

Robotic Radical Prostatectomy - beyond my personal experience -



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Laparoscopy

- golden standard in Urology -

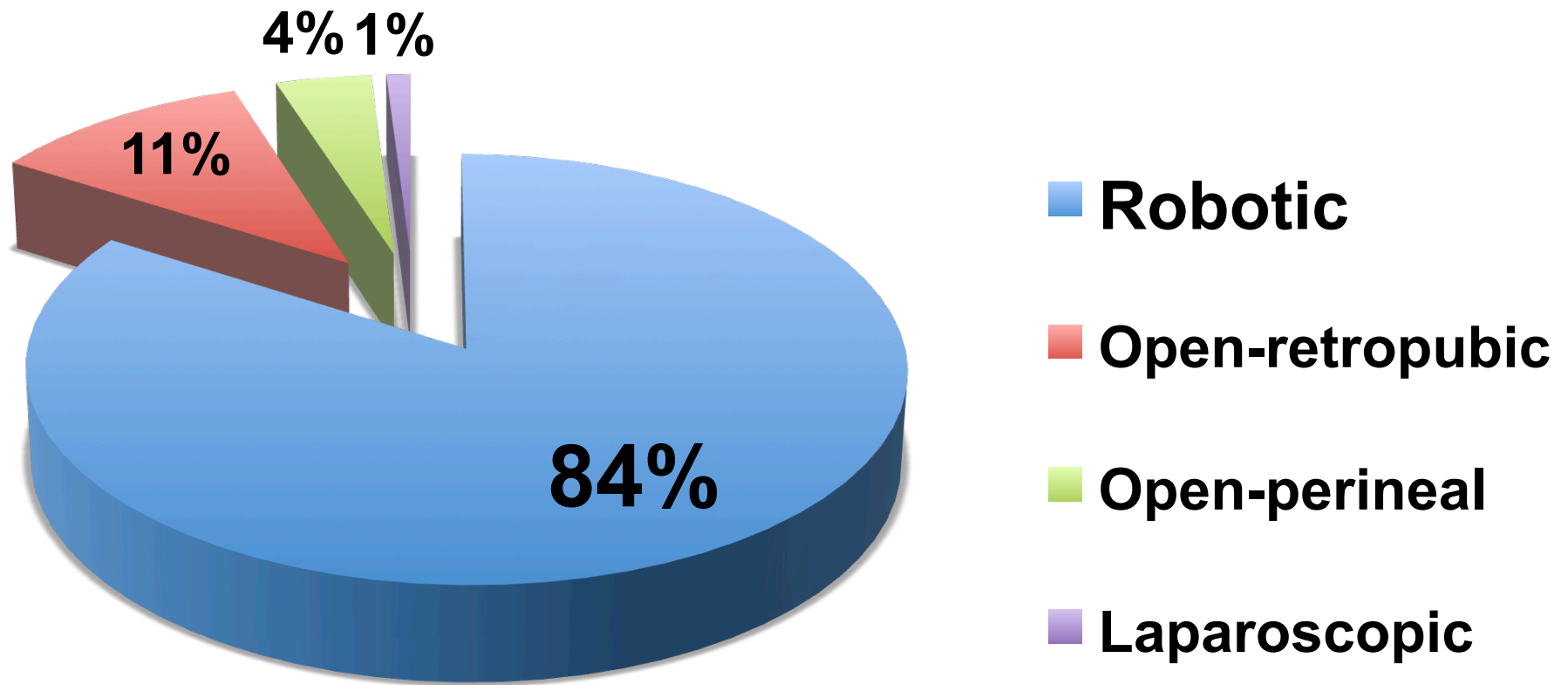
Proved

- Pyeloplasty
- Partial nephrectomy
- Simple or donor nephrectomy
- Radical nephrectomy for localized tumors
- Adrenalectomy

Not proved, but is going to be

- Radical prostatectomy
- Radical cystectomy

**Robotic Radical Prostatectomy
Golden Standard in USA
- relative incidence of procedures in 2010 -**



I used to be laparoscopic surgeon ...

My wide and advance laparoscopic spectrum:

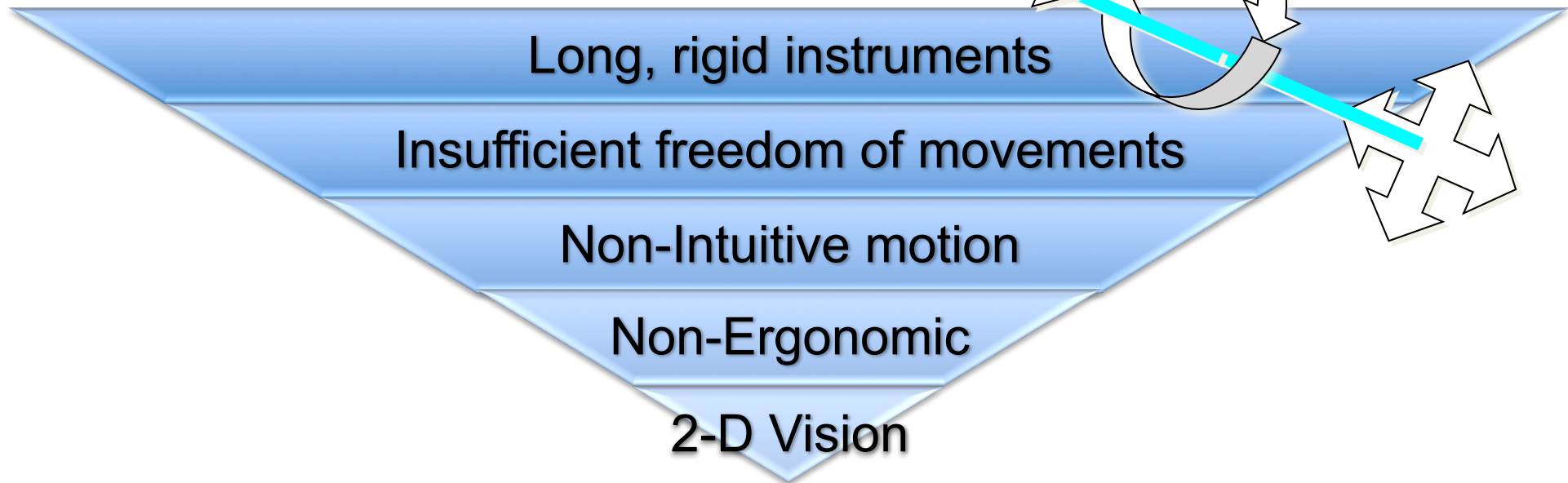
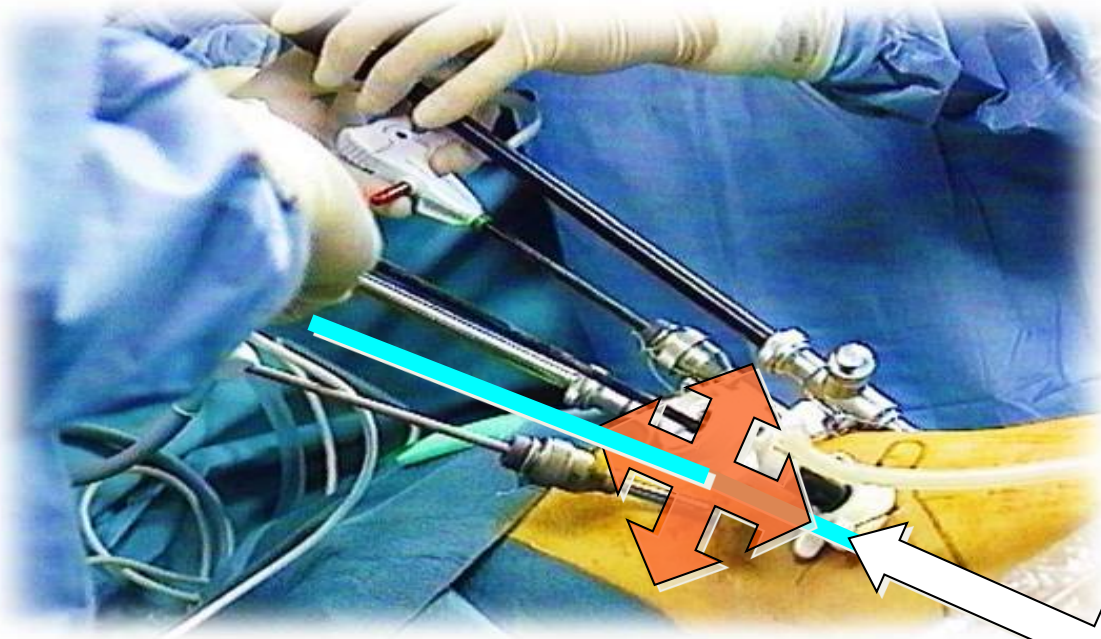
- Radical prostatectomy
- Simple / radical nephrectomy
- Partial nephrectomy
- Nephroureterectomy
- Pyeloplasty
- Adrenalectomy
- Sacropexy

I used to be laparoscopic surgeon ...

My wide and advance laparoscopic spectrum:

- > 600 laparoscopic operations
- > 400 laparoscopic radical prostatectomies
- > 10 papers about laparoscopy in MEDLINE
- Acting as mentor and proctor of laparoscopic urology many times in Germany and in Greece

Restrictions of laparoscopic RP



Potentials of robotic RP

- advantages combination of open & laparoscopic technique -

Bloodless & painless

3-D & magnified vision

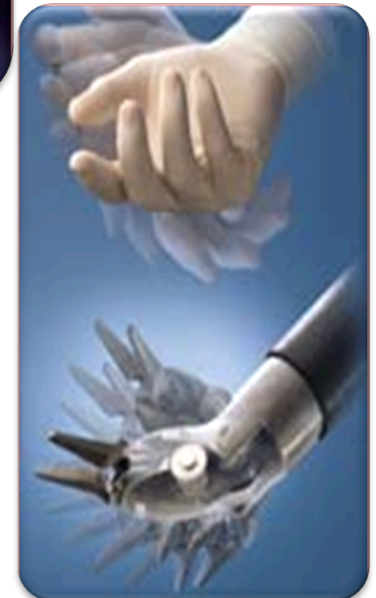
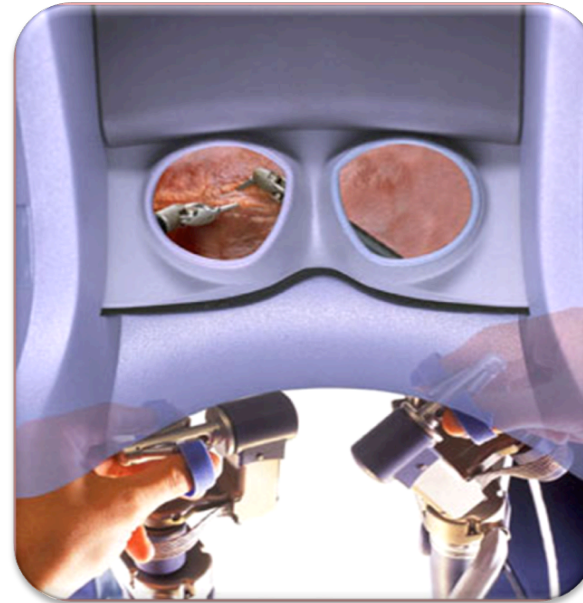
Freedom & precision of movements

Improved continence & potency

Disease cure

Lower morbidity

Faster recovery



Indication for robotic RP

Identical with the open RP

Localized Prostate cancer
without metastases
→ cT2 and/or cT3, cN0, cM0

Life expectancy
longer than the physical progress of
cancer disease
→ at least 10 years

None remarkable surgical risks

Indication for nerve-sparing RP

Independent of pre-OP sexual function
Nerve-sparing → improved continence!

Digital
Rectal
Examination
→ no tumor
in the apex

Partin's
tables
→ low risk for
extracapsular
extension

During
surgery
→ no
adhesions at
neurovascular
bundle

Indication for pelvic lymphadenectomy

Risk of lymph node metastasis >10%
→ at least one of the following:

PSA >20ng/ml

Local stage
> cT2a

Gleason grade 4
as primary
or
Gleason grade 4
as secondary in
>3 biopsy cores

Technique of pelvic lymphadenectomy

If a pelvic lymphadenectomy is indicated,
this must be always extended

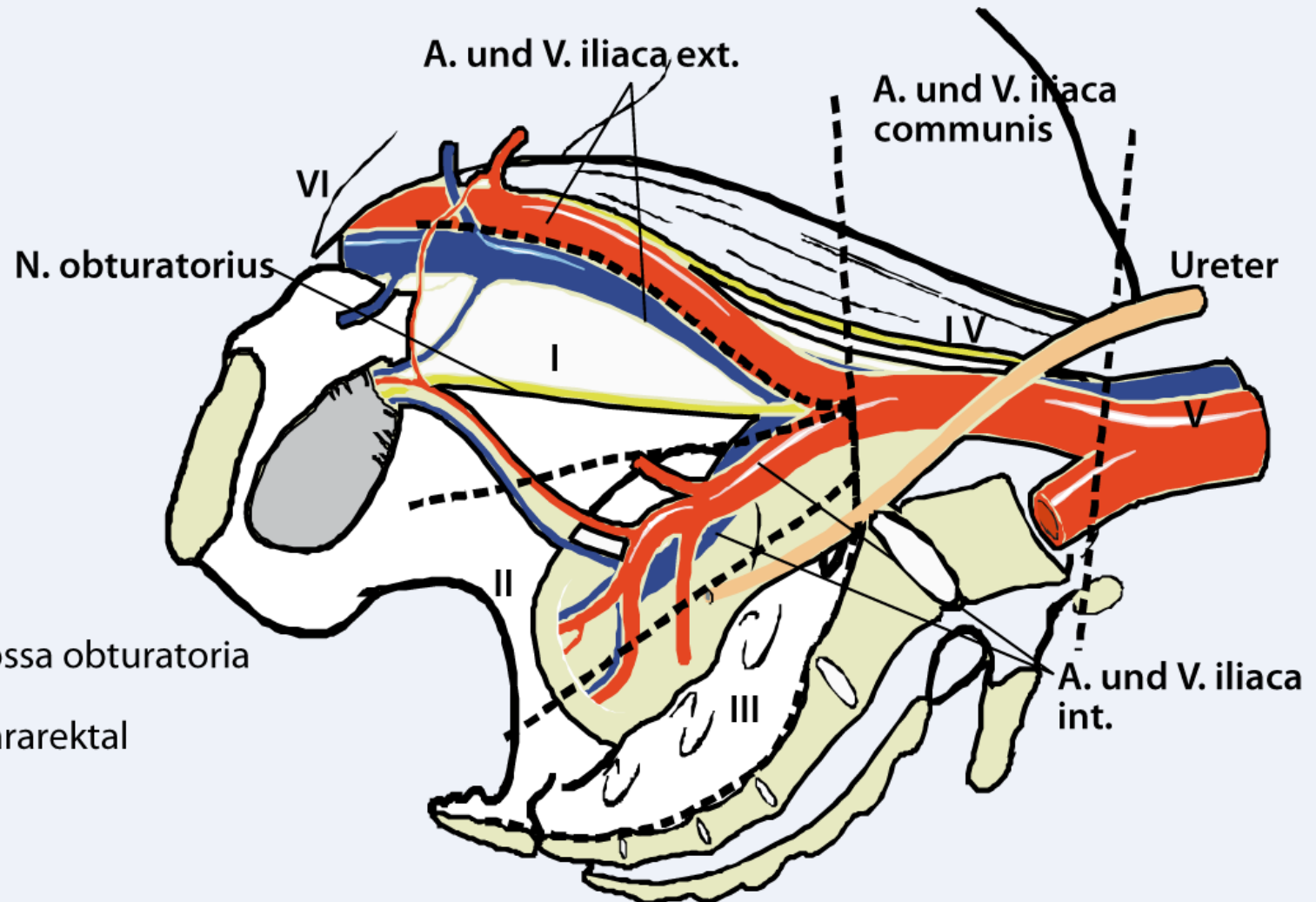
despite all its
possible
complications
and
not restricted
in the obturator
fossa

50% of lymph
node
metastases
**outside the
obturator
fossa!**

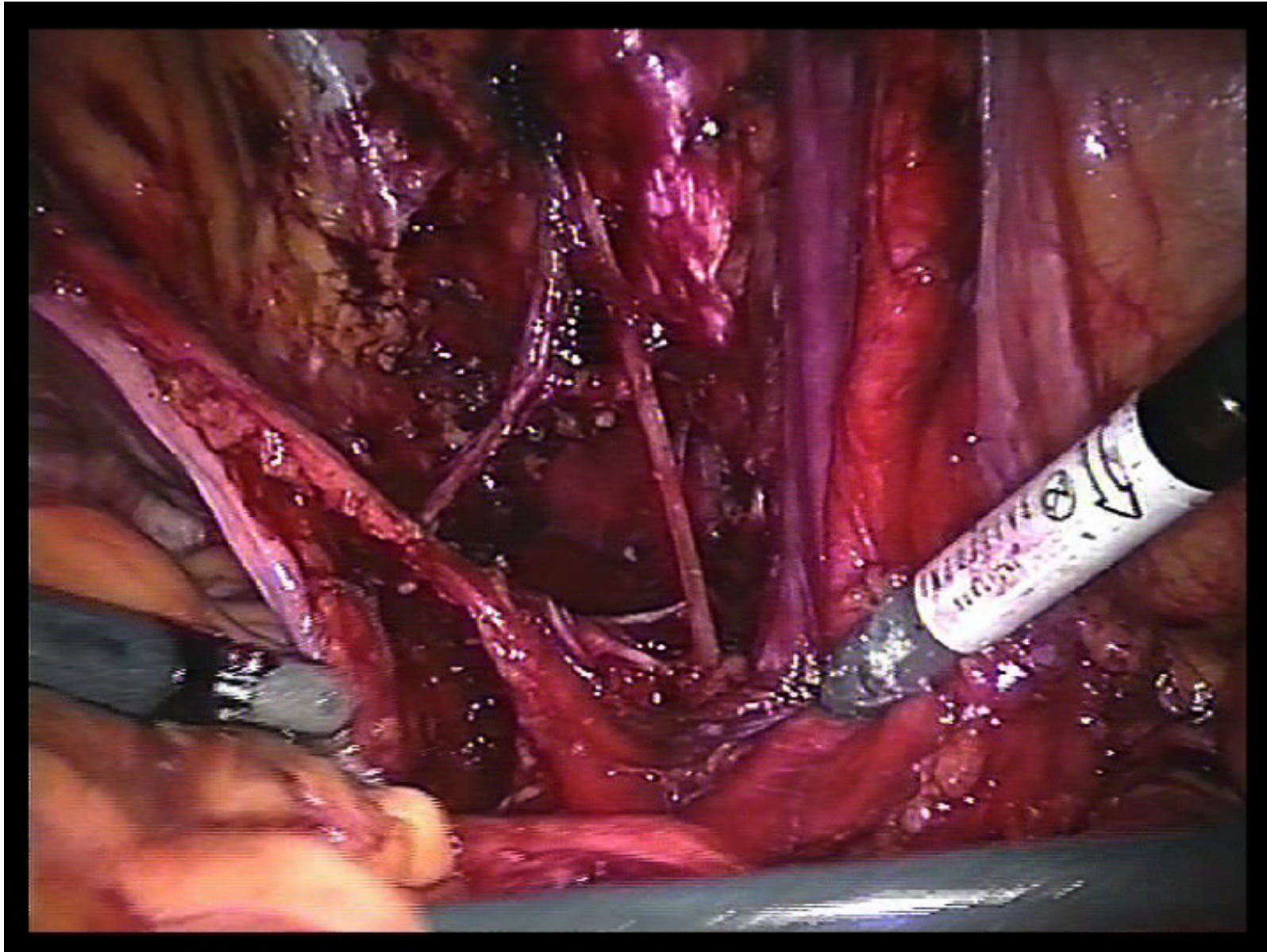
transperitoneal
laparoscopic or
robotic
lymphadenectomy
are **equivalent**
with the open

Limits of pelvic lymphadenectomy

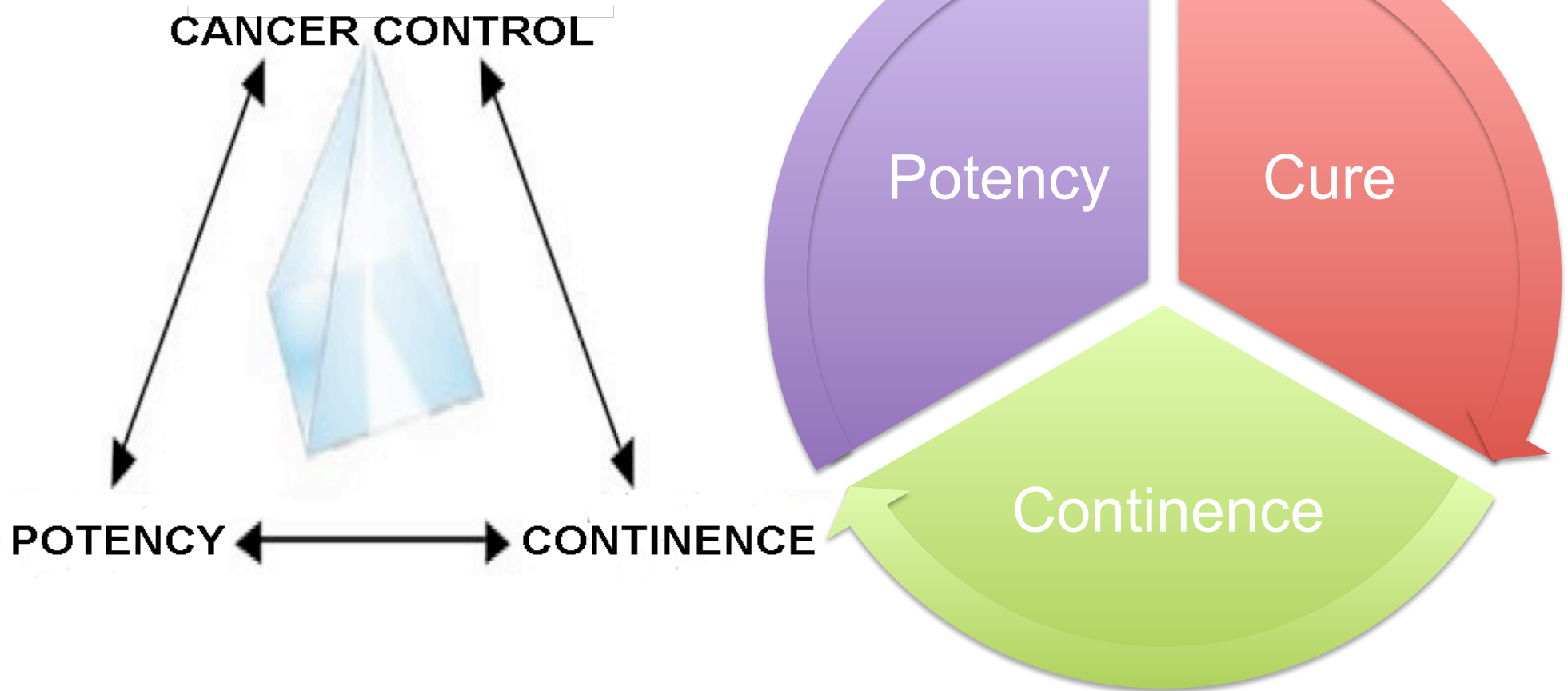
- range I + II ± III = extended field -



Extended robotic pelvic lymphadenectomy



Aims of prostate cancer therapy - trifecta -



Retropubic Radical Prostatectomy:

Long-term cancer control &
recovery of sexual & urinary function (“trifecta”)

Bianco FJ, Scardino PT et al. Urology 2005

- PSA-free survival → 83% at 6 ys F-up
- Continence → 91% & 95% after 1 & 2 ys
- Potency → 63% & 70% after 1.5 & 2 ys

Trifecta (SUBJECTIVE) → 60% at 2 ys

Robotic Radical Prostatectomy:

Short-term cancer control &
recovery of sexual & urinary function (“trifecta”)

V. Patel et al. BJU Int 2010

- 404 men
- Preoperative potent & continent
- Bilateral nerve-sparing robotic prostatectomy

Trifecta (OBJECTIVE) → 86% at 1.5 years

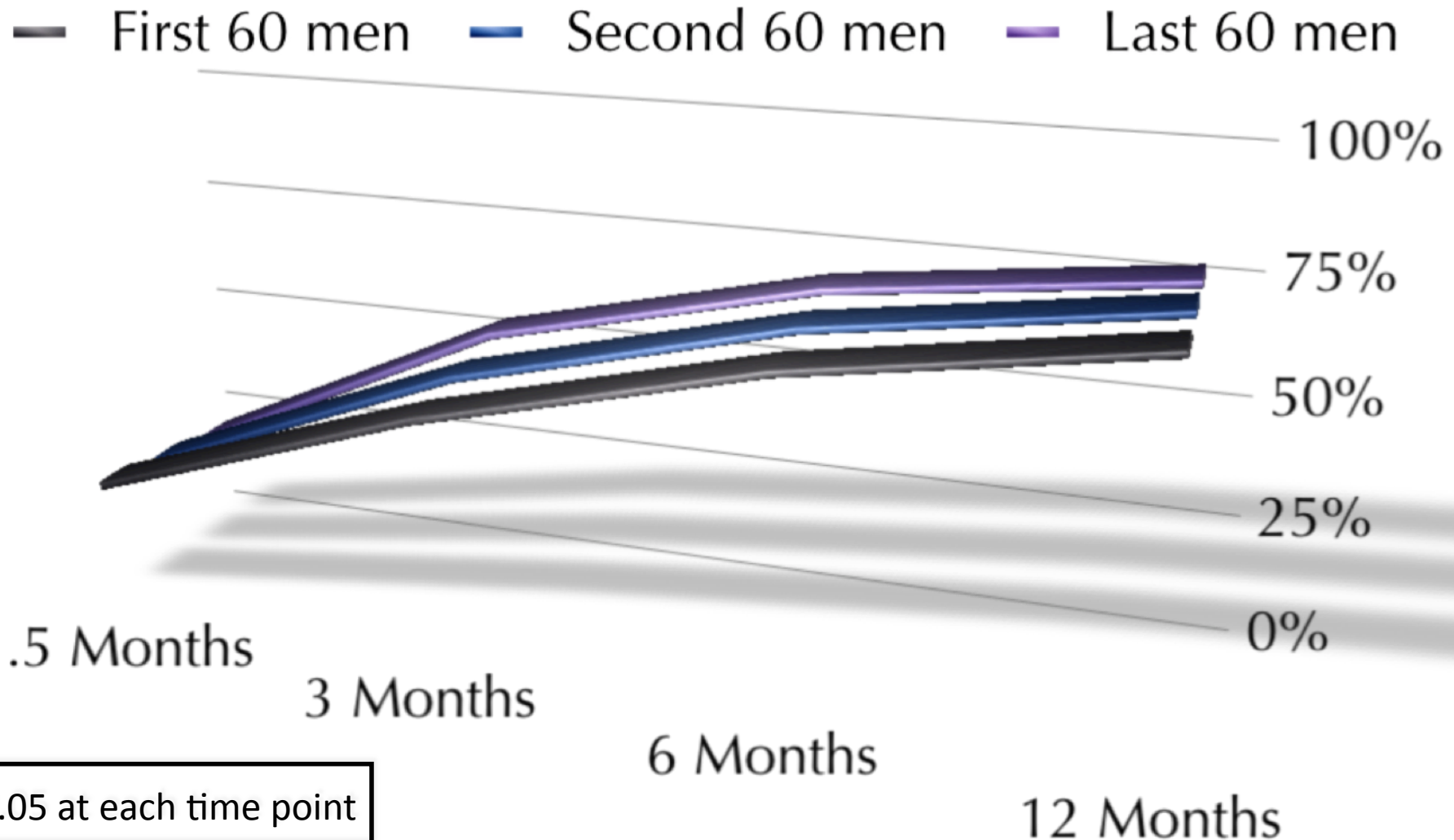
Trifecta achieve faster in young patients

Trifecta outcomes after Robotic Prostatectomy

The impact of learning curve → no effect!

180 preoperative potent & continent men

Poulakis et al. under submission



Aims of robotic RP

- “multi-fecta” -

Minimal complications

Shorter recovery

Trifecta

Quality of life

Positive relationship of cost-morbidity

Pentafecta: A New Concept for Reporting Outcomes of Robot-Assisted Laparoscopic Radical Prostatectomy

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Counseling tool

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Abstract

Background: Widespread use of prostate-specific antigen screening has resulted in younger and healthier men being diagnosed with prostate cancer. Their demands and expectations of surgical intervention are much higher and cannot be adequately addressed with the classic trifecta outcome measures.

Objective: A new and more comprehensive method for reporting outcomes after radical prostatectomy, the *pentafecta*, is proposed.

Design, setting, and participants: From January 2008 through September 2009, details of 1111 consecutive patients who underwent robot-assisted radical prostatectomy performed by a single surgeon were retrospectively analyzed. Of 626 potent men, 332 who underwent bilateral nerve sparing and who had 1 yr of follow-up were included in the study group.

Measurements: In addition to the traditional trifecta outcomes, two perioperative variables were included in the *pentafecta*: no postoperative complications and negative surgical margins. Patients who attained the trifecta and concurrently the two additional outcomes were considered as having achieved the *pentafecta*. A logistic regression model was created to evaluate independent factors for achieving the *pentafecta*.

Results and limitations: Continence, potency, biochemical recurrence-free survival, and trifecta rates at 12 mo were 96.4%, 89.8%, 96.4%, and 83.1%, respectively. With regard to the perioperative outcomes, 93.4% had no postoperative complication and 90.7% had negative surgical margins. The *pentafecta* rate at 12 mo was 70.8%. On multivariable analysis, patient age ($p = 0.001$) was confirmed as the only factor independently associated with the *pentafecta*.

Conclusions: A more comprehensive approach for reporting prostate surgery outcomes, the *pentafecta*, is being proposed. We believe that *pentafecta* outcomes more accurately represent patients' expectations after minimally invasive surgery for prostate cancer. This approach may be beneficial and may be used when counseling patients with clinically localized disease.

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Robotic Radical Prostatectomy:

Pentafecta = Trifecta +

+ no complication + negative surgical margins

V. Patel et al. Eur Urol 2011

332 men

preoperative potent & continent

bilateral nerve-sparing robotic radical prostatectomy

1 year followup

Trifecta → 83%

- No complication – 93%
- Negative surgical margins – 90%

Pentafecta → 71%

Open retropubic prostatectomy versus robot-assisted laparoscopic prostatectomy: A comparison of length of sick leave

Scandinavian Journal of Urology and Nephrology, 2009; 43: 259–264

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- 274 working Radical Prostatectomy (RP) patients (127 Robotic + 147 Open)
- 2 large hospitals performing both procedures
- Adjusted for workload, salary, BMI, disease characteristics
- Median time sick leave:
 - Robotic RP → 11 days
 - Open RP → 49 days

Robotic Radical Prostatectomy saves money for society

Robotic Radical Prostatectomy:

**Exafecta = Trifecta +
+ no complication + negative surgical margins
+ time sick leave <2 weeks**

V. Poulakis et al. under Submission

75 working men
preoperative potent & continent
bilateral nerve-sparing robotic radical prostatectomy
1 year followup

Trifecta → 78%

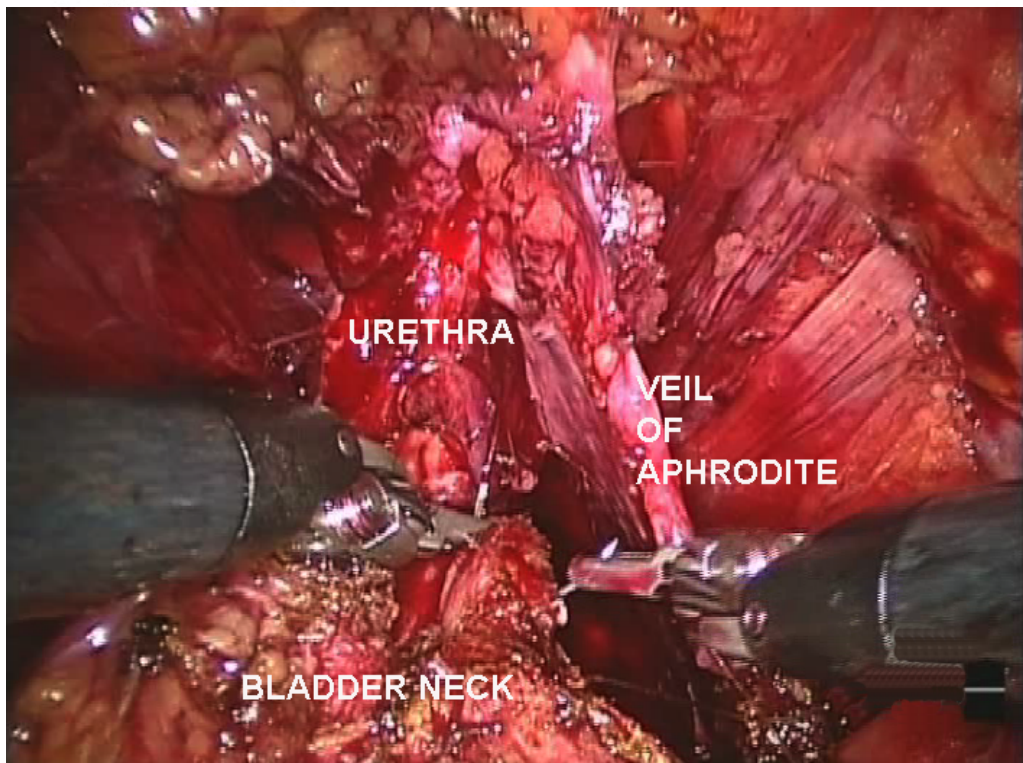
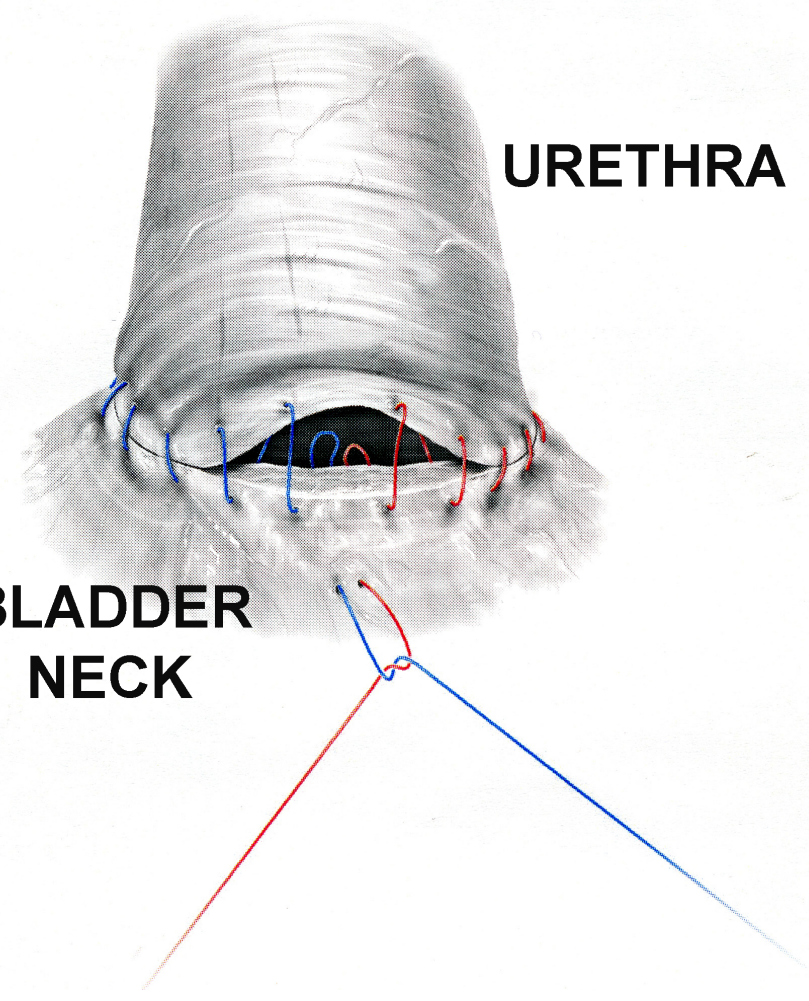
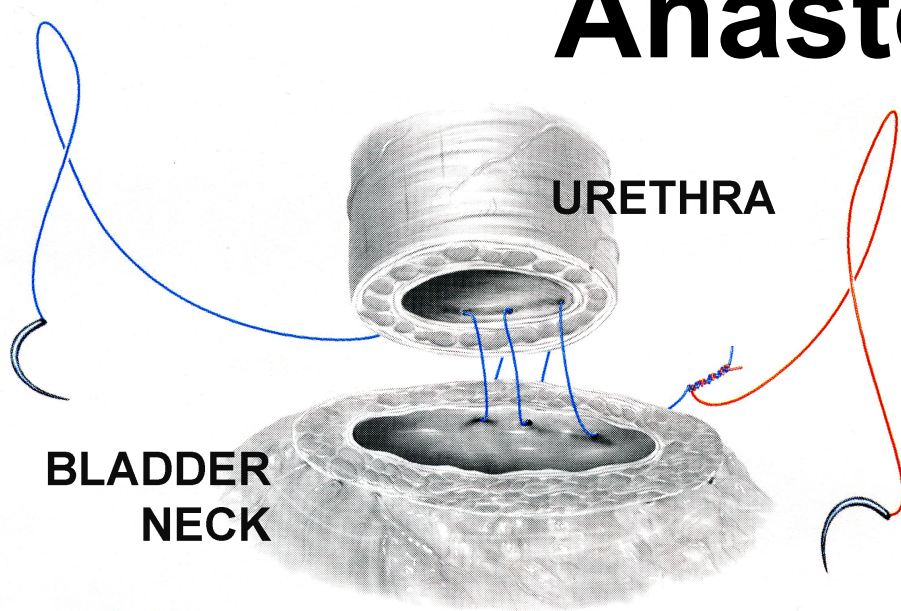
- No complication – 90%
- Negative surgical margins – 89%

Pentafecta → 69%

- Time sick leave <2 weeks – 80%

Exafecta → 64%

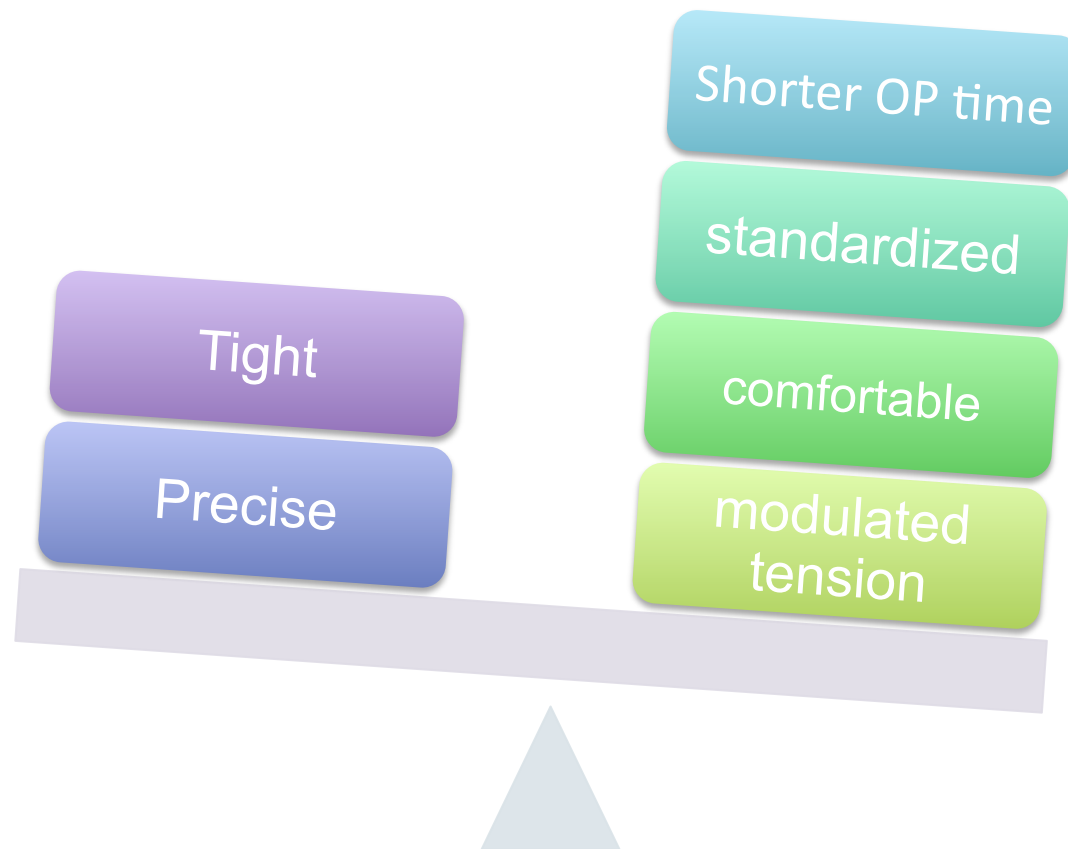
Anastomosis



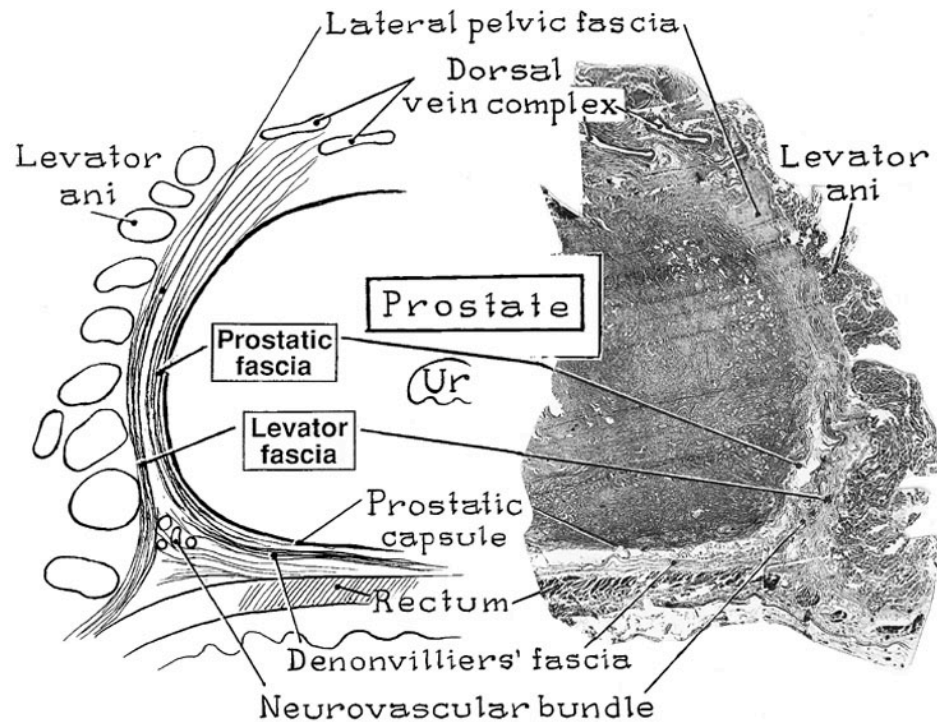
Robotic urethrovesical anastomosis - single vs continuous -

Single

Continuous

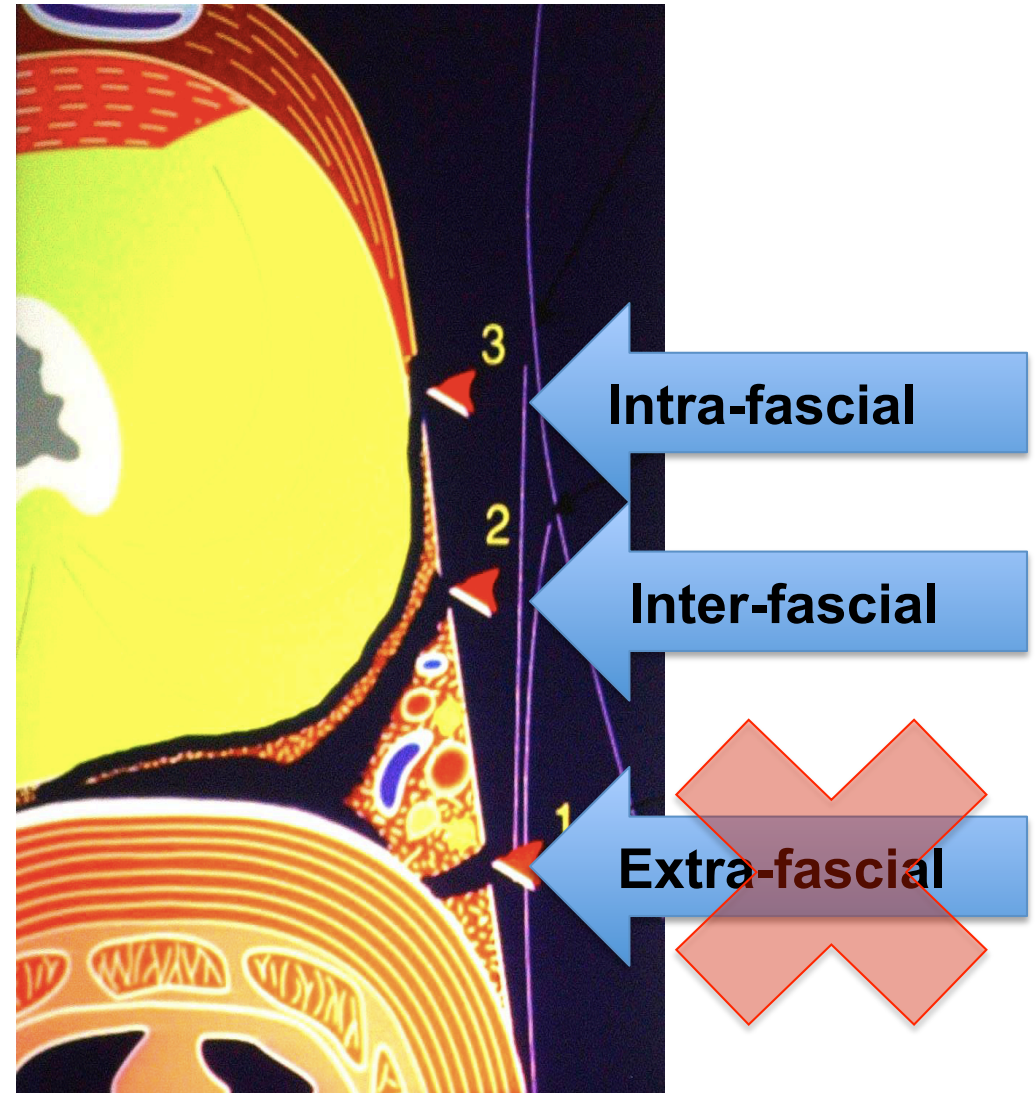


Anatomy of prostatic fascia



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Walsh, 2004

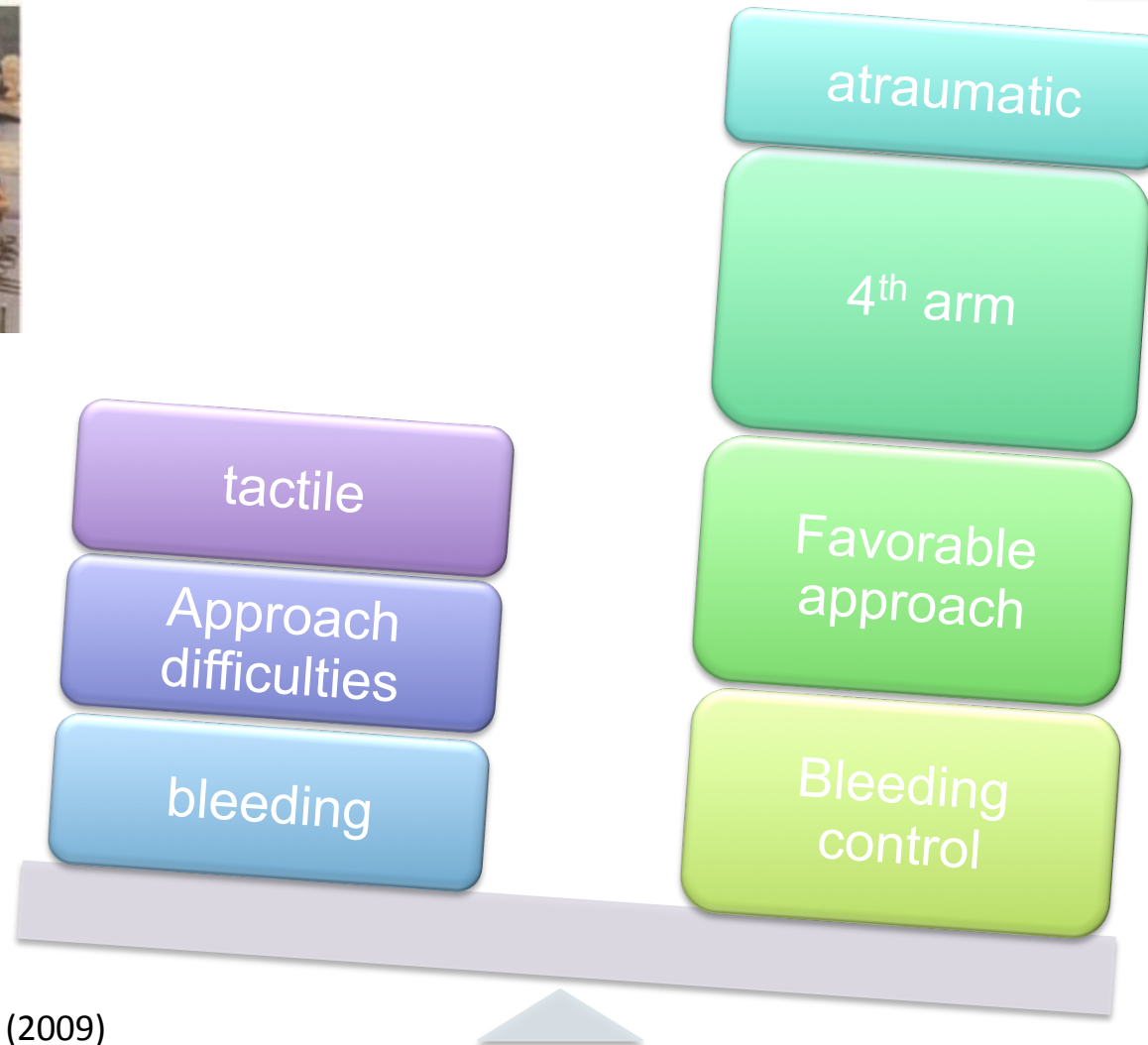


Basic principles of nerve-sparing open vs robotic

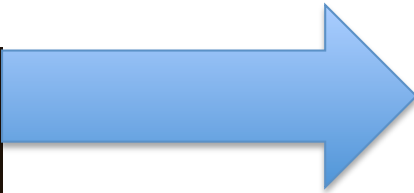
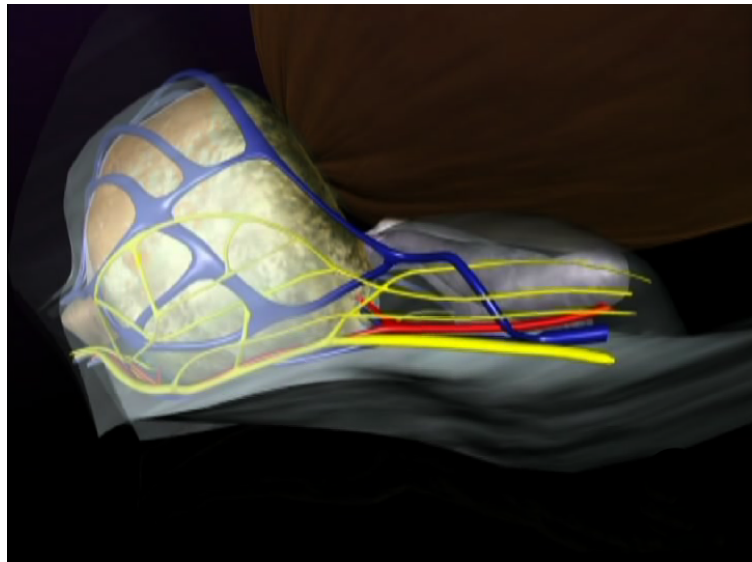
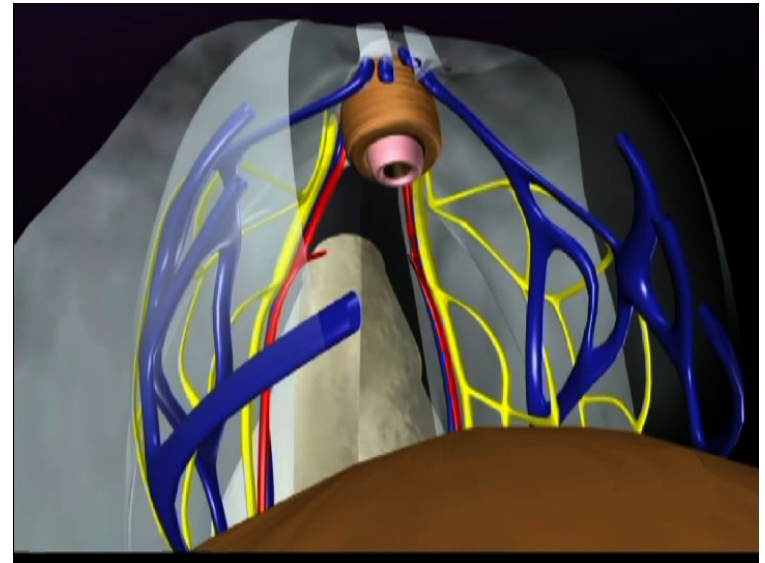
Open



Robotic

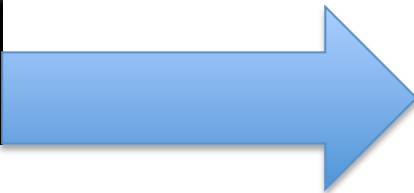


Veil of
Aphrodite

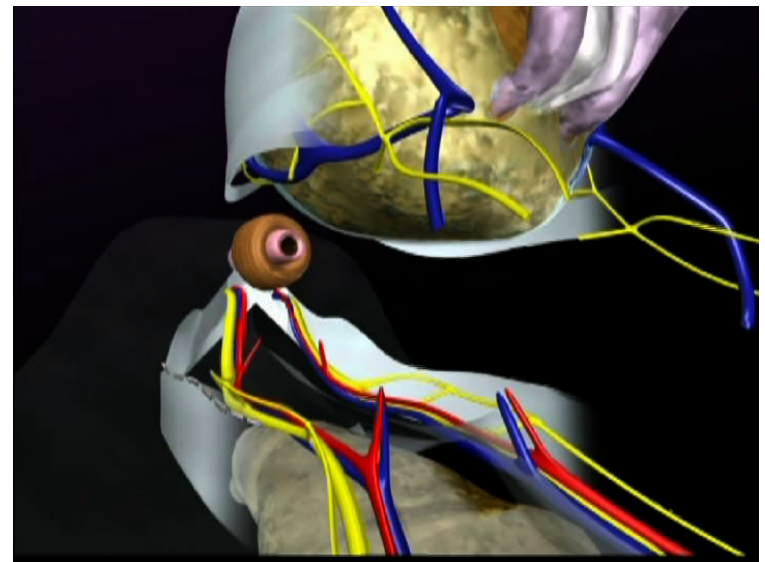


Schematic difference

Veil of Aphrodite vs Conventional nerve-sparing

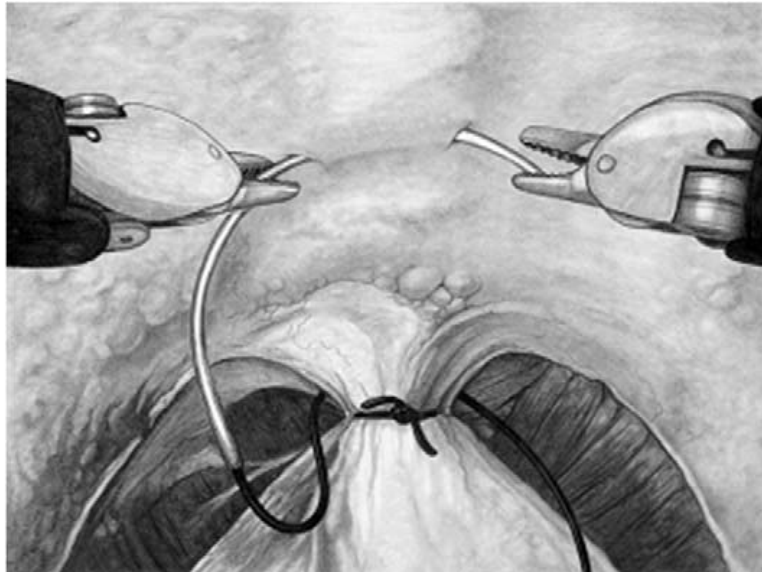


Conventional
Nerve-sparing

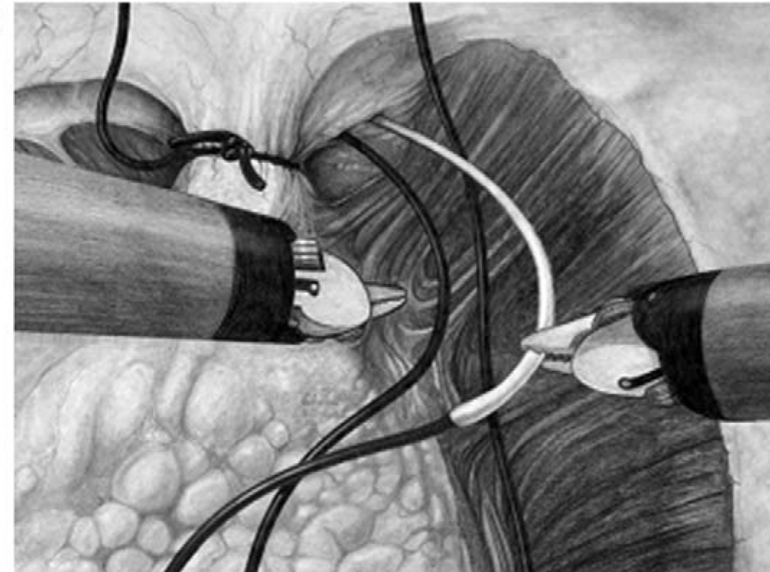


Improved early continence - periurethral suspension stitch -

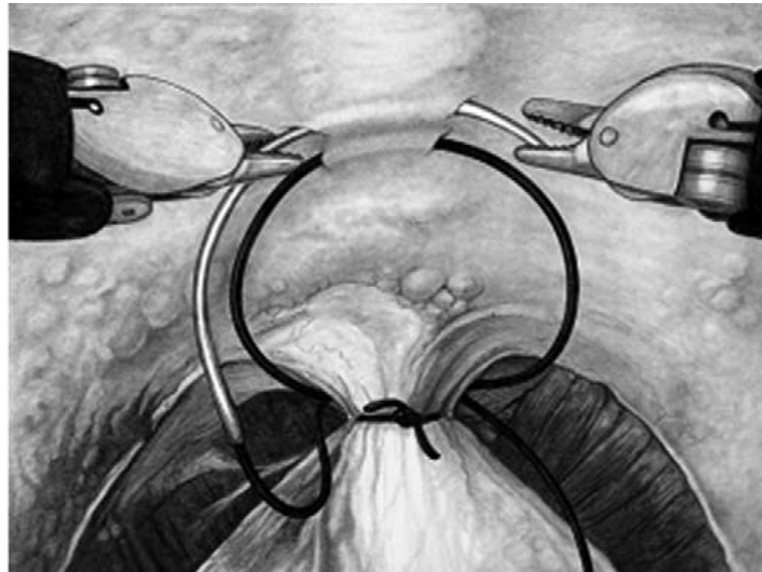
(a)



(b)



(a)

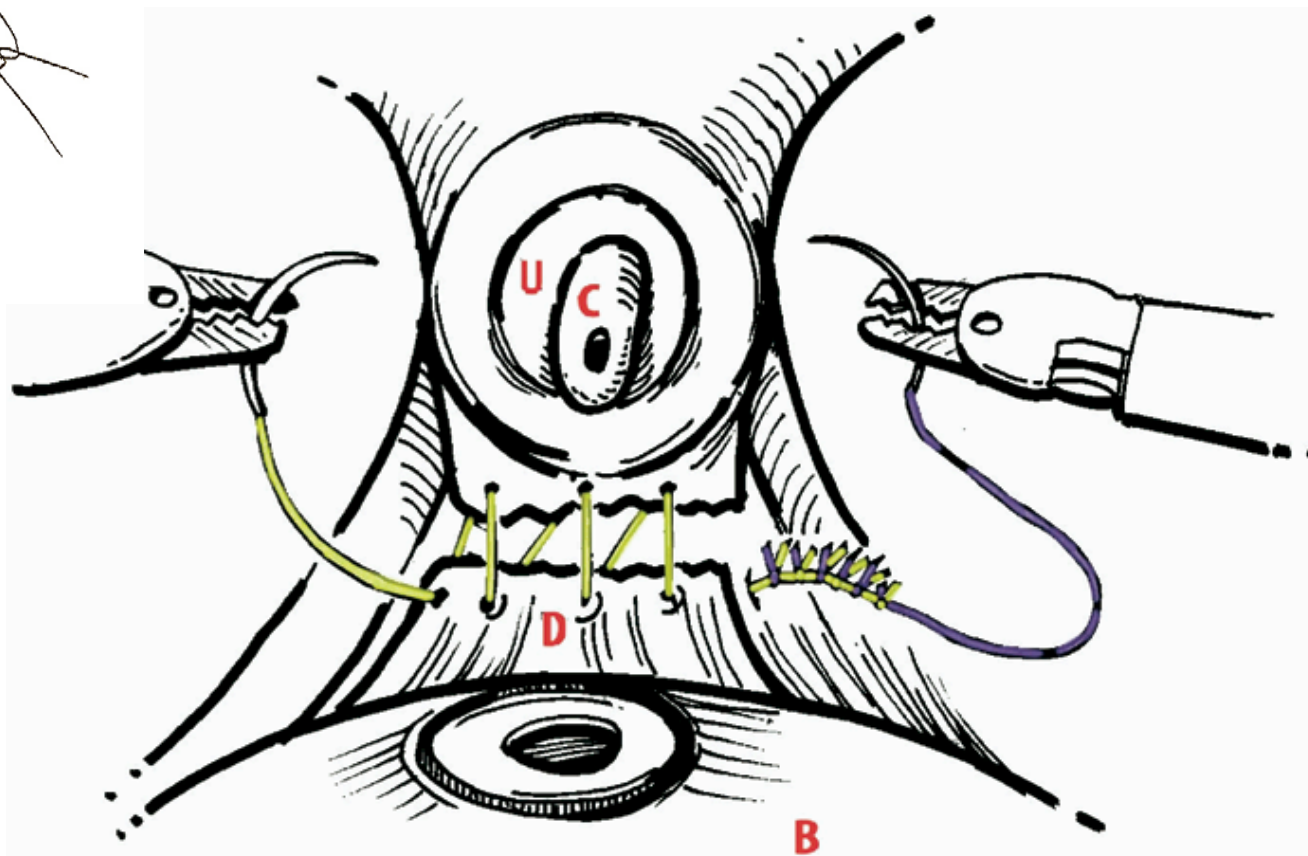
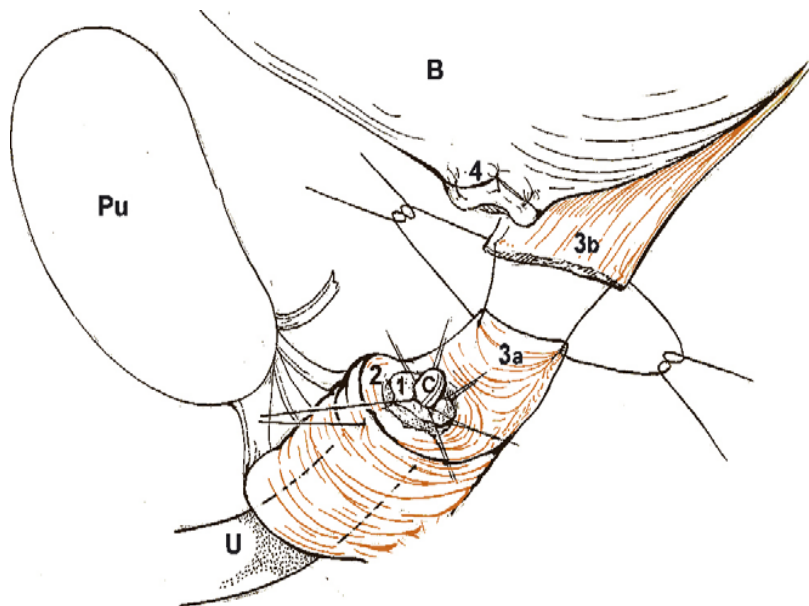


(b)



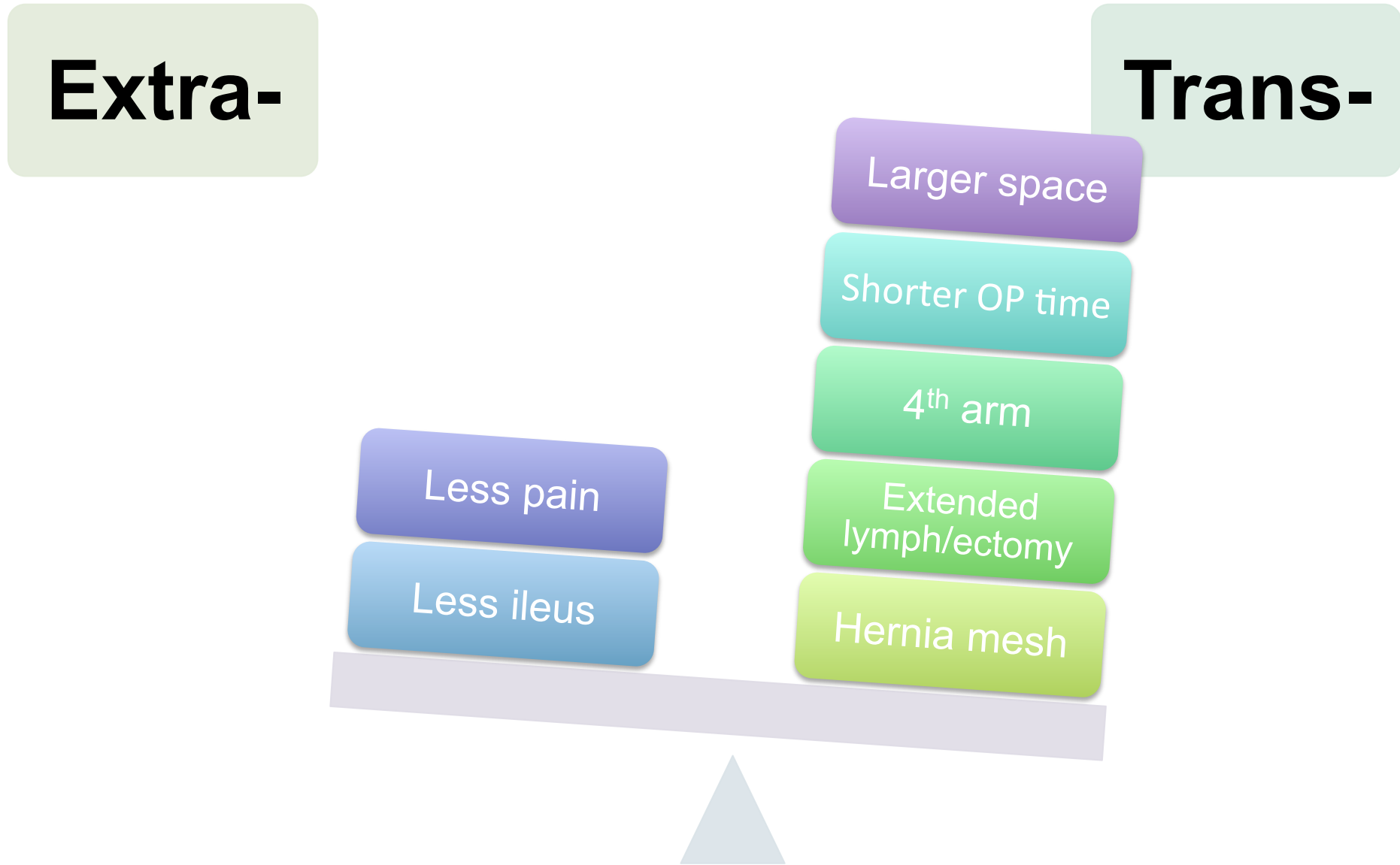
Improved early continence

- restoration of posterior aspect of sphincter -



Robotic RP

- extraperitoneal vs transperitoneal -



Meta-Analysis of comparative studies open vs laparoscopic vs robotic RP

Open RP → more complications

- 3 meta-analyses
- Comparative study of 2 at least RP approaches
- > 40 comparative studies
- > 5,000 patients
- Equivalent results
 - Continence & potency at 1 year
 - Positive surgical margins & recurrence
- Advantage of laparoscopic & robotic RP
 - Less bleeding
 - Less transfusions

Ficcarra V et al, Eur Urol 2009, 55: 1037

Parsons JK et al, Urology 2008, 72: 412

Toohar R et al, J Urol 2006, 175: 2011

Safety Profile of Robot-Assisted Radical Prostatectomy: A Standardized Report of Complications in 3317 Patients

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Abstract

Background: Previous studies attempting to assess complications after robot-assisted radical prostatectomy (RARP) are limited by their small numbers, short follow-up, or lack of risk factor analysis.

Objective: To document complications after RARP by strict application of standardized reporting criteria.

Design, setting, and participants: Between January 2005 and December 2009, 3317 consecutive patients underwent RARP at a tertiary referral center. Median follow-up was 24.2 mo (interquartile range: 12.4–36.9).

Intervention: Transperitoneal RARP was performed by one of five surgeons—two experienced, three beginners.

Measurements: Complications were captured by exhaustive review of multiple datasets, including our prospective prostate cancer database, claims data, and electronic medical and institutional morbidity and mortality records, and reported according to the Martin–Donat criteria. Complications were stratified by type (medical/surgical), Clavien classification, and timing of onset. Multivariable analysis of factors predictive of complications was performed.

Results and limitations: The median hospitalization time was 1 d. There were 368 complications in 326 patients (9.8%), including a transfusion rate of 2.2%. We detected 79 medical complications in 78 patients (2.4%) and 289 surgical complications in 264 patients (8.0%). There were 242 minor (Clavien 1–2) and 126 major (Clavien 3–5) complications. Two hundred ninety-nine (81.3%) complications occurred within 30 d, 17 (4.6%) within 31–90 d, and 52 (14.1%) after 90 d from surgery. On multivariable analysis, preoperative prostate-specific antigen values and cardiac comorbidity were predictive for medical complications, whereas age, gastroesophageal reflux disease, and biopsy Gleason score were predictive of surgical complications. Limitations of this study include representing results from a single high-volume referral center and not including the learning curve of the two most experienced surgeons.

Conclusions: RARP is a safe operation, with an overall complication rate of 9.8%. Most complications occurred within 30 d of surgery.

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Personal experience first 500 robotic RP

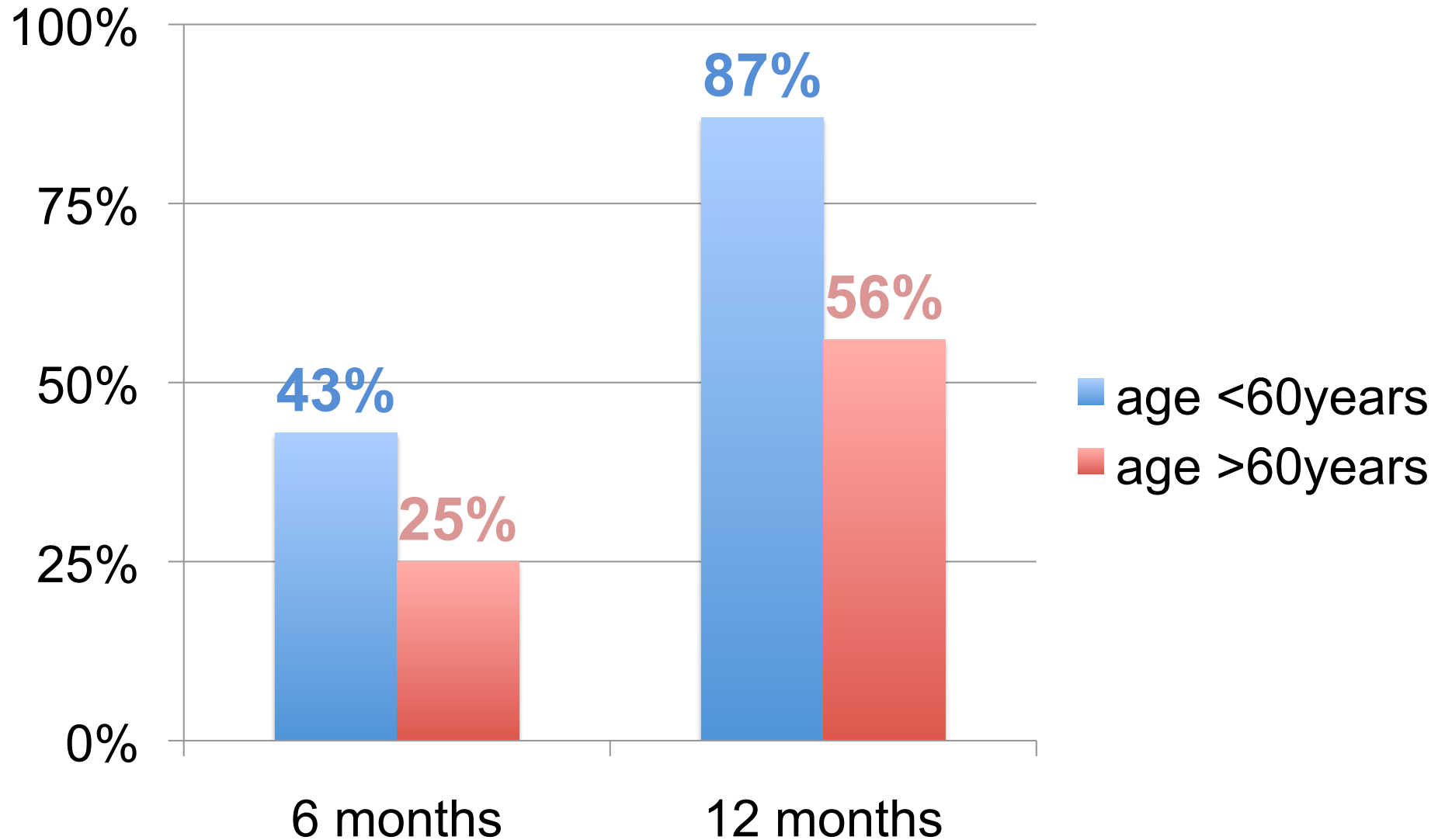
Patients' data

- Age (median, range) 63 (40 – 82) years
- Prostate volume 58 (10 – 345) ml
- Body Mass Index 30 (19 – 47) kg/m²
- PSA 7 (0.8 – 101) ng/ml
- Biopsy Gleason score 7 (5 – 9)
- Clinical stage 55% → cT1c
- Prior surgery 62% lower abdomen
- ASA 2-3

Personal experience first 500 robotic RP

- Access extra/transperitoneal
- Transfusion 1%
- Mean consol time (RP) 105 (62 - 367) min
- Mean consol time (extended LA) 43 (32 -85) min
- Complications 8%
- Second operation 0.1%
- Conversions 0%
- Death 0%
- Positive surgical margins 8%
- Hospital stay 97% in ≤ 3 days
- Early continence (0 pads) 60% (1 month)
- Catheter removal 98% in ≤ 7 days

Potency after da Vinci Prostatectomy bilateral nerve-sparing



Why do I move to the Robot?

Robotic Radical Prostatectomy is:

Safe or safer than open RP

Reproducible

At least theoretical benefits for
more favorable & completed results

Using robotic technology I expand my operative-robotic spectrum

Robotic radical cystectomy
with intracorporeal formation of orthotopic neobladder

Robotic transvesical adenomectomy for BPH

Robotic bladder diverticelectomy

Robotic bilateral varicelectomy

Robotic Psoas-Hitch (ureter implantation in the bladder)

Robotic pyelolithotomy for staghorn kidney stones

Robotic closure of vesicovaginal fistel

Robotic Radical Prostatectomy better than open - personal perception -

Robotic RP is the translation of traditional surgery in a minimal invasive fashion, but with

- better vision
- more meticulous handling
- miniaturisation of instruments

Results

- less tissue damage & more precision
- better oncological & functional outcome
- of course ... learning curve, but acceptable!