"Optimización de los resultados funcionales de la prostatectomía radical: Detalles técnicos"

Dr JG Pereira

Hospital Galdakao

Clínica IMQ Zorrotzaurre






“ What nice operation are you making difficult today ?
Hardy Hendren MD
Prof Cirg Harvard Medical School

Aspectos históricos de la Prostatectomía Radical



- 1905; YOUNG H Abordaje perineal.
- 1945; MILLIN T Abordaje retropúbico.
- **1982-83**; WALSH P y DONKER Preservación bandeletas neurovasculares.
- **1991** SCHUESSLER WW. 1ª PR laparoscópica.
- **1997-98** GUILLONEAU B; RABOY A; GASTON R. PR laparoscópica definida.
- **2001** MENON M; PR Robotasistida da Vinci.

Aspectos históricos de la Prostatectomía Radical

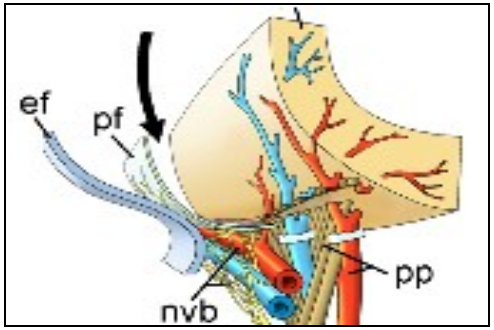


- 2001; ROCCO F Reconstrucción posterior retropúbica
- 2003; VAN VELTHOVEN. Sutura contínua-nudo simple.
- 2005: MENON M . Velo afrodita.

  SECIN FP Preservación art. pudendas accesorias.
- 2007: MORAN M. Sutura barbada en anastomosis
- 2010: BOCCIARDI A Retzius Sparing RP

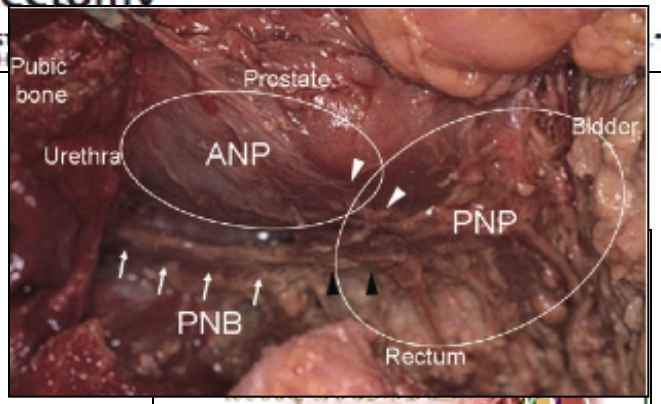
  GASTON R: Complete periprostatic preservation.
- 2013: HEMAL AK; Fluorescencia?.

Resucitado interés por la anatomía



The proximal neurovascular plate and the tri–zonal neural architecture around the prostate gland: importance in the athermal robotic technique of nerve–sparing prostatectomy

ASHUTOSH TEWARI, ATSUSHI TAKENAKA, ES
GEORG BARTSCH* and E. DARRACOTT VAUGH

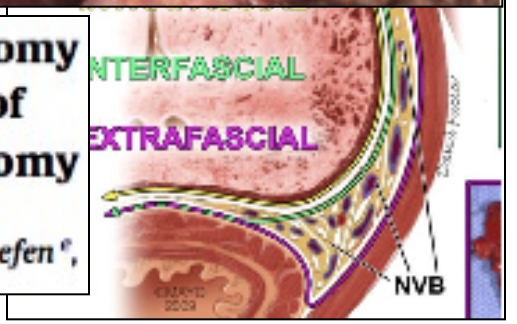


Anatomical Landmarks of Radical Prostatecomy

Jens-Uwe Stolzenburg [a,], Thilo Schwalenberg [a], Lars-Christian Horn [b], Jochen Neuhaus [a], Costantinos Constantinides [c], Evangelos N. Liatsikos [d]*

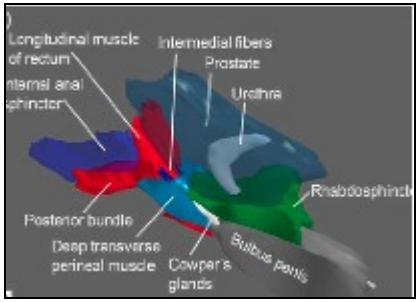
A Critical Analysis of the Current Knowledge of Surgical Anatomy Related to Optimization of Cancer Control and Preservation of Continence and Erection in Candidates for Radical Prostatectomy

Jochen Walz [a,], Arthur L. Burnett [b], Anthony J. Costello [c], James A. Eastham [d], Markus Graefen [e], Bertrand Guillonneau [d], Mani Menon [f], Francesco Montorsi [g], Robert P. Myers [h]*



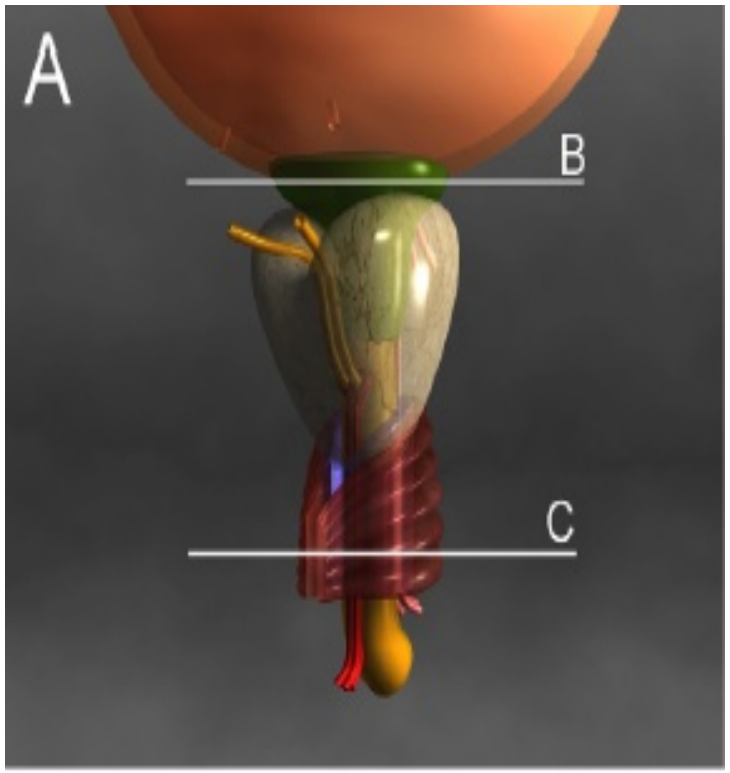
The Male Rectourethralis and Deep Transverse Perineal Muscles and Their Relationship to Adjacent Structures Examined with Successive Slices of Celloidin-Embedded Pelvic Viscera

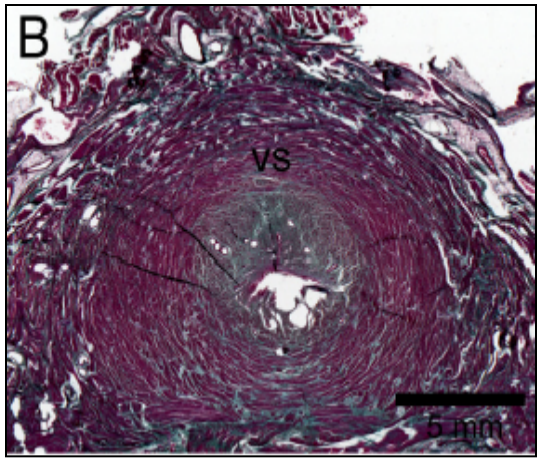
Li-Dong Zhai [a], Jin Liu [a], Yun-Sheng Li [a,], Qing-Tong Ma [b], Ping Yin [b]*

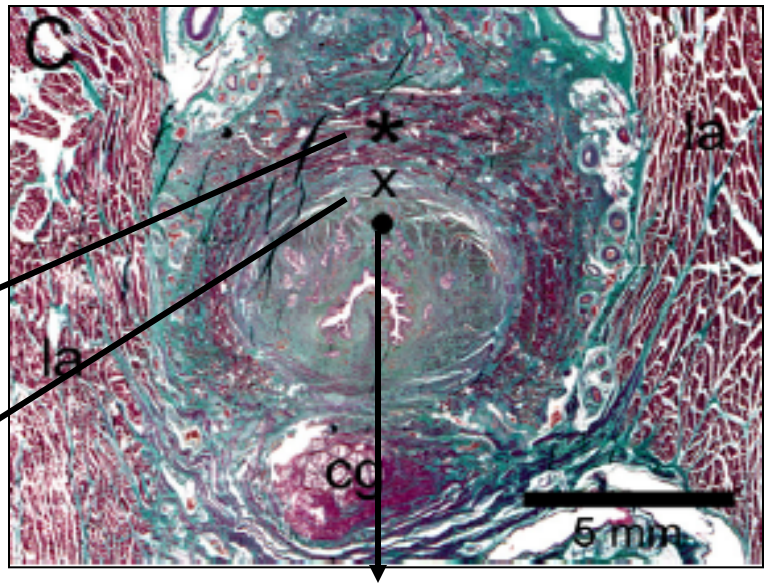


Musculatura del cuello vesical y uretra

Fibras musculares circulares en anillo







Fibras circulares M. Estriado

Rabdoesfínter

Fibras Circulares M. Liso

Fibras Longitudinales M. Liso

Factores de los que depende la continencia urinaria

Factores inherentes

- *EDAD*
- Patología previa prostática (RTU-P,.), Volumen,..
- Grado de obstrucción e inestabilidad vesical
- *Longitud y grosor manguito uretral*

Factores modificables

- Preservación nerviosa
- *Preservación longitud manguito uretral*
- *Ausencia fístula urinaria o esclerosis*
- Reconstrucción cuello
- *Preservación estructuras de soporte*

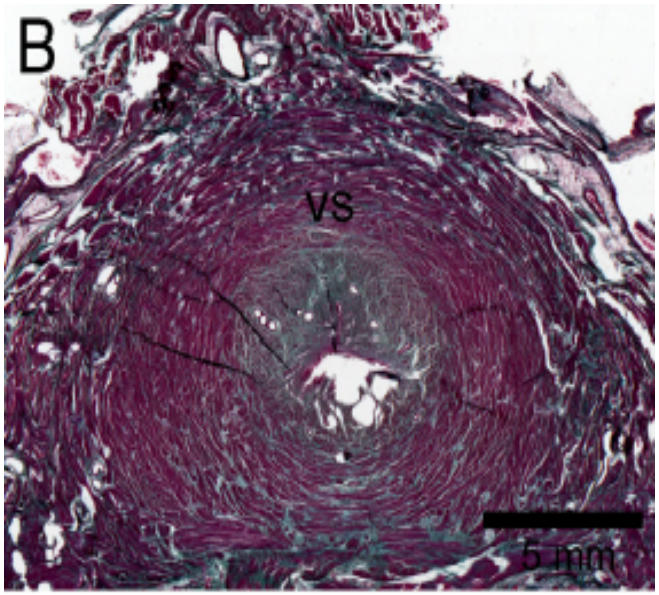
Puntos clave en continencia urinaria postPR

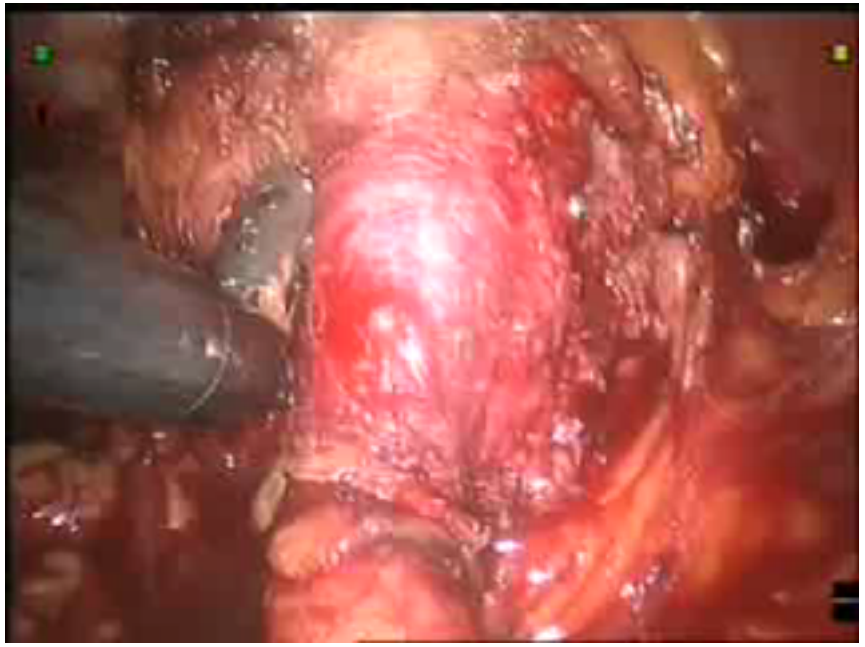
ETIOLOGIA Incontinencia es MULTIFACTORIAL

1. Daño directo rabdoesfinter
2. Lesión inervación
3. Prolapso estructuras de soporte y anastomosis

- Conservación-reconstrucción cuello vesical
- Conservación-inervación esfínter uretral externo
- Actuación sobre estructuras de soporte
- Preservación inervación

- ***Disección del cuello vesical con preservación fibras circulares***

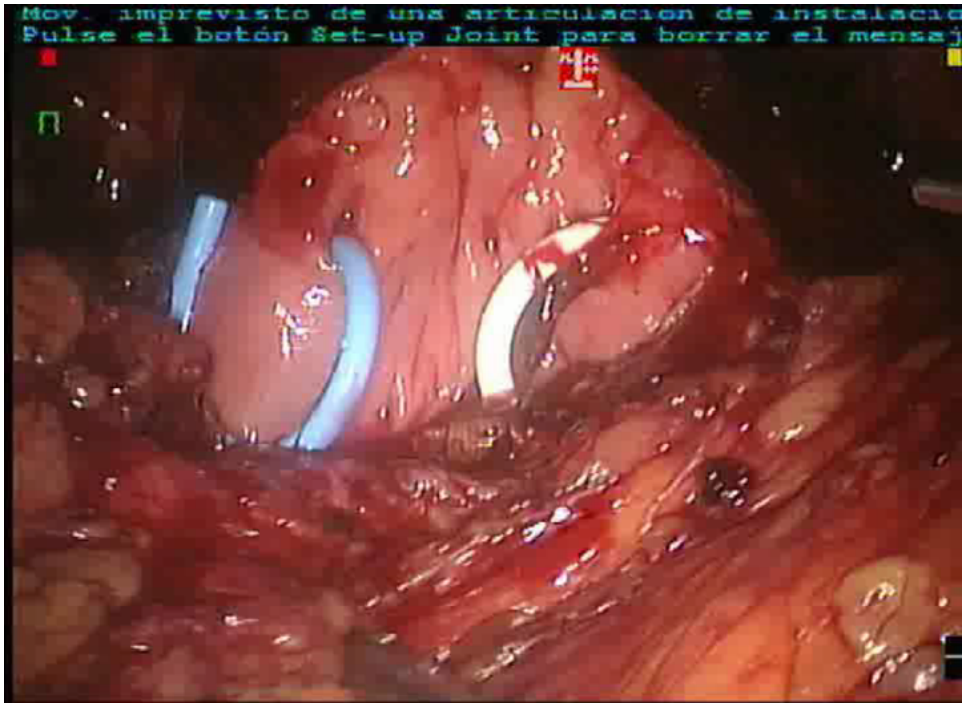


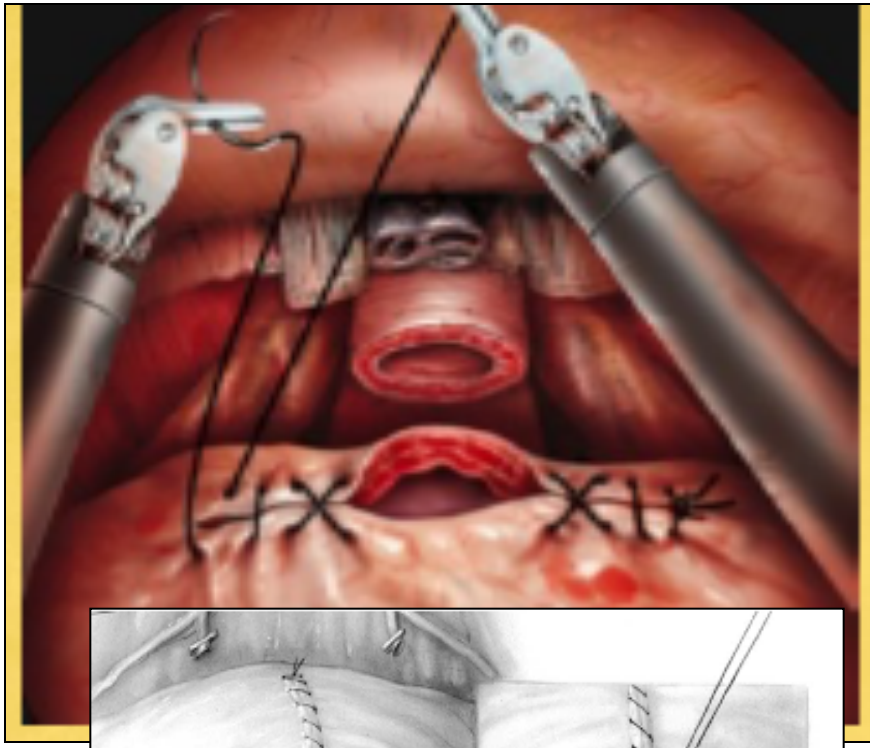


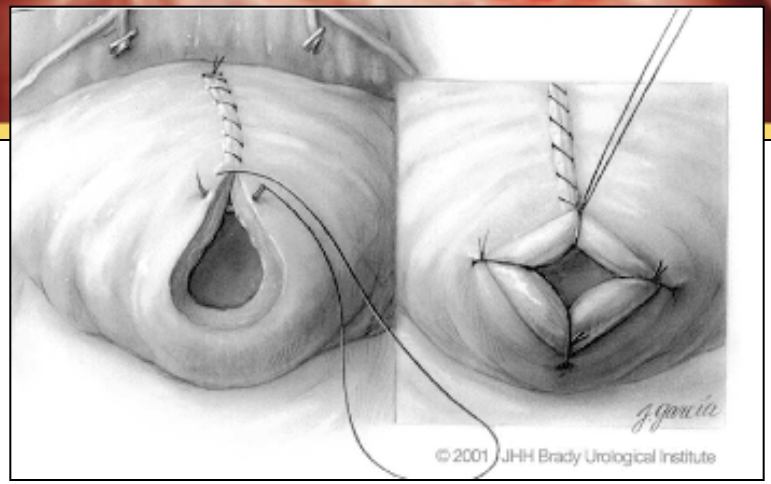
DELIVELIOTIS C. *Radical prostatectomy: bladder neck preservation and puboprostatic ligament sparing-effects on continence and positive margins. Urology 60;855,2002.*

STOLZENBURG JU. *Effect of bladder neck preservation during EERP on urinary continence. Urol Int 2010;85:135-8.*

- ***Reconstrucción del cuello vesical***







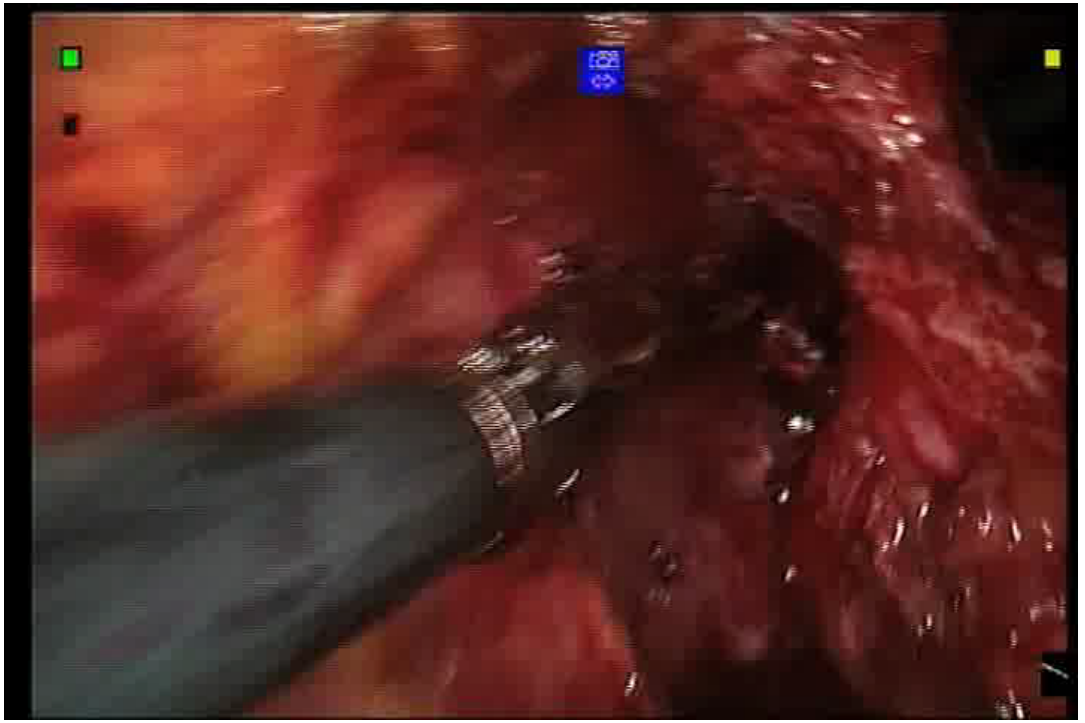
Incidence and management of anastomotic leakage following laparoscopic prostatectomy with implementation of a new anastomotic technique incorporating posterior bladder neck tailoring

T. Sukkarieh · J. Harmon · F. Penna · R. Parra

Intususpección: continencia 3 meses (82% vs 54%)

- ***Preservación de la mayor longitud de muñón uretral sin trauma-coagulación***.





- ***38% circunferencial***
- ***25% anterior***
- *22% posterior*
- *15% no sobrepasa*

TEWARI AK. *Anatomical retroapical technique of synchronous urettrhal transection: A novel appproach for ameliorating apical margin positive during RRP. BJU Int 2010;106;1364-73*

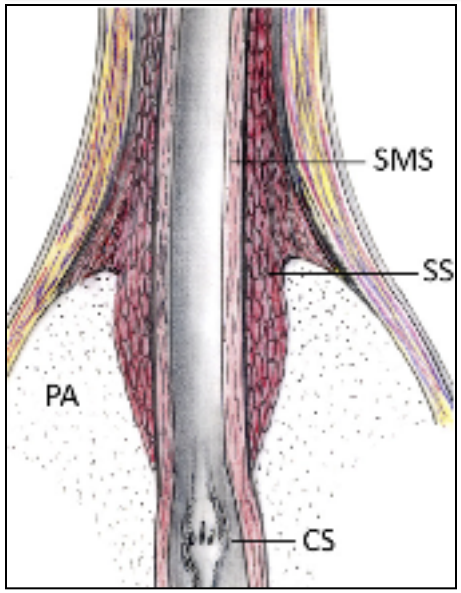
SASAKI H. *Lateral view dissection of the prostato-urethral junction to reduce positive apical margin in LRP. Int J Urol 2009;16:664-9*

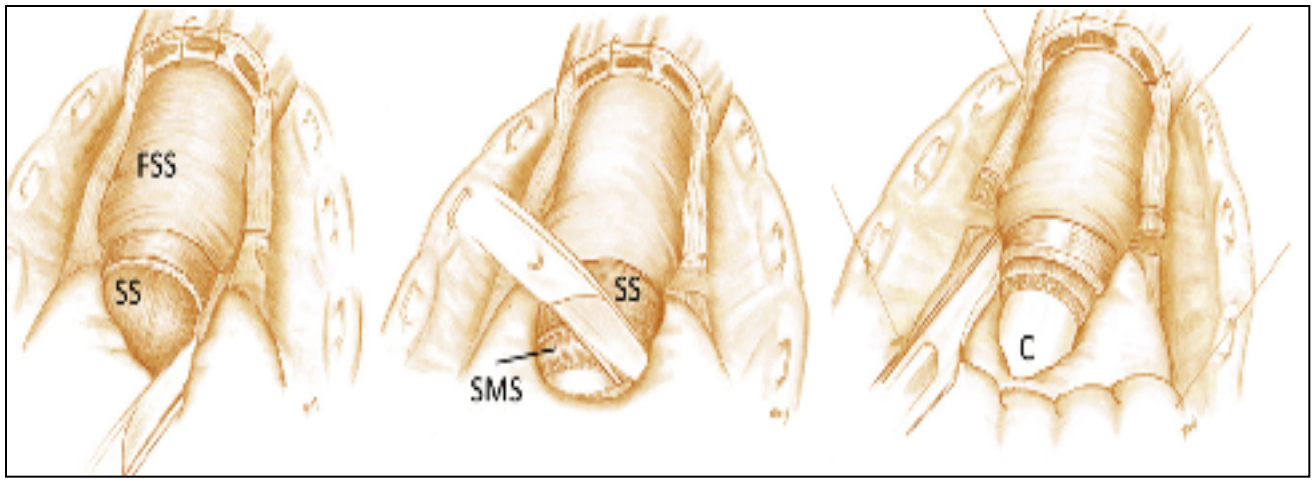
Full Functional-Length Urethral Sphincter Preservation During Radical Prostatectomy

*Thorsten Schlomm *, Hans Heinzer, Thomas Steuber, Georg Salomon, Oliver Engel, Uwe Michl, Alexander Haese, Markus Graefen, Hartwig Huland*



2011





10-40% rabdoesfínter intraprostático

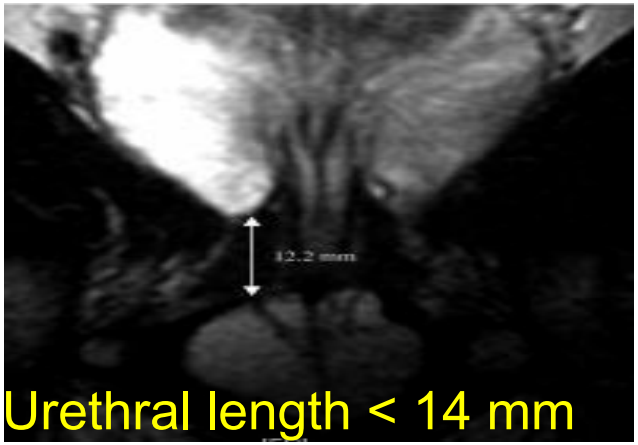
Continencia

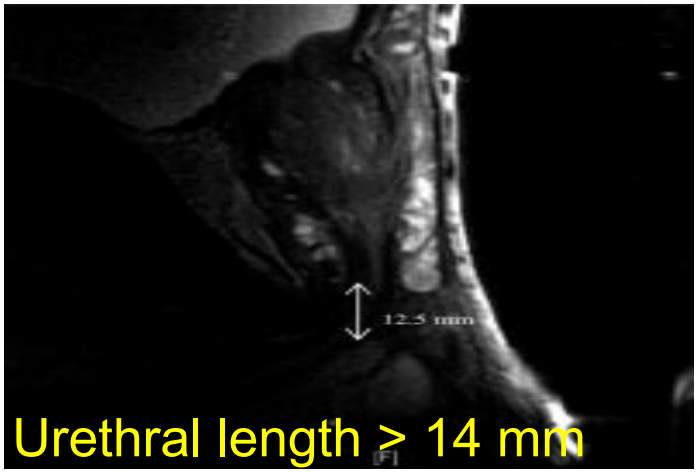
50,1% vs 30,9% 1ª sem
96,9% vs 94,7% 12 mes

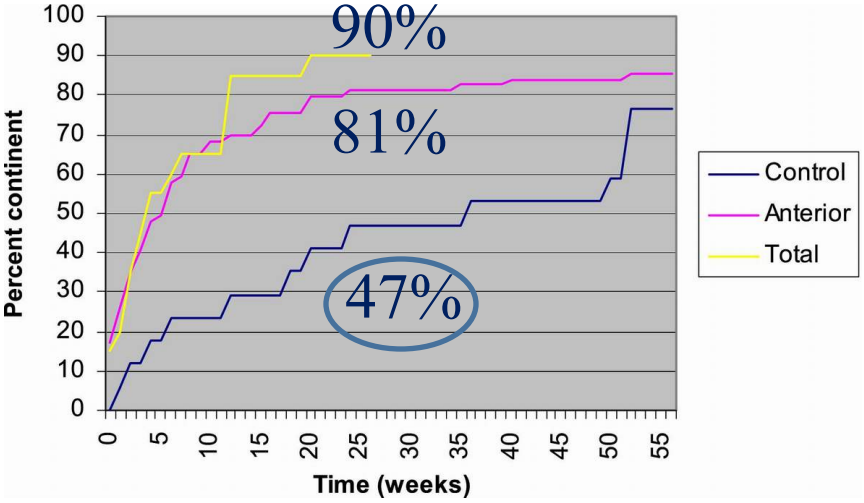
20%

Márgenes positivos
11,8% vs 14%

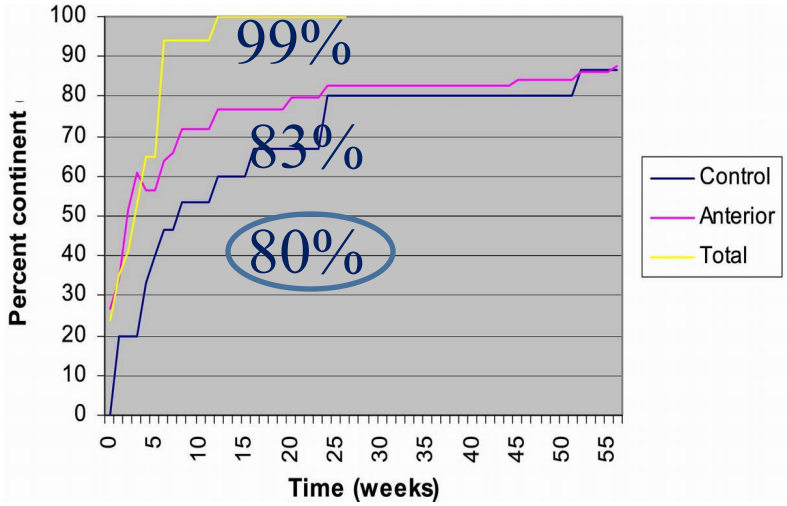
Nguyen L: *Surgical Technique to Overcome Anatomical Shortcoming: Balancing Post-Prostatectomy Continence Outcomes of Urethral Sphincter Lengths on Preoperative Magnetic Resonance Imaging.*







25 semanas

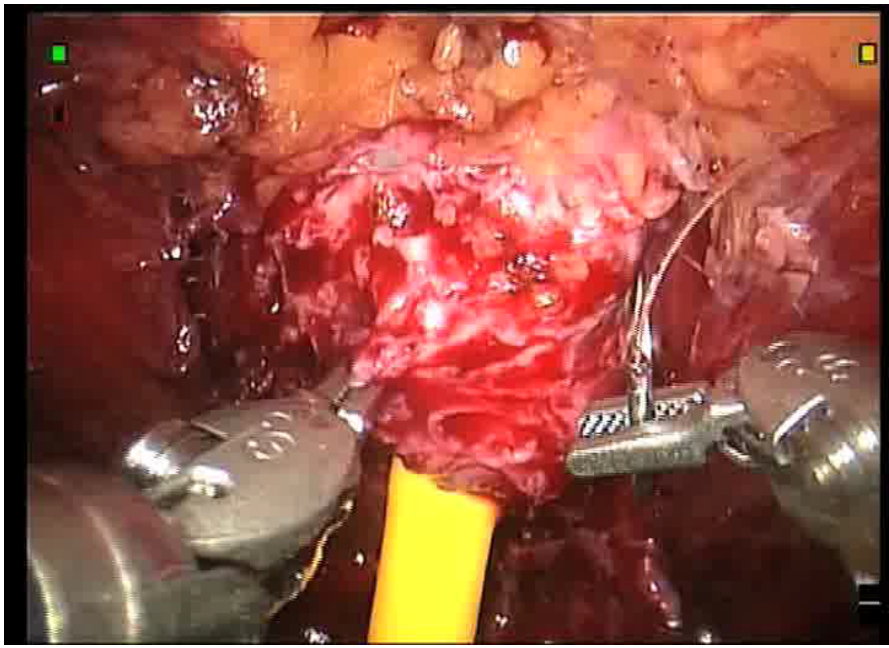


12 semanas

J Urol 179(5), May 2008, p 1018–1023

- ***División atérmica y ligadura selectiva CVD***



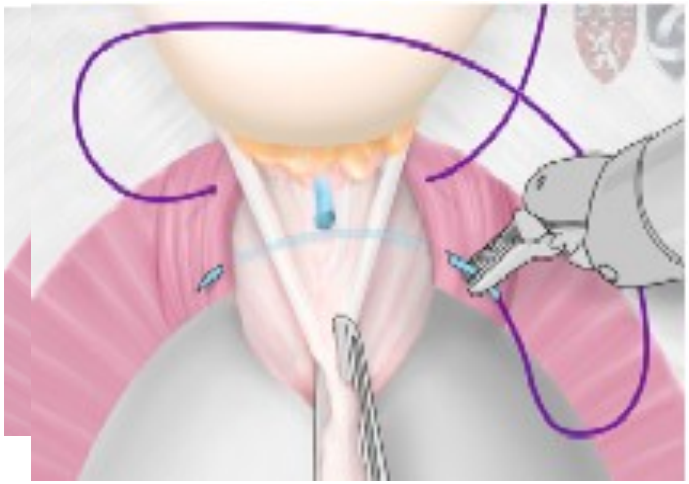


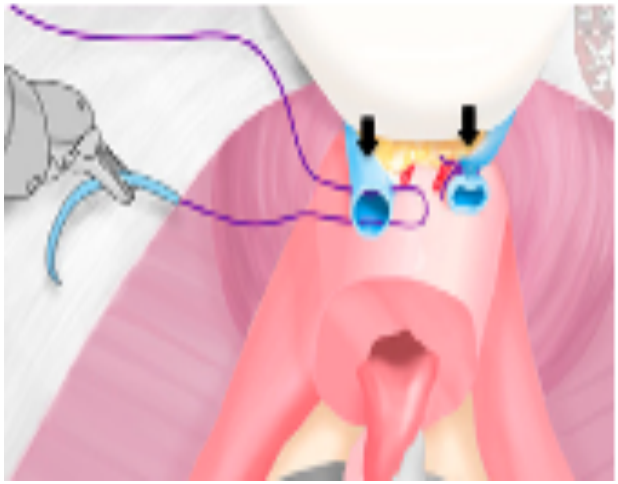
Coagulación selectiva arteriolas y sección fría de CVD

Sutura CVD individualizada

PORPIGLIA F*. Selective vs standard ligature of the DVC during laparoscopic radical prostatectomy: effects on continence, blood loss and margin status.* ***Eur Urol 2009;55:1377-83***

LEI Y: Athermal division and selective suture ligation of the dorsal vein complex during RALP: description of technique and outcomes..





Comparativo 303 PRR vs 240 con ligadura selectiva

***Menor tiempo quirúrgico**: 147 min vs 132 min*

***Mayor hemorragia**: 175,6 ml vs 184.3 ml*

***MQP en ápex similares**: 2,7% vs 1,3%*

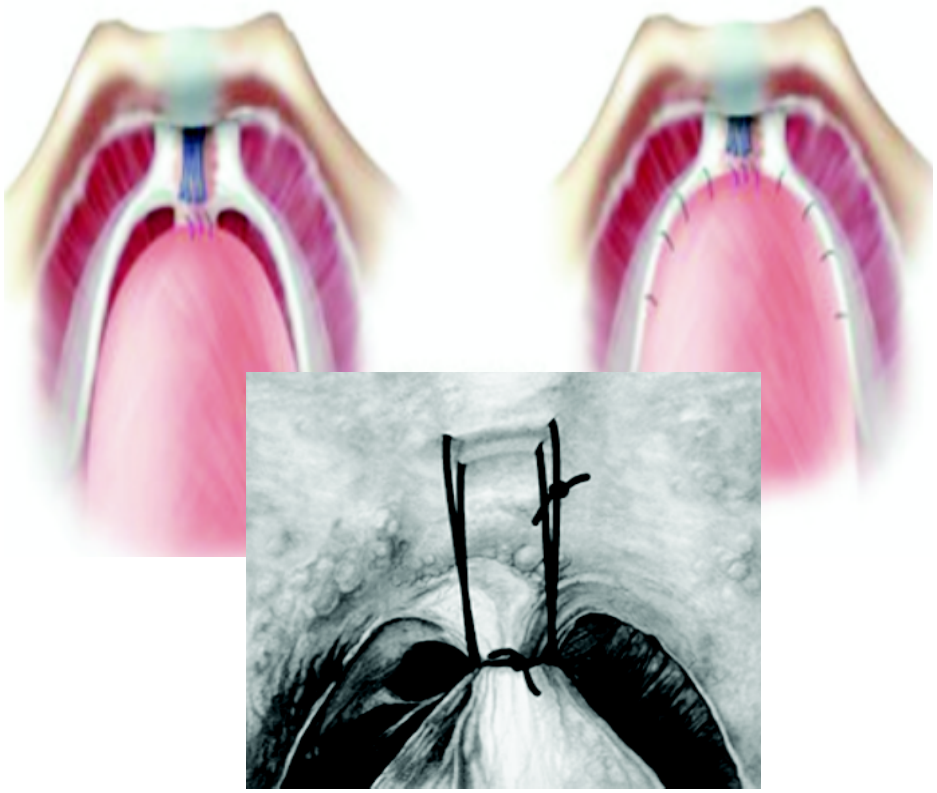
Continencia 5 meses mejor : **39,5% vs 61,4%** **21,9%**

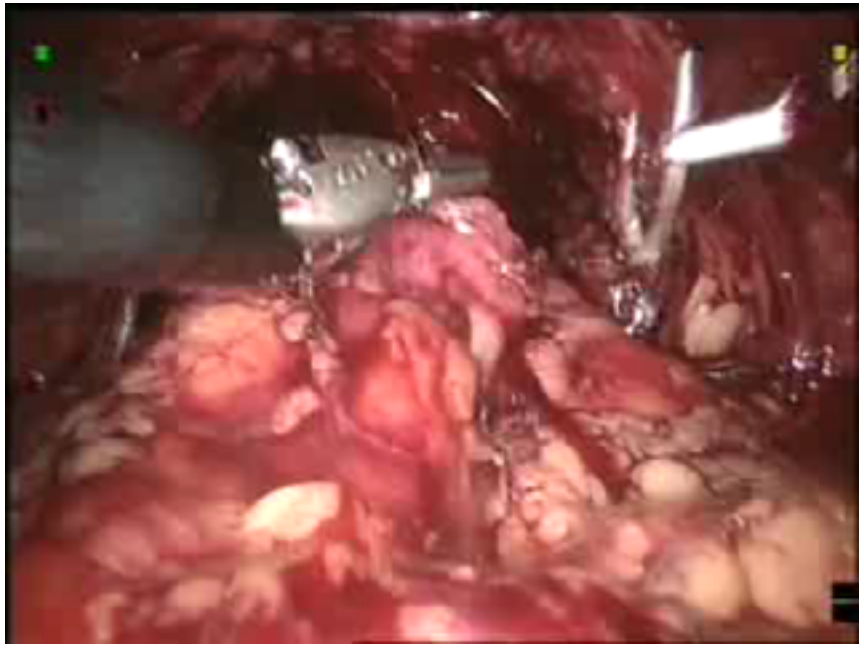
Eur Urol 59 (2011) 235–243

• Técnicas de reconstrucción anterior

(PUBOPERINEOPLASTY- ANTERIOR RECONSTRUCTION)

Continencia 29% en 1ª semana y 62% en 6 semanas

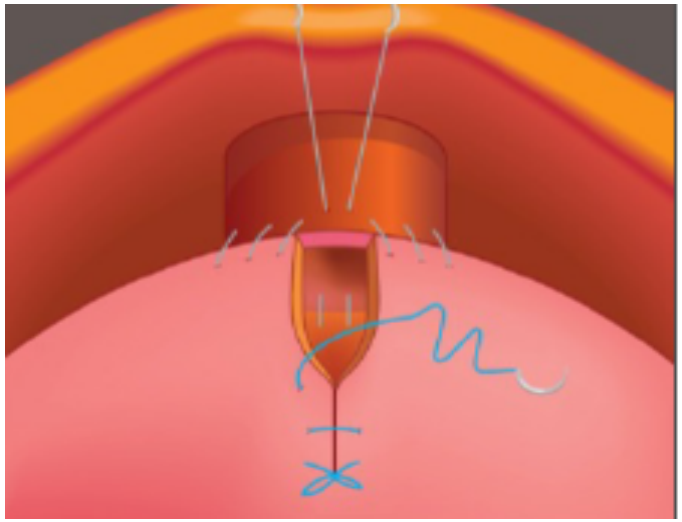


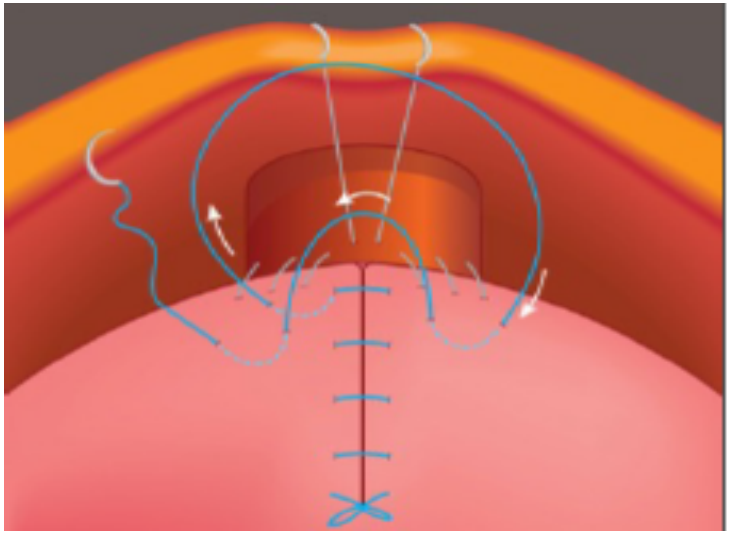


TAKENAKA A. Preservation of the puboprostatic collar and puboperineoplasty for early recovery of urinary continence after robotic prostatectomy: Anatomic basis and preliminary outcomes. Eur Urol 51:433;2007

- ***Técnicas de reconstrucción anterior***

TÉCNICA IMBRICADO CUELLO VESICAL STRICKER P (2010)





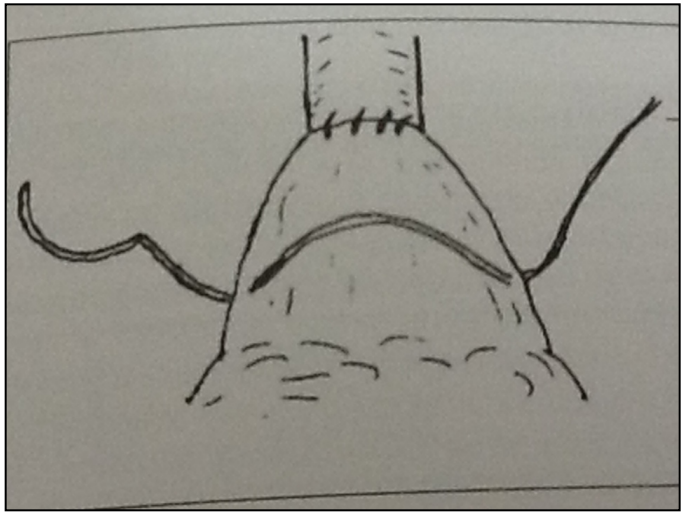
Continencia 6 semanas (**67% vs 78%**) **11%**

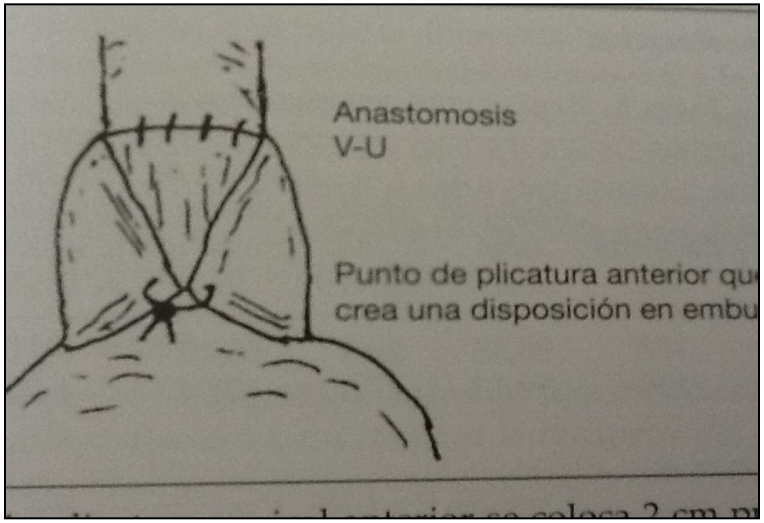
3 meses (89% vs 95%)

6 meses (98% vs 98%)

- *Técnicas de reconstrucción anterior*

TÉCNICA PLICATURA DEL CUELLO VESICAL LEE D (2011)



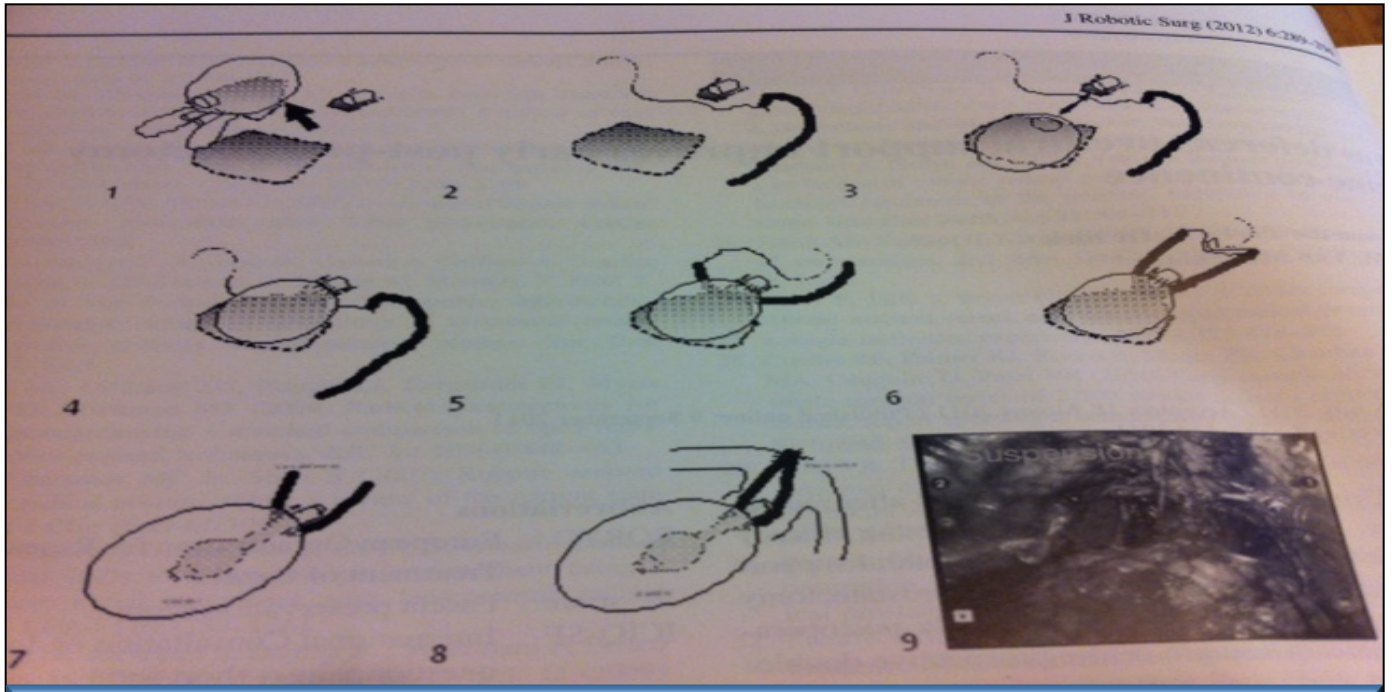


Continencia total 1 mes (16 % vs 8,9%)

12 meses (85,7% vs 74,4%) ***11,3%***

Lee D, Wedmid A, mendoza P: J Endourol 2011,25(12):1723-1726

TÉCNICA SOPORTE URETRAL CON CONDUCTO DEFERENTE Van der Poel (2012)



112 pacientes randomizados

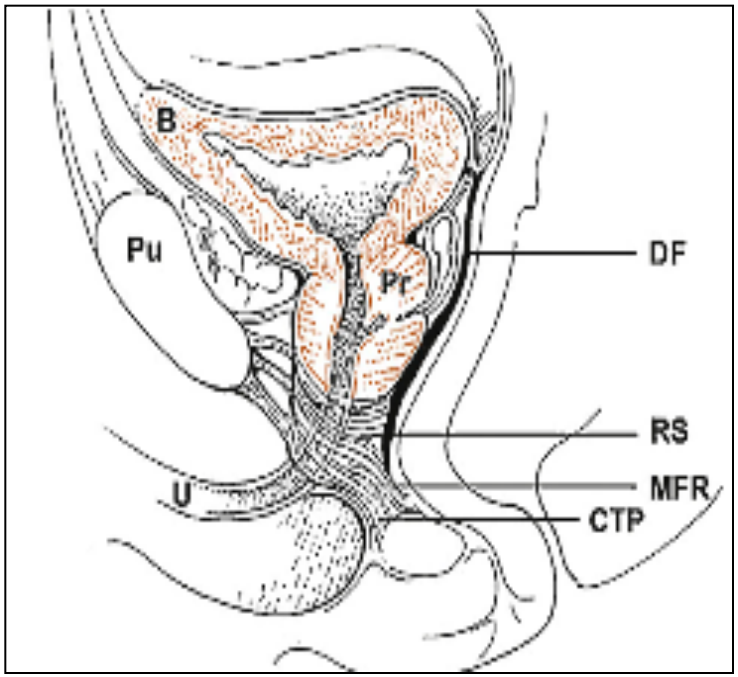
Continencia: 1ª semana: 39% vs 19%

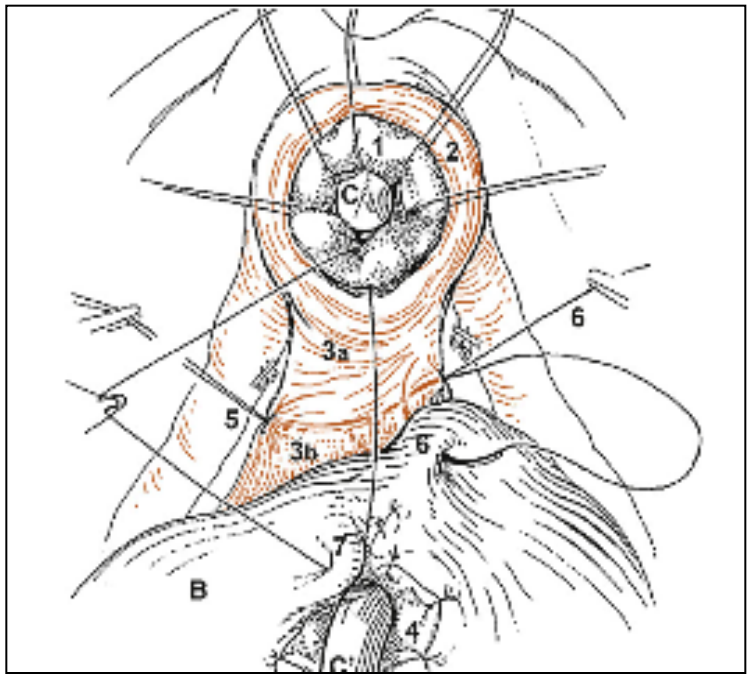
1er mes: 59% vs 35% (24%)

6º mes: 91% vs 83%

HG VAN DER POEL .Vas deferens urethral support improves early post-prostatectomy urine continence
J Robotic Surg 2012; 6:289

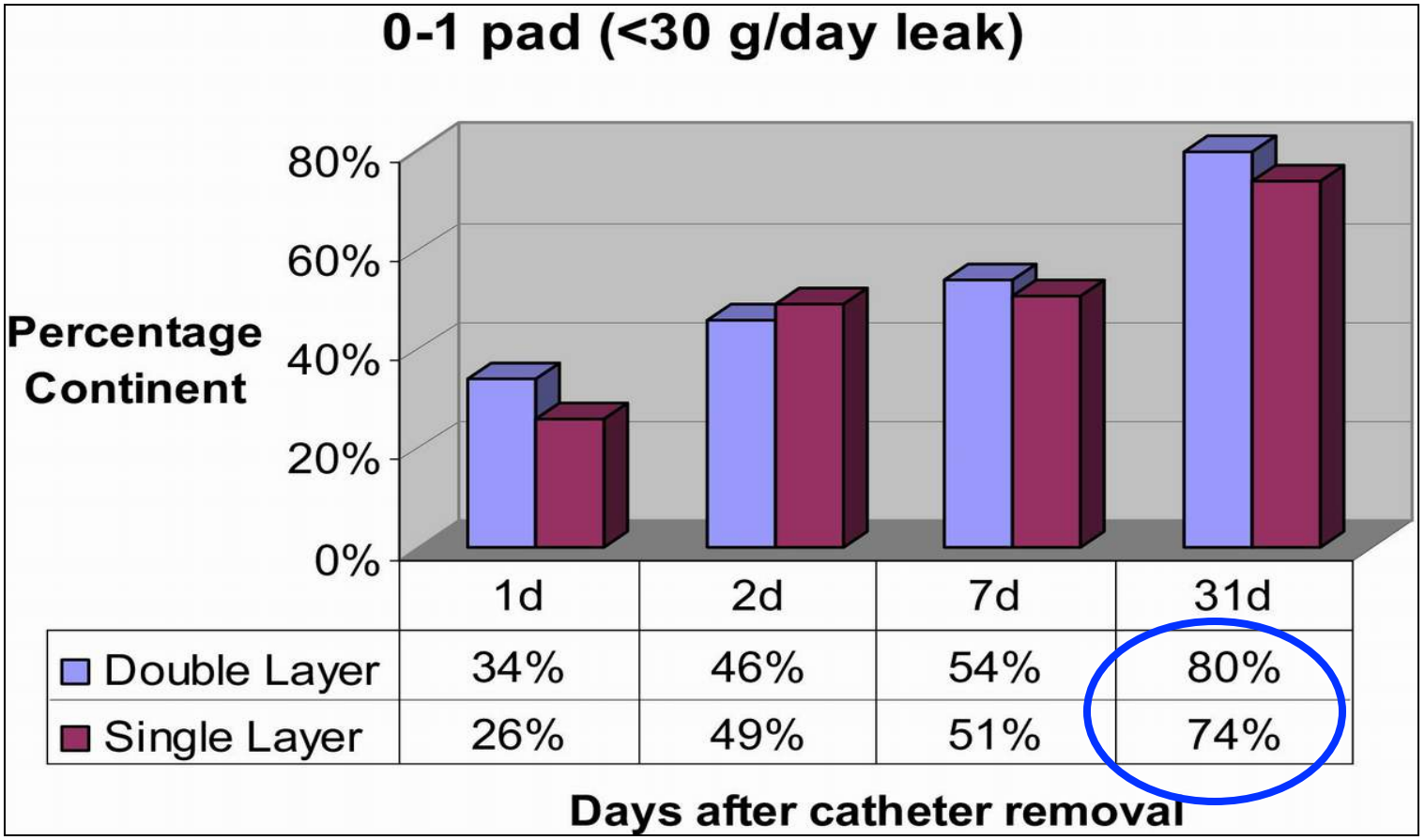
• *Reconstrucción posterior*





ROCCO F : *A personal research: reconstruction of the uretrhal striated sphincter . Arch Ital Urol Andn* ***2001****;73:127-37*
ROCCO F ***:*** *Restoration of posterior aspect of rhabdosphincter shortens continence time after radical retropubic prostatectomy. J Urol* ***2006****; 175:2201-6.*

• *Reconstrucción posterior*

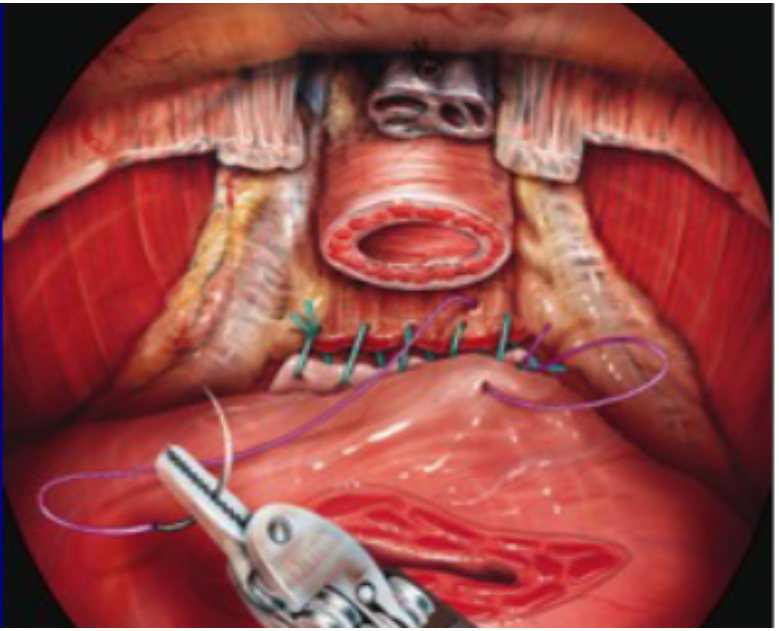


Menon M: *Assessment of Early Continence After Reconstruction of the Periprostatic Tissues in Patients Undergoing Computer Assisted (Robotic) Prostatectomy: Results of a 2 Group Parallel Randomized Controlled Trial*.
J Urol 180(3), September 2008, p 1018–1023

• *Técnicas de reconstrucción posterior*

Influence of Modified Posterior Reconstruction of the Rhabdosphincter on Early Recovery of Continence and Anastomotic Leakage Rates after Robot-Assisted Radical Prostatectomy

Rafael F. Coelho [a,b,c], Sanket Chauhan [a,c], Marcelo A. Orvieto [a,c], Ananthakrishnan Sivaraman [a,c], Kenneth J. Palmer [a,c], Geoff Coughlin [a,c], Vipul R. Patel [a,c,]*



1 semana	22,7% vs 28,7%
1 mes	42,7% vs 51,6%
3 meses	91,8% vs 91,1%
6 meses	96,3% vs 97%

8,9%

Las técnicas de reconstrucción posterior sólo han demostrado un escaso beneficio en la recuperación de la continencia precoz (8,9% 1º mes)

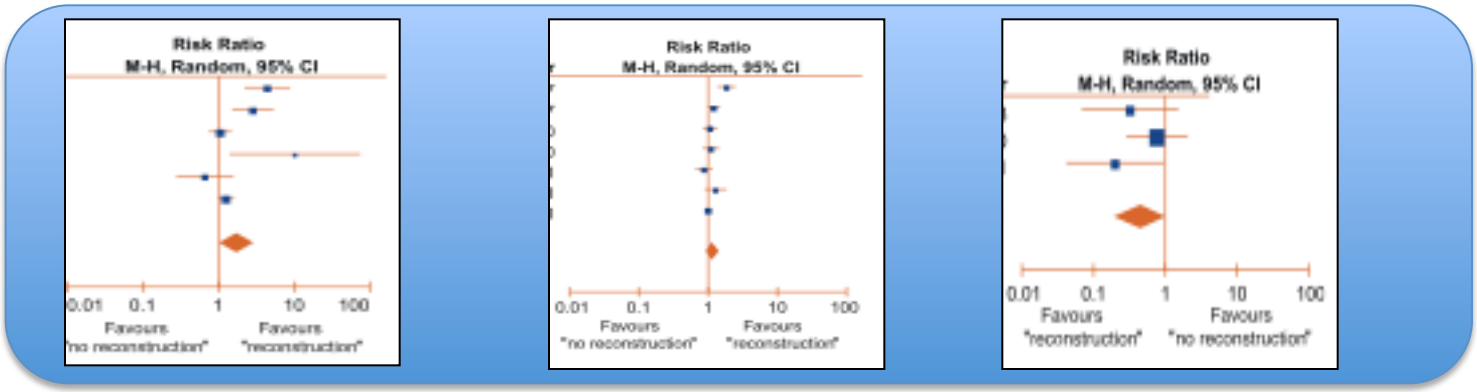
Eur Urol. 2011;59:72-80.

Posterior Musculofascial Reconstruction After Radical Prostatectomy: A Systematic Review of the Literature

Bernardo Rocco [a,b,], Gabriele Cozzi [a], Matteo G. Spinelli [a], Rafael F. Coelho [b,c,d], Vipul R. Patel [b], Ashutosh Tewari [e], Peter Wiklund [f], Markus Graefen [g], Alex Mottrie [h], Franco Gaboardi [i], Inderbir S. Gill [j], Francesco Montorsi [k], Walter Artibani [l], Francesco Rocco [a]*



2012

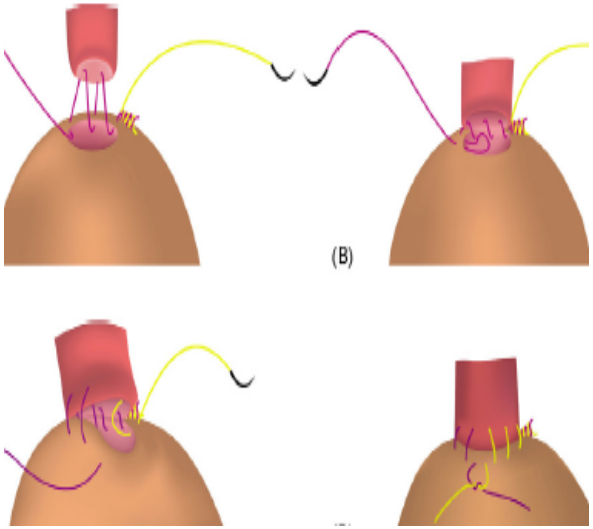


- En 11 estudios se aprecia una *mejor continencia inmediata y al mes*, con tasas similares de continencia a los 90 días.

- Se insinúa una *menor tendencia a fugas anastomóticas* (11,3% vs 14,8%), con *tasas similares de RAO* (2,8% vs 2%), *esclerosis anastomóticas* (2% vs 4%) y de márgenes quirúrgicos positivos.

- ***Anastomosis uretrovesical "impermeable"***





VAN VELTHOVEN RF: *Technique for laparoscopic running urethrovesical anastomosis: the single knot method. Urology 61:699,* ***2003.***

MENON M. *Technique of apical dissection of prostate and urethrovesical anastomosis in robotic radical prostatectomy. BJU Int 93;715,* ***2004***

• Suturas escamosas

Randomized Controlled Trial of Barbed Polyglyconate Versus Polyglactin Suture for Robot-Assisted Laparoscopic Prostatectomy Anastomosis: Technique and Outcomes

Stephen B. Williams [a,1], Mehrdad Alemozaffar [a,1], Yin Lei [a], Nathanael Hevelone [b], Stuart R. Lipsitz [b], Blakely A. Plaster [a], Jim C. Hu [a,b,]*

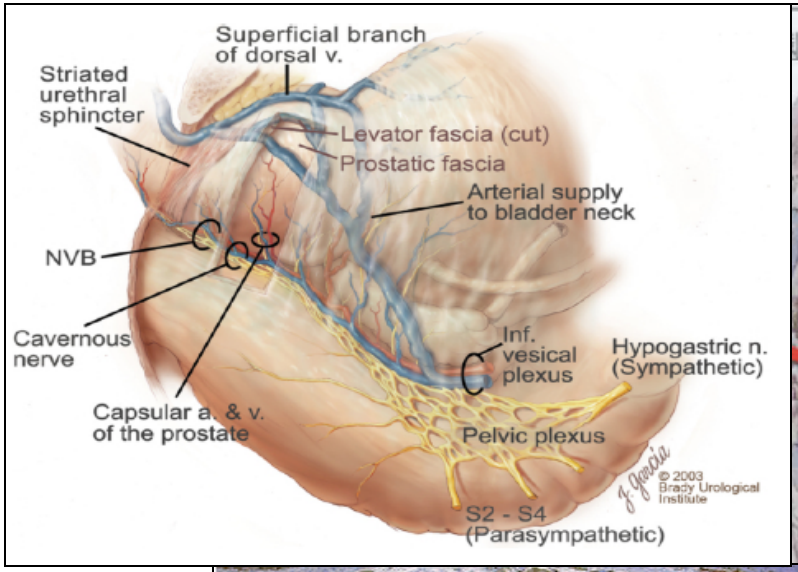
- *Facilita los pasos de la reconstrucción.*
- *Reduce el tiempo de anastomosis uretrovesical de12 min a 7 min.*
- *La sutura escamosa requiere una modificación técnica destinada a evitar la sobretensión que condicione retraso en la cicatrización y mayor tiempo de cateterización.*

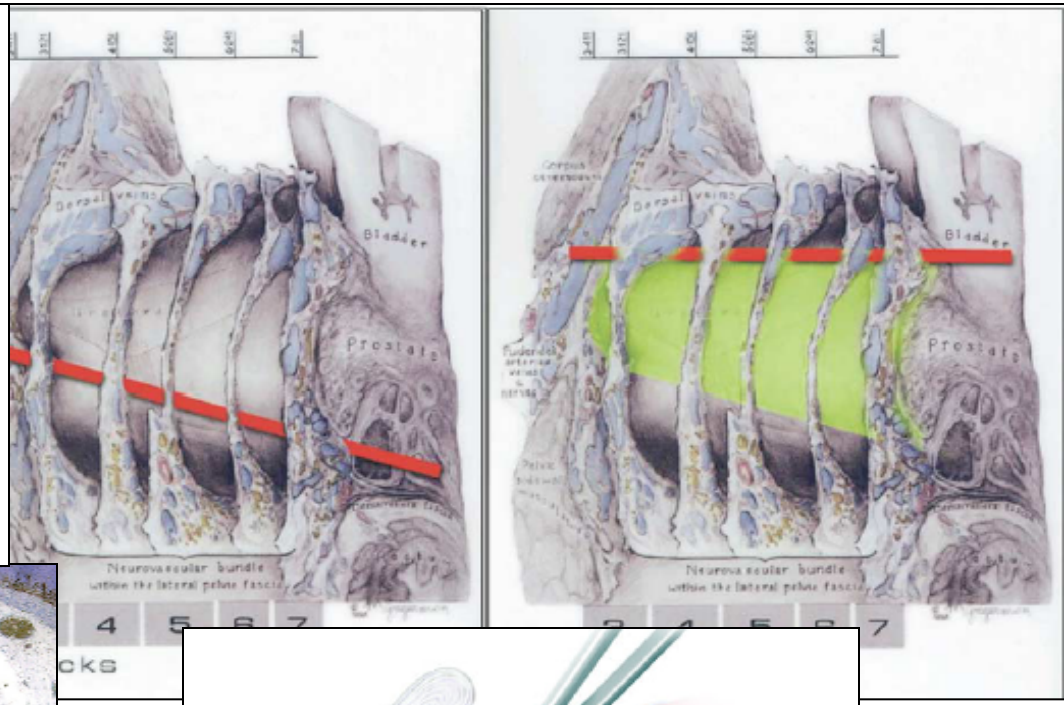
EUROPEAN UROLOGY 58 (2010) 875–881

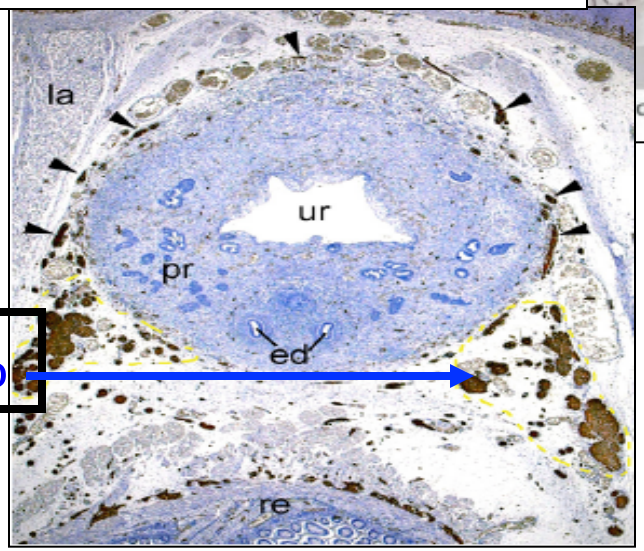
Función eréctil



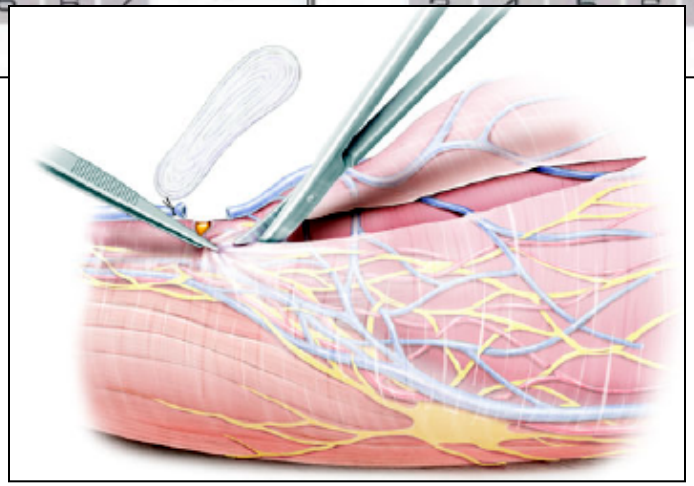
- *Disección en cortina, velo de afrodita*







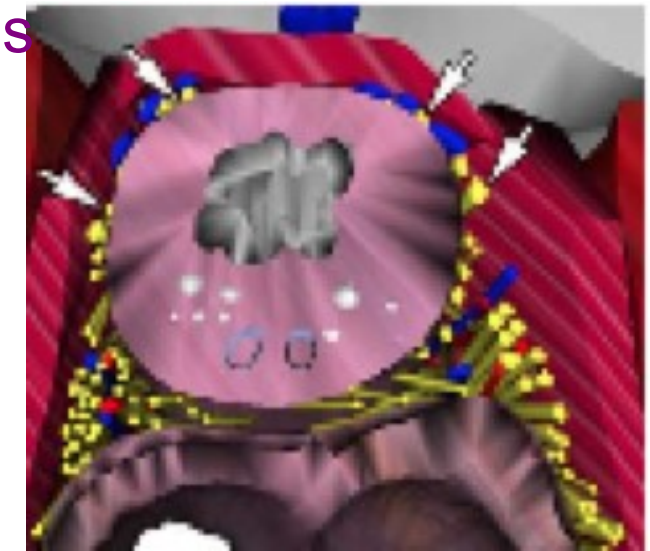
45-65%



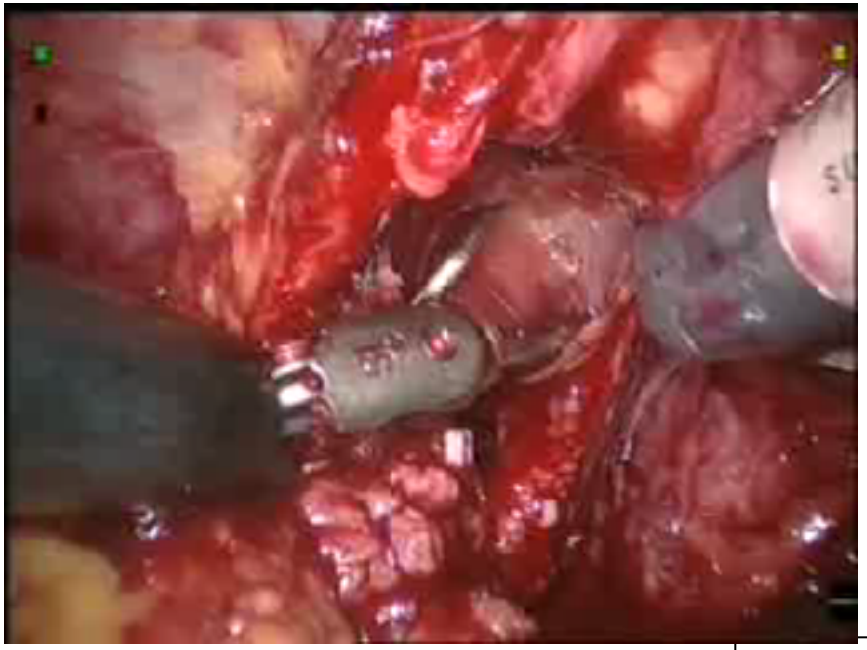
SAVERA AT, KAUL S;BADANI K: Robotic radical prostatectomy with the "Veil of Aphrodite" technique: histologic evidence of enhanced nerve sparing. Eur Urol 2006;49:1065-1074.

Técnica quirúrgica para mejorar función eréctil

- Apertura más anterior de la fascia prostática
- Disección atérmica de vértice vesículas seminales
- Preservación del vértice de vesículas seminales
- Disección intra o interfascial de bandeletas neurovascualres según indicación
- Evitar tracción y neuroaparxia en bandeletas
- Preservar las art. Pudendas accesorias



- ***Conservación de fascia periprostática (Velo de Afrodita)***



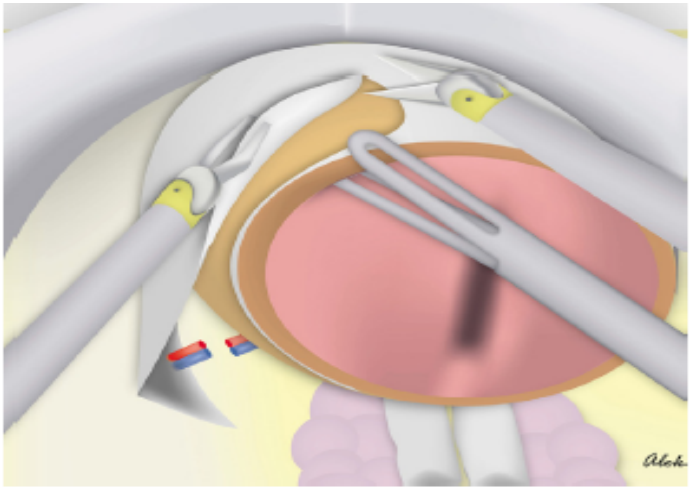


Fig. 8 – Plane of dissection for veil of Aphrodite.

74% vs 97% (23%)

High prostatic fascia release or standard nerve sparing? A viewpoint from the Royal Melbourne Hospital

Declan G. Murphy · Anthony J. Costello

68,4% vs 67,2%

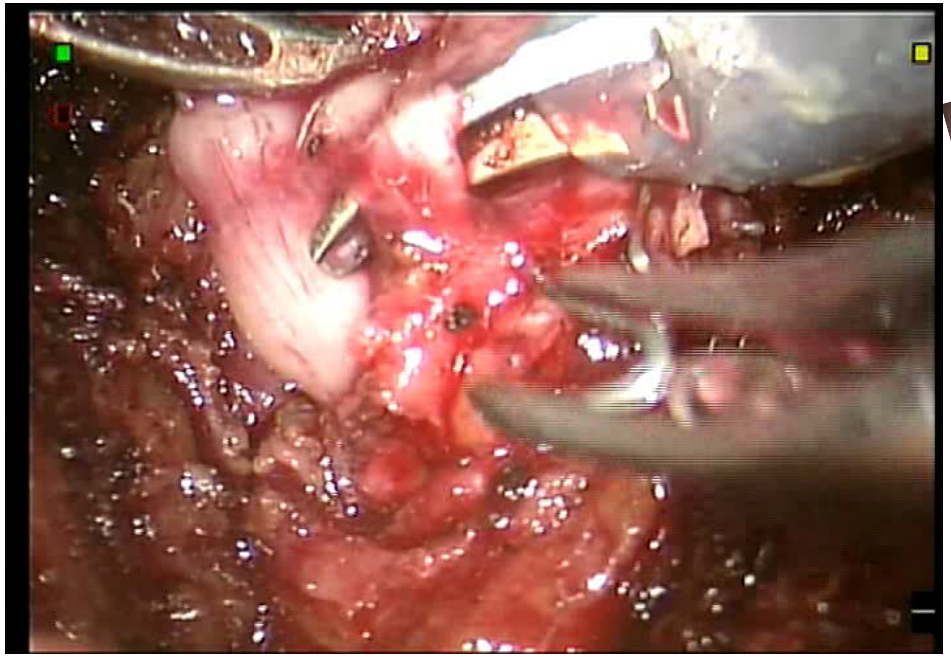
MENON M: *Potency following robotic radical prostatectomy:A questionnaire based analysis of outcomes after conventional nerve sapring and prostatic fascia sparing techniques. J Urol 174:2291, 2005.*

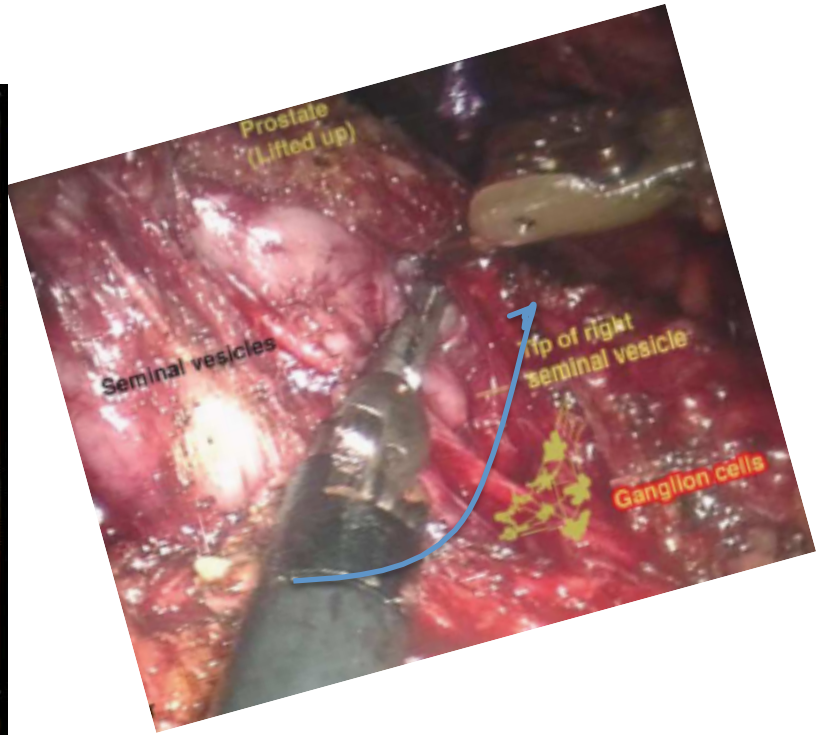
…. EL PROBLEMA en las técnicas de preservación nerviosa son…

- *Muchos de los nervios son invisibles al cirujano.*
- *No conservamos nervios.*
- *Conservamos el tejido donde creemos que están los nervios.*
- *El éxito/fracaso de la conservación se mide tardíamente (a los 3-6 meses de la cirugía)*

Neurourology and Urodynamics 31:60–63 (2012)

- ***Técnica atérmica de disección de VVSS y de CC deferentes.***

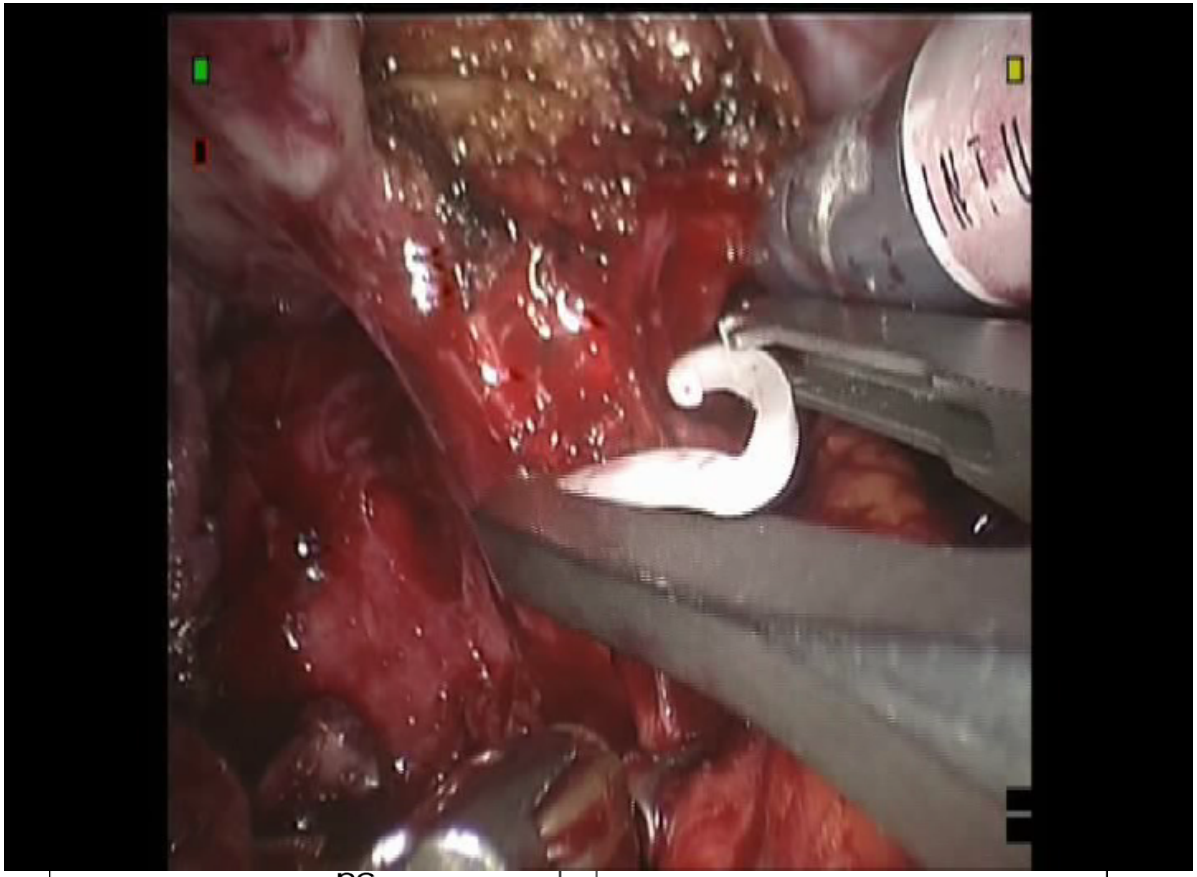


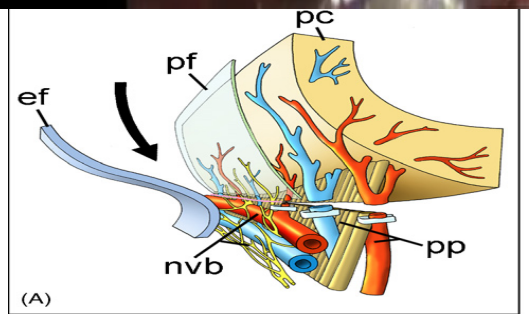


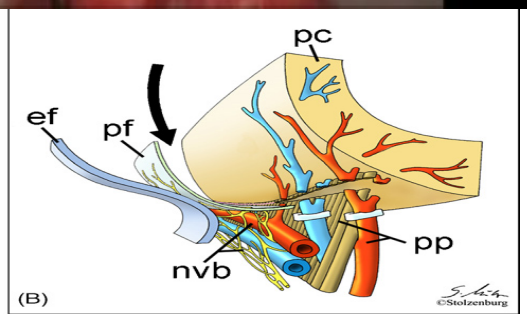
AHLERING TE: *Impact of cautery versus cautery free preservation of neurovascular bundles on early return of potency.* ***J Endourol 20: 586, 2006***

EICHEL L: *Feasibility study for LRP cautery free neurovascualr bundle preservation.* ***Urology 65:994, 2005***

- ***Preservación bandeletas posterolaterales mediante disección atérmica INTERFASCIAL***





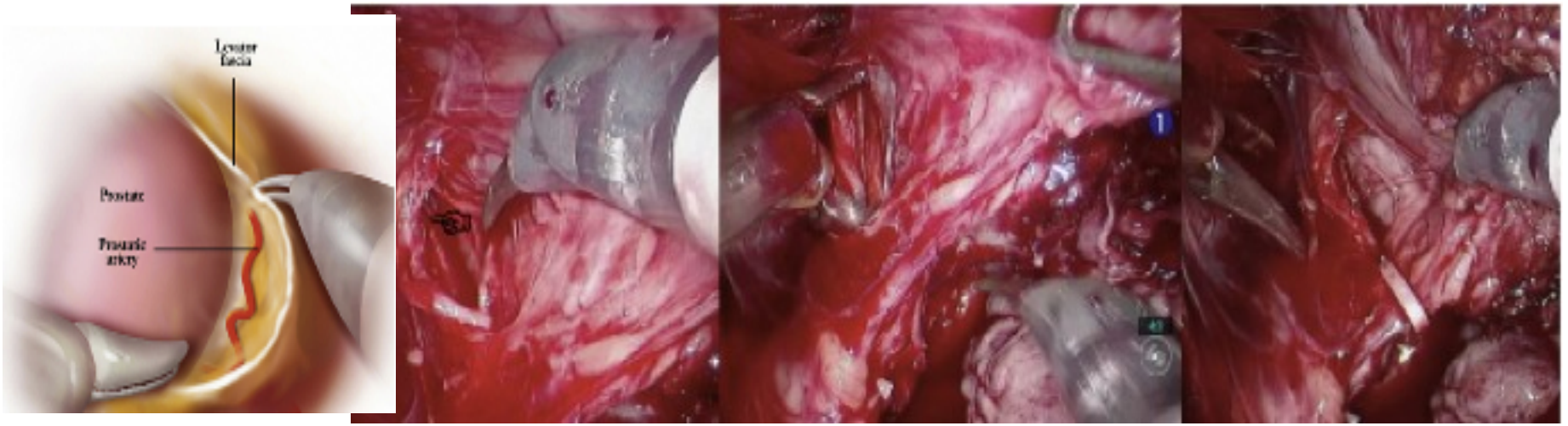


The Role of the Prostatic Vasculature as a Landmark for Nerve Sparing During Robot-Assisted Radical Prostatectomy

Eur Urol 61 (2012)

Vipul R. Patel [a,b,], Oscar Schatloff [a], Sanket Chauhan [a,b], Ananthakrishnan Sivaraman [a], Rair Valero [c], Rafael F. Coelho [d], Bernardo Rocco [e], Kenneth J. Palmer [a,b], Darian Kameh [a]*

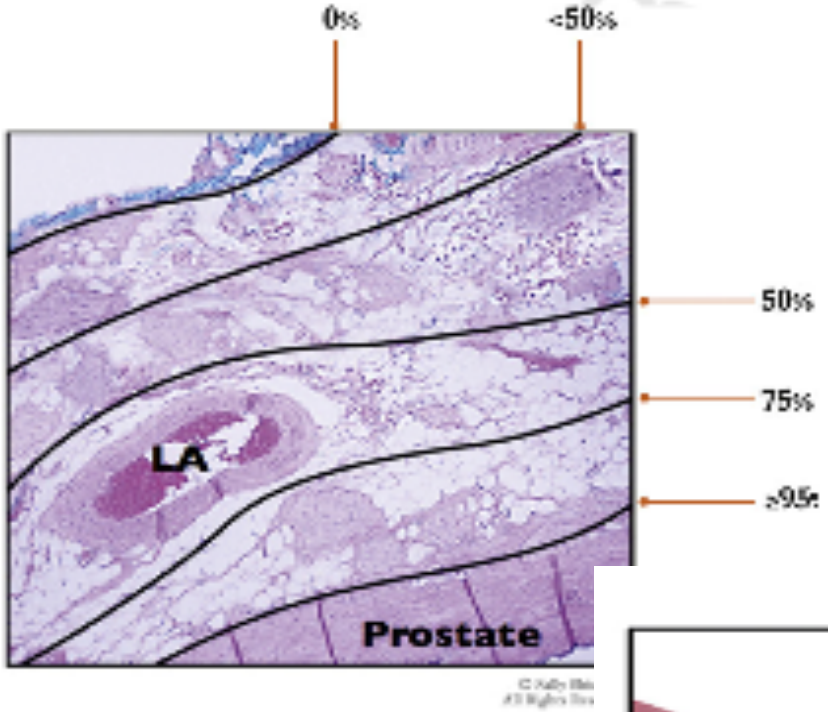
- *Arteria capsular prostática lateral identificable en 73,3%* en 133 casos consecutivos, realizando disección lateral o medial a la misma como referencia visual para nerve-sparing-RRP.

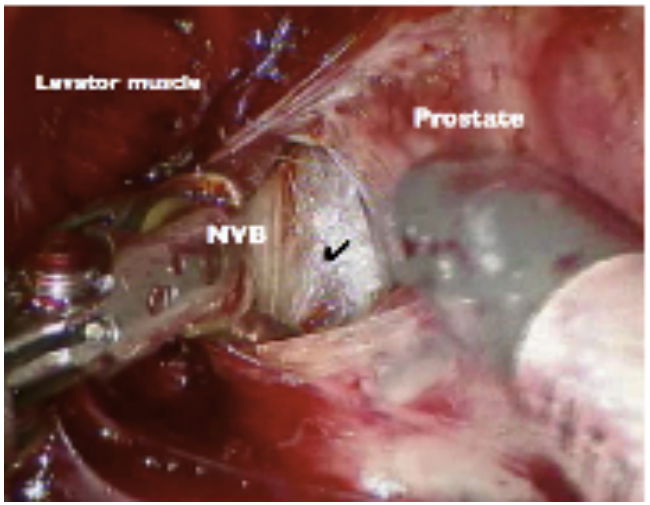


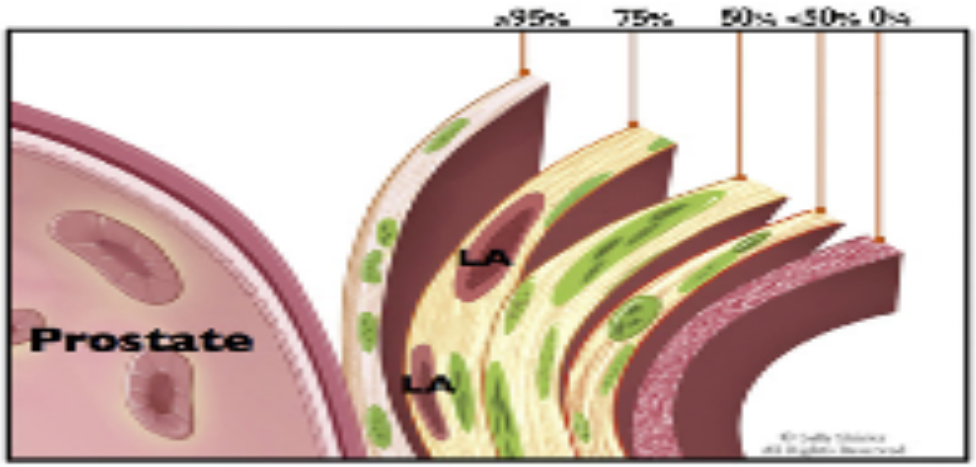
Tewari A. Anatomical grades of nerve sparing: a risk-stratified approach to neural-hammock sparing during robot-assisted radic prostatectomy (RARP). BJU Int 2011;108:984–92

Anatomic Grading of Nerve Sparing During Robot-Assisted Radical Prostatectomy

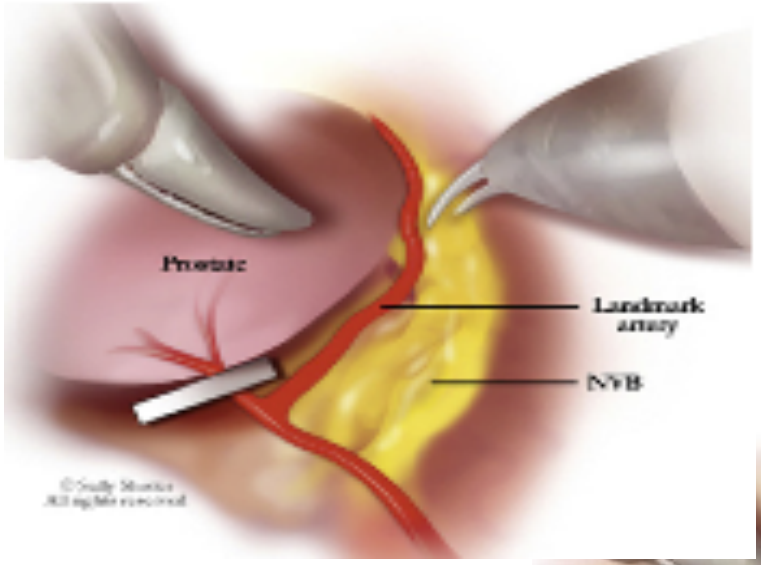
*Oscar Schatloff, Sanket Chauhan, Ananthakrishnan Sivaraman, Darian Kameh, Kenneth J. Palmer, Vipul R. Patel **



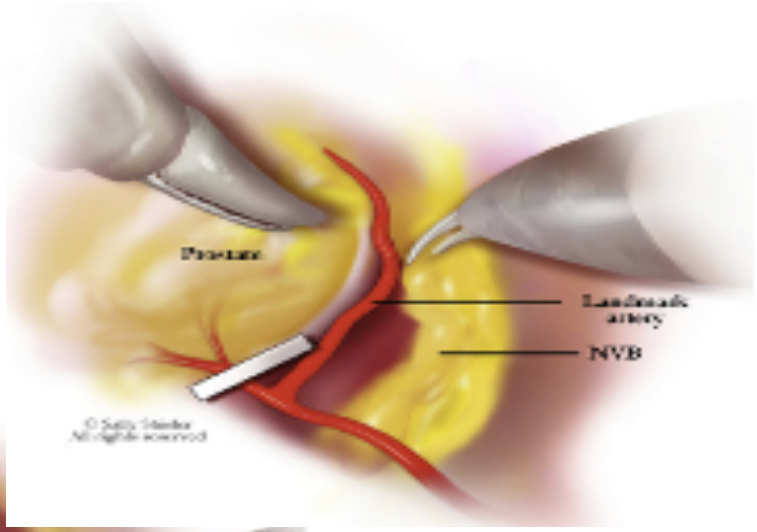


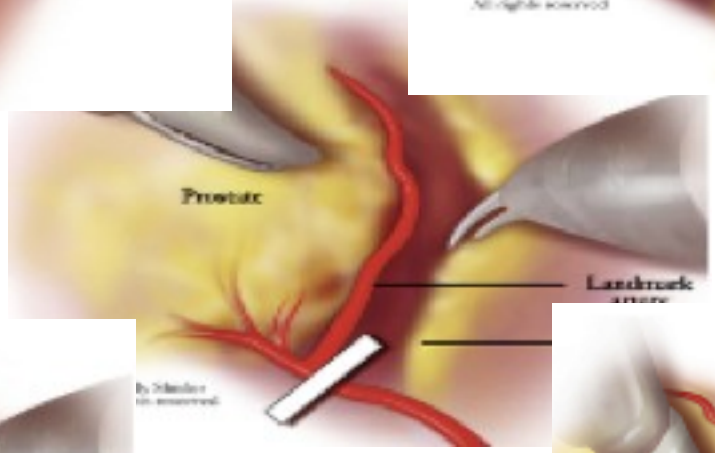


Grado 5: 95%



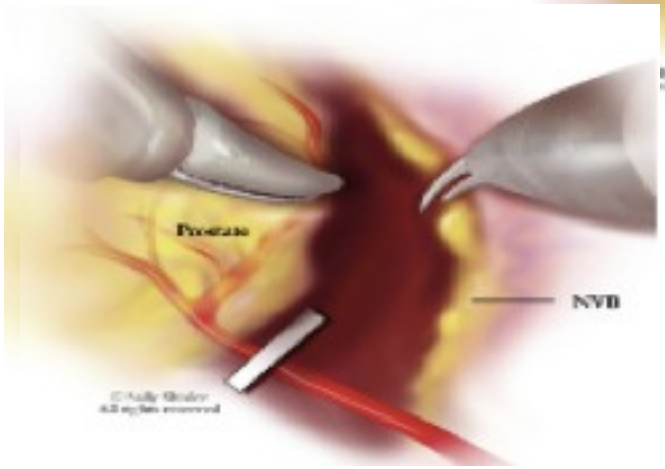
Grado 4: 75%

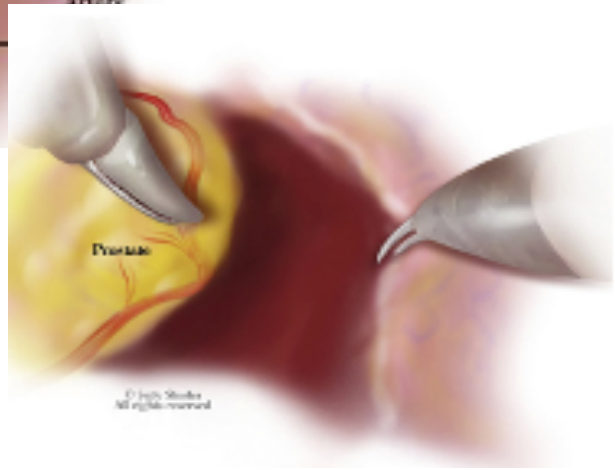




Grado 3: 50%

Grado 2: <50%



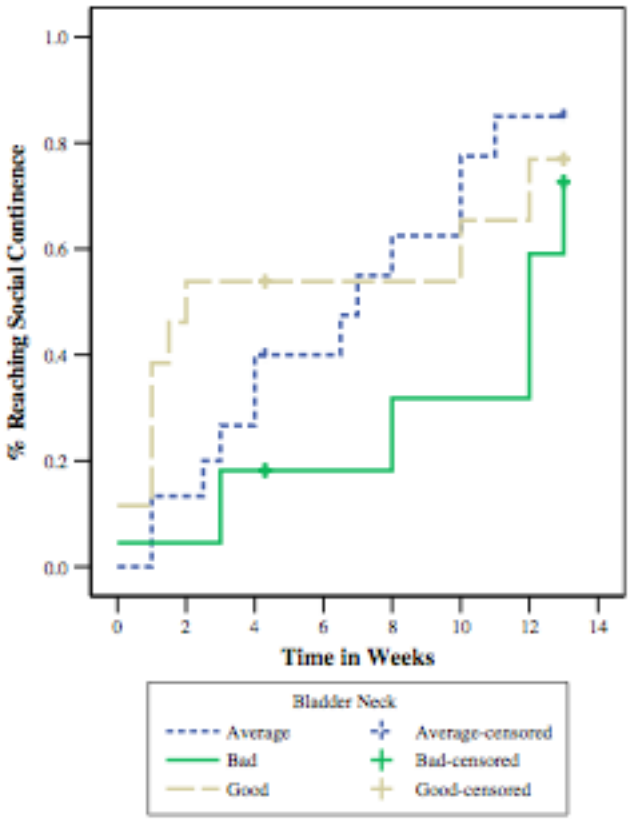


Grado 1: 0%

Surgeon perception is not a good predictor of peri-operative outcomes in robot-assisted radical prostatectomy

Joshua Stern · Saurabh Sharma · Pierre Mendoza · Mary Walicki · Rachel Hastings · Kelly Monahan · Baber Sheikh · Alexei Wedmid · David I. Lee

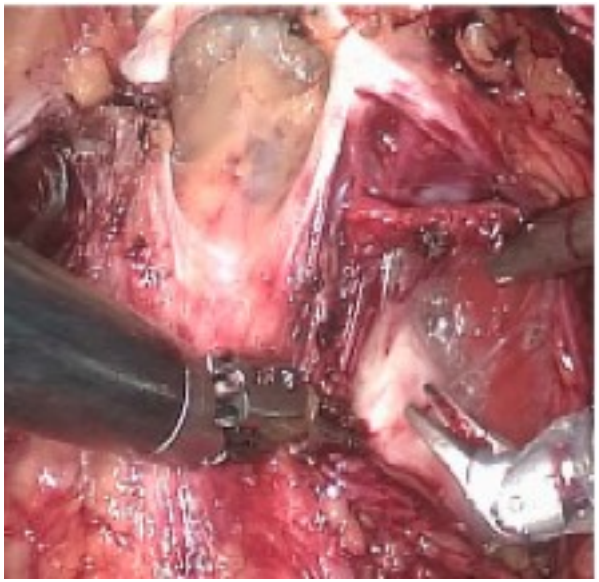
- *No existe correlación entre la impresión del cirujano y los resultados* (58,6% bueno, 32,2% medio y 8,4% malo).
- La continencia se recuperó *3 semanas* antes en los grupos de mala impresión sobre los de buena.
- La preservación de *longitud uretral y calidad reconstrucción posterior correlación inversa continencia* , no así la preservación cuello vesical.



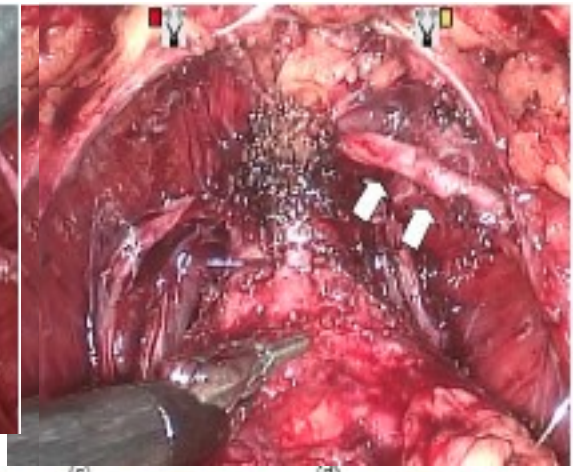
J Robotic Surg 2011

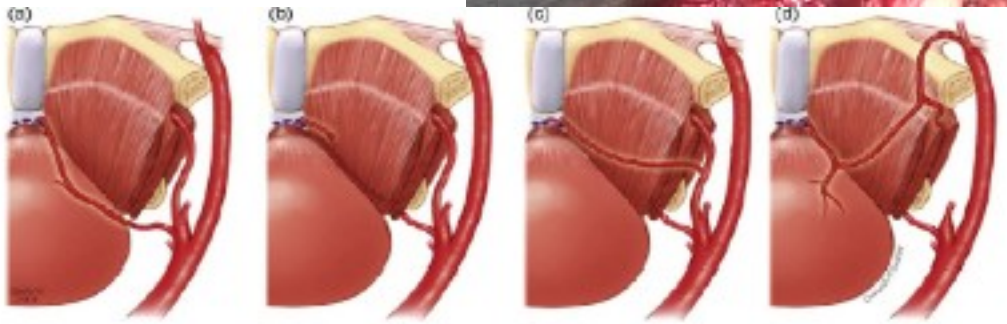
- # Preservación de Art pudendas accesorias

Presentes en 4-75%. Origen: Art. Vesical inferior-Hipogástrica-obtruatriz-ilíaca externa.









***SECIN FP**: Anatomy and preservation of accesory pudendal arteries in laparoscopic radical prostatectomy. Eur Urol 2007;51:1229-35.*

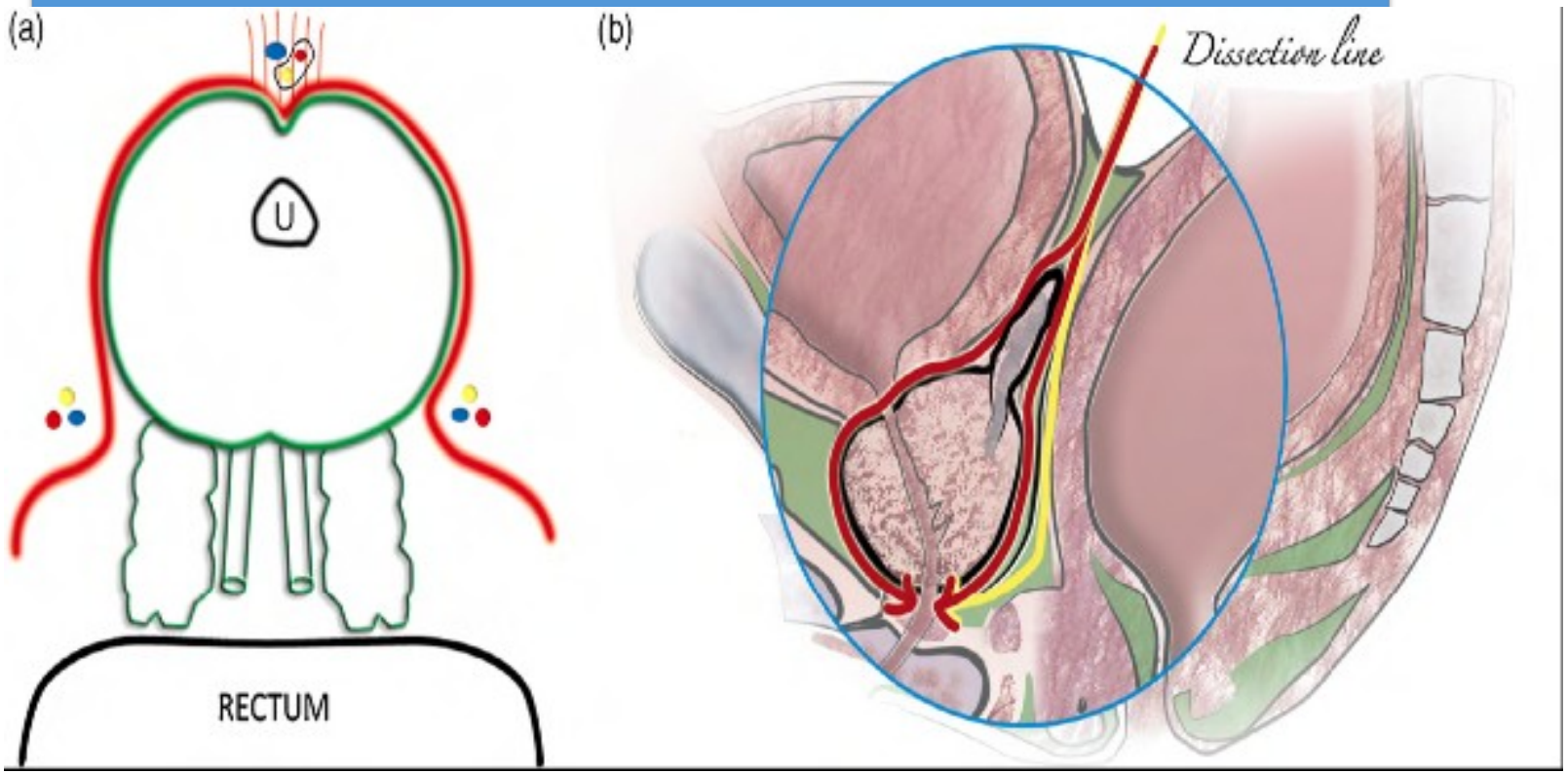
***STERRET SP**: Identication and preservation of accessory pudendal vessels during robot-assisted laparoscopic radical retropubic prostatectomy. J ROBOT SURG 2008; 2:31-34:*

Variantes técnicas y propuestas



A New Anatomic Approach for Robot-Assisted Laparoscopic Prostatectomy: A Feasibility Study for Completely Intrafascial Surgery

Antonio Galfano, Assunta Ascione, Salvatore Grimaldi, Giovanni Petralia, Elena Strada, Aldo Massimo Bocciardi*



Técnica intrafascial con preservación velo afrodita,arterias pudendas, lig puboprostáticos y sin sección del CVD.

EUROPEAN UROLOGY 58 (2010) 457–461

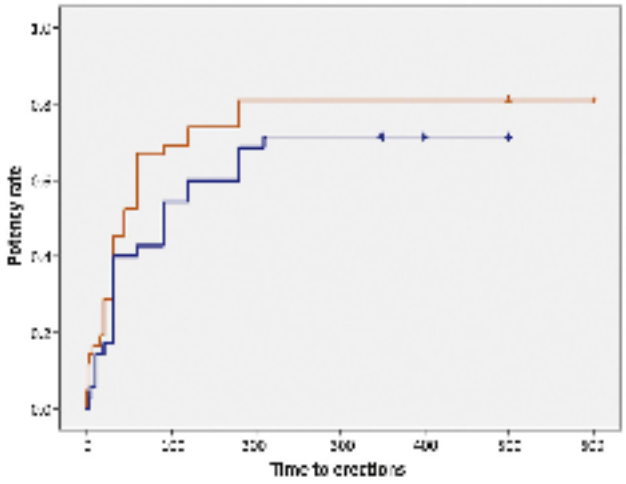
Beyond the Learning Curve of the Retzius-sparing Approach for Robot-assisted Laparoscopic Radical Prostatectomy: Oncologic and Functional Results of the First 200 Patients with ≥1 Year of Follow-up

Antonio Galfano[a,], Dario Di Trapani[a], Francesco Sozzi[a], Elena Strada[a], Giovanni Petralia[c], Manuela Bramerio[b], Assunta Ascione[a], Marcello Gambacorta[b], Aldo Massimo Bocciardi[a]*



2013

200 pacientes (15 meses) PSM 25,5%



ig. 5 – Kaplan-Meier curve of erectile function recovery. Blue continuous ine = group 1 (patients 1–100); green dashed line = group 2 (patients 01–200). Time to erections is expressed in days.

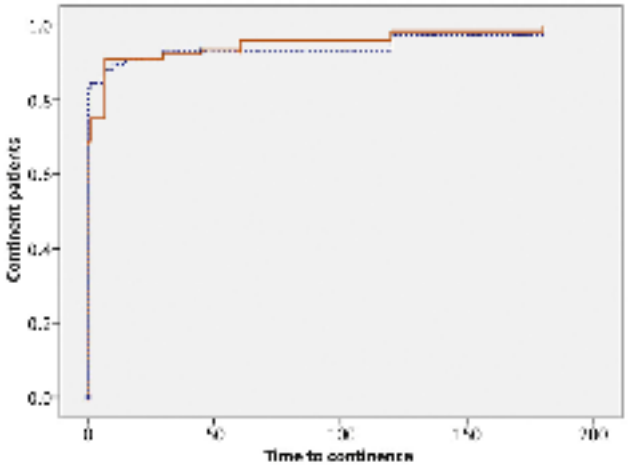


Fig. 4 – Kaplan-Meier curve of continence recovery. Blue continuous line = group 1 (patients 1–100); green dashed line = group 2 (101–200). Time to continence is expressed in days.

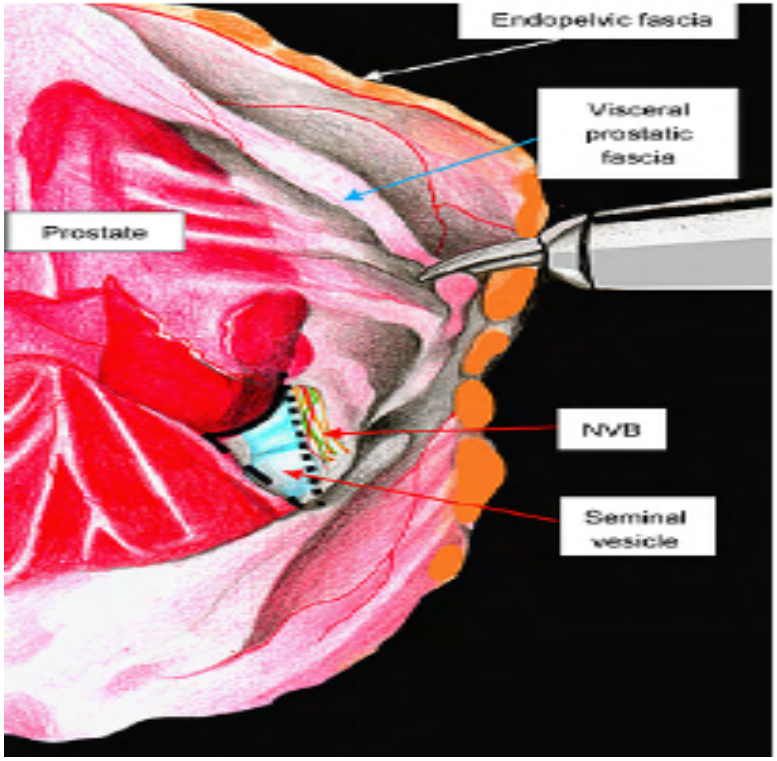
Función eréctil

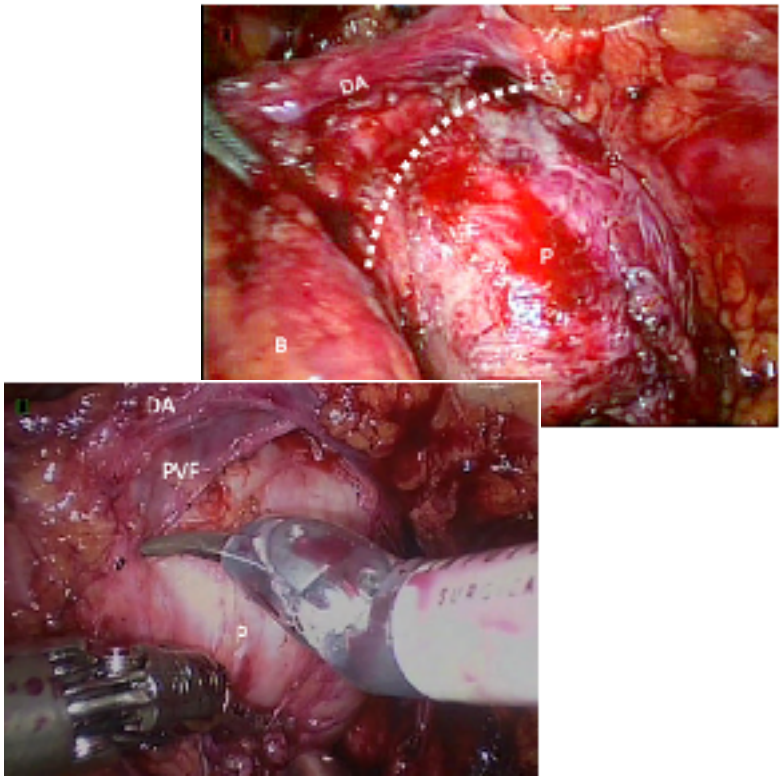
60-68% (52,5 días)

Continencia 90-92%

1er Mes (62,5%-80%)

Complete Periprostatic Anatomy Preservation During Robot-Assisted Laparoscopic Radical Prostatectomy (RALP): The New Pubovesical Complex-Sparing Technique

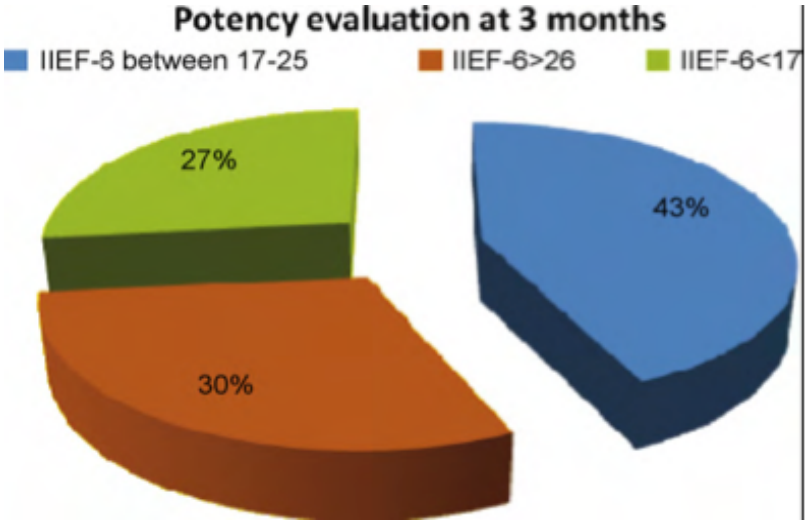


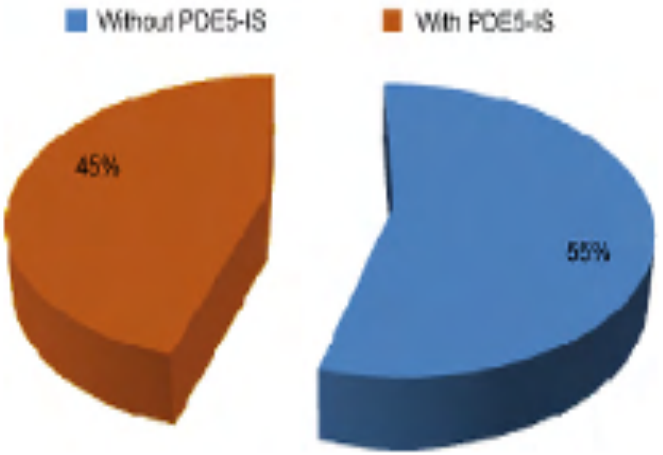


30 Varones < 60 años IIFE-6 >17 e IPSS normal
T1c-T2a Gleason <6, PSA < 10
RNM y biopsia anterior negativa

Eur Urol 5 8 (2 0 1 0) 4 0 7 – 4 1 7

Complete Periprostatic Anatomy Preservation During Robot-Assisted Laparoscopic Radical Prostatectomy (RALP): The New Pubovesical Complex-Sparing Technique

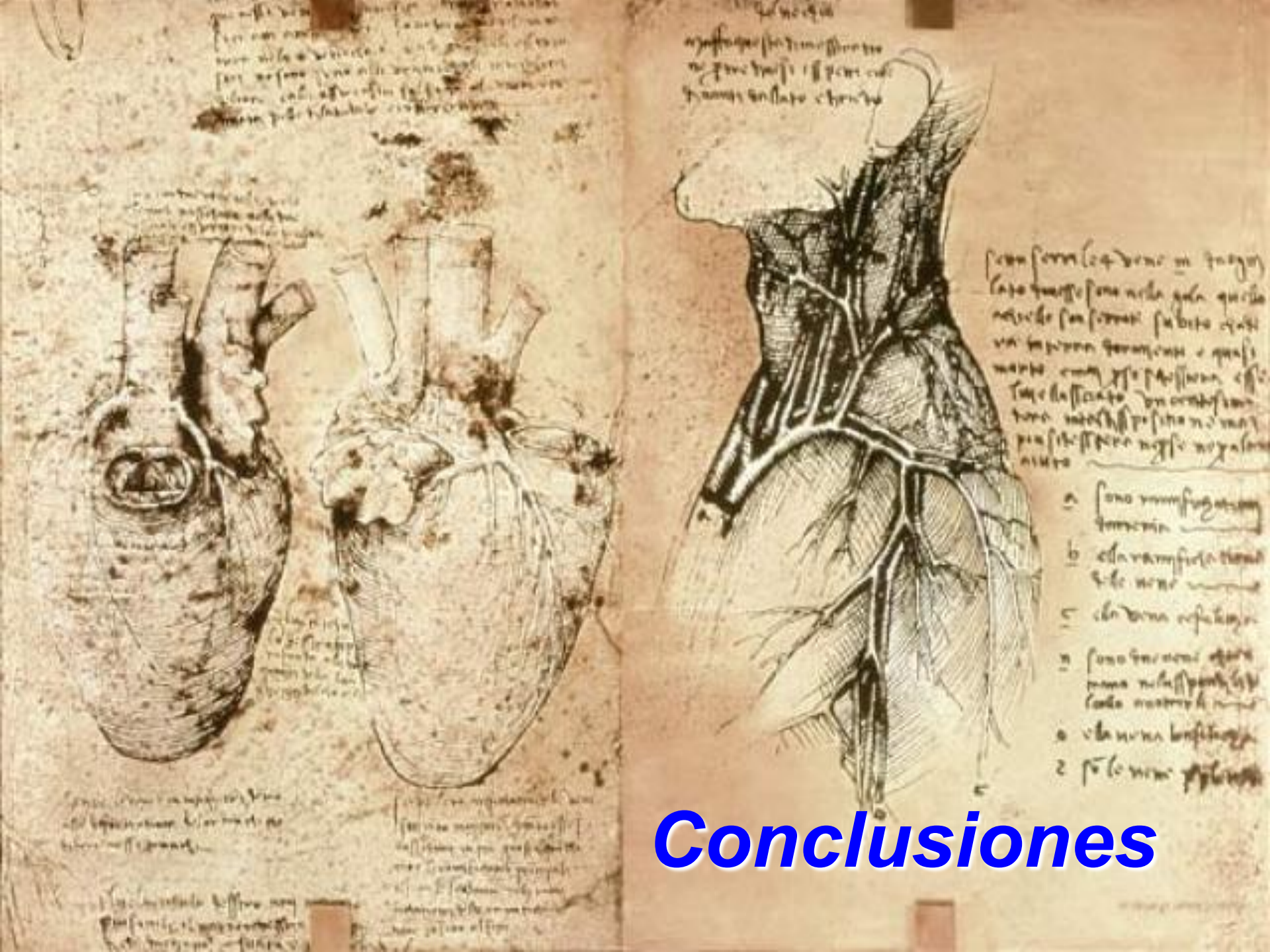




80% continencia a retirada de sonda.

73% IIFE-6 > 17 a los 3 meses y el 55% sin (-)PDE5.

Eur Urol 5 8 (2 0 1 0) 4 0 7 – 4 1 7



Conclusiones

Continencia urinaria

Puntos clave

1. Conservación cuello vesical.
2. Conservación mayor longitud uretral.
3. Sutura individualizada del CVD sin lesión rabdoesfínter.
4. Anastomosis precisa “impermeable”.
5. Preservación nerviosa.

Opcionales: modalidades de reconstrucción anterior, posterior o combinada.



Función eréctil

- **Puntos clave**

1. Disección atérmica desde las VVSS con abordaje inter ó intrafascial de NVB.
2. Clipado vascular selectivo sobre VVSS y no en vértice.
3. Reducir tracción bandeletas
4. Abordaje más anterior con conservación de ramas nerviosas accesorias
5. Preservación de las Art. Pudendas accesorias.

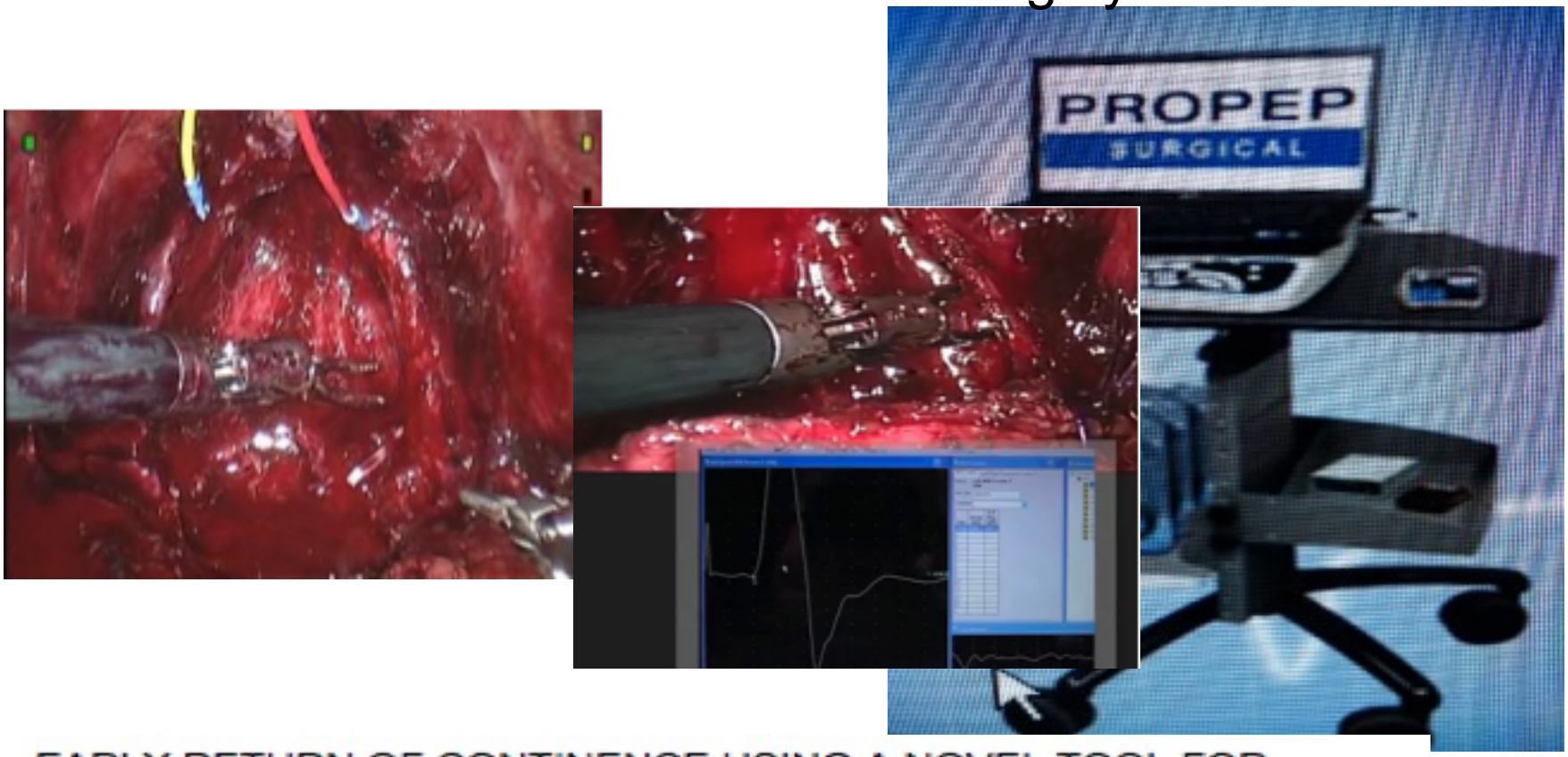
- Opcionales: Tip-sparing.




.....y el futuro
inmediato?

- # Real time nerve identification

SISTEMA PROPEP nerve monitoring system

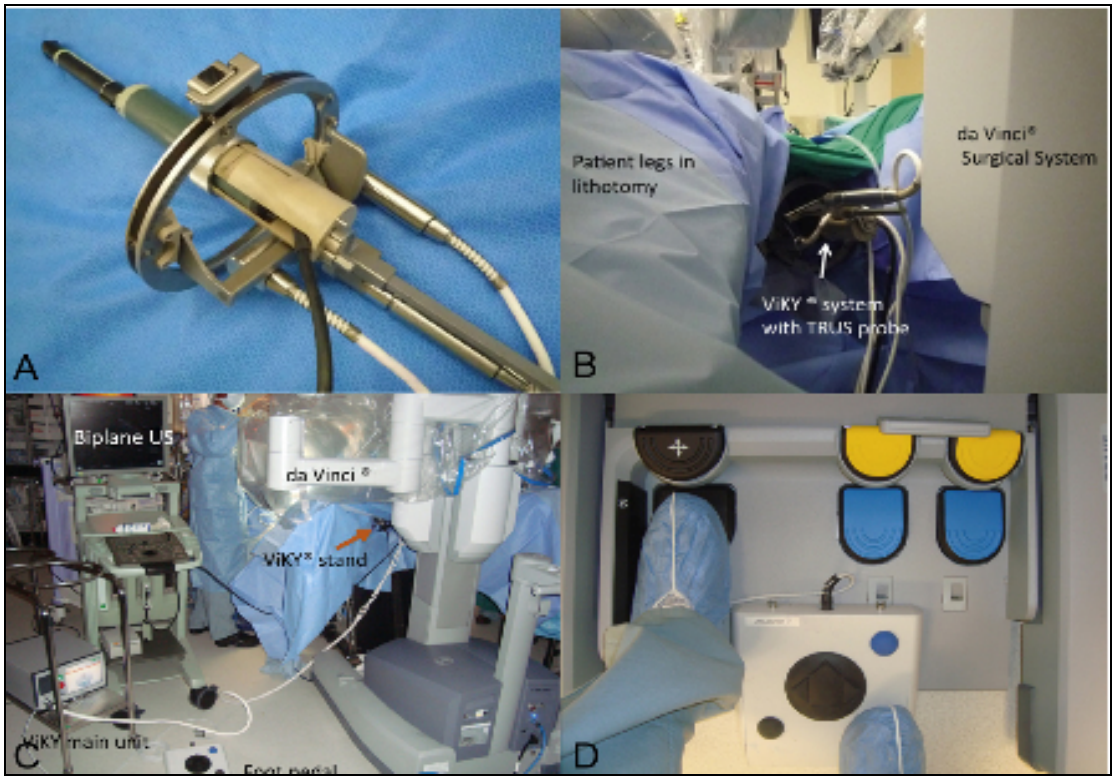


EARLY RETURN OF CONTINENCE USING A NOVEL TOOL FOR IDENTIFICATION OF THE PERINEAL BRANCH OF PUDENDAL NERVE DURING DA VINCI® PROSTATECTOMY

R FAGIN, J SCHIFF, J RASMUSSEN

Robotic Transrectal Ultrasonography During Robot-Assisted Radical Prostatectomy

*Andrew J. Hung, André Luís De Castro Abreu, Sunao Shoji, Alvin C. Goh, Andre K. Berger, Mihir M. Desai, Monish Aron, Inderbir S. Gill, Osamu Ukimura **



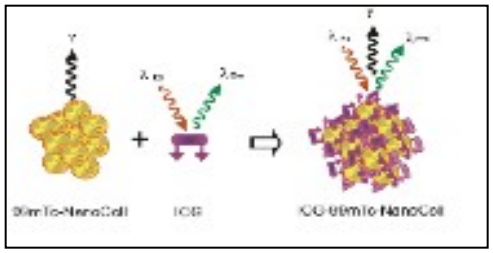
Facilita disección cuello vesical y ápex, preservación NVB e identificación de lesiones hipoecoicas periféricas disminuyendo riesgo de márgenes quirúrgicos.

Intraoperative Laparoscopic Fluorescence Guidance to the Sentinel Lymph Node in Prostate Cancer Patients: Clinical Proof of Concept of an Integrated Functional Imaging Approach Using a Multimodal Tracer

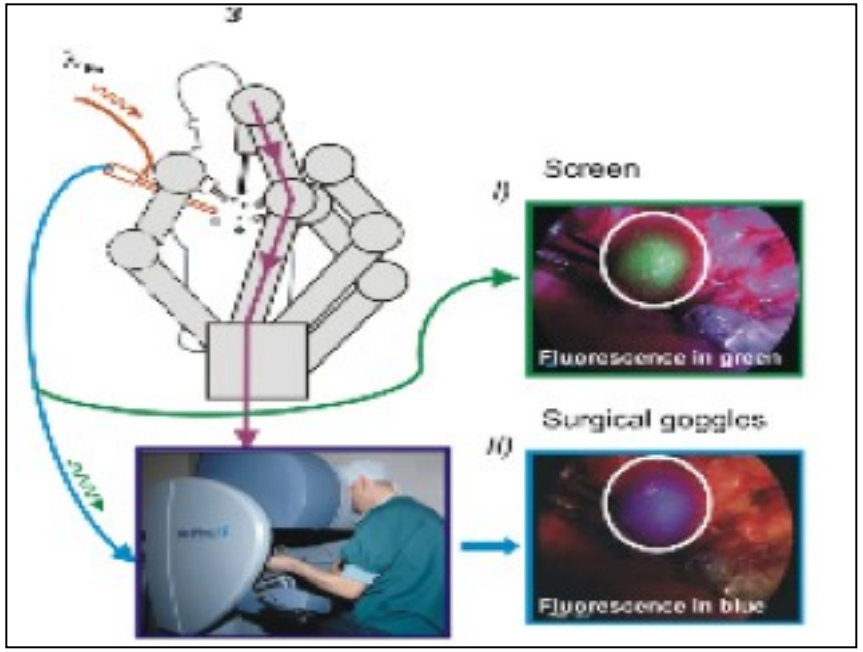
Eur Urol 60 (2011) 826-833

Henk G. van der Poel [a,], Tessa Buckle [b,1], Oscar R. Brouwer [b,1], Renato A. Valdés Olmos [b], Fijs W.B. van Leeuwen [b,*]*









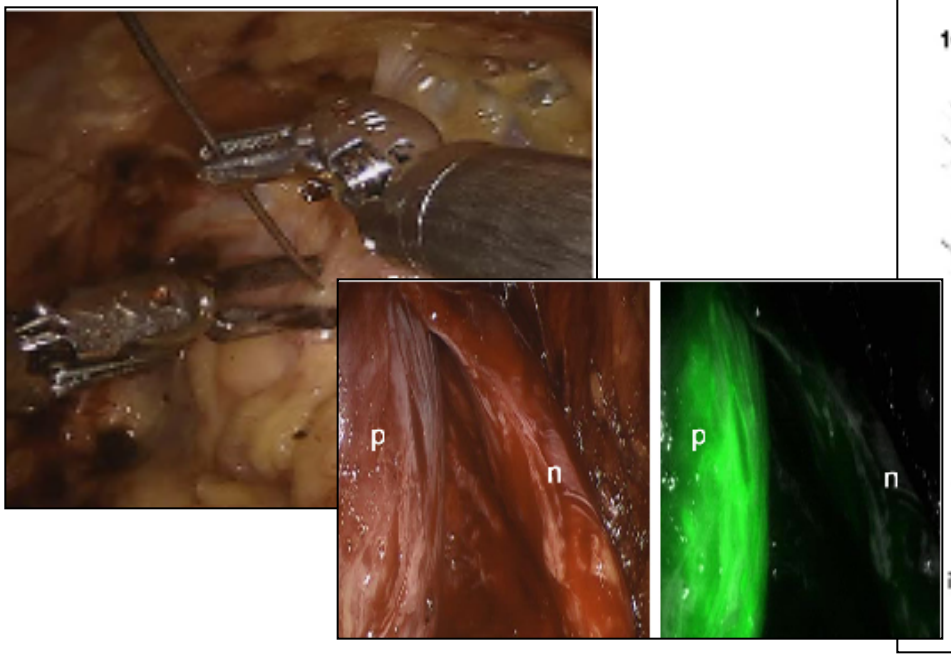
Radiocoloide híbrido ICG 99mTc Nanocoll inyectado intraprostático 3 horas antes de cirugía y recepción con Gammacámara, SPECT/CT preOp y NIR de fluorescencia y radiación intraOp.

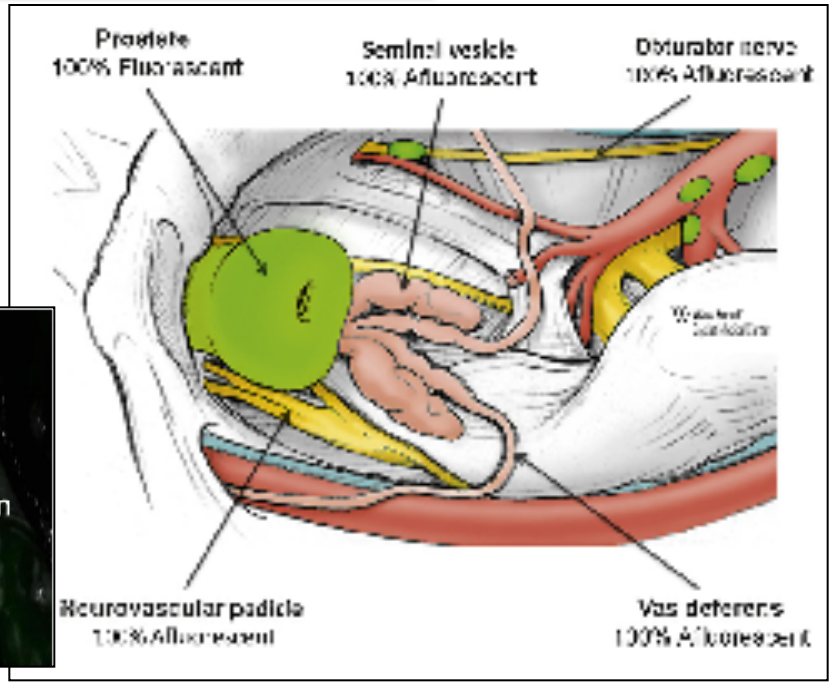
Fluorescence-enhanced Robotic Radical Prostatectomy Using Real-time Lymphangiography and Tissue Marking with Percutaneous Injection of Unconjugated Indocyanine Green: The Initial Clinical Experience in 50 Patients

*Ted B. Manny, Manish Patel, Ashok K. Hemal **



2013





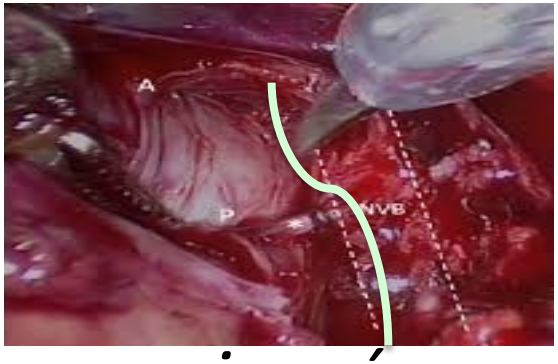
INYECCIÓN PERCUTÁNEA intraprostática de 0,4 ml (1mg de ICG) detección fluorescencia NIRF cada 5 min.

Detección met ganglios en ADC P alto riesgo

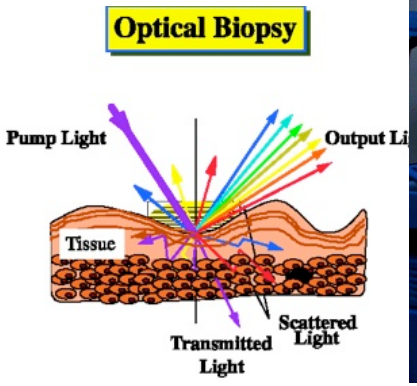
Novedades en preservación Nerviosa PR

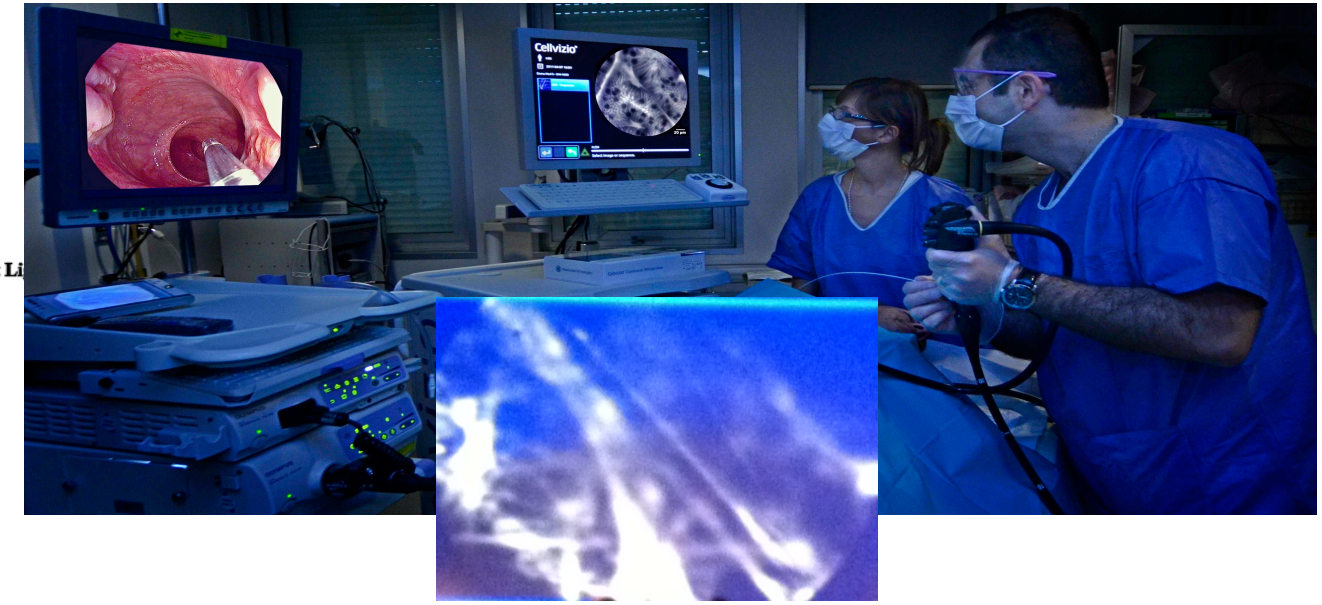
- Mejoras en la **imagen intraoperatoria** de NVB

- *Identificar arteria capsular con inmunofluorescencia.*



- *Biopsia óptica: visualizar anatomía neural y celular para prevenir márgenes.*



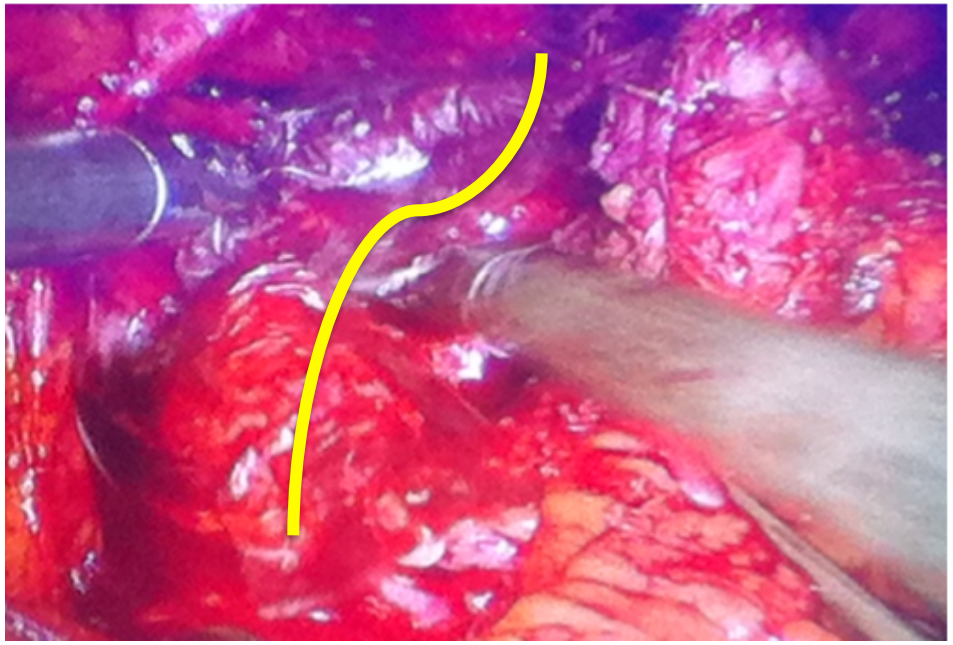


Novedades en preservación Nerviosa PR

- Neuroprotección-regeneración: *Reducir isquemia tisular y la inflamación mejorando la cicatrización.*

- *MEMBRANA AMNIOTICA*

colocada sobre NVB.



- *FACTORES DE CRECIMIENTO.*