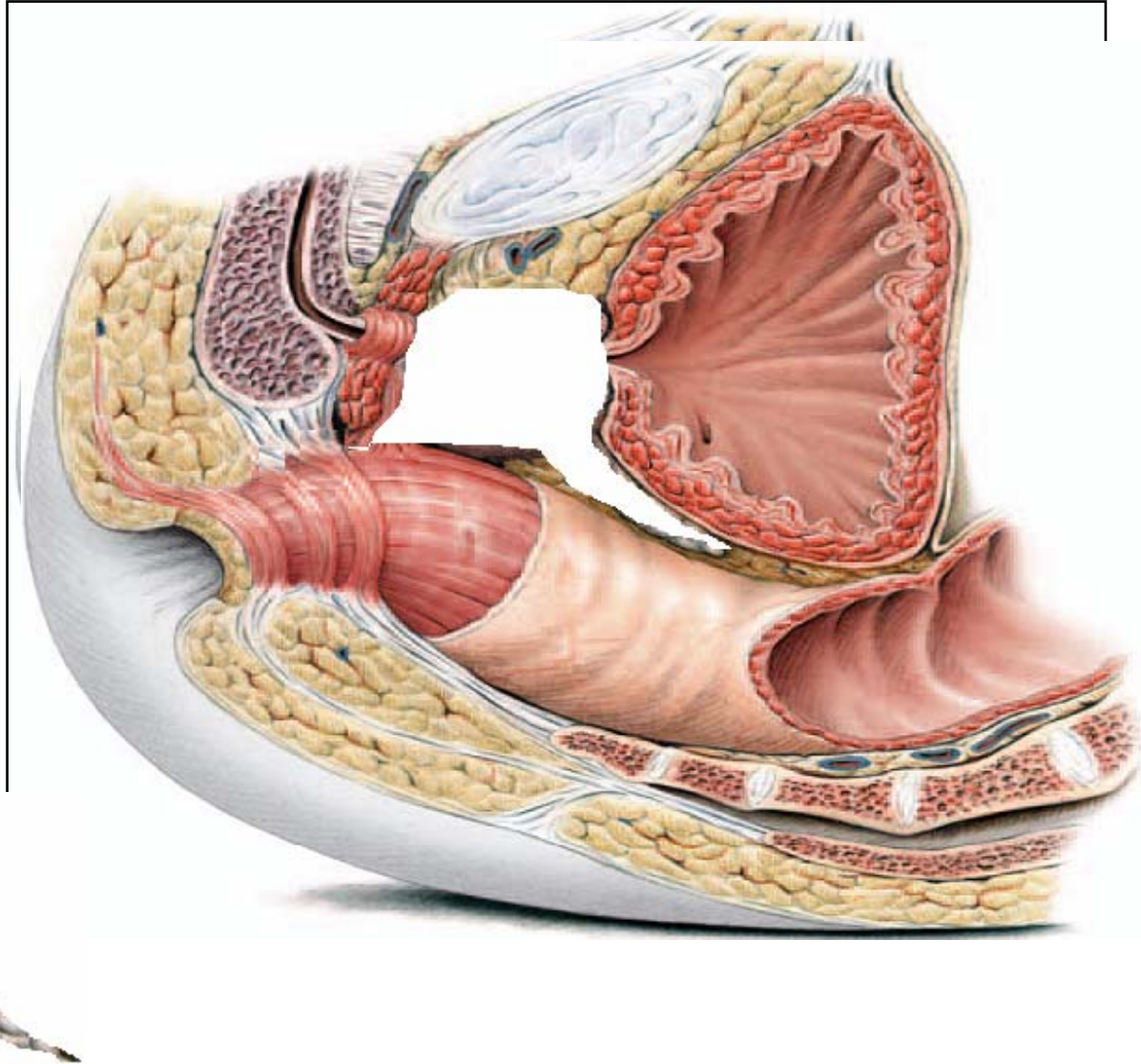


Radikal Perineal Prostatektomi

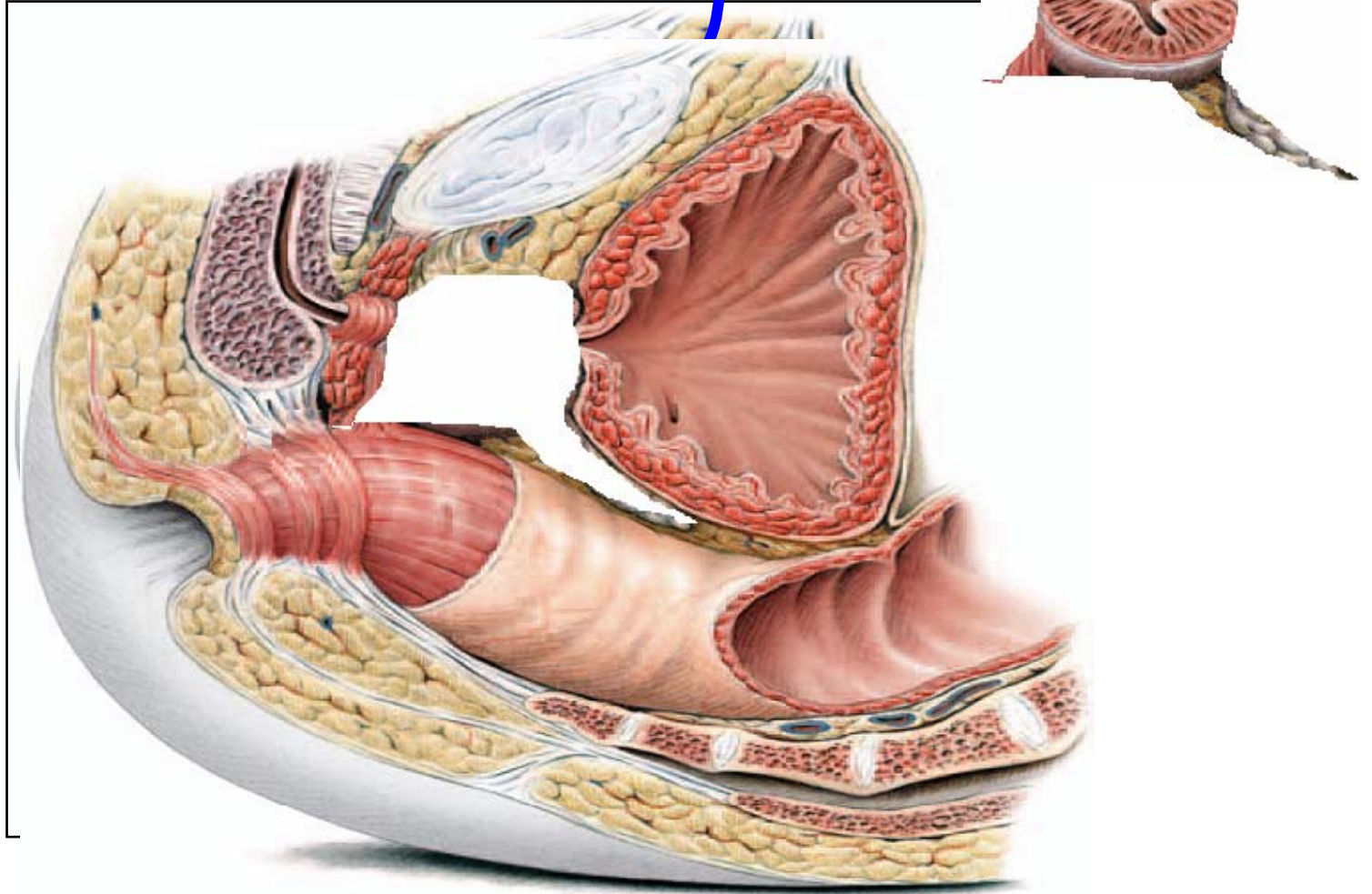
Niçin ?

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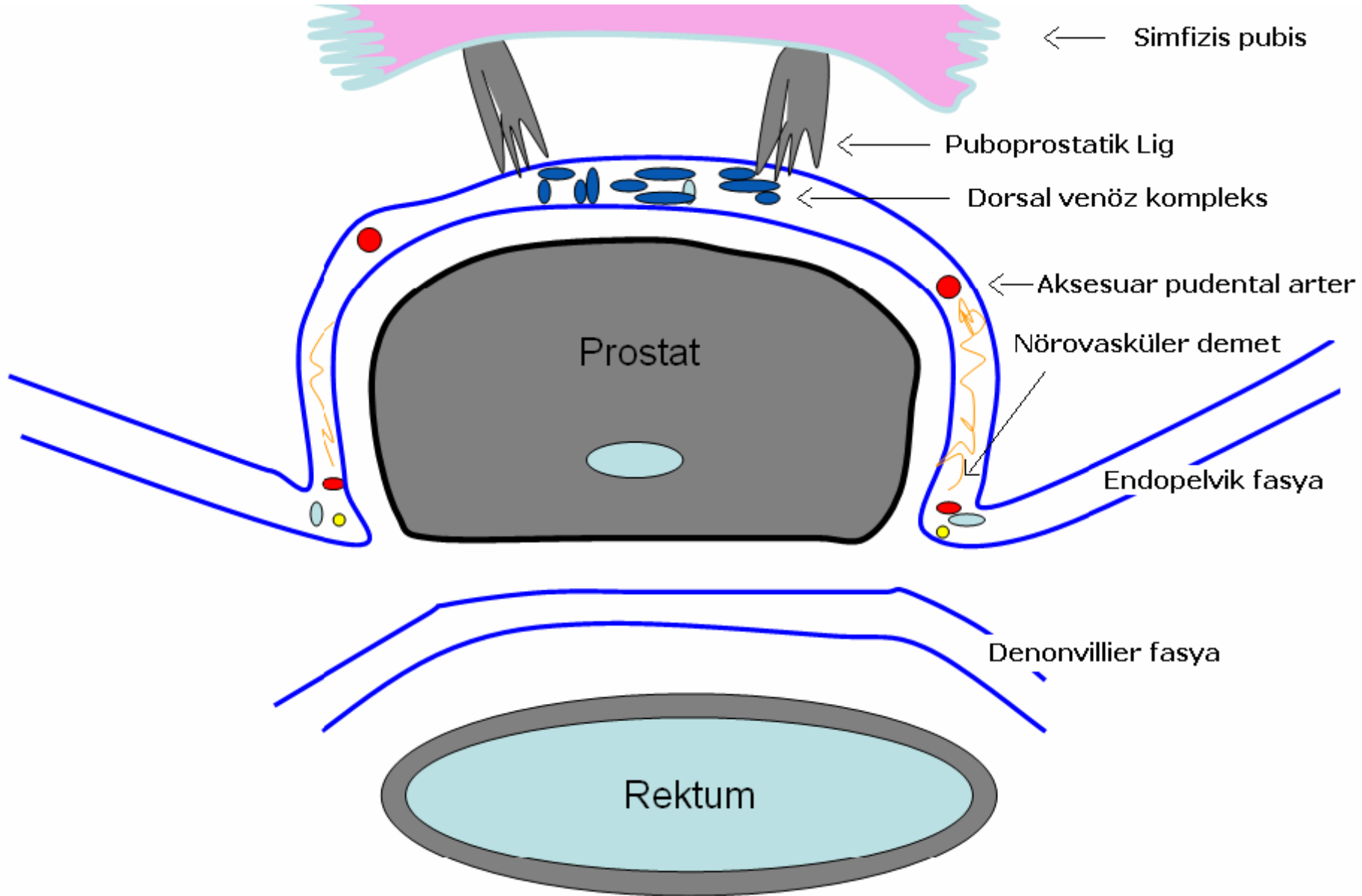
Perineal Yolk



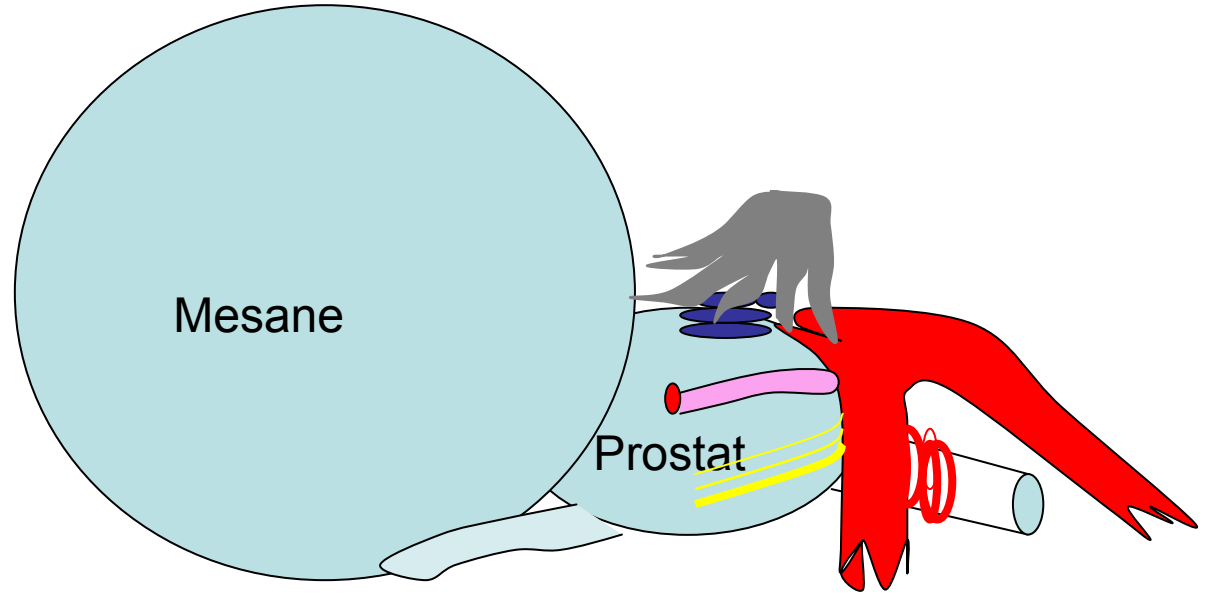
Retropubik Yol

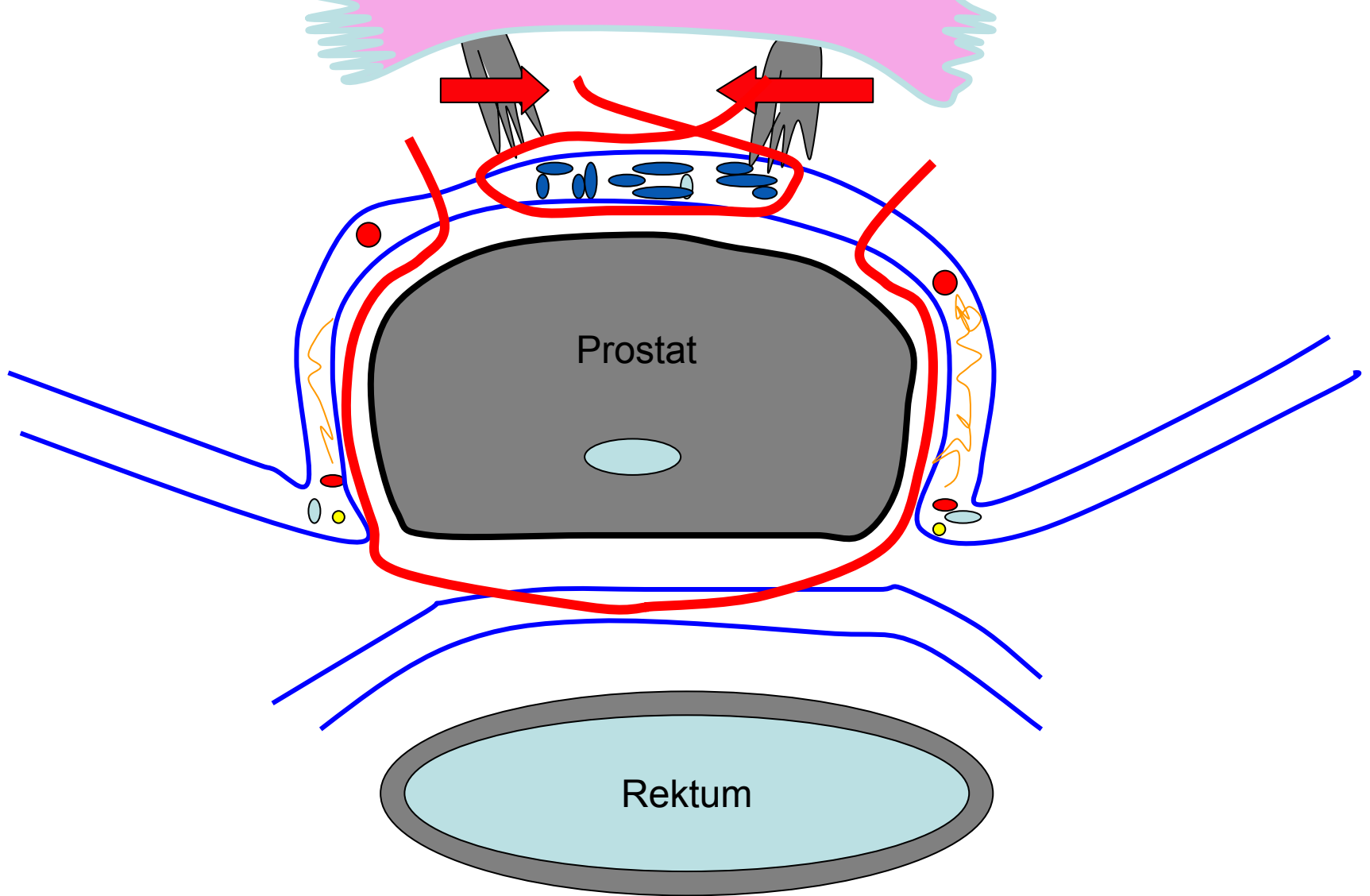


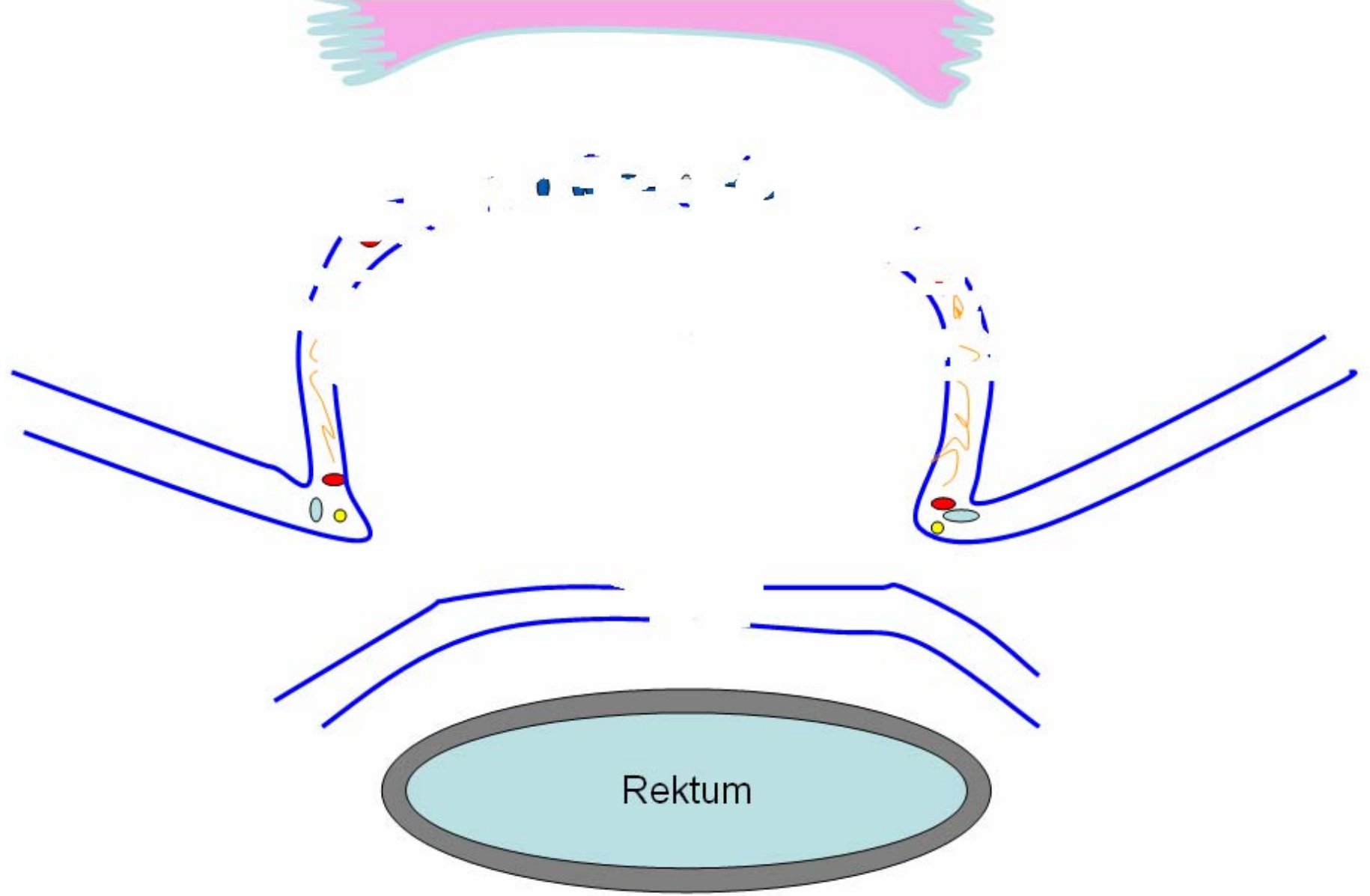
RP : Anatamik Deęerlendirme



Retropubik alanın önemli anatomik oluşumları







RP : Anatomik Değerlendirme

- **Korunmasını istediğimiz oluşumlar**
 - Pubo prostatik ligamanlar
 - Santorini ven pleksusu
 - Eksternal Üretral Sifinkter
 - Aksesuar pudental arter
 - Kavernozal sinir

RP : Anatomik Değerlendirme

- Puboprostatik lig. ve kontinans (1)
 - Tewari A.K. Newyork
 - 10 taze kadavrada retropubik anatomi
 - Sonuç:
 - Puboprostatik lig
 - Puboprostatic collar
 - Tüm tendinöz yapılar
- } Kotinanstansorumlu

Urology 2007 April;69(4):726-31
Eur Urol 2007 Feb; 51(2)433-40

RP : Anatomik Değerlendirme

- Puboprostatik lig. ve kontinans (2)

- Henk G ve ark.:

- Preservation of Lateral Pelvic Fascia is Associated with Urine Continence after Robotic Assisted Prostatectomy

Eur Urol 2009 April

- N: 151 RALRP Lateral Fascia Presevation Score
- RP'den önce ve 6 -12 ay sonra QOL-C30

- SONUÇ: Prostat ve memb. üretranın lateralinde fasyal yapıların korunması idrar kontrolünün en iyi belirleyicisidir.

RP : Anatomik Değerlendirme

- Puboprostatik lig. ve kontinans (3)
 - Wimpissinger T.F.2003
 - 60 hasta 5 taze kadavra
 - Puboprostatik lig (pubovezikal) üretrayı tespit edici / asıcı etki yapan bir anatomik yapı
 - Dorsal venöz kompleks
 - Rhabdo sfinkter
- } Puboprostatik Kompleks
- Sonuç: Bu kompleks ile üretra arasında avasküler bir plan vardır

RP : Anatamik Değerlendirme

- **Korunmasını istediğimiz oluşumlar**
 - Pubo prostatik ligamanlar
 - Santorini ven pleksusu
 - Eksternal Üretral Sifinkter
 - Aksesuar pudental arter
 - Kavernoza sinir

RP : Anatomik Değerlendirme

- Santorini Ven Pleksusu

- Venöz trombo-embolizm ve Virchow's Triad;

- Kan akımında azalma
- Damar duvarında yaralanma
- Kuagülobilitede değişiklik

Robert D. Rosenberg

New England J. Med 1993 40(20)1555-1563

RP : Anatomik Değerlendirme

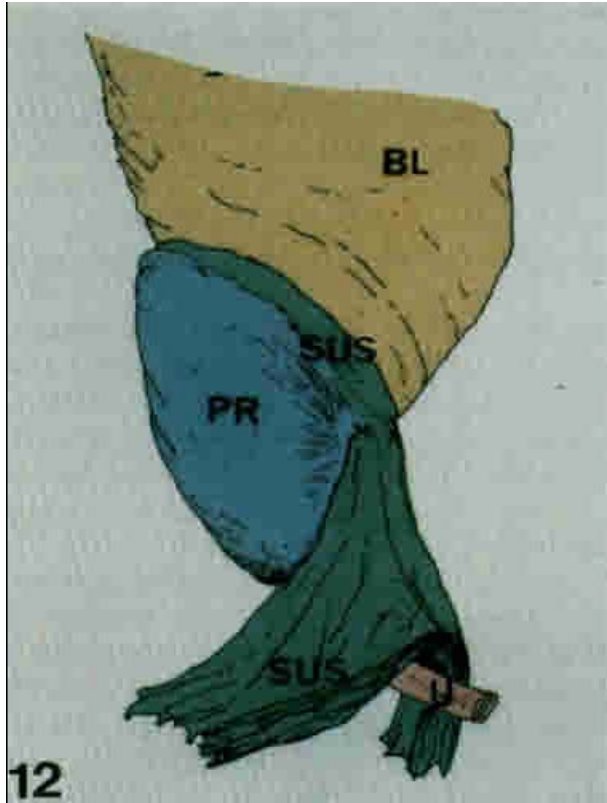
- **Korunmasını istediğimiz oluşumlar**

- Pubo prostatik ligamanlar
- Santorini ven pleksusu
- Eksternal Üretral Sifinkter
- Aksesuar pudental arter
- Kavernozal sinir

RP : Anatomik Değerlendirme

- The Prostate 28:24-31 1996
- Anatomy and Inervation of the Rhabdosphincter of the Male Urethra
H. Strasser ve ark.

Ekst. Üretral Sfinkter (1)



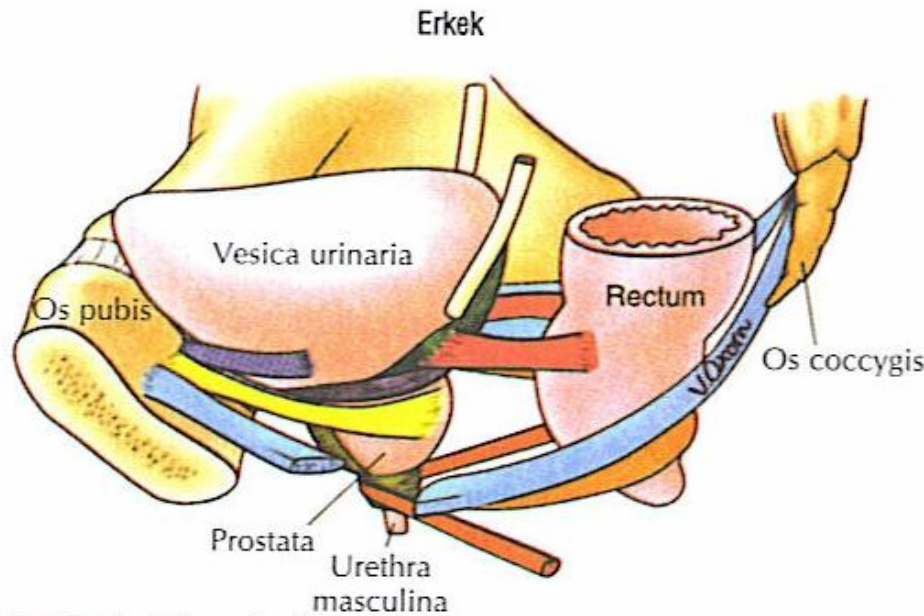
- » 12 taze kadavra erkek insan pelvisi
 - » Kadavra yaşları 52-78 ve 1 fetüs kadavra
- BULGULAR:**
- » Membranöz üretranın dosalinde yoğun düz kas ve bağ dokusu mevcut
 - » Prosatik apekte membranöz üretraya binerek lateralden aşağıya inen ve perineal cisme insersiyon yapan omega şeklinde çizgili kas (rbdosfinkter) varlığı
 - » Bu kas, prostatın dorsoline yatarak incelmek suretiyle mesane boynu ile devamlılık sağlıyor
 - » Rbdosfinkter pudental sinir ile inerve oluyor

RP : Anatomik Değerlendirme

Ekst. Üretral Sfinkter (2)

- J.Urol 2008 May 179(5):1683-9
- Koraitim MM Alexandria Univ. Mısır
 - Çizgili rabdosfinkter dorsalde incelenerek mesane boynu ile devamlılık sağlar ve kranialde baskın,
 - Düz kas komponenti ise kaudalde baskın

RP : Anatamik Deęerlendirme



M. pubovesicalis

M. puboprostaticus

M. pubococcygeus

M. puborectalis

M. sphincter urethrae internus

Uvula vesicae içindeki kas

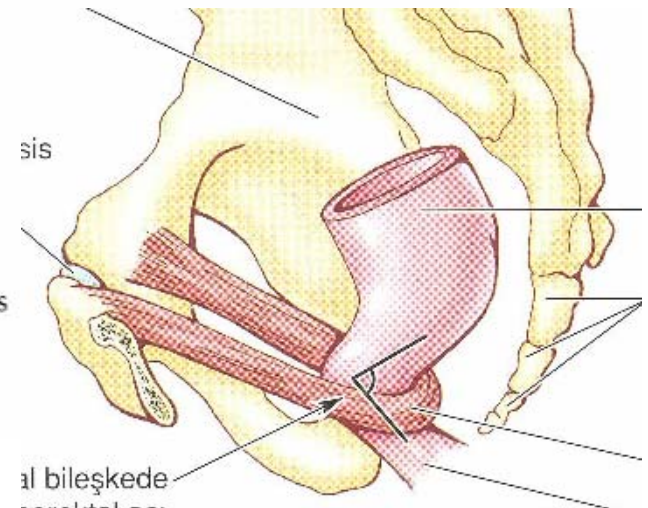
M. compressor urethrae

M. sphincter urethrae externus

M. rectovesicalis

Urethra'nın sfinkter kasları

- M. sphincter urethrae internus
- M. pubovesicalis
- M. sphincter urethrae externus
- M. compressor urethrae

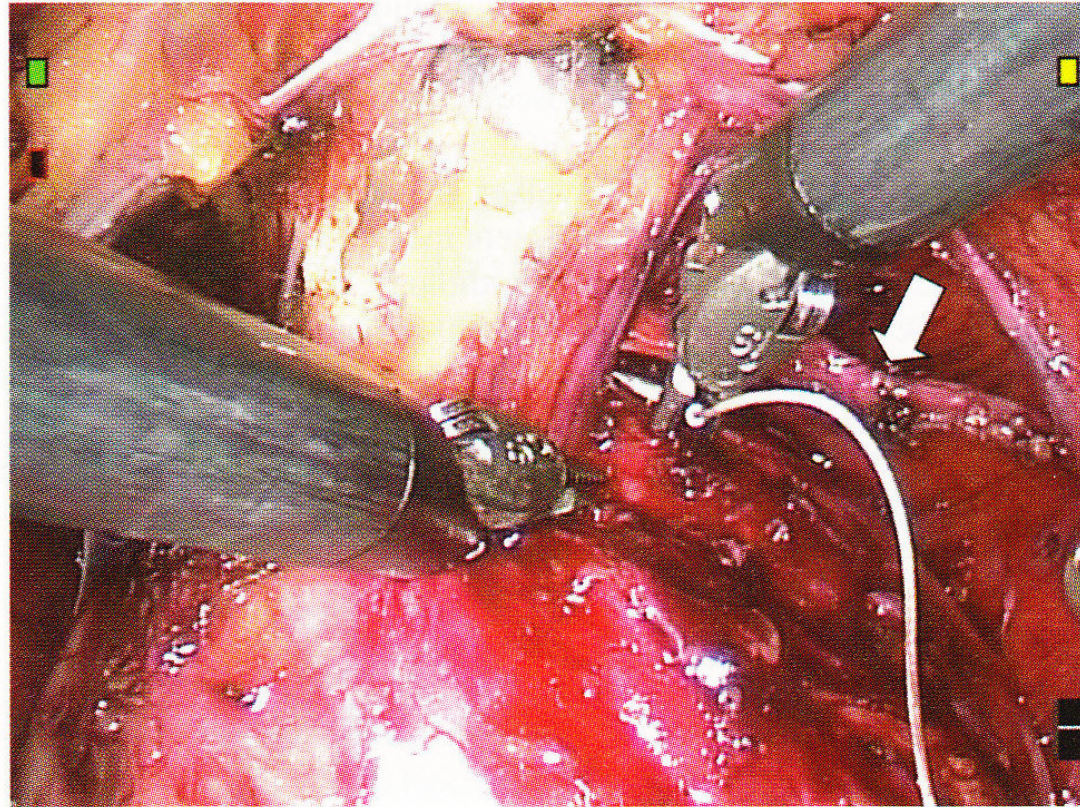


RP : Anatomik Değerlendirme

- Korunmasını istediğimiz oluşumlar
 - Pubo prostatik ligamanlar
 - Santorini ven pleksusu
 - Eksternal Üretral Sifinkter
 - Aksesuar pudental arter
 - Kavernozal sinir

RP : Anatamik Deęerlendirme

Aksesuar pudental arter

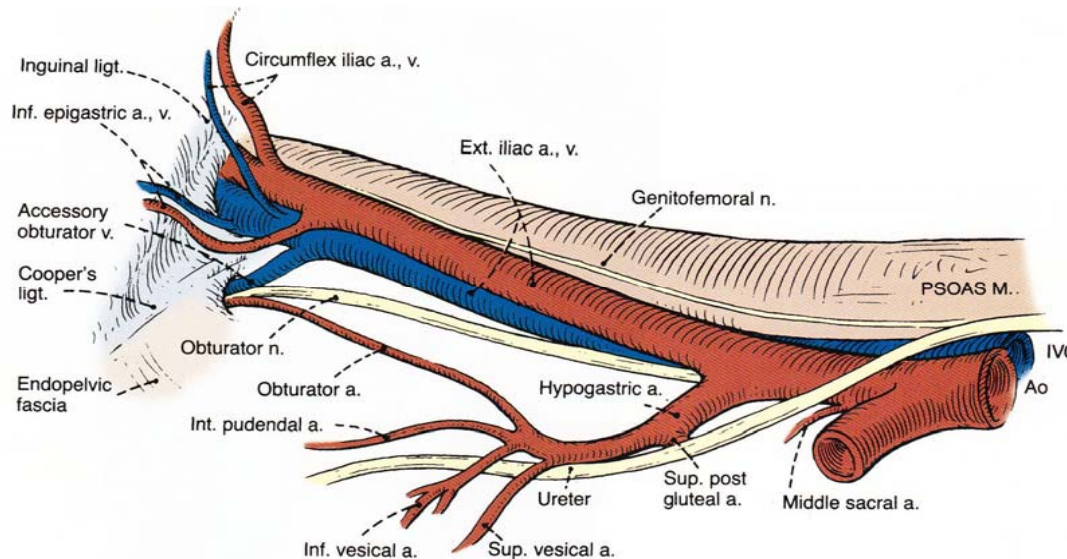


RP : Anatomik Değerlendirme

- **APA Orijinleri;**

- İnferior vezikal arter %37.5
- Karşı sup vez. arter %12.5
- Aynı taraf obturator arter %50

Breza J. Ve ark.



RP : Anatomik Değerlendirme

- Aksesuar Pudental Arter (APA)-1

- J.Urol 2008 Jun;179(6):2317-20
- Nehra A ve ark. Mayo Clinic USA

- 79 ED'li hasta
- Selektif Pudental Farmakoanjiogram

- Sonuç:

- APA bulunma oranı %35
- En sık orijin: Obturator arter
- APA saptanan olguların %54' ünde erektil fonksiyon için dominan arter APA

RP : Anatomik Değerlendirme

- Aksesuar Pudental Arter (APA)-2

- J Urol 2008 Mar;179(3):827-31

Artery sparing RP: Myth or reality

Mulhall JP, Seçin FP MSKCC

- Gözden geçirme

- SONUÇ:

- 4 LRP den birinde APA saptanıyor
 - Seksüel fonksiyonu korumak için kavernoöz siniri korumak esas ama tek başına yetmiyor
 - APA de mutlaka korunmalı. Ama ???

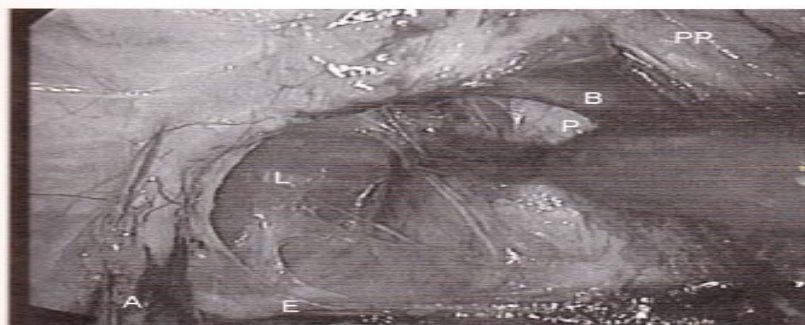


FIG. 2. Left lateral APA (A) located above endopelvic fascia (E). Artery gives off branch (B) to prostate apex (P), while main trunk courses behind left puboprosthetic ligament (PP). L, levator ani.

an internal pudendal or internal iliac artery flush,^{32,33} or during cadaveric dissection (see table).^{30,34,35}

Gray et al performed angiography of the iliopudendal vascular tree to evaluate impotence in 73 patients.³³ Accessory arteries were present unilaterally in 14% of the patients and bilaterally in 7%. Rosen et al performed selective bilateral internal pudendal angiography in 195 men who were suspected of having arteriogenic impotence.³² If a selective internal pudendal artery injection failed to demonstrate the penile arterial anatomy, a less selective injection was performed. The researchers found substantial variation in the origin of the internal pudendal artery with APAs recognized in 7% of patients. In all cases APAs provided the main blood supply to the penile artery.

Cadaveric dissection rendered much higher APA identification rates. Breza et al dissected the pelvic vasculature in 10 cadavers and found APAs in 7.³⁵ In 4 cases the APAs were found to be a major source of arterial inflow to the corpora cavernosa and in 1 case the APA was the only source of erectile arterial inflow.

Similarly Benoit et al reported a 70% incidence of intrapelvic APAs based on cadaveric dissection.³⁴ They identified a total of 33 APAs in 20 cadavers, including at least 1 APA in 17 of the 20, of which not all were intrapelvic. In 8 cadavers only 1 accessory pudendal artery was present but in 9 cadavers APAs were present bilaterally, including 2 arteries in 5, 3 in 1 and 4 in 3. APAs originated from the inferior vesical artery in 46% of cases, from the obturator in 36% and from the external pudendal artery in 18%. In 15%

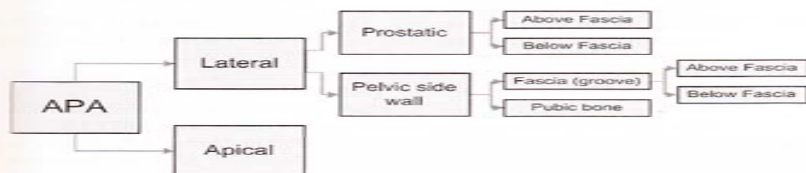


FIG. 3. APA classification by intrapelvic location

References	No. Pts	APA prevalence	
		Assessment Mode	% APA Prevalence
Gray et al ³³	73	Arteriography	21
Breza et al ³⁵	10	Cadaveric dissection	70
Rosen et al ³²	195	Arteriography	7
Polascik and Walsh ²⁸	835	Open RP	4
Benoit et al ³⁴	20	Cadaveric dissection	70
Droupy et al ³⁰	12	Preop transrectal Doppler ultrasound	75
Rogers et al ²⁹	2,399	Open RP	4
Secin et al ²⁶	285	Laparoscopic RP	25
Secin et al ²⁷	325	Laparoscopic RP	30
Matin ³¹	70	Laparoscopic RP	26

of cases the penile arterial inflow originated exclusively from APAs.

The highest incidence of APAs has been reported by Droupy et al.³⁰ Using preoperative transrectal color Doppler ultrasound they identified 9 of 12 patients (75%) with APAs, which were confirmed in all at open RP in 10 and radical cystoprostatectomy in 2.

Intrapelvic APAs have been identified in 26% to 30% of patients undergoing laparoscopic RP^{27,31} and in 4% undergoing open retropubic RP.²⁸ In the 30% of patients undergoing laparoscopic RP who had APAs it was possible to preserve 83% of the arteries with a 89% preservation rate for lateral APAs and 79% for apical arteries. The side specific incidence of positive surgical margins was 3% when APAs were preserved and 6% when not preserved ($p = 0.5$).²⁷ Droupy et al performed preoperative transrectal color Doppler ultrasound in 12 patients with normal EF who were undergoing radical pelvic surgery to assess APA presence and function.³⁰ APAs were identified in 75% of the patients. Pharmacologically induced erections performed concurrently demonstrated that the hemodynamic changes in the APAs were similar to those described in the cavernous arteries, supporting the concept that APAs have a functional role in penile erection. However, the investigators were unable to make decisive functional conclusions because they could not preserve any of the 9 APAs during open RP in 10 cases or radical cystoprostatectomy in 2. They stated that "it was impossible to over-see effectively the distal part of the dorsal venous complex without damaging the accessory pu-

cases or radical cystoprostatectomy in 2. They stated that "it was impossible to over-see effectively the distal part of the dorsal venous complex without damaging the accessory pudendal artery."³⁰

per by the usual concerns that affect intraoperative visualization.

The impact of artery sparing RP on urethral and external sphincter vascularization, which may ultimately contribute to the preservation of continence postoperatively, remains to be further elucidated. However, findings reported by Benoit et al suggest that APAs may have a role in sphincteric blood supply.³⁴ A total of 85 male cadavers were examined and APAs were present in 70%. APAs originating from inferior vesical arteries gave branches to the bladder, prostate and external urethral sphincter. APAs consistently provided the main arterial supply to the urethral sphincter. After going

RP : Anatomik Değerlendirme

- Aksesuar Pudental Arter (APA)-3
- J Urol 1999 Dec;162(6):1987-91
Droupy S ve ark. Fransa
 - 12 hasta
 - TRUS ve Perineal Doppler ile APA aranmış
 - SONUÇ:
 - APA:9/12
 - İnt pud arter 12/12
 - İKET sonrasında APA ile İnt Pud arterlerde Tepe sist. Akım artmış, diastol sonu basınç azalmış,
 - Prostat ve SV arterlerinde değişiklik olmamış

RP : Anatomik Değerlendirme

- Aksesuar Pudental Arter (APA)-5
- Urology 2004 Jul; 64(1):148-51
Preservation of accessory pudental arteries during RRP
Rogers CG,Track BP, Walsh PC
- 2399 RRP;
 - APA bulabilme oranı: %4
 - APA koruyabilme oranı: ?

RP : Anatomik Değerlendirme

- Aksesuar Pudental Arter (APA)-6

	<u>APA görülme sıklığı</u>
Laparoskopik RP serileri	%25-30
Açık RP serileri	%4
Radyolojik incelemeler	%7
Kadavra disseksiyonları	%70-85

RP : Anatomik Değerlendirme

- Korunmasını istediğimiz oluşumlar
 - Pubo prostatik ligamanlar
 - Santorini ven pleksusu
 - Eksternal Üretral Sifinkter
 - Aksesuar pudental arter
 - Kavernoza sinir

RP : Anatomik Değerlendirme

EUROPEAN UROLOGY 51 (2007) 105–111

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European Association of Urology



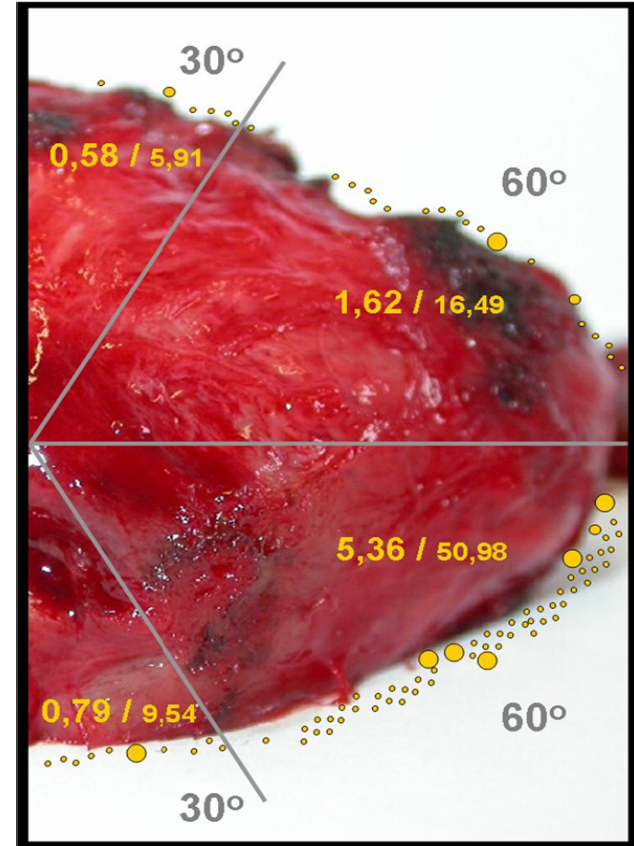
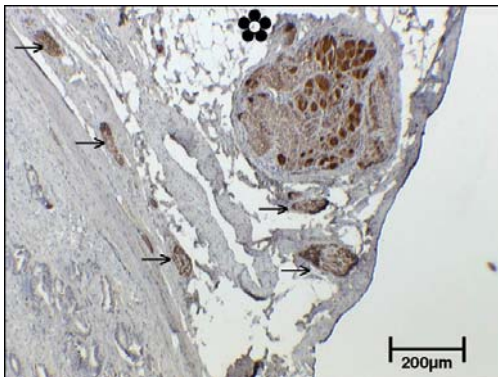
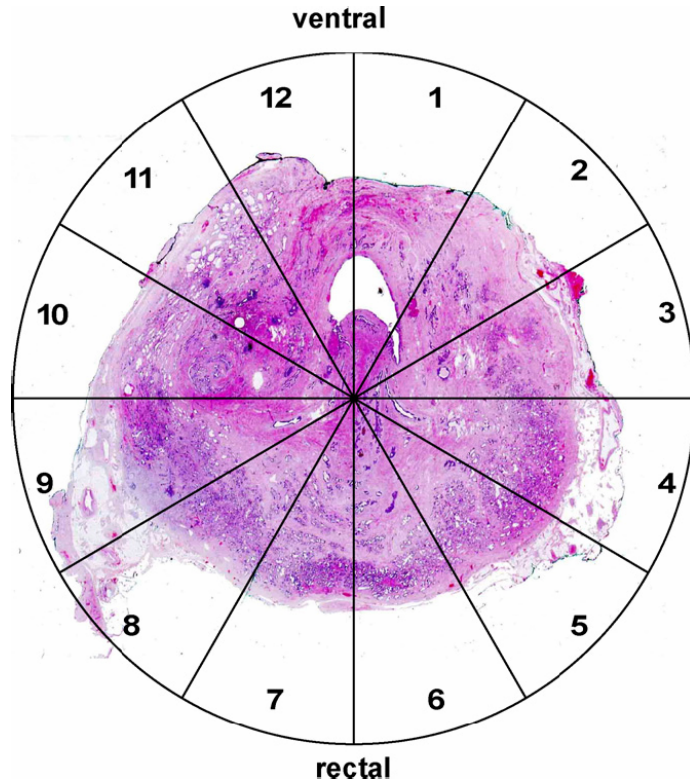
Prostate Cancer

Nerve Distribution along the Prostatic Capsule

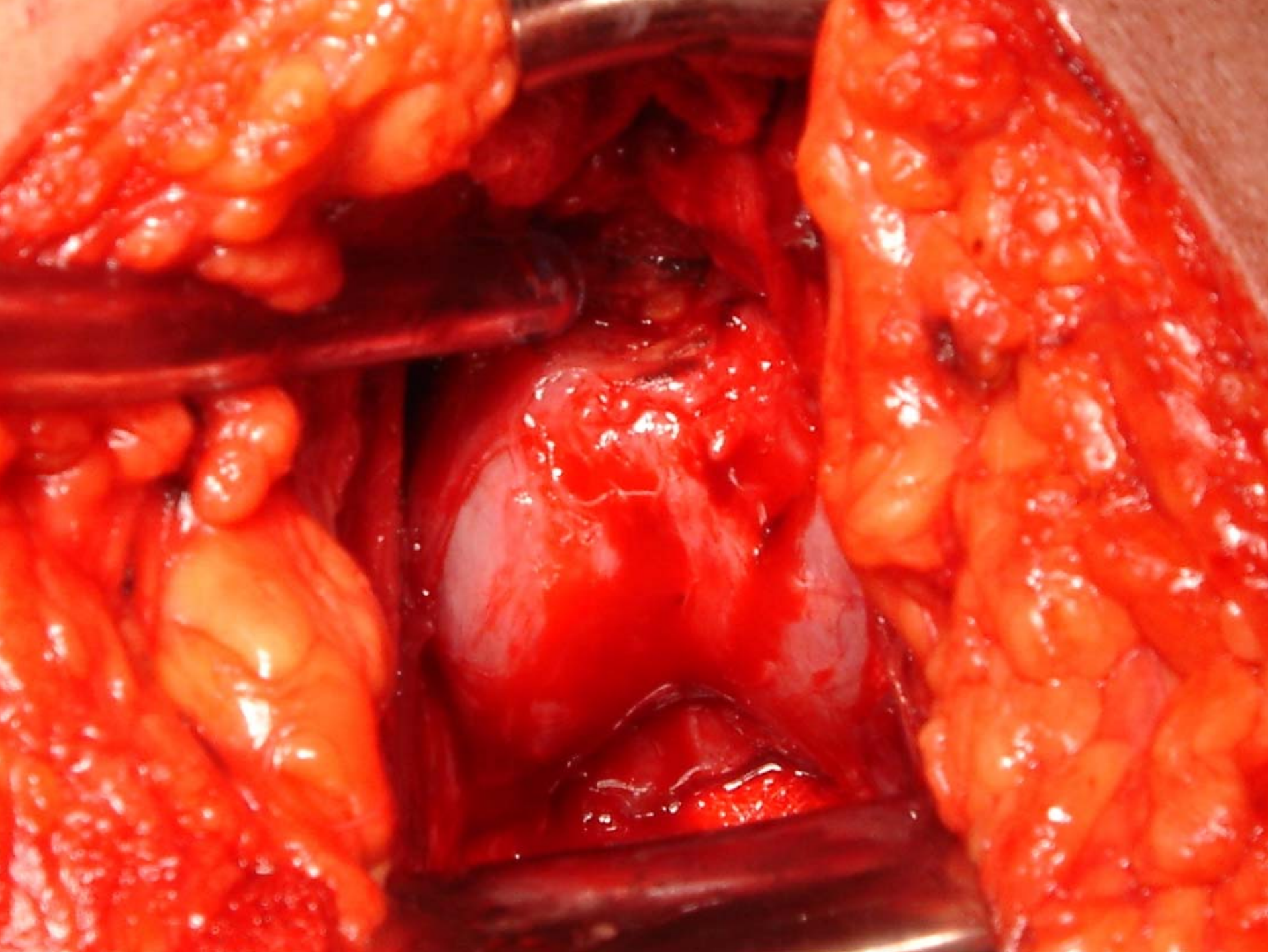
Christian Eichelberg*, Andreas Erbersdobler, Uwe Michl, Thorsten Schlomm,
Georg Salomon, Markus Graefen, Hartwig Huland

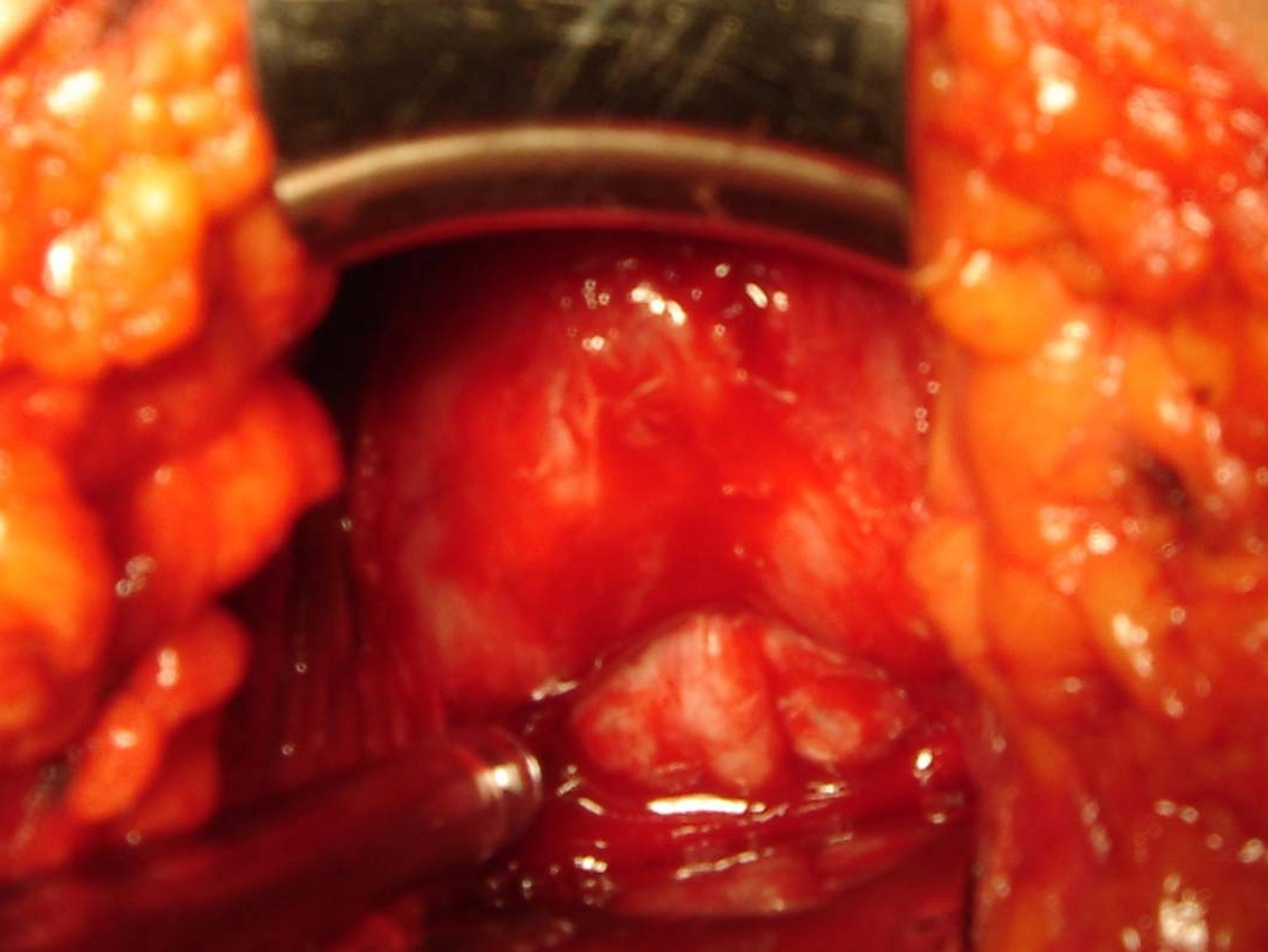
Department of Urology, University Hospital Eppendorf, Hamburg, Germany

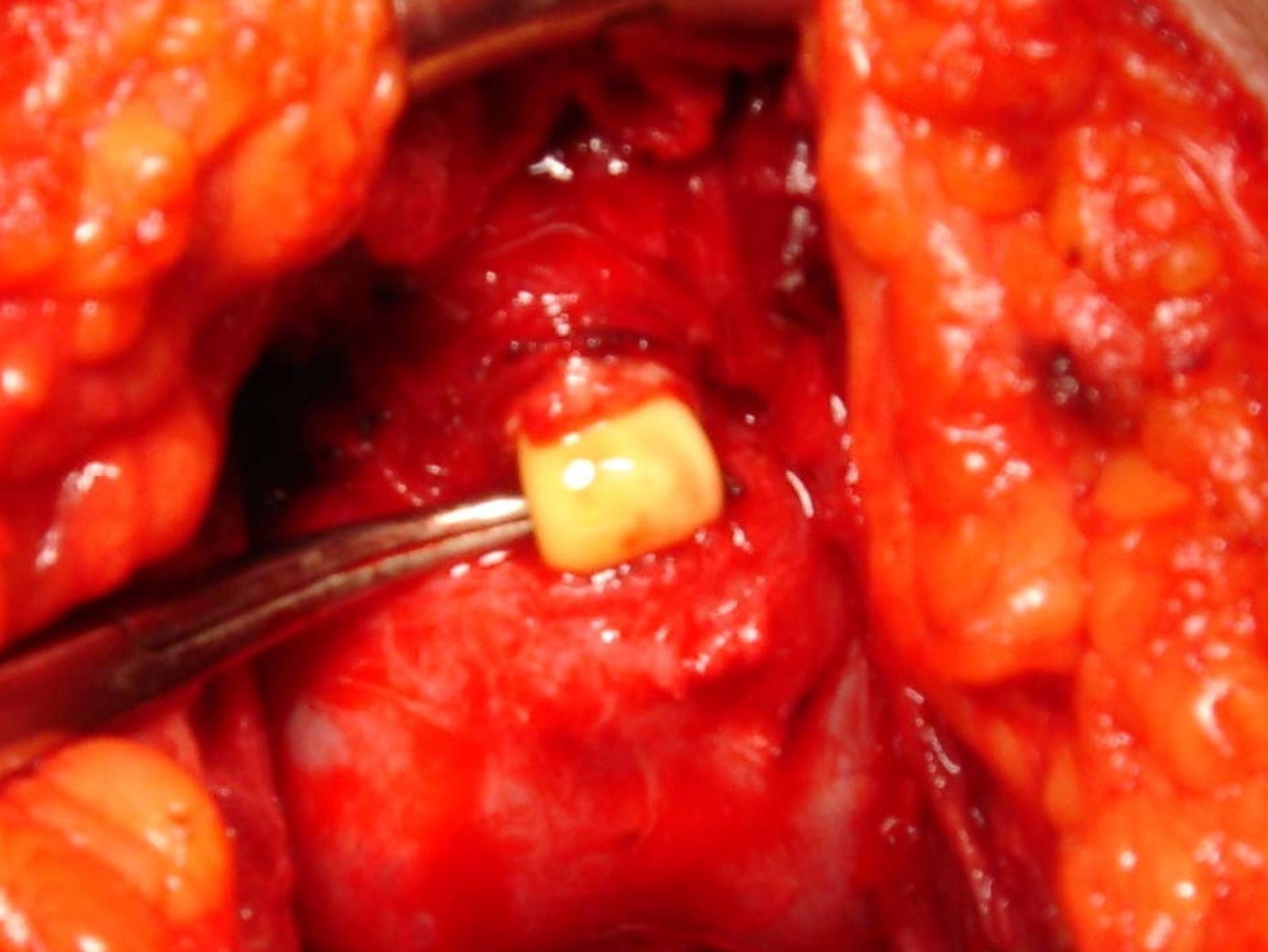
RP : Anatomik Değerlendirme

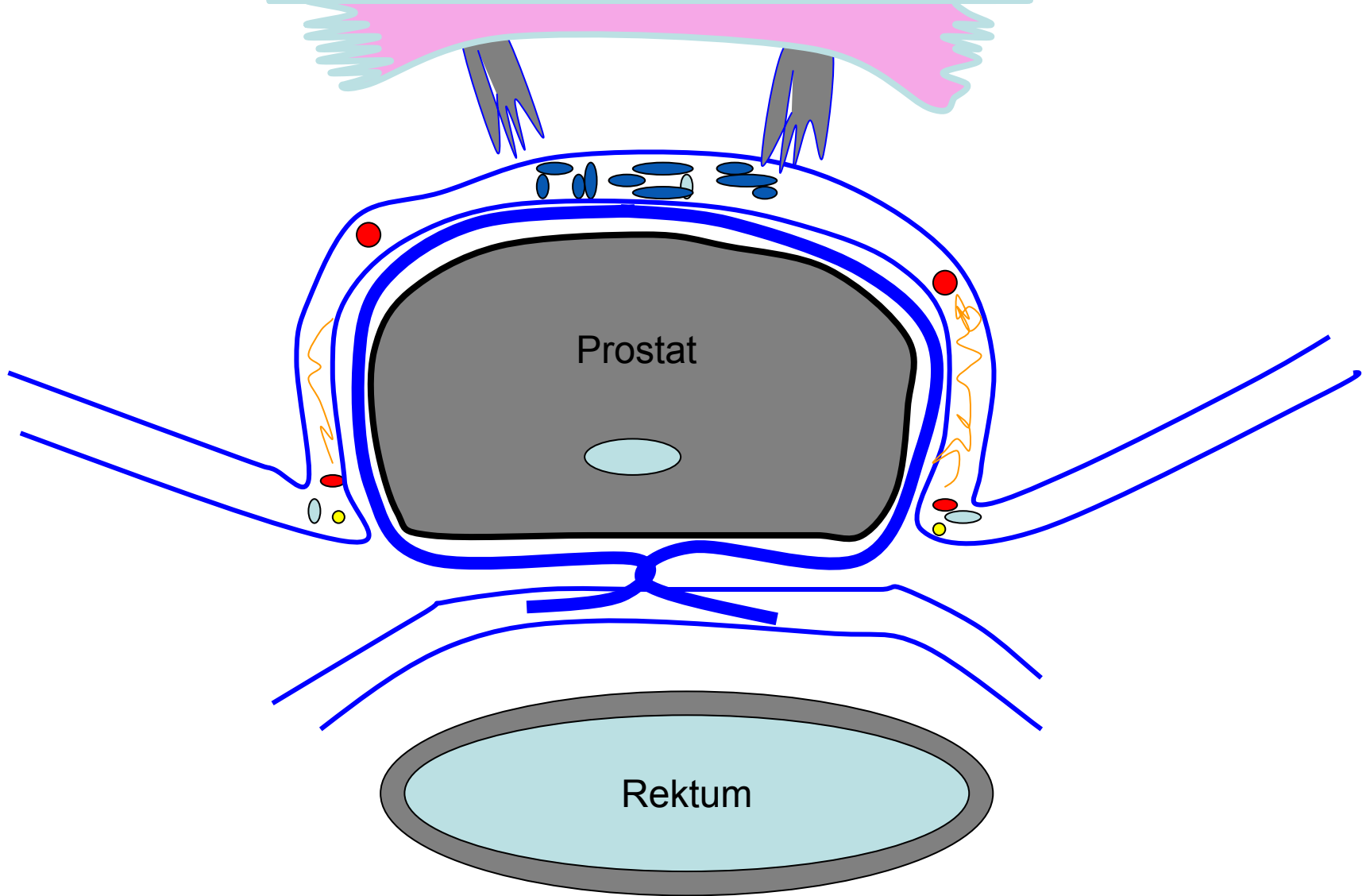


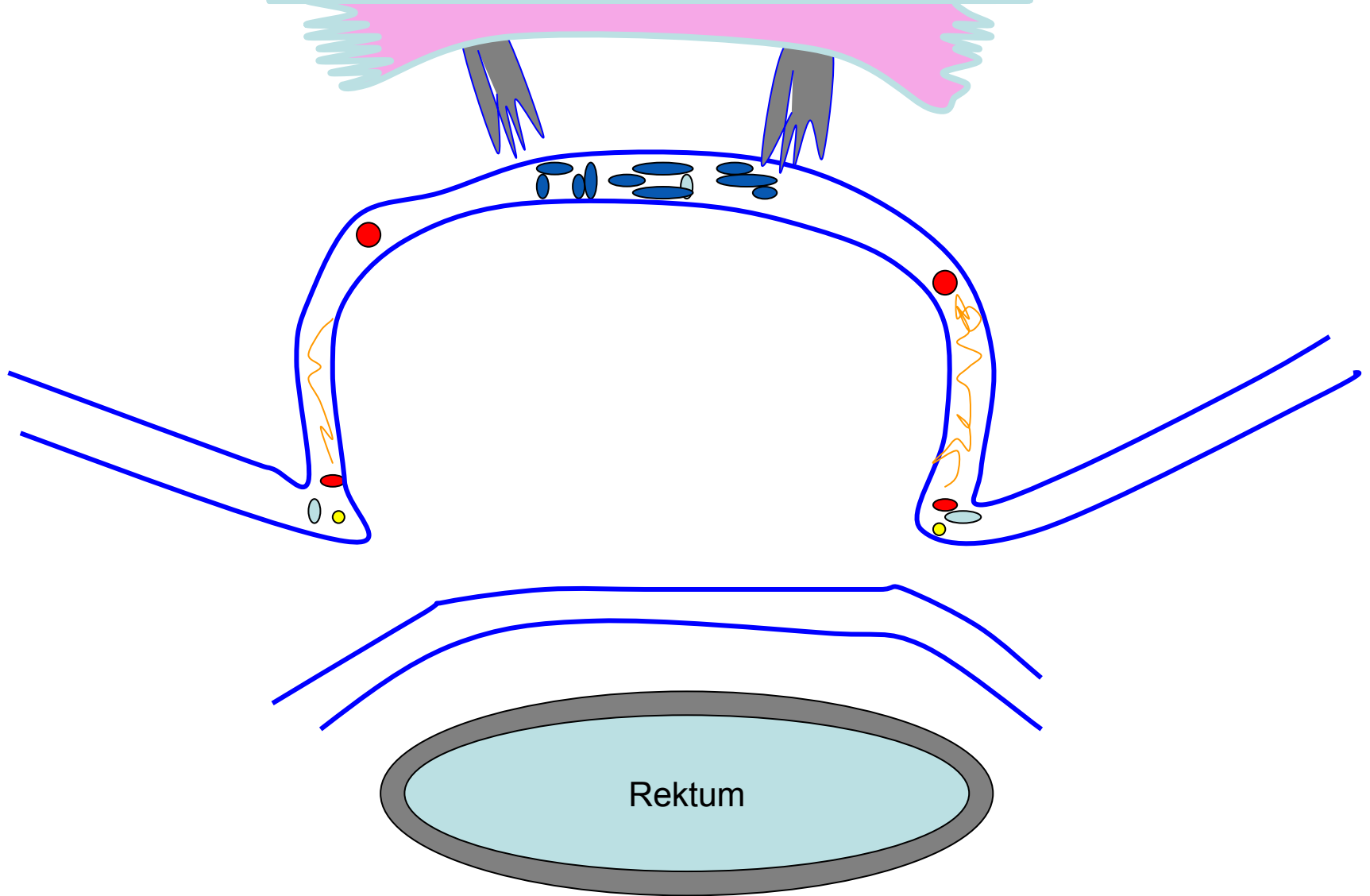


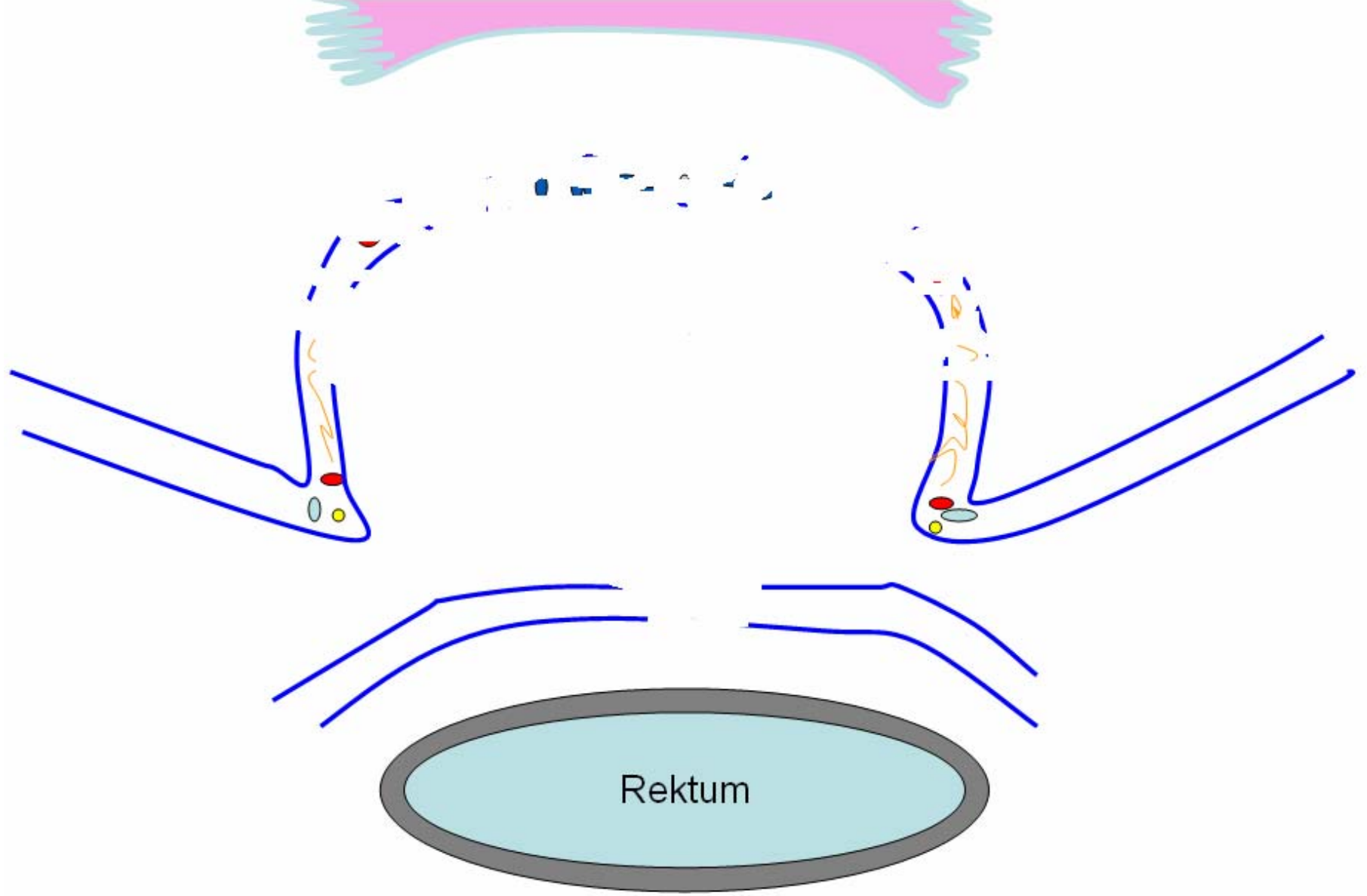












Radikal Perineal Prostatektomi

RRP vs RPP vs LRP

Table 1 Preoperative patient characteristics

	Retropubic approach <i>n</i> = 86	Perineal approach <i>n</i> = 65	Laparoscopic approach <i>n</i> = 155	<i>P</i>
Mean age (y)	63.8	65.9	63.5	NS
Mean PSA (ng/ml)	5.5	6.5	6.6	< 0.05 ^a
Mean Gleason biopsy score	5.6	5.7	5.7	NS
T1 _{a-b}	8	7	7	NS
T1 _c	43	28	106	< 0.05 ^b
T2 _a	30	27	40	NS
T2 _b	5	3	2	NS

^a < 0.05 Between the (retropubic) group and the (perineal and laparoscopic) group.

^b < 0.05 Between the (laparoscopic) group and the (retropubic and perineal) group.

NS: not significant.

Radikal Perineal Prostatektomi

RRP vs RPP vs LRP

Table 2 Pre and postoperative data

	Retropubic approach <i>n</i> = 86	Perineal approach <i>n</i> = 65	Laparoscopic approach <i>n</i> = 155	<i>P</i>
Operating time (min)	181 ± 46 (120–360)	163 ± 58 (80–325)	266 ± 73 (120–510)	< 0.05 ^a
Transfused patients (%)	24 (22.1%)	7 (10.7%)	3 (1.99%)	< 0.05 ^b
Bladder catheterization (days)	12.1 ± 8.1 (4–45)	11.3 ± 4.6 (3–30)	5.7 ± 4.8 (2–30)	< 0.05 ^c
Hospital stay (days)	12.1 ± 7.6 (5–55)	7.9 ± 4.1 (2–22)	6.8 ± 3 (4–21)	< 0.05 ^d

^a < 0.01 Between all groups.

^b < 0.01 Between (retropubic) group, and (perineal and laparoscopic) group.

^c < 0.05 Between perineal group and laparoscopic group.

^d < 0.01 Between (laparoscopic) group and (retropubic and perineal) group.

NS between retropubic group and perineal group.

Radikal Perineal Prostatektomi

RRP vs RPP vs LRP

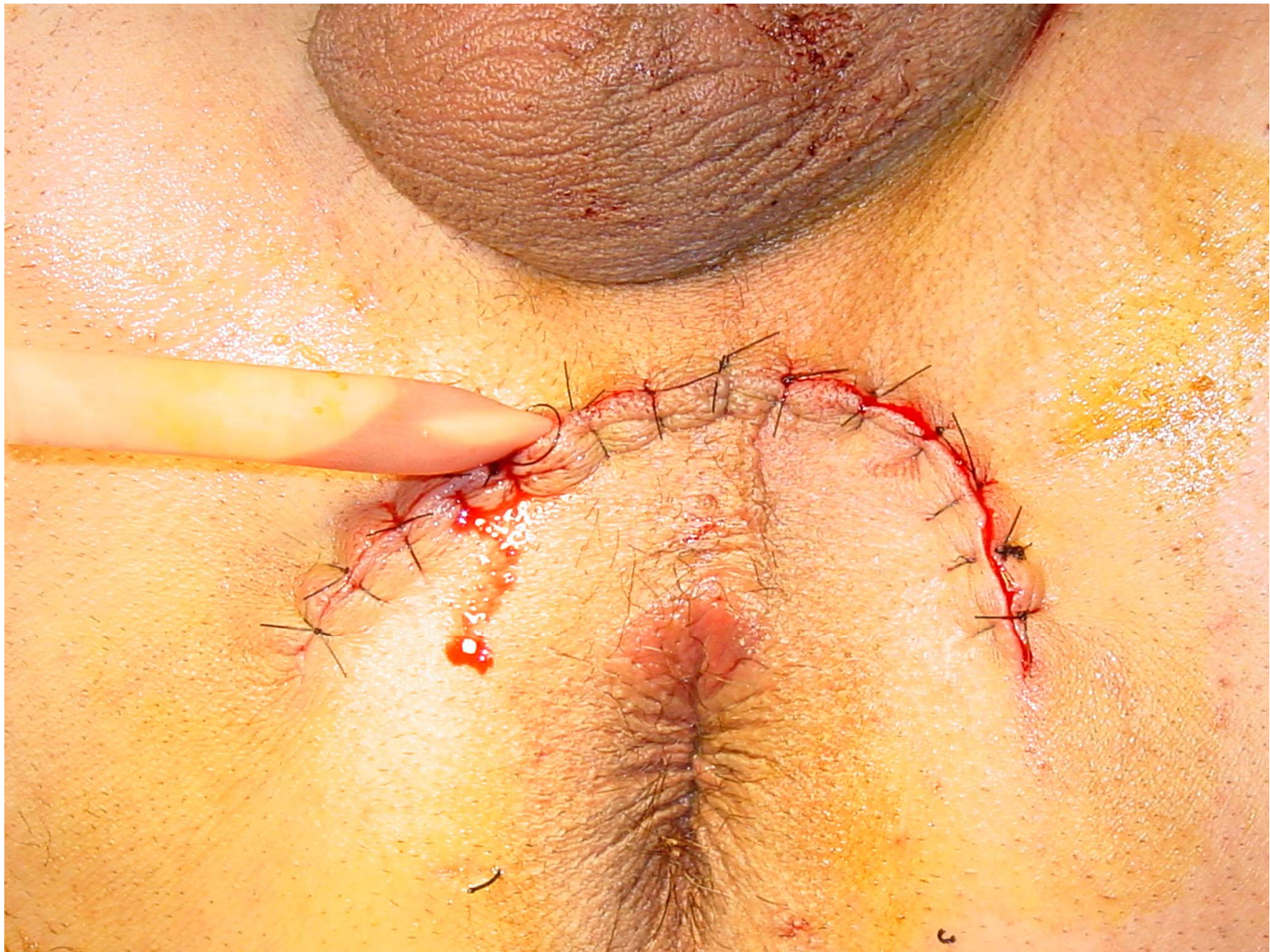
Table 3 Pathological results

	Retropubic approach <i>n</i> = 86	Perineal approach <i>n</i> = 65	Laparoscopic approach <i>n</i> = 155
Mean specimen weight (g)	55.6 (20–165)	42.8 (10–78)	59.7 (25–210)
Mean Gleason score	6.2 (3–10)	6.1 (4–9)	6.6 (4–10)
Mean tumor volume (ml)	1 (0.01–5.4)	0.9 (0.1–8.1)	0.8 (0.01–6.5)
pT2	66 (76.7%)	86 (78.4%)	126 (81.3%)
pT3a	13 (15.1%)	9 (13.8%)	20 (12.9%)
pT3b	7 (8.2%)	5 (7.7%)	9 (5.8%)
N+	2 (2.3%)	0 (0%)	2 (1.3%)
Positive surgical margins	18 (20.9%)	12 (18.4%)	32 (20.6%)

Radikal Perineal Prostatektomi

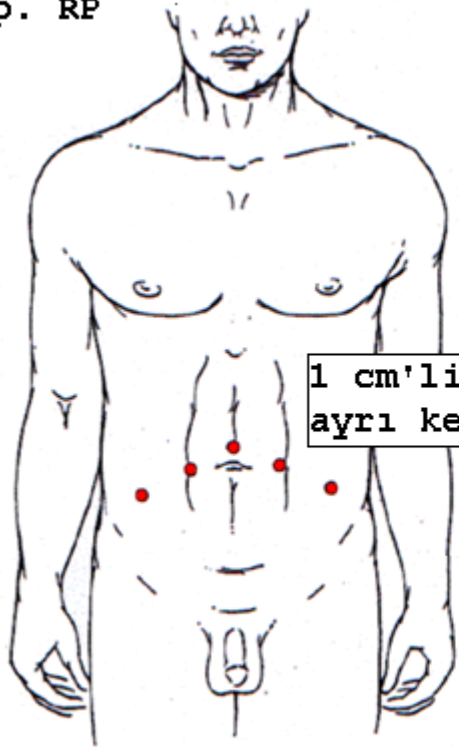
Table 4 Medical and surgical complications

	Retropubic approach <i>n</i> = 86	Perineal approach <i>n</i> = 65	Laparoscopic approach <i>n</i> = 155
<i>Medical complications</i>			
Death	—	—	1
Deep venous thrombosis	2	—	1
Pulmonary embolism	1	—	1
Pyelonephritis	1	—	1
Sepsis	1	1	—
Orchioepidymitis	1	1	—
Duodenal ulcer	—	—	1
A.R.D.S	—	—	1
Total	6 (6.9%)	2 (3.1%)	6 (3.4%)
<i>Surgical complications</i>			
Postoperative neuropathy	—	2	—
Wound infection	6	6	2
Pelvic hematoma	2	—	2
Anastomotic leakage	2	—	4
Ureteral injury	—	—	1
Rectal injury	2	1	3
Ileus	—	—	4
Lymphorrhea	4	2	2
Total	16 (18.6%)	11 (16.9%)	18 (11.6%)



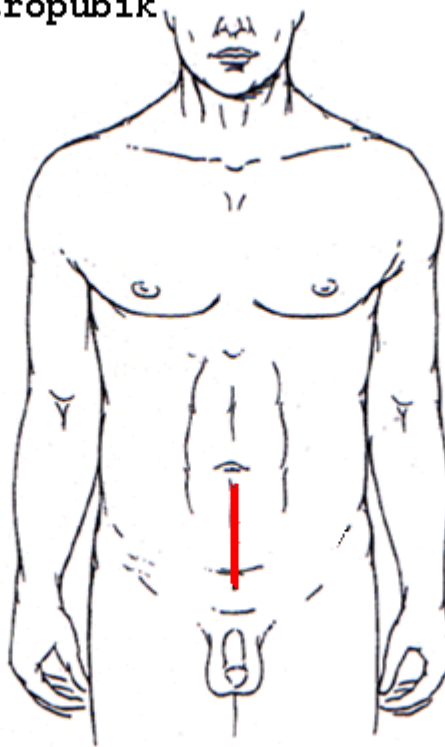
Radikal Perineal Prostatektomi

Lap. RP

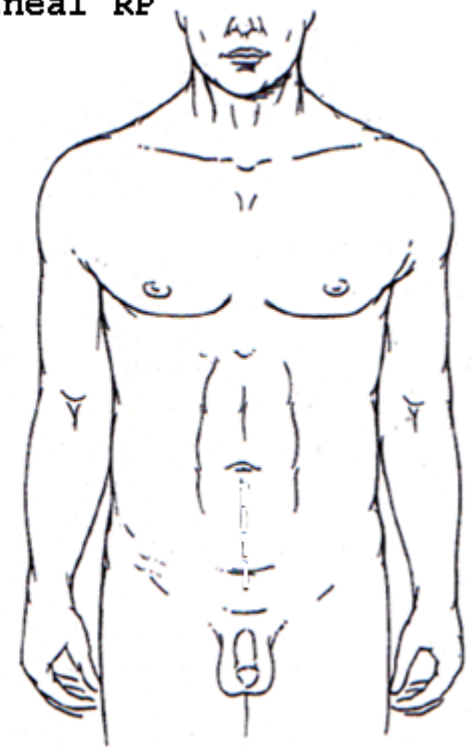


1 cm'lik 5
ayrı kesi

Retropubik
RP



Perineal RP



Perineal Radikal Prostatektomi

3.11 dk

Prof. Dr. Selami Albayrak
Kartal Eğitim ve Araştırma Hastanesi
İSTANBUL