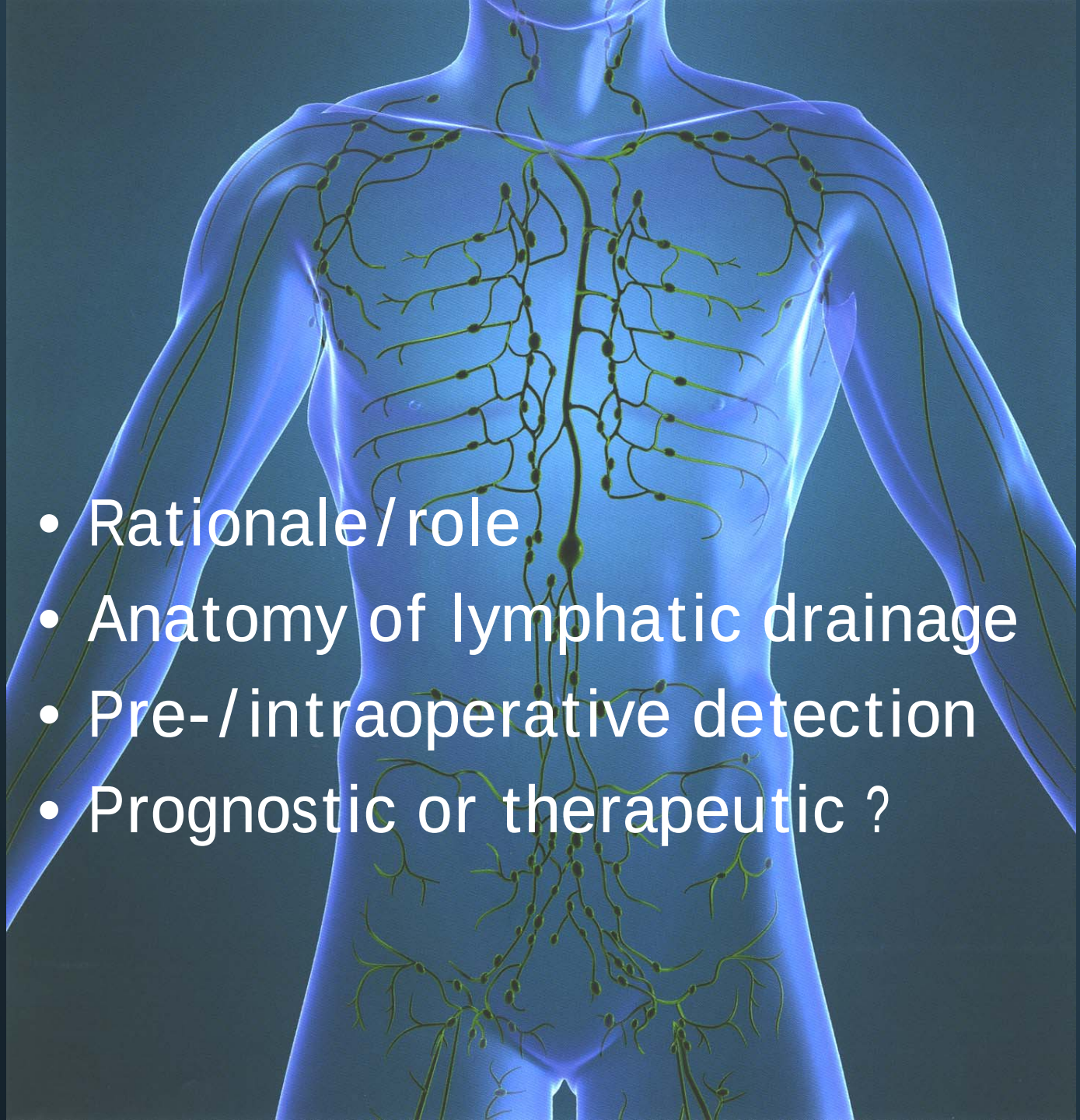


What is the optimal lymphadenectomy in MIBC ?

Arnulf Stenzl
Dep. of Urology, Univ. of Tübingen



- Rationale/role
- Anatomy of lymphatic drainage
- Pre-/intraoperative detection
- Prognostic or therapeutic ?

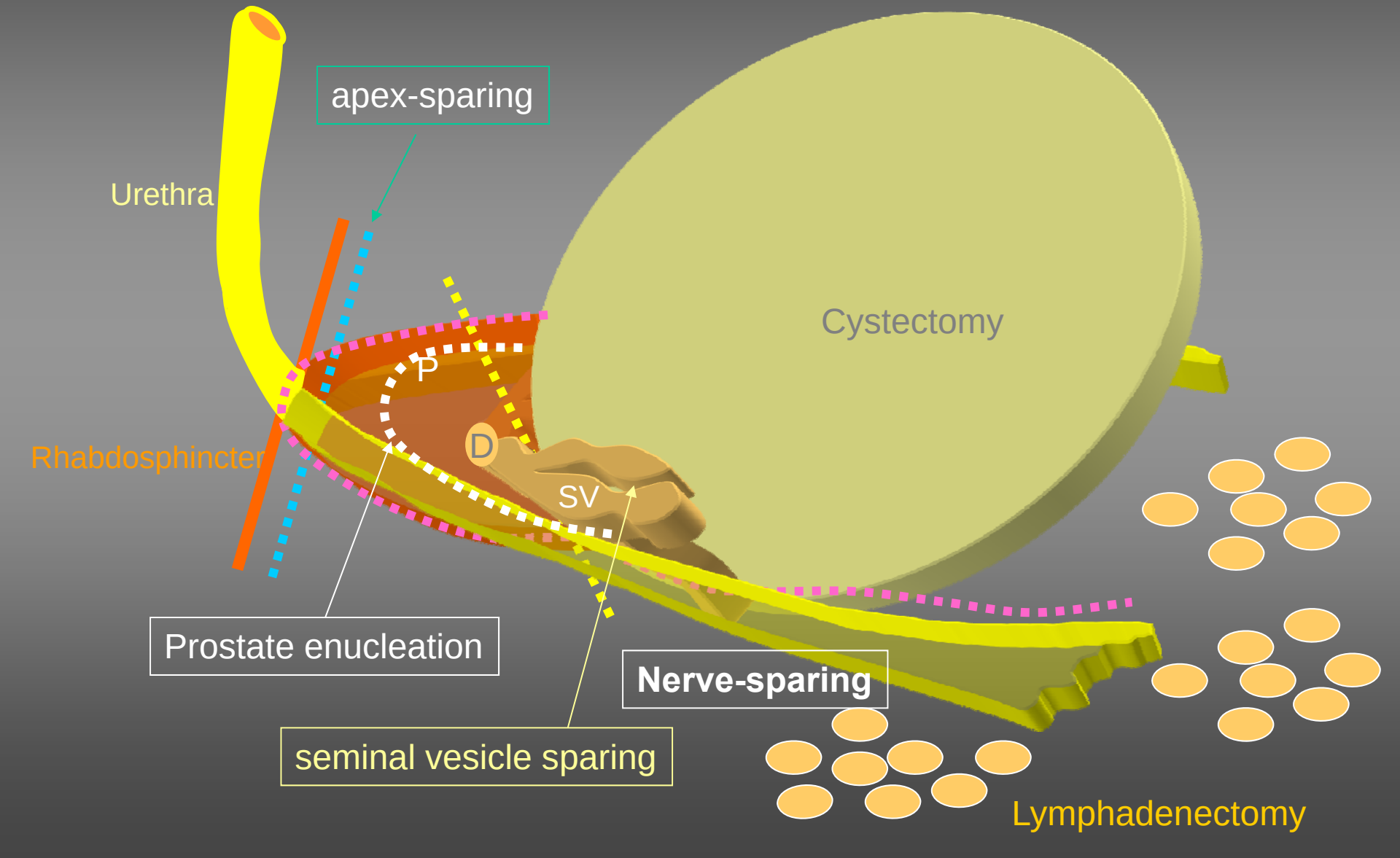
Re ektomie

(n=1051)

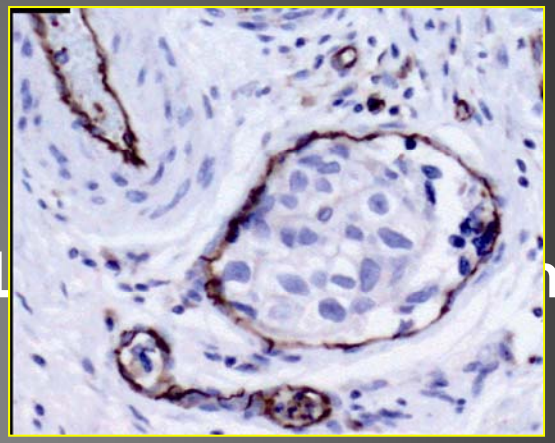
Stein et al., JCO 2001

Radical cystoprostatectomy

Stenzl et al., Eur Urol 2012



Rationale for lymphadenectomy

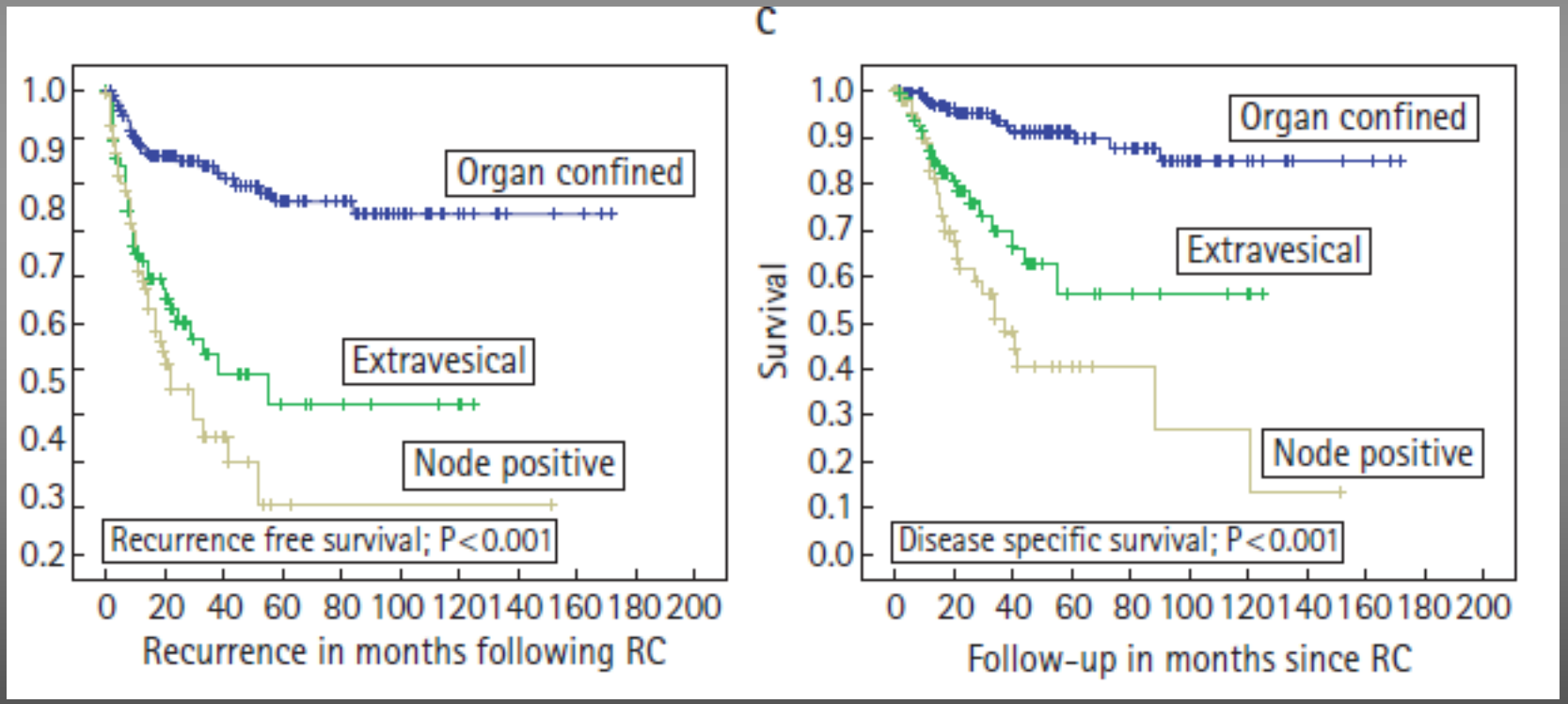


- lymph node filtration
- Immune modulation

- mechanic destruction
- host immune system

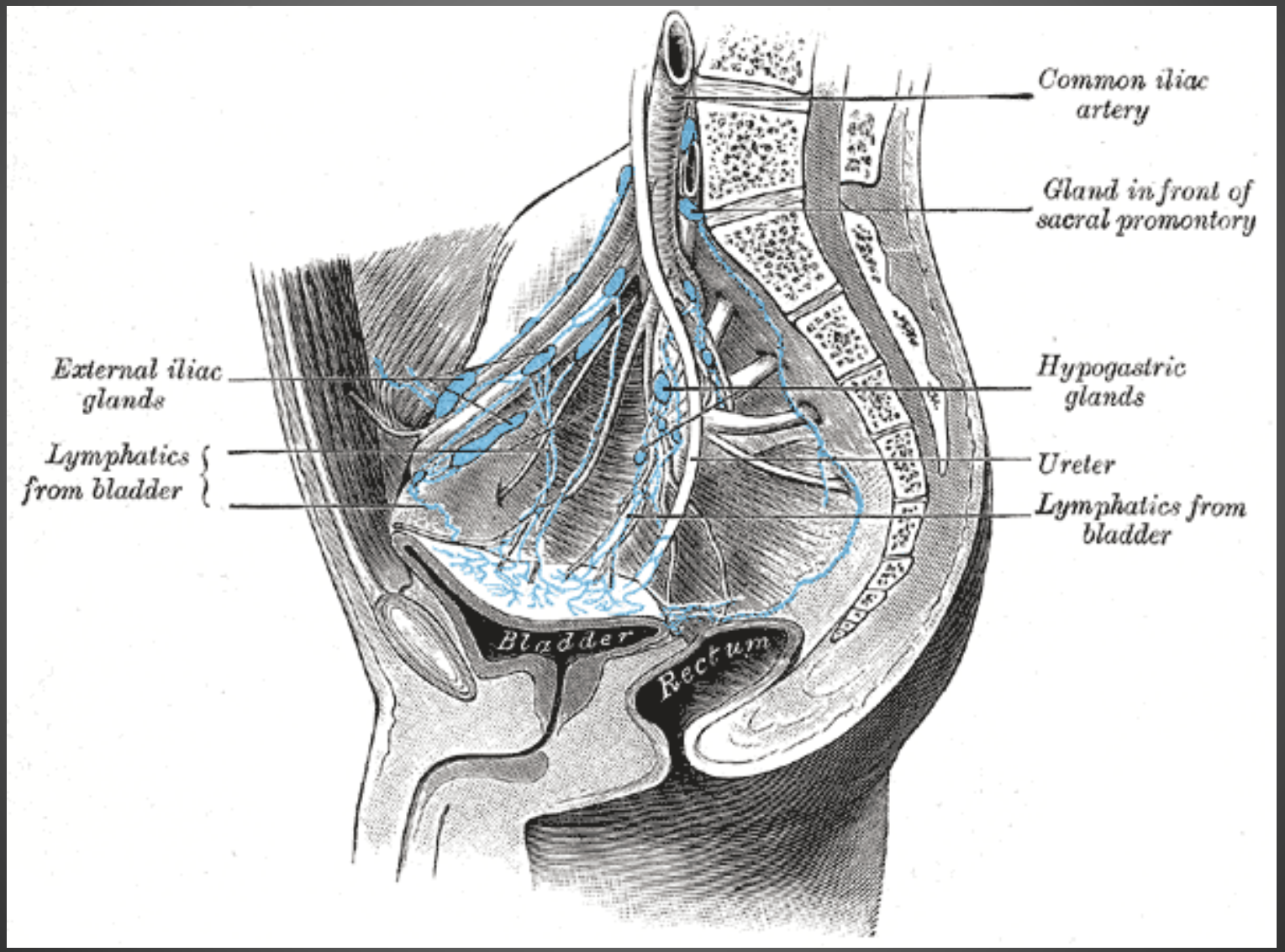
Survival in N+ BCa

RFS *DSS*

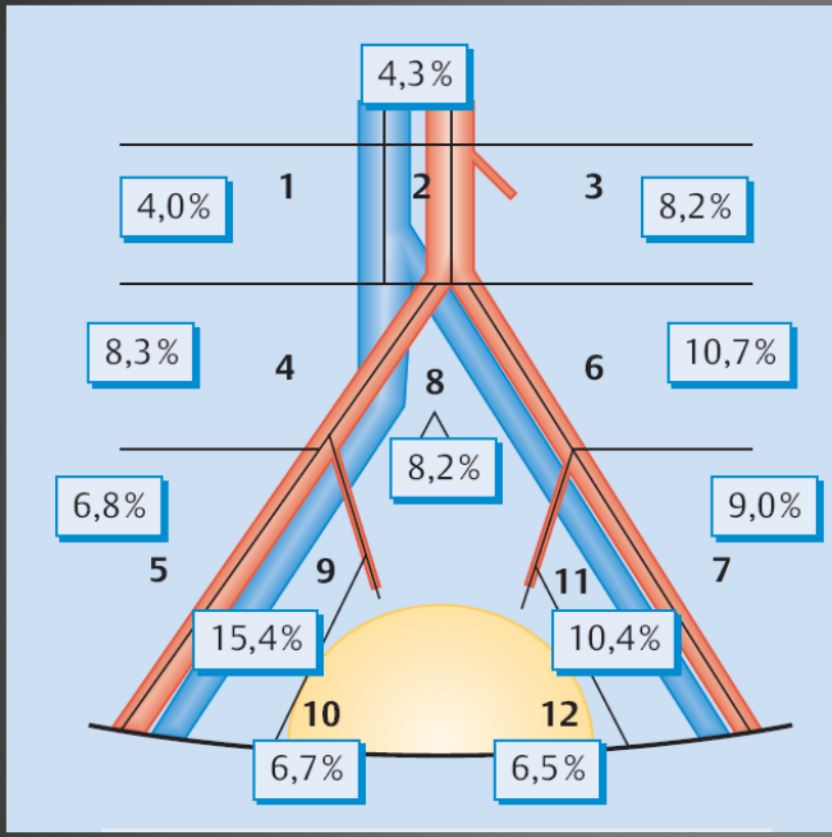


Manoharan et al, BJUI 104: 1227, 2009

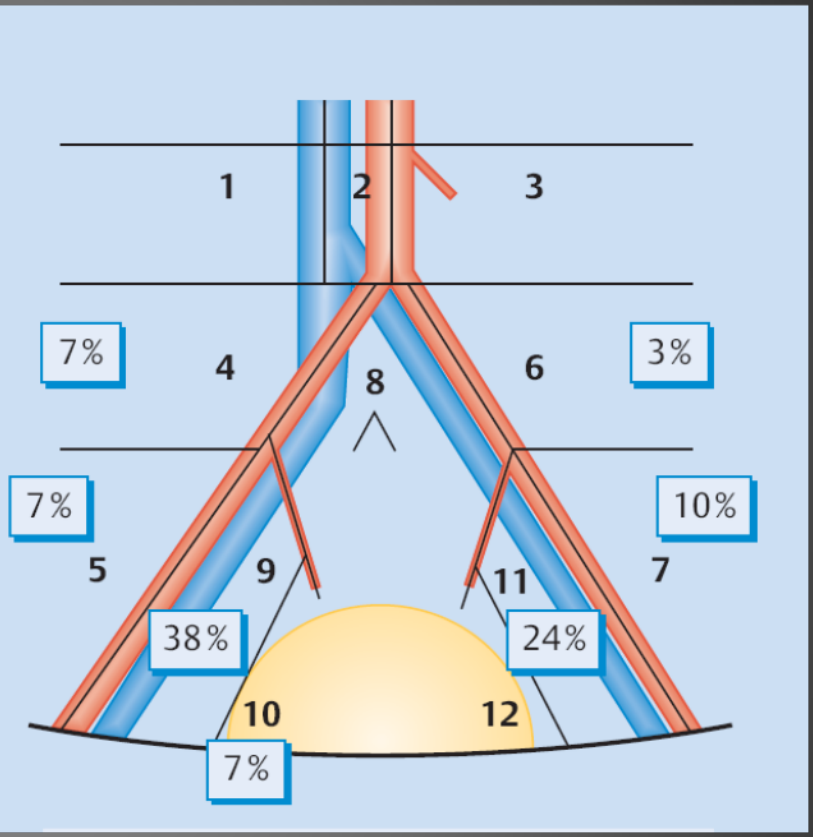
Lymphatic drainage



Gray's Anatomy of the Human Body, 1918, Barbley.com edition



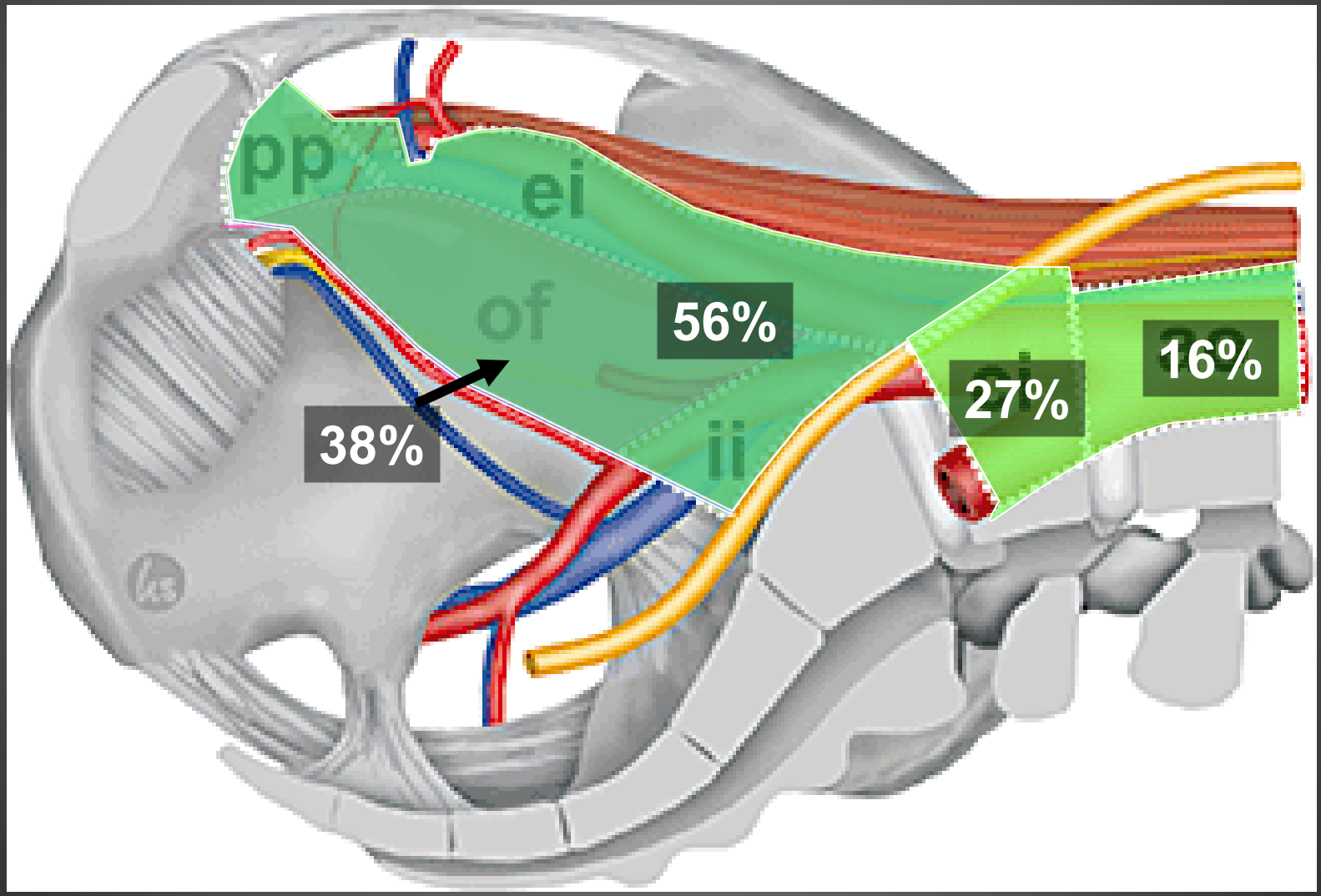
Regional distribution of 599 lymph node metastasis



Location of 1 positive lymph node in 29 pts. with single lymph node mets.

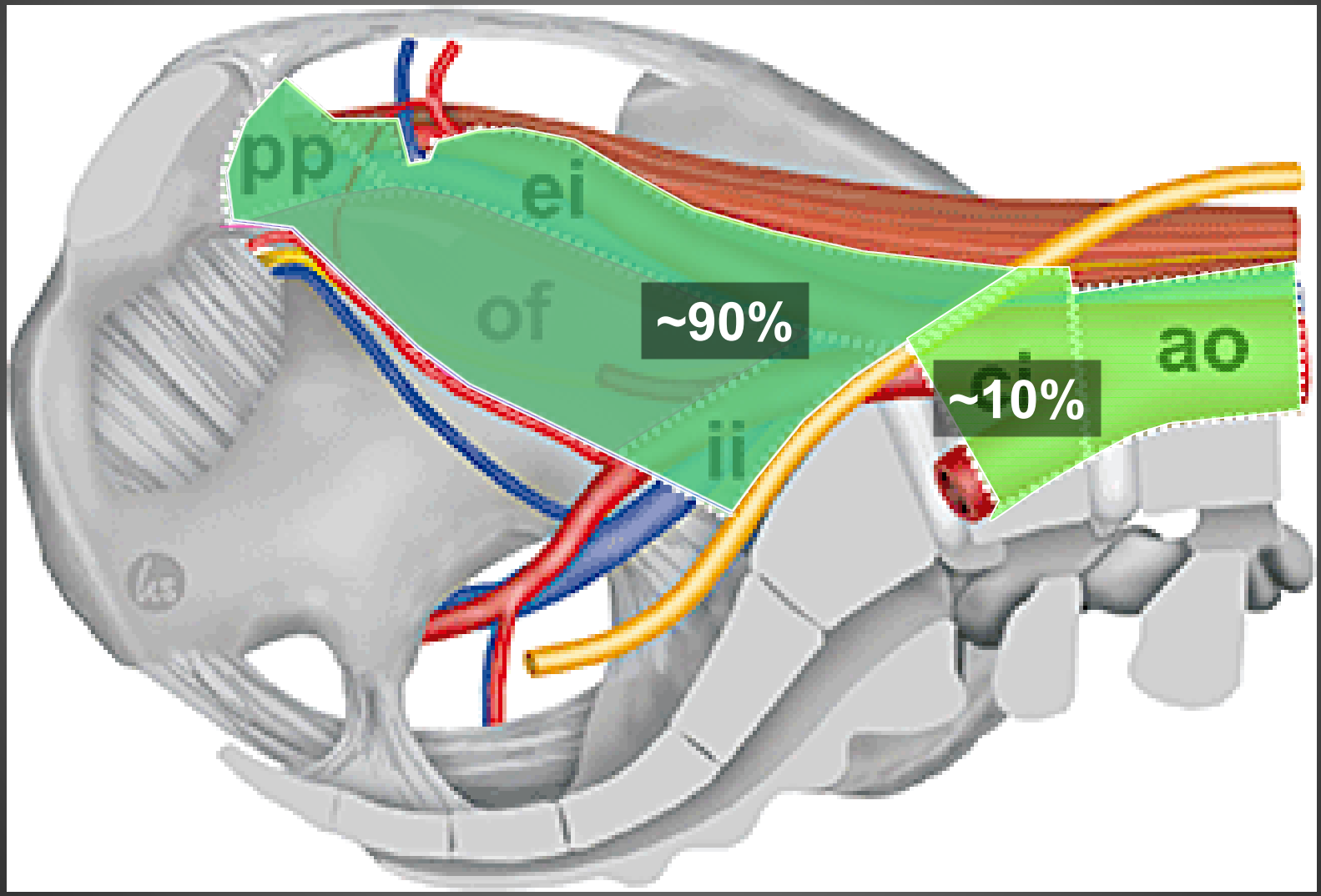
Leissner et al, J Urol 171(1): 139-44, 2004

Pelvic lymphadenectomy - distribution of + nodes



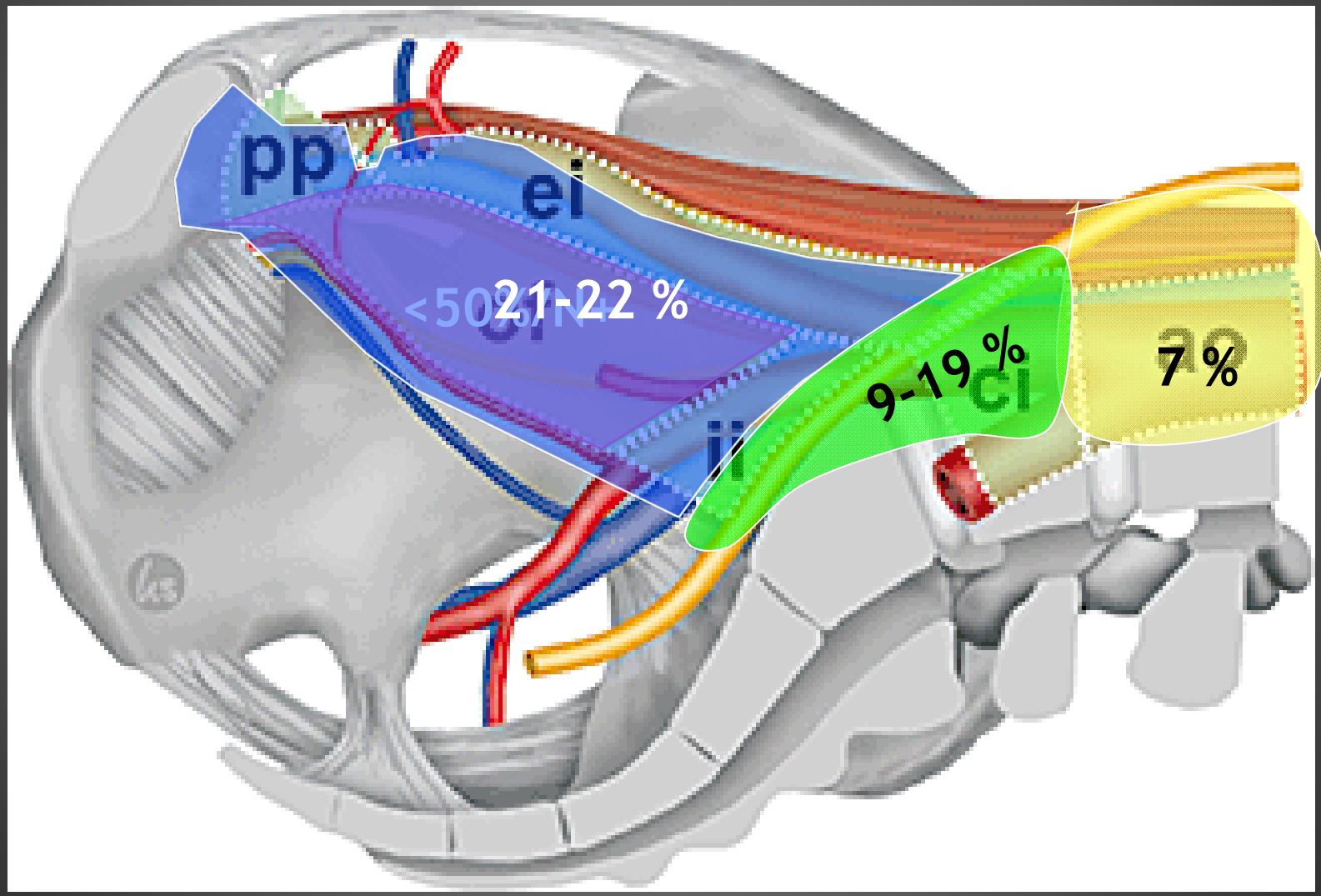
Schilling et al, BJU Int, 2008, Leissner et al. J Urol 2004

Pelvic lymphadenectomy - distribution of solitary (N1) nodes



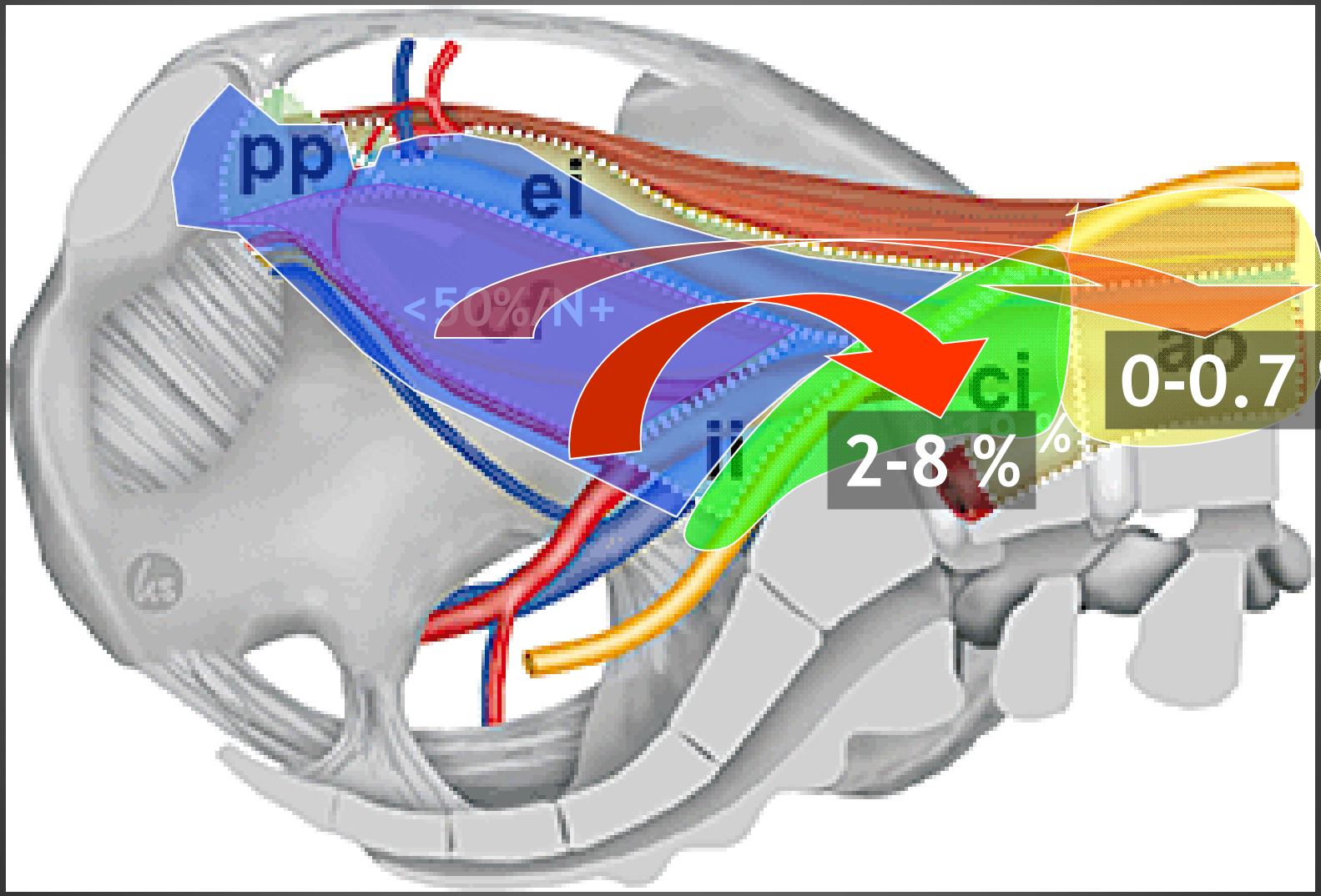
Schilling et al, BJU Int, 2008, Leissner et al. J Urol 2004

BCa Lymphadenectomy - N+ 25 - 30%



Schilling et al, BJU Int, 2008, Leissner et al., J Urol 2004, Morgan et al., J Urol, October 2012

“Skip” Lesion



Vazina et al, J Urol 2004, Steven and Poulsson J Urol 2007, Miocinovic et al, J Urol 2011

A minimum # of nodes ?

+

- 10 – 20 nodes minimum

  Herr et al, JCO 2004, Leissner et al., J Urol 2004, May et al, Ann Surg Oncol 2011

- Gradual increase of survival benefit

  Koppie et al., Cancer 2006

-

- Patients´ constitution Dorin et al, Eur Urol 2011, Mertens et al, World J Urol 2012
- Dissection template Dhar et al., J Urol, Abol Enein et al., Eur Urol 2011
- Pathology: human factor, CK 19, uroplakin II, FXYD3, KRT20 Marin-Aguilera et al, Eur Urol 2008, Kurahashi et al, Clin Cancer Res 2005

Therapeutic ?

Standard vs. Extended LA

- Reduced risk of recurrence with extended LA Abol Enein et al, Eur Urol 2012
- Reduced risk of recurrence and mortality with extended LA Dhar et al, J Urol 2008
- Super extended vs extended LA does not improve recurrence Zehnder et al., J Urol 2011

Standard (level I) vs. extended (level I-III) LA – phase III trials

German AUO trial

- cT2-T4a UC
- Open RC + LND
- 458
- Neoadjuvant Chx –
- PFS
- F/U 5 yrs.
- 15% diff. PFS/5yrs
- **Results: ~2015**

SWOG 1011

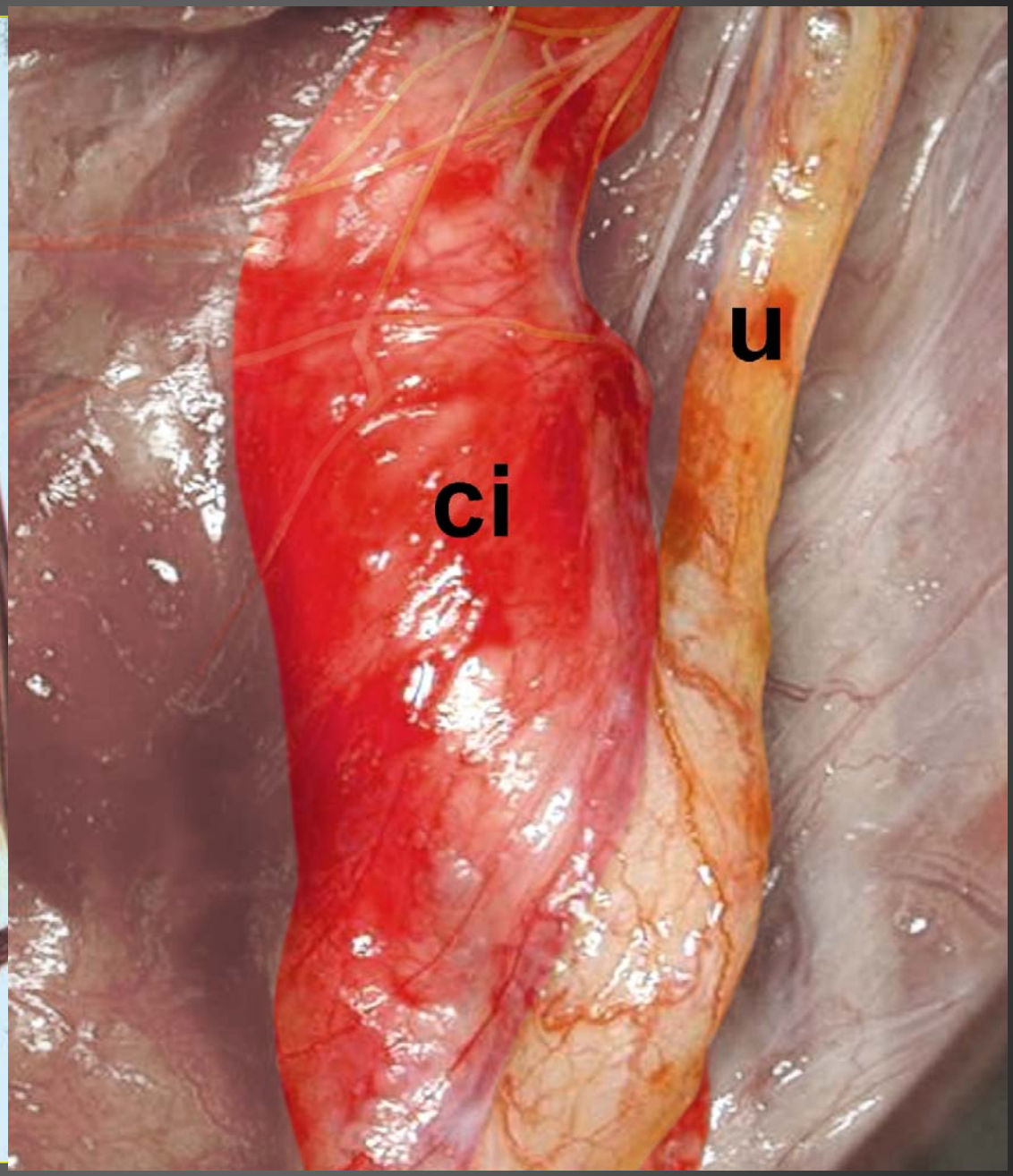
- cT2-T4a UC
- Open RC + LND
- 620
- Neoadjuvant Chx +
- DFS
- F/U 6 yrs.
- 10% diff. DSS/3yrs
- **Results: ~2020**

Severe late complications with possible LA correlation

System or type Late major	<60 years (%)	60-69 years (%)	70-79 years (%)	≥80 years (%)
Cardiovascular	0	1,0	0	0
Dehydration	0	0	0	0
IPP/AUS	6,0	2,0	1,0	0
Urinary diversion	32,0	29,0	12,0	2,0
Gastrointestinal	9,0	4,0	6,0	0
Hemorrhage/bleeding	0	0	0	0
Infectious disease	3,0	2,0	1,0	0
Lymphatic	1,0	0,3	0,3	0
Neurologic	0	0	0	0
Pulmonary	0	0	0	0
Upper urinary tract	20,0	12,0	7,0	0
Vascular/thrombosis	0	0	1,0	0
Wound/incision/hernia	13,0	14,0	7,0	2,0

Symptomatic Lymphocele: ~ 5%

Sogani Urology 1981, Gill et al AJR 1993 Clark et al, Cancer, May 2005

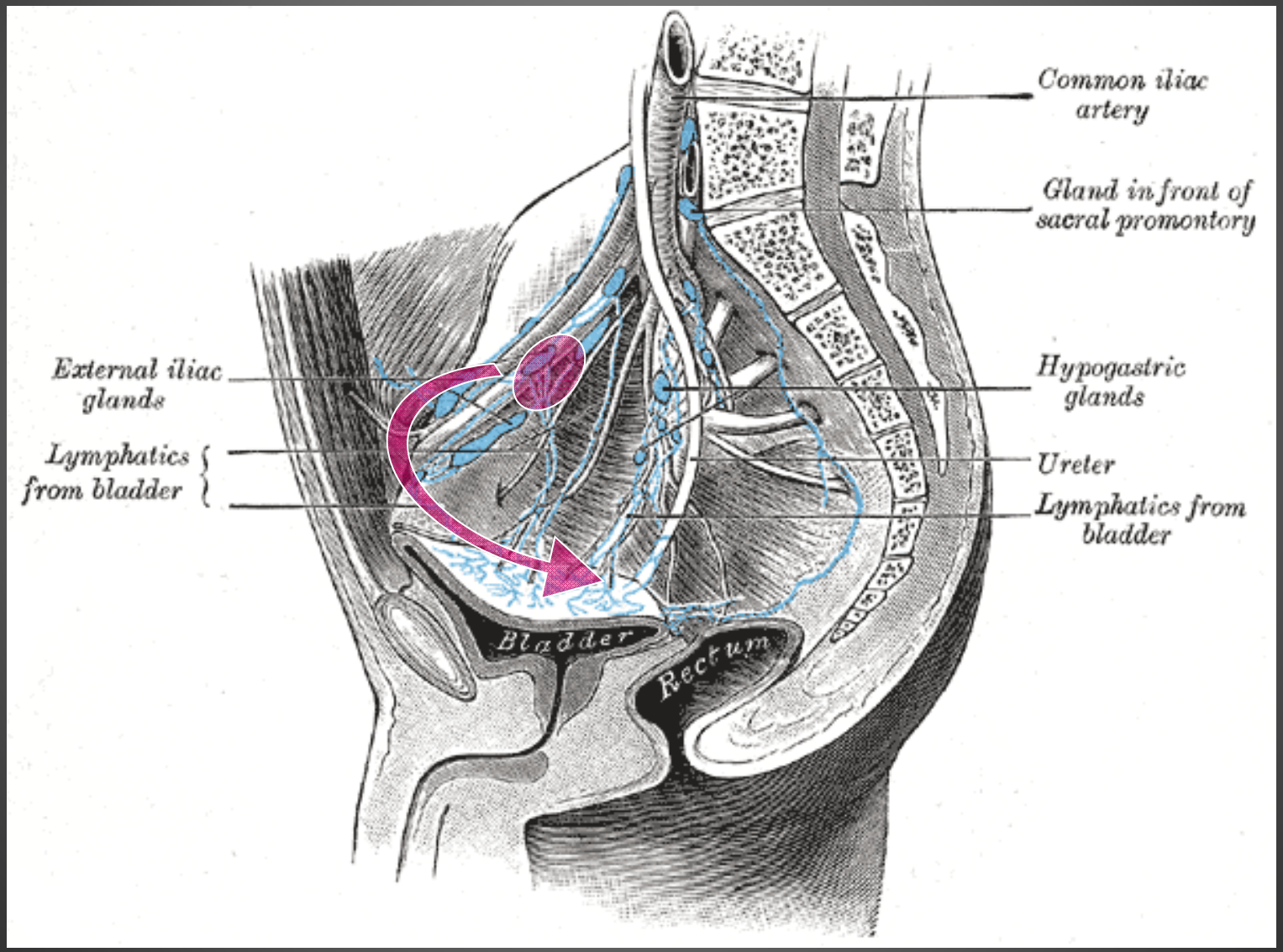


Colleselli et al 1991, Stenzl et al, World J Urol 1998

Is a bilateral extended lymphadenectomy necessary in unilateral invasive BCa?

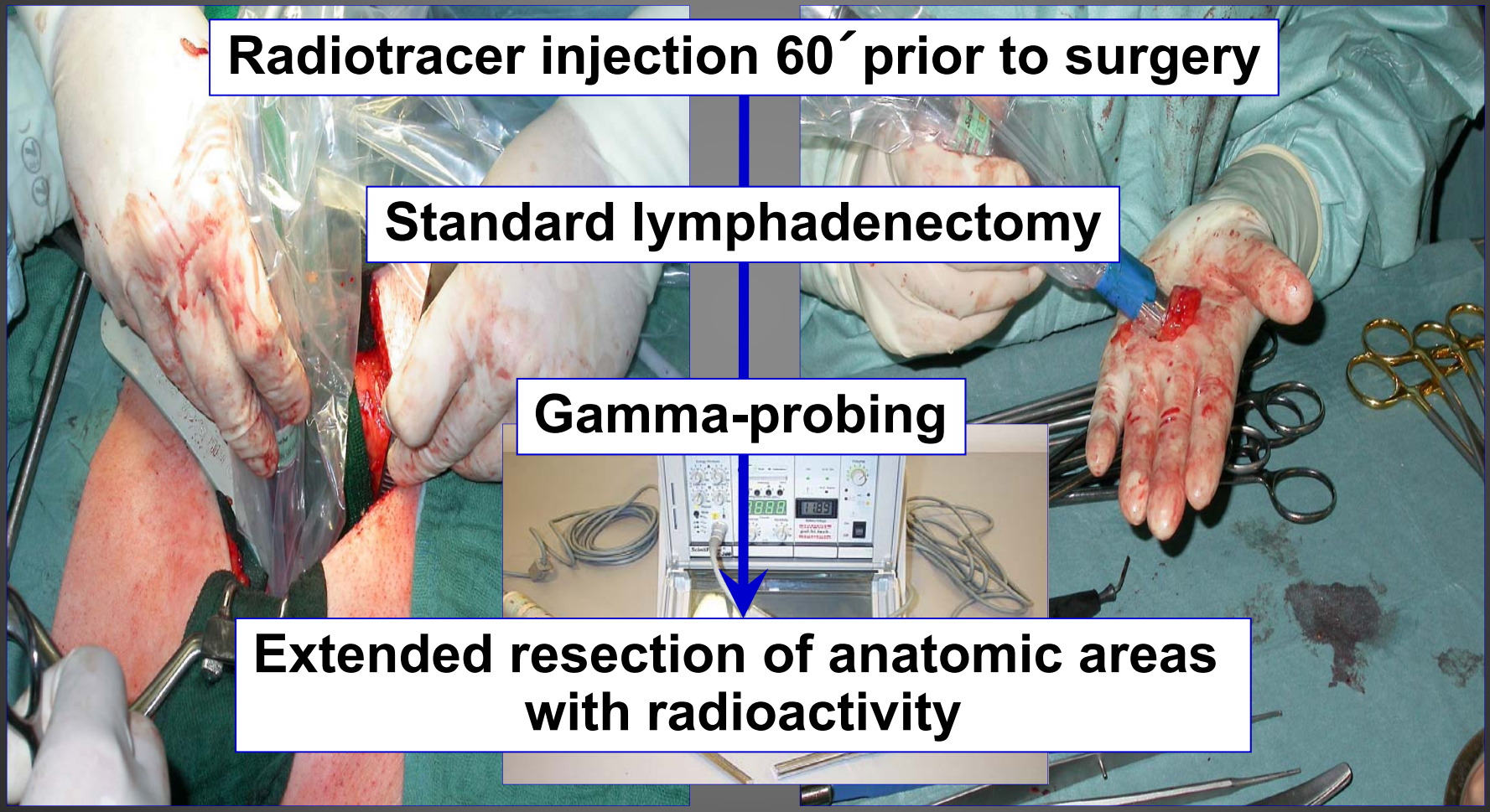
Roth B, Zehnder P, Birkhäuser FD, Burkhard FC, Thalmann GN, Studer UEJ Urol. 2012 May;187(5):1577-82

Lymphatic drainage



Gray's Anatomy of the Human Body, 1918, Barbley.com edition

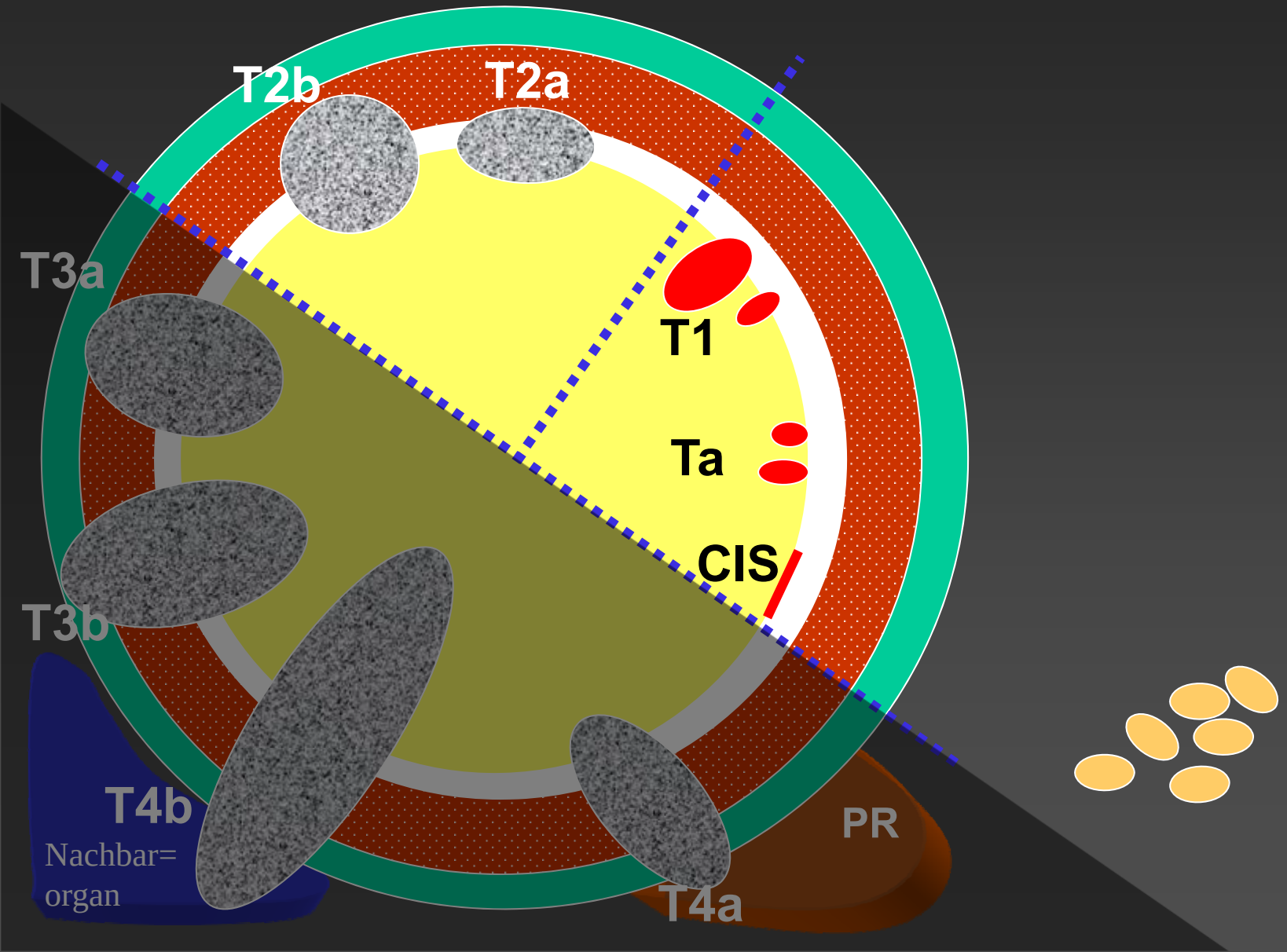
Intraoperative Detection: Multimodality mapping



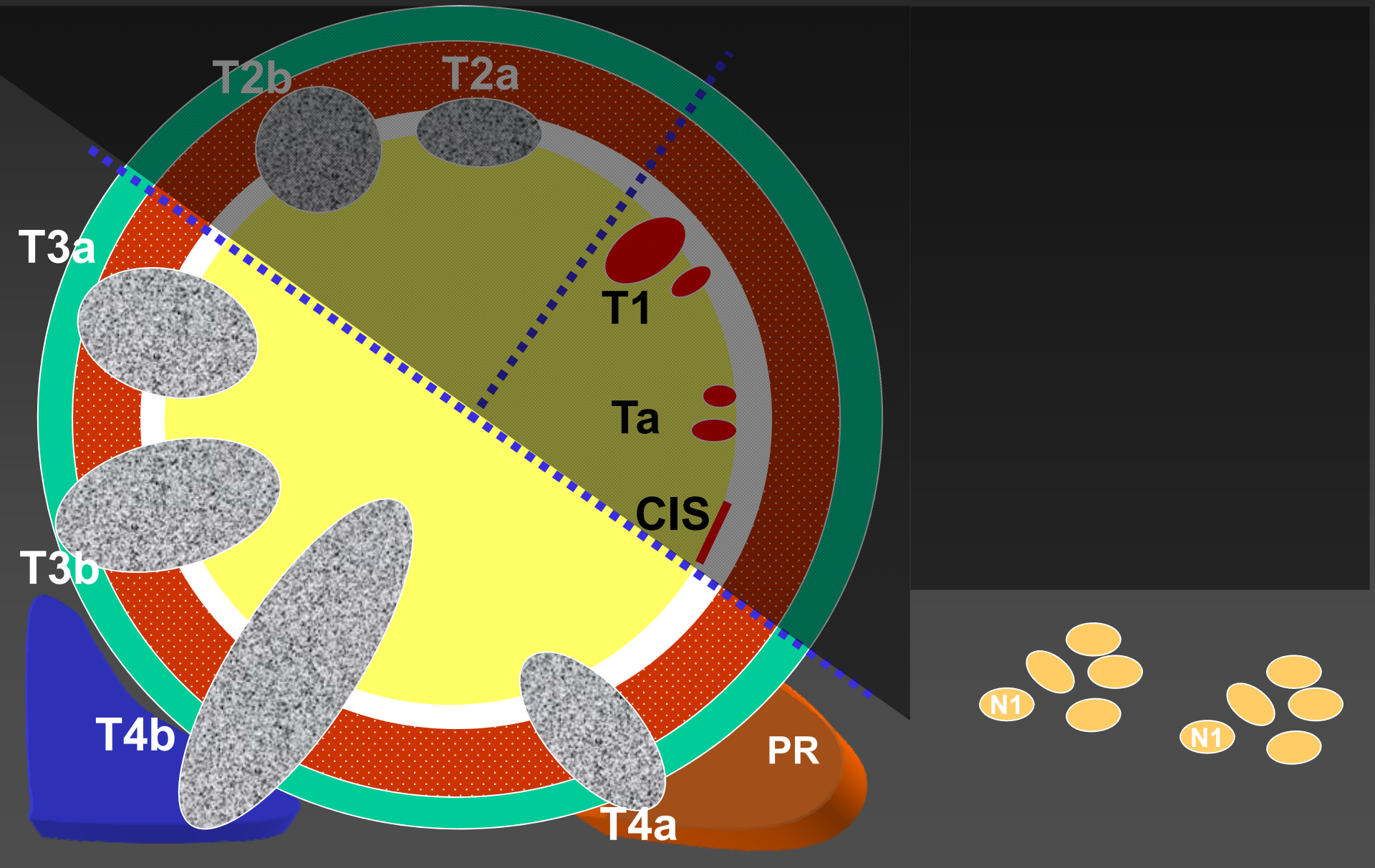
Roth et al., Eur Urol, 2010

And now?

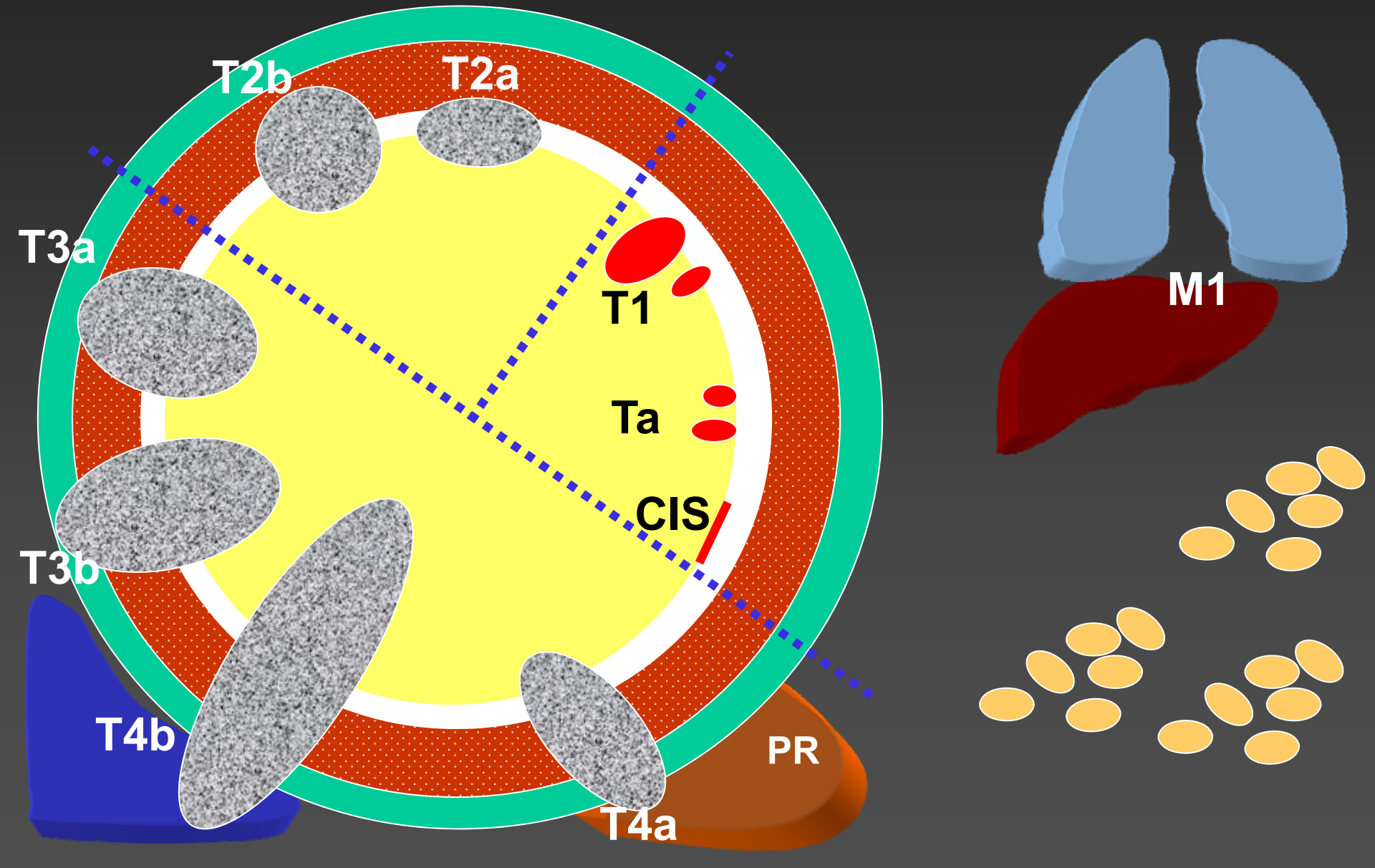
Radical cystectomy + standard LA

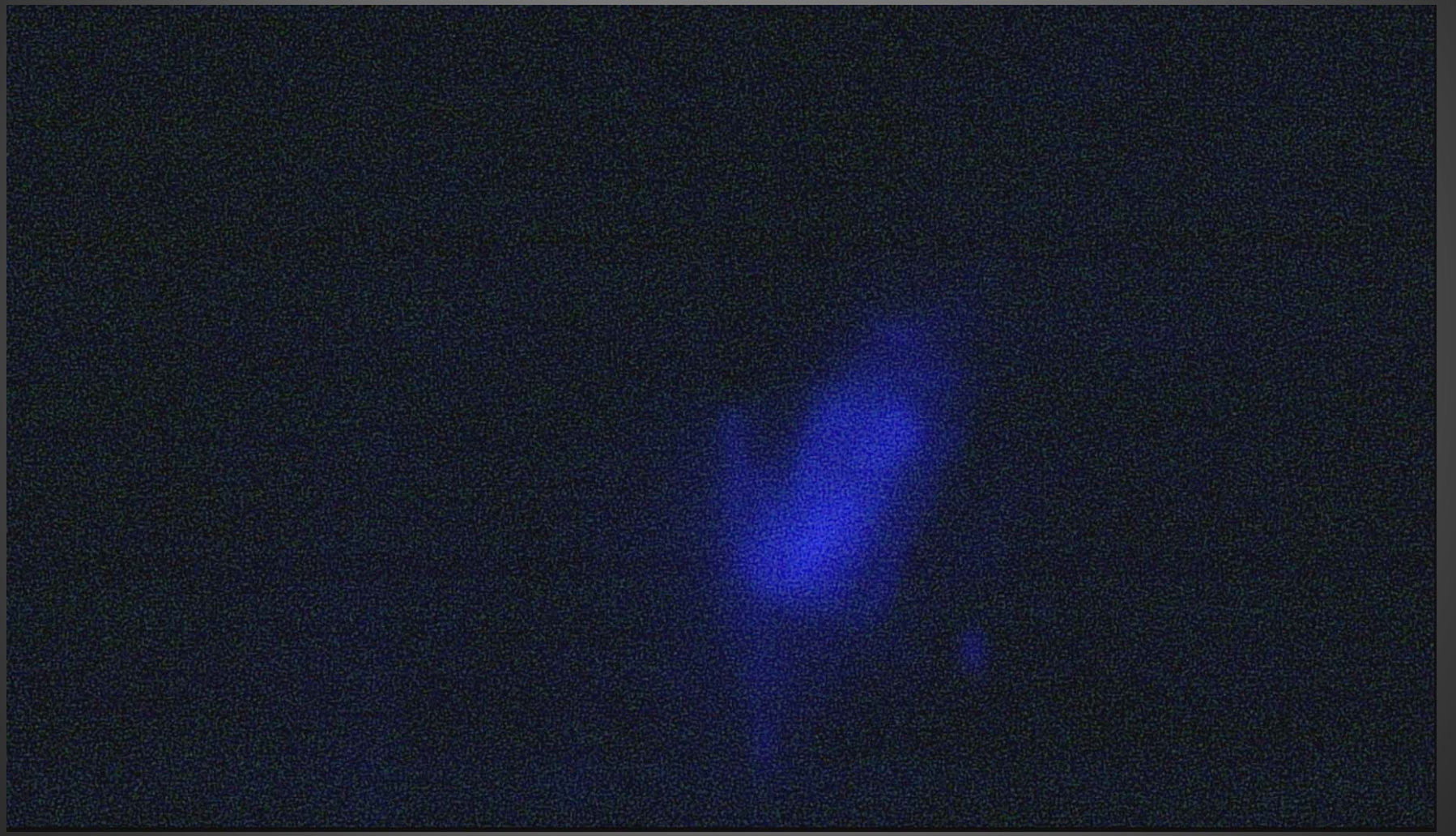


Neoadjuvant Chx + radical cystecomy + extended LA

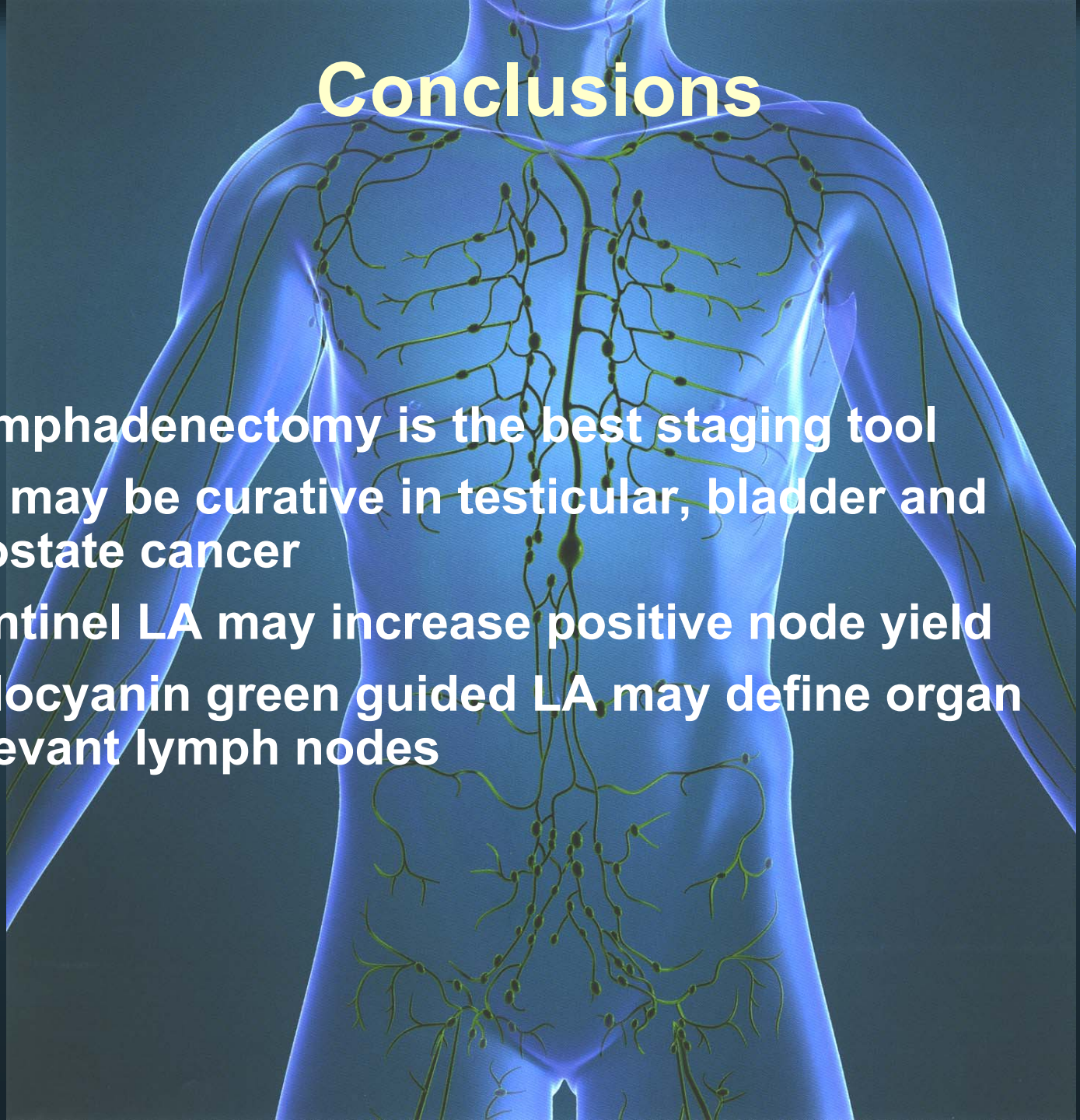


radical cystecomy + extended LA (+/- M-resection → M0) + adjuvant Chx

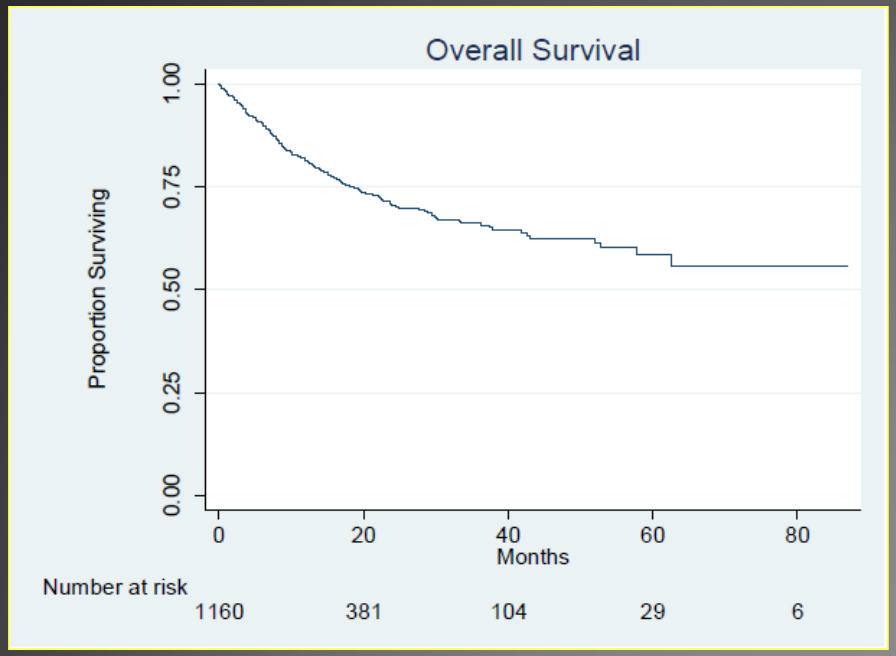




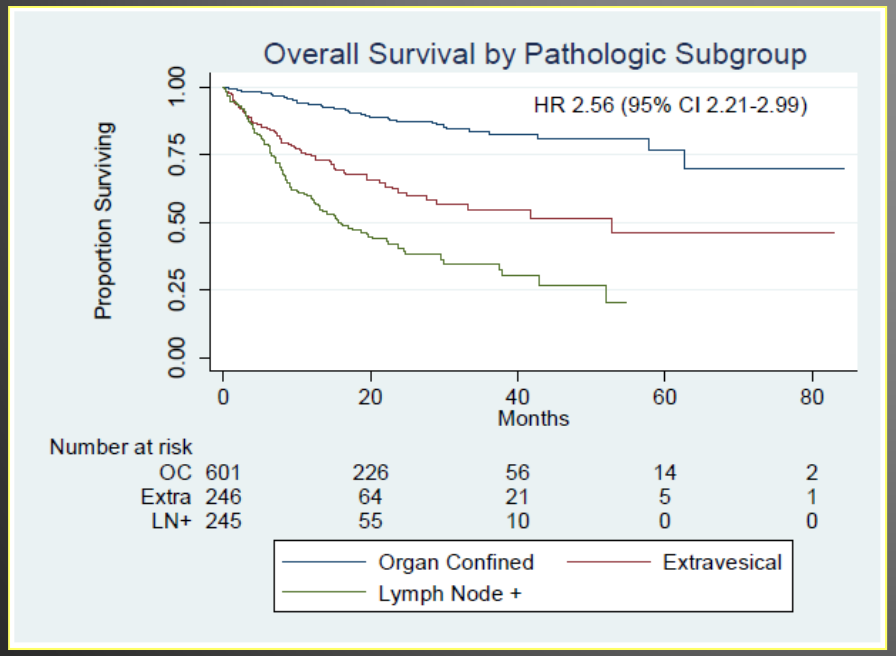
Conclusions



- Lymphadenectomy is the best staging tool
- LA may be curative in testicular, bladder and prostate cancer
- Sentinel LA may increase positive node yield
- Indocyanin green guided LA may define organ relevant lymph nodes



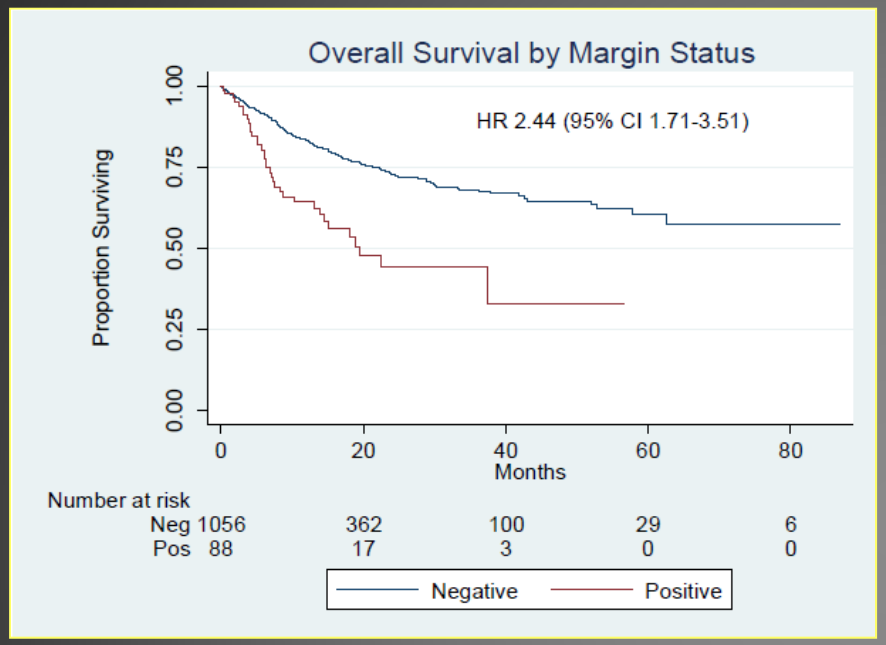
Robotic Assisted Radical Cystectomy: Overall Survival

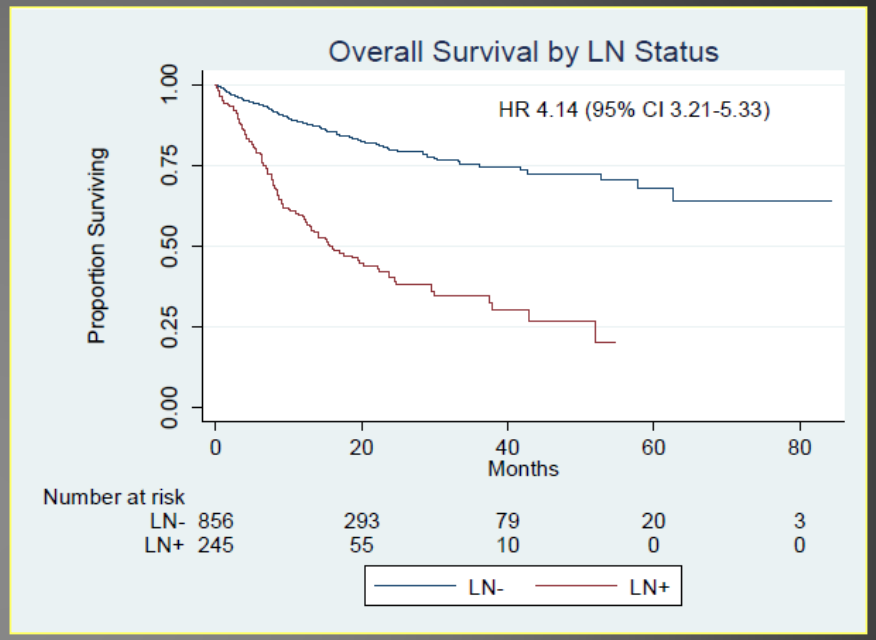


1 year	82% (95% CI 80-85)
2 year	71% (95% CI 68-75)

N>1,000

Khurshid A. Guru et al, IRCC 2012

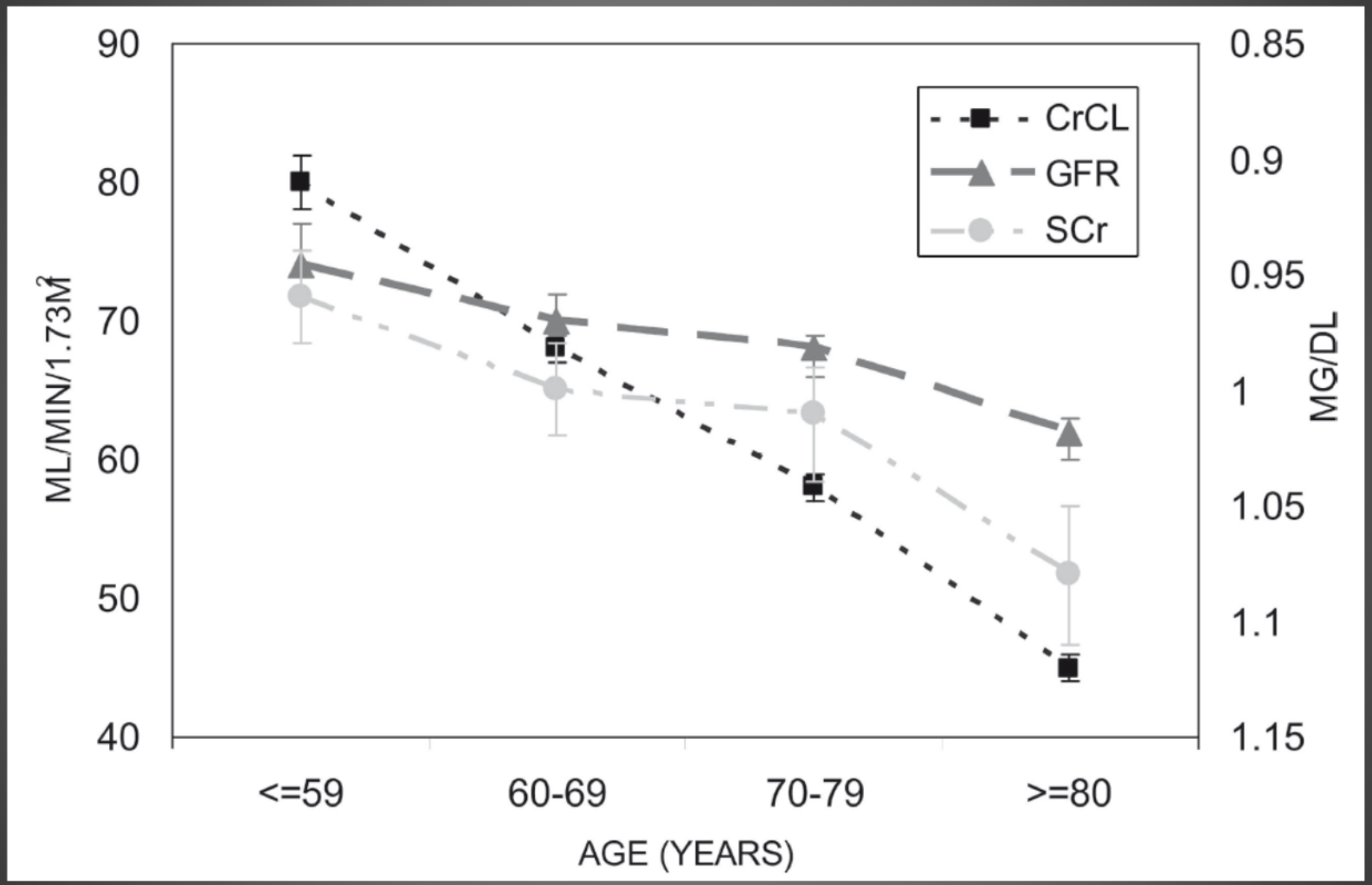




Multivariable Analysis

Variable	Hazard Ratio	95% CI	p value
Pathologic Stage[§]	3.22	2.35-4.40	**<0.001**
Lymph Node Status[*]	2.43	1.82-3.26	**<0.001**
Margin[*]	1.03	0.68-1.55	0.906
Age Group[‡]	1.37	1.19-1.58	**<0.001**

Khurshid A. Guru et al, IRCC 2012



Simerjot et al, J Bone Miner Res, 2007