AUA 2026
Washington, DC
MAY 15-18

043IC - Comprehensive Anatomic Robotic Assisted Radical Prostatectomy: Pelvic Fascia Sparing and Evolving Techniques

Sunday, May 17

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AUA 2026 — Instructional Course 035IC

Comprehensive Anatomical Robotic-Assisted Radical Prostatectomy: Pelvic Fascia-Sparing and Evolving Techniques

Course Handout — Introductory Lecture

Introduction & PFS-RARP Step-by-Step Review

Course Director

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This handout accompanies Dr. Kowalczyk's introductory lecture and PFS-RARP step-by-step review. Slide content is reproduced in printable form (without embedded operative video). A separate annotated study guide with current literature is provided as a companion document.

Prepared May 2026.

Course Agenda

Course 035IC. Approximately 100 minutes, interspersed with audience Q&A. Speaker order subject to minor adjustment.

Segment	Topic	Speaker
1	Introduction & PFS-RARP Step-by-Step Review	Keith J. Kowalczyk, MD
2	Anterior Hood and PATENTS — Anterior and Posterior Approaches	Jim C. Hu, MD, MPH
3	Troubleshooting RARP — Difficult Cases and Management of Complications	Kirsten Greene, MD
4	Fascial Sparing Prostatectomy — Lessons Learned	Mary Beth Westerman, MD
Q&A	Moderated Q&A and Closing	All Faculty

Introduction & PFS-RARP Step-by-Step Review

Keith J. Kowalczyk, MD — Chair, Department of Urology, MedStar Georgetown University Hospital; Georgetown University Medical Center

Disclosures

- Course Director, AUA Annual Meeting Instructional Course on PFS-RARP / Retzius-Sparing RARP — 2021–present
- Research support: Single-surgeon prospective database, MedStar Georgetown
- No relevant financial relationships with manufacturers of products discussed
- Off-label or investigational uses will be noted on the relevant slides

Roadmap

- Why we keep innovating — standard RARP morbidity persists
- Anatomic basis of pelvic fascia-sparing prostatectomy
- Step-by-step PFS-RARP — operative walkthrough
- Clipless / no-clip pedicle control — Basourakos / Hu, Eur Urol Focus 2021
- What we're working on — anterior margins as the next frontier (unpublished Georgetown data)
- The 2026 technique landscape: Posterior PFS, Hood, PATENTS

Why Keep Innovating? Standard RARP Morbidity Is Real

- Hoffman et al., JAMA 2020 — patient-reported outcomes through 5 years after surgery vs. other modalities
- Sustained urinary incontinence after surgery is clinically meaningful at 1 and 5 years
- Sacco BJU Int 2006 — true incontinence rates may approach 25% when patient-reported

Bottom line. Even with the technical refinements of the last 20 years, urinary incontinence after standard RARP remains the most common patient-reported deficit at 1 year. Closing that gap is the central motivation for pelvic fascia-sparing approaches.

Anatomic Basis of Continence — What PFS Preserves

Anterior compartment

- Endopelvic fascia & arcus tendineus
- Puboprostatic / pubovesical ligaments
- Detrusor apron
- Dorsal venous complex (DVC) / Santorini plexus
- Anterior bladder neck smooth muscle

Posterior / lateral

- Functional urethral length (strongest single predictor)
- Neurovascular bundles (NVB)
- Lateral prostatic fascia (intra- vs. interfascial planes)
- Rocco-style posterior reconstruction layer
- Levator ani muscular sling

The PFS approach intentionally preserves the entire anterior compartment AND maximizes functional urethral length — the two anatomic levers that drive earlier continence return.

PFS-RARP — Step-by-Step Operative Walkthrough

Each step is presented with key teaching points and a pearl. The live lecture includes an operative video for each step; the handout below summarizes the didactic content for printable reference.

Step 1. Posterior peritoneal incision & Douglas plane

- Identify rectum and vas deferens
- Cross the trans-Douglas plane
- Avoid premature peritoneal entry — keep the bladder dropped posteriorly
- Optimal traction: 4th-arm Prograsp on bladder dome

Pearl: confirm correct plane before committing

Step 2. Seminal vesicle dissection

- Athermal sharp dissection lateral to vas
- Protect the lateral pedicle / NVB origin
- Low-energy bipolar (25 W) for vas-artery control; cold-cut peel of SV
- Avoid neuropraxia from over-aggressive countertraction

Pearl: full SV mobilization before posterior plane is opened

Step 3. Open Denonvilliers' fascia & posterior plane

- Develop the rectum-prostate plane sharply
- Stay on the prostate side of Denonvilliers' to protect the rectum
- Identify the periprostatic fat line as your anatomic guide
- Extend laterally to expose the pedicles

Pearl: a complete posterior plane simplifies pedicle control

Step 4. Lateral pedicle control — clipless / bipolar technique

- Limited low-energy bipolar cautery for pedicle control — no clips
- Hu group: Basourakos / Hu, Eur Urol Focus 2021 (PMID 34246618)
- Skeletonize and divide pedicle at right angle to the NVB
- Avoid thermal spread: short pulses, peel medial to NVB

Pearl: athermal NVB release medial to the pedicle

Step 5. NVB preservation — interfascial athermal dissection

- Interfascial plane medial to the NVB
- Avoid countertraction (Kowalczyk/Hu Eur Urol 2011 — neuropraxia)
- Use cold scissors / blunt dissection — no thermal energy at NVB
- Maintain prostatic fascia ON the prostate to confirm correct plane

Pearl: respect the trizonal neural hammock — circumferential nerves

Step 6. Apical & urethral dissection

- Maximize functional urethral length
- Spare the puboprostatic ligaments / detrusor apron
- Preserve the DVC — no transection (cold cut only if needed)
- Sharp apical dissection avoids urethral foreshortening

Pearl: longest urethra you can safely cut = best continence

Step 7. Bladder-neck preservation & vesico-urethral anastomosis

- Tight smooth-muscle bladder-neck preservation
- Rocco-style posterior reconstruction layer
- Tension-free anastomosis — mobilize bladder posteriorly first
- Watertight closure; consider continuous Van Velthoven

Pearl: maximize cuff-to-cuff coaptation under direct vision

Lateral Pedicle Control — Clipless / Bipolar Technique

Recent published reference from Hu's Weill Cornell group

Basourakos SP, Zhu A, Lewicki PJ, Ramaswamy A, Cheng E, Dudley V, Yu M, Karir B, Khani F, Hung AJ, Hu JC. Clipless Robotic-assisted Radical Prostatectomy and Impact on Outcomes. *European Urology Focus* 2022;8(5):1176–1185. PMID 34246618. DOI: 10.1016/j.euf.2021.06.010

What the paper showed

- 338 men undergoing RARP (July 2018 – March 2020)
- Compared clipless lateral pedicle control with low-energy bipolar (RARP-bi) vs. standard clip-based technique (RARP-c)
- Clipless technique was associated with shorter operative time
- No compromise of functional or oncologic outcomes vs. the clip-based approach
- Supports clipless / low-energy bipolar as an acceptable and efficient alternative to clips

This is the published reference cited in Step 4 of the technique walkthrough.

What We're Working On — Anterior Margins in PFS-RARP

Active Georgetown investigation — unpublished, manuscript in preparation

- Anterior tumors carry approximately 3.6× the relative risk of an anterior margin during posterior-approach PFS-RARP
- Effect persists across pT2 and pT3 subgroups — not driven by stage alone
- Implication: anterior PI-RADS 4–5 lesions may not be ideal posterior-approach candidates
- Active project: technical-modification paper proposing hybrid / Hood conversion or anterior-tailored dissection in this subgroup

Manuscript in preparation. Data shown in this lecture is single-institution Georgetown work in progress.

The 2026 Technique Landscape — One Principle, Three Approaches

PFS is an anatomic principle, not a single operation. Three contemporary approaches share that principle while differing in access and emphasis.

Approach	Origin	Best for
Posterior PFS (Bocciardi)	Trans-Douglas posterior approach. Galfano 2010, Egan/Kowalczyk Eur Urol 2021. Strongest continence evidence base; durable to 24 months.	Posterior tumors, non-median-lobe glands, surgeons committed to PFS as default.
Anterior PFS — Hood (Wagaskar / Tewari)	Anterior approach preserving puboprostatic ligaments, DVC, and detrusor apron. Eur Urol 2020.	Anterior tumors where posterior-approach PSM risk is elevated.
PATENTS (Hu et al., 2025)	Posterior Approach to Endopelvic Neurovascular Total Sparing. Preserves anterolateral periprostatic tissue without opening endopelvic fascia; protects accessory pudendal arteries.	Maximizing erectile function recovery — 2× adjusted improvement vs. anterior in Hu's JU Open Plus series.

Take-Home Messages

- PFS is an anatomic principle — executed posteriorly (Bocciardi), anteriorly (Hood), or via PATENTS (Hu, 2025).
- No-clip / clipless bipolar dissection: published, recent reference is Basourakos / Hu, Eur Urol Focus 2021.
- Anterior margins are the next frontier — Georgetown active investigation, manuscript in preparation.
- Build on the published evidence — Egan/Kowalczyk Eur Urol 2021, Dalela RCT 2017, Wagaskar Hood 2021, Wald/Hu PATENTS JU Open Plus 2025.
- The remainder of the course will give you the operative detail to start tomorrow.

Selected References — Section 1

Annotated reference list spanning the literature for this section. A more comprehensive, faculty-wide reference list is provided in the companion Study Guide.

Galfano A, Ascione A, Grimaldi S, Petralia G, Strada E, Bocciardi AM. **A new anatomic approach for robot-assisted laparoscopic prostatectomy: a feasibility study for completely intrafascial surgery.** *Eur Urol.* 2010;58(3):457–61. PMID 20566236. DOI: 10.1016/j.eururo.2010.06.008

Dalela D, Jeong W, Prasad MA, et al., Menon M. **A Pragmatic Randomized Controlled Trial Examining the Impact of the Retzius-sparing Approach on Early Urinary Continence Recovery After Robot-assisted Radical Prostatectomy.** *Eur Urol.* 2017;72(5):677–685. PMID 28483330. DOI: 10.1016/j.eururo.2017.04.029

Menon M, Dalela D, Jamil M, et al. **Functional Recovery, Oncologic Outcomes and Postoperative Complications after Robot-Assisted Radical Prostatectomy: An Evidence-Based Analysis Comparing the Retzius Sparing and Standard Approaches.** *J Urol.* 2018;199(5):1210–1217. PMID 29225060. DOI: 10.1016/j.juro.2017.11.115

Hoffman KE, Penson DF, Zhao Z, et al. **Patient-Reported Outcomes Through 5 Years for Active Surveillance, Surgery, Brachytherapy, or External Beam Radiation With or Without Androgen Deprivation Therapy for Localized Prostate Cancer.** *JAMA.* 2020;323(2):149–163. DOI: 10.1001/jama.2019.20675

Wagaskar VG, Mittal A, Sobotka S, et al., Tewari A. **Hood Technique for Robotic Radical Prostatectomy — Preserving Periurethral Anatomical Structures in the Space of Retzius and Sparing the Pouch of Douglas, Enabling Early Return of Continence Without Compromising Surgical Margin Rates.** *Eur Urol.* 2021;80(2):213–221. PMID 33067016. DOI: 10.1016/j.eururo.2020.09.044

Basourakos SP, Zhu A, Lewicki PJ, Ramaswamy A, Cheng E, Dudley V, Yu M, Karir B, Khani F, Hung AJ, Hu JC. **Clipless Robotic-assisted Radical Prostatectomy and Impact on Outcomes.** *Eur Urol Focus.* 2022;8(5):1176–1185. PMID 34246618. DOI: 10.1016/j.euf.2021.06.010

Dall CP, Mason JB, Choudhury E, Mora-Garijo B, Egan J, Hu JC, Kowalczyk KJ. **Long-term outcomes of pelvic-fascia sparing robotic-assisted radical prostatectomy versus standard technique: Superior urinary function and quality of life without compromising oncologic efficacy in a single-surgeon series.** *Urol Oncol.* 2024;42(3):67.e17–67.e24. PMID 38212151. DOI: 10.1016/j.urolonc.2023.11.020

Wald G, Posada L, Suzman E, Lama J, Winograd J, Ting M, Pothier C, Zhong J, Kowalczyk KJ, Hu JC. **Posterior Approach to Endopelvic Neurovascular Total Sparing Robotic-Assisted Radical Prostatectomy Improves Recovery of Erectile Function (PATENTS).** *JU Open Plus.* 2025;3(12):e00154. DOI: 10.1097/JU9.0000000000000394

Gangidi S, Wald G, Hu JC. **Technical modifications to improve erectile function recovery after radical prostatectomy.** *Nat Rev Urol.* 2025 Dec 8. PMID 41361530. DOI: 10.1038/s41585-025-01115-6

Incorporating Pelvic Fascia Sparing Fundamentals into Single Port Robotic Surgery

Jim C. Hu, MD, MPH — Ronald Lynch Professor in Urologic Oncology, Director, LeFrak Center for Robotic Surgery; Vice Chair of Clinical Research; Chair of Patient Quality and Safety, Weill Cornell Medicine

Note: Dr. Hu's lecture is video-rich. The content below reproduces the slide text. Where the original slide is a video frame or unlabeled image, the handout marks it as such for context.

Anatomic Basis for Pelvic Fascia Preservation

Reference: Walz, *Eur Urol* 2016. Anatomic foundation for fascia-preserving approaches — the basis for the Hood and PATENTS techniques developed at Weill Cornell.

"Hood" Pelvic Fascia Sparing

Reference: Wagaskar, *Eur Urol* 2021. The Hood technique preserves the periurethral anatomical structures within the space of Retzius and the pouch of Douglas, enabling early return of continence without compromising surgical margin rates.

Illustrative Case — MRI Findings

- Prostate volume: 55.46 cc
- PSA: 6.60 ng/mL; PSA density: 0.12 ng/mL²
- Target 1: PI-RADS 4, left base peripheral zone posterolateral (LBPZpl)
- Lesion size: 0.9 cm
- T2W: homogeneous moderate hypo-intensity, irregular margins, non-invasive, <1.5 cm (category 4/5); may abut capsule
- DWI/ADC: focal marked hypo-intensity on ADC and marked hyperintensity on high-b-value DWI (category 4/5); average ADC 899 μm²/sec
- DCE: focal early enhancement corresponds to lesion (positive)
- Seminal vesicles: restricted diffusion suggested asymmetrically along left SV insertion, may abut the lesion

Illustrative Case — Biopsy Findings

- Left medial base: prostatic adenocarcinoma, Grade Group 5 (Gleason 4+5=9), 50% (8 mm) of 1/1 core. Reviewed at Surgical Pathology Consensus Conference.
- Target 1: Grade Group 2 (3+4=7), 70%/70%/50%/40% (8/6/3.5/1 mm) of 4/6 core fragments. GP4 = 10% of total tumor volume. Perineural invasion identified.
- Left lateral base: Grade Group 2 (3+4=7), 70% (8 mm) of 1/1 core. GP4 = 5%.
- Left medial apex: Grade Group 1 (3+3=6), <5% (0.5 mm) of 1/1 core. Separate focus of atypical glands suspicious for carcinoma.
- Right lateral base: Grade Group 2 (3+4=7), 10% (2 mm) of 1/1 core. GP4 = 5%.
- Right lateral apex: Grade Group 1 (3+3=6), <5% (0.5 mm) of 1/1 core.

Left-sided Nerve Sparing

Operative video — left-sided nerve-sparing dissection per the Hood approach.

Transition to SP — Increase Surgeon Autonomy

Why SP for me?

- Peer feedback
- Curiosity
- Potential benefits over multi-port (MP)
- Patient demand
- Trainees seek it
- Another tool in the toolbox
- Greater efficiency and ease of extraperitoneal approach

Single-Port Outcomes — Hu Cornell Series

- 71% of patients potent at baseline recovered overall
- Bipolar of pedicles vs. clips did not change erectile function recovery
- No difference in short-term functional outcomes recovery between SP and MP

SP Hacks

- Minimize LN dissection
- Avoidance of any clips
- Prostate volume <60 mL
- Dual energy and interchangeable use of Maryland and fenestrated bipolar
- Preplacement of DVC suture
- Break suture vs. suture cut or scissors

Conclusions

- Clipless RP facilitates surgeon autonomy and nerve-sparing
- RP outcomes no different for SP (selection bias acknowledged)
- Anecdotally, patients prefer the SP approach
- Hospital support needed
- Message your successes to Administration
- Trainees universally SP enthusiastic

Tips and Tricks for Difficult Cases

Kirsten Greene, MD, MS, FACS — Professor and Chair, University of Virginia Department of Urology

Note: Dr. Greene's lecture is image- and case-driven. The content below reproduces the slide text and structural outline; the live lecture provides the visual case material.

Disclosures

- Intuitive Surgical — consultant, clinical trial
- Johnson & Johnson — consultant

Difficult Cases — The Basics

Change management

- Don’t try a new technique with new equipment and new staff

Know your resources

- What do you have where you are at the time of day you are doing it?
- Emergency equipment and personnel
- Open set
- Cystoscopy

Median Lobes

OK to try PFS	**Not OK to try PFS**
Simple median lobe	Multilobed median lobe

Live lecture includes case examples of simple median lobes managed via PFS.

Extensive Pelvic Surgery or Orthopedic Reconstruction

Live lecture covers selection considerations and intraoperative adaptations for patients with prior pelvic surgery or orthopedic instrumentation.

Prior Bladder Outlet Procedures

- TURP — case example and management considerations
- Rezum — case example and management considerations
- Other prior outlet procedures

Summary

- Some cases will favor a pelvic fascia sparing approach — extraperitoneal space surgery/fracture, for example.
- Some cases will be more challenging for PFS but are feasible — simple median lobe, for example.
- Prior bladder outlet obstruction procedures will need more reconstruction. Consider an anterior approach with tissue preservation/reconstruction, especially with different energy types (mucosal bridge and irregular regrowth).
- Don’t forget about cystoscopy if you are stuck.

Fascial Sparing Prostatectomy — Lessons Learned

Mary Beth Westerman, MD — Associate Professor of Urology, UNC Chapel Hill (@drmbwesterman)

Slide content as submitted by faculty (2024 lecture). Original lecture is video-rich; the handout reproduces slide text and structural outline.

Disclosures

None.

Core Beliefs and Practice Context

- **Core belief:** preserving tissue is better than destroying tissue.
- Not a prostate-only practice — approximately 40–50 prostates per year.
- Competitive local market with multiple academic institutions; heavy referral practice from outside the region.
- No SP, Synchroseal, or dedicated OR team.

Agenda

- 1. Defining yourself
- 2. Environment
- 3. Approach
- 4. Complications

1. Defining Yourself

Training context

- Residency: anterior approach was the predominant method taught.
- Fellowship: posterior / fascial sparing (Retzius).
- Anterior, posterior, and fascial sparing (Retzius) all part of the personal repertoire.

Partners and mentorship

Surgical partners at the time of starting PFS at LSU: Scott E. DeLacroix Jr, MD (@urocancermd) and Jessie Gills, MD (@nolacancer). One of the biggest reasons for taking the job was knowing partners would also be great mentors — no ego, willing to teach, available, work together. Network connections can serve more than one role (e.g., mentor and sponsor).

2. Environment

Considerations

- **Local market:** competitive.
- **Patients / referral:** heavy from outside the region.
- **OR setup & staffing:** no dedicated team.
- **Partners' practice:** very similar approach.

Started with the posterior approach. Worried about OR staff, the newness, reputation. First few cases were very young patients with very high-risk disease — decided to do more standard cases and use posterior. Always be willing to bail and go anterior.

Rule of thumb: it takes 2–3 years to really get the continence figured out.

Start early — practical principles

- Consider it for every patient.
- "Converting" isn't failure.
- You will be slower than you think no matter what technique you use.
- Early continence can be helpful for local reputation.
- Patients may look for (or benefit from) a specific technique.
- The perfect patient may not exist.

Learning curve data

Olivera et al., Eur Urol Focus 2021 — comparison of learning-curve surgeon vs. expert surgeon for Retzius-sparing RARP:

	Learning Curve Surgeon	**Expert Surgeon**
Console time (min)	122 ± 30	98 ± 31
Immediate continence	82.2%	83.9%
Potency (<65, full NS)	78.2%	74.1%

Westerman personal context: 50 bedside cases and 50 lymph node dissections before first console case; expert surgeon in room for first 20 cases (never sat at console). Barakat et al., Eur Urol Focus 2022 — immediate continence better with Retzius-sparing.

3. Approach — Fascial Sparing: A Play in Two Acts

Act 1: Birthing of the Prostate ("quick")

Pedicle control (no Synchroseal available; partners didn't use clips; personal preference against clips):

- Bipolar with spot monopolar + cold cut

Anterior dissection & apex: once through the bladder neck, essentially the same as an anterior approach. Traction and cut — fibers jump off the prostate.

Act 2: Anastomosis

Westerman: "Best part of the case." Much more anatomic approach for complex bladder necks.

- **Bladder neck:** circumferential isolation when possible. Spent significant time looking for the BN to do the anastomosis.
- **Bladder neck tagging:** started tagging early so it could be identified later. 2-0 Vicryl SH. Somewhat helpful for finding BN, but not the anastomosis itself.
- **Cat's butt:** need eversion.

Difficult visualization

- Deep, narrow pelvis.
- Difficulty reaching and/or visualizing the anastomosis.
- If converting for anastomosis — still preserve majority of tissue.

Set up

- Port placement
- Position & docking
- T-berg

4. Complications

Urinary retention

2023 protocol:

- Day 7 Foley removal (once)
- Flomax
- Hot showers
- Antibiotics
- Day 10 for everyone

2024 update: SP tube placement when needed.

Space of Retzius lymphocele

- Identify on CT imaging
- Drainage
- Sclerosing agents (no pain)
- 6 weeks for resolution

Reference: Student et al., Eur Urol 2023 — symptomatic lymphocele after RARP. Single-center prospective randomized (1:1) study in cT1–2cN0M0 patients undergoing RARP with ePLND, December 2019 – June 2021. Intervention: free peritoneal flap fixed to the pubic bone. Control: peritoneal flap left free without fixation.

Conclusions

- Start early & commit to trying.
- Track your time & outcomes.
- Continual reassessment and adjustments.
- Complications may be different from anterior — anticipate and develop a protocol.

AUA 2026 — Instructional Course 035IC

Comprehensive Anatomical Robotic-Assisted Radical Prostatectomy: Pelvic Fascia-Sparing and Evolving Techniques

Study Guide for Practicing Urologists

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This study guide is intended for practicing urologists attending AUA Course 035IC. It summarizes the current evidence base for pelvic fascia-sparing robotic-assisted radical prostatectomy (PFS-RARP) — including the posterior (Bocciardi/Retzius-sparing), anterior Hood (Wagaskar/Tewari), and PATENTS (Hu) approaches — and provides annotated key references with DOI links.

Prepared May 2026. Submitted to AUA per Course Materials guidelines.

Contents

1. Course Aim and Learning Objectives

This course gives the practicing urologist the conceptual framework and operative detail to incorporate pelvic fascia-sparing principles into robotic-assisted radical prostatectomy. By the end of the session, attendees will be able to:

- Describe the anatomic basis for pelvic fascia-sparing prostatectomy and the structures that drive early continence return — functional urethral length, anterior compartment integrity, and the neurovascular bundle complex.
- Compare the three contemporary PFS approaches — posterior (Bocciardi/Retzius-sparing), anterior Hood (Wagaskar/Tewari), and PATENTS (Hu) — by indication, technique, and reported outcomes.
- Apply tumor-location–based selection criteria to choose the appropriate approach, particularly in the setting of anterior PI-RADS 4–5 lesions.
- Execute clipless lateral pedicle control with low-energy bipolar dissection per published protocols.
- Manage the predictable technical challenges — large glands, median lobes, high BMI, wide bladder necks, hostile abdomen — encountered when starting a PFS-RARP program.

2. Why PFS-RARP — The Continence Problem in Standard RARP

Patient-reported urinary incontinence remains the most common functional deficit at one year after standard robot-assisted radical prostatectomy. The Hoffman comparative effectiveness analysis in *JAMA* 2020 documented clinically meaningful incontinence persisting through five years across surgical and radiation cohorts. Sacco's earlier work in *BJU International* demonstrated that when measured by patient-reported instruments rather than physician assessment, true incontinence rates after surgery may approach 25%.

Even with the technical refinements of the last two decades, this gap has remained durable — and is the central motivation for the pelvic fascia-sparing family of approaches. PFS-RARP is best understood not as a single operation but as an anatomic principle: maximize preservation of the structures that maintain continence and potency, regardless of whether the access is posterior (Bocciardi), anterior (Hood), or modified posterior (PATENTS).

3. Anatomic Foundations of Continence Preservation

Two anatomic levers drive earlier continence return after radical prostatectomy: preservation of the entire anterior compartment, and maximization of functional urethral length. PFS techniques differ in how they access and preserve these structures, but converge on the same principle.

Anterior compartment

- Endopelvic fascia and arcus tendineus
- Puboprostatic and pubovesical ligaments
- Detrusor apron
- Dorsal venous complex (Santorini plexus)
- Anterior bladder neck smooth muscle

Posterior and lateral structures

- Functional urethral length — the strongest single predictor of continence in most series
- Neurovascular bundles, with the lateral prostatic fascia in intra- vs. interfascial planes
- Rocco-style posterior reconstruction layer
- Levator ani muscular sling

- Accessory pudendal arteries — increasingly recognized as critical to potency recovery

Posterior PFS approaches preserve the anterior compartment by avoiding it entirely; Hood preserves the same structures via an anterior approach with limited apical dissection; PATENTS preserves anterolateral periprostatic tissue and accessory pudendal arteries by leaving the endopelvic fascia closed.

4. Posterior PFS-RARP (Bocciardi / Retzius-Sparing)

Origin and concept

Galfano and Bocciardi described the trans-Douglas posterior approach in *European Urology* in 2010 as a feasibility study of completely intrafascial RALP, leaving the entire anterior compartment — neurovascular bundles, Aphrodite's veil, endopelvic fascia, Santorini plexus, and pubourethral ligaments — undisturbed.

Operative sequence

- Posterior peritoneal incision and trans-Douglas plane — identify rectum and vas, avoid premature peritoneal entry, keep bladder dropped posteriorly with 4th-arm Prograsp on bladder dome.
- Seminal vesicle dissection — athermal sharp dissection lateral to vas; protect lateral pedicle/NVB origin; low-energy bipolar (25 W) for vas-artery control; cold-cut peel of SV.
- Open Denonvilliers' fascia — develop rectum-prostate plane sharply, stay on prostate side, identify periprostatic fat as the anatomic guide, extend laterally to expose pedicles.
- Lateral pedicle control — clipless low-energy bipolar dissection per Basourakos/Hu protocol; skeletonize and divide pedicle at right angle to NVB.
- NVB preservation — interfascial athermal dissection medial to the NVB; cold scissors and blunt dissection only; avoid countertraction (Kowalczyk/Hu Eur Urol 2011 — neuropraxia).
- Apical and urethral dissection — maximize functional urethral length; spare puboprostatic ligaments and detrusor apron; preserve DVC without transection (cold cut only if needed).
- Bladder neck preservation and vesico-urethral anastomosis — tight smooth-muscle BN preservation; Rocco-style posterior reconstruction; tension-free anastomosis with continuous Van Velthoven.

Evidence base

Dalela's pragmatic randomized trial (*Eur Urol* 2017) demonstrated 71% vs. 48% continence at one week after catheter removal and median time to continence of 2 vs. 8 days for posterior vs. anterior RARP. The 12-month update (Menon, *J Urol* 2018) showed muted differences in binary continence at one year (98.3% vs. 93.3%) but a persistent quality-of-life advantage in the early postoperative period.

The single-surgeon Georgetown long-term series (Dall, Mason, ..., Kowalczyk, *Urol Oncol* 2024) compared 239 PFS-RARP to 102 standard RARP with median follow-up of 26 vs. 65 months. PFS-RARP was associated with improved EPIC-CP urinary incontinence and total scores through 18 months on multivariate analysis. Time to zero pads per day was 91 vs. 261 days; time to 0–1 pads was 33 vs. 171 days. There was no difference in biochemical recurrence, but anterior positive margins were more frequent in the PFS-RARP cohort (47% vs. 26% of all PSM, $p = 0.035$), foreshadowing the anterior-margin question now under active investigation.

The 2025 Ficarra meta-analysis (*Prostate Cancer Prostatic Dis*) of 16,207 RARPs across 18 studies confirmed an OR of 3.25 (95% CI 1.76–5.99) for 12-month continence favoring Retzius-sparing in the overall pooled analysis — though the RCT-only subanalysis showed overlapping continence at 6 and 12 months, suggesting the effect is most robust in the early postoperative period.

5. The Hood Technique (Wagaskar / Tewari)

Origin and concept

Wagaskar and Tewari described the Hood technique in *European Urology* 2021 as an anterior approach to RARP that preserves the periurethral structures within the space of Retzius — the detrusor apron, puboprostatic ligament complex, arcus tendineus, endopelvic fascia, and pouch of Douglas — without the steep posterior-approach learning curve of Bocciardi-style RS-RARP. It is well-suited to surgeons who prefer to preserve the anterior approach and trigone view while still capturing meaningful continence benefit.

Key technical principles

- Anterior access maintained — the Retzius space is entered minimally, preserving the anterior musculofascial structures.
- Detrusor apron preserved as a distinct anatomic layer.
- Puboprostatic ligaments and arcus tendineus left intact.
- Apical dissection limited to maintain functional urethral length.
- Posterior-anterior reconstruction restores the periurethral suspension.

Evidence base

The original Wagaskar series (*Eur Urol* 2021, n=300) reported continence at one, two, four, six, twelve, and 48 weeks of 21%, 36%, 83%, 88%, 91%, and 95%, with a positive surgical margin rate of 6% and 9.7% complication rate (predominantly Clavien-Dindo I–II). Patients with anterior tumors on biopsy or mpMRI were excluded.

Mandel et al. (*J Endourol* 2025) provided an updated technical description and placed Hood in the broader context of anterior-compartment-sparing techniques, including PERUSIA extraperitoneal and retrograde NVB release.

Vargo et al. (*J Endourol* 2024, n=200, propensity-matched) compared a hybrid hood-sparing approach to traditional retropubic and Retzius-sparing RARP. Median time to continence was 1.6 months for hybrid HS, 1.3 months for RS, and 5.4 months for traditional RP. Clinically significant positive margin rates favored hybrid HS (13.9%) and traditional RP (17.5%) over RS (32.5%, $p = 0.046$), suggesting hybrid HS may capture the functional benefit of RS while preserving the oncologic profile of the anterior approach.

Simpson et al. (*BJUI Compass* 2024) reported a single-surgeon learning-curve series of 174 cases across standard, hemi-hood, and full-hood cohorts, demonstrating doubling of early continence (>75% at 6 weeks) with hood-sparing without compromise of margin rates — and importantly, a short learning curve compared to RS-RARP.

The 2025 Huang meta-analysis (*BJU Int*, 26 RS studies + 4 hood studies, 5,512 patients) found both RS and Hood significantly improved early continence vs. standard RARP, with hood showing RR 1.52 (95% CI 1.13–2.04) for perfect continence at 6 months. The authors note that direct head-to-head data between Hood and RS-RARP remain sparse and are a priority for future study.

6. PATENTS — Posterior Approach to Endopelvic Neurovascular Total Sparing (Hu)

Origin and concept

Wald, Posada, Suzman, ..., Kowalczyk, Hu (*JU Open Plus* 2025) introduced PATENTS as a modification of posterior PFS-RARP that focuses specifically on potency outcomes. PATENTS preserves anterolateral periprostatic tissue without opening the endopelvic fascia, protecting the accessory pudendal arteries and capsular veins. This contrasts with both standard anterior nerve-sparing approaches (which routinely open the endopelvic fascia) and with classical Bocciardi RS-RARP (which does not specifically target accessory pudendal artery preservation).

Key technical principles

- Posterior trans-Douglas access, as in Bocciardi RS-RARP.
- Endopelvic fascia is left closed bilaterally — protecting the accessory pudendal arteries and anterolateral capsular veins.
- Anterolateral periprostatic tissue preserved as a continuous unit.
- Pinpoint bipolar cautery without clips for hemostasis.
- Full nerve sparing executed in the standard PFS plane, with the additional vascular preservation as the differentiator.

Evidence base

The Wald/Hu single-surgeon retrospective series (*JU Open Plus* 2025; PMID 41584061, Erratum) compared 217 PATENTS to 278 conventional anterior nerve-sparing RARP performed 2015–2025. After adjustment, PATENTS was associated with improved erections firm enough for intercourse (HR 2.3, 95% CI 1.45–3.68, $p < 0.001$), improved erections firm enough for sexual activity (HR 1.5, 95% CI 1.21–1.96, $p < 0.001$), and improved partial erections (HR 1.4, 95% CI 1.13–1.63, $p < 0.001$). Among men with baseline erections firm enough for intercourse, approximately 70% achieved recovery. There were no significant differences in margin status ($p = 0.234$) or adverse events ($p = 0.933$) between the two arms.

The companion *Nature Reviews Urology* 2025 review (Gangidi, Wald, Hu) places PATENTS in the context of all current technical modifications targeted at erectile function recovery, and is a recommended primer for surgeons considering adopting the technique.

Where Bocciardi RS-RARP and Hood are continence-first techniques with potency as a secondary outcome, PATENTS is best understood as a potency-first refinement of the posterior approach. The early data are single-institution and retrospective, but the magnitude of effect (>2× adjusted improvement in erectile recovery despite older patients with more clinically significant disease) makes it the most important new PFS development of the past two years.

7. Comparative Continence and Potency Outcomes

The 2025 evidence base is increasingly mature but direct head-to-head comparisons across the three approaches remain limited. The table below summarizes the reported continence advantages of each approach over standard anterior RARP.

Approach	Early continence (≤6 weeks)	12-mo continence	Key reference
Standard anterior RARP	~30–50%	~85–93%	Hoffman JAMA 2020

Posterior PFS (Bocciardi/RS)	70%+ at 1 wk in RCT	~95–98%	Dalela Eur Urol 2017; Menon J Urol 2018; Dall Urol Oncol 2024
Anterior Hood (Wagaskar/Tewari)	~83% at 4 wk	~95%	Wagaskar Eur Urol 2021; Mandel J Endourol 2025
PATENTS (Hu)	Comparable to RS	Similar; 2× erectile recovery	Wald/Hu JU Open Plus 2025

Note: Values are approximate ranges synthesized across cited series and meta-analyses. Definitions of continence vary (zero pads vs. zero or one security pad). Direct RCT-level comparisons between Hood and RS, and between PATENTS and either, do not yet exist.

8. Patient Selection and Tumor-Location Considerations

Tumor location on mpMRI and biopsy is the dominant selection variable across all three PFS approaches. Posterior PFS-RARP is best-suited to patients without anterior PI-RADS 4–5 lesions and without large median lobes. The Hood technique was originally validated with anterior tumors excluded but has been applied to anterior disease in some series, with hybrid approaches showing favorable margin profiles.

The Georgetown single-institution work-in-progress identifies an approximately 3.6-fold relative risk of anterior positive margin in patients with anterior tumors undergoing posterior-approach PFS-RARP, persisting across pT2 and pT3. Implication: anterior PI-RADS 4–5 lesions may not be ideal posterior-approach candidates, and a hybrid or Hood conversion should be considered. A technical-modification manuscript is in preparation.

Selection summary

- Posterior PFS / Bocciardi — posterior or lateral tumors, non-median-lobe glands, surgeons committed to PFS as default. Avoid with anterior PI-RADS 4–5, history of TURP, or very large median lobes.
- Anterior Hood — anterior tumors where PSM risk is elevated by posterior approach; surgeons preferring to maintain trigone view; shorter learning curve than RS.
- PATENTS — cases where erectile function recovery is the dominant patient priority; bilateral nerve sparing already planned; surgeons experienced with posterior approach.
- Standard anterior RARP — high-risk disease with extensive anterior involvement, reoperative pelvis with extensive adhesions, or high suspicion of EPE requiring wide local excision.

9. Single-Port Considerations

PFS principles translate to the SP platform, with several published series demonstrating feasibility. Lin et al. (*Sci Rep* 2025) reported a Taiwanese clinical trial (NCT05403190) of 30 extraperitoneal SP-RARPs using either conventional anterior or Hood approach with the DAVINCI SP system; 96.67% achieved continence within 3 months and 80% had undetectable PSA at 6 months, with comparable outcomes between techniques. Ji et al. (*Transl Androl Urol* 2025) described total periurethral reconstruction with Hood preservation in extraperitoneal SP-RARP, achieving 91.67% continence at 3 months in a 12-patient series. Zhang et al. (*Front Surg* 2023) reported 95.8% continence at 12 months with modified Hood SP-RARP.

The 2025 Ficarra meta-analysis confirmed comparable 6-month continence rates between SP and multi-port RARP (OR 0.93, 95% CI 0.65–1.33). SP adoption introduces its own learning curve and is best approached after the surgeon has established proficiency with the chosen PFS technique on a multi-port platform.

10. Troubleshooting: Large Prostates, Median Lobes, High BMI, Wide Bladder Necks

Large prostates (>80 g)

Posterior PFS becomes more demanding as gland size increases, but is feasible with experience. Key adjustments: more aggressive trans-Douglas mobilization to gain working space; lower insufflation pressure to reduce abdominal compression; careful seminal vesicle lateralization to expose pedicles; consider conversion to anterior or hybrid approach if exposure is inadequate after the Douglas plane is fully developed.

Median lobes

A modest median lobe is manageable with posterior PFS if the bladder neck dissection is deliberate and the trigone is preserved by retrograde countertraction on the lobe. Large median lobes — particularly with prior TURP — favor anterior approaches where the trigone view is direct.

High BMI

Steep Trendelenburg is poorly tolerated in patients with morbid obesity or significant cardiopulmonary risk. SP extraperitoneal access can reduce Trendelenburg requirement; consider lithotomy positioning to reduce perineal pressure. Standard-port posterior PFS remains feasible with attention to insufflation pressure and ventilation.

Wide bladder necks

Tight smooth-muscle bladder-neck preservation is the priority. If the bladder neck is wide at the conclusion of dissection, perform a tennis-racquet reconstruction before the anastomosis. Rocco-style posterior reconstruction restores the periurethral suspension and is a key continence determinant in this subgroup.

Hostile abdomen

Prior pelvic surgery, ventral hernia mesh, colostomy takedown, or known adhesions favor extraperitoneal access — either standard-port extraperitoneal or SP. Posterior PFS is compatible with extraperitoneal access in experienced hands but requires careful peritoneal windowing for the trans-Douglas plane.

11. Annotated Key References

All references annotated with DOI links. PubMed IDs provided where available. Listed in approximate order of importance for understanding the evidence base, then chronologically within categories.

Foundational technique papers

Galfano A, Ascione A, Grimaldi S, Petralia G, Strada E, Bocciardi AM. **A new anatomic approach for robot-assisted laparoscopic prostatectomy: a feasibility study for completely intrafascial surgery.** *Eur Urol.* 2010;58(3):457–61. PMID 20566236. DOI: 10.1016/j.eururo.2010.06.008

Wagaskar VG, Mittal A, Sobotka S, et al., Tewari A. **Hood Technique for Robotic Radical Prostatectomy — Preserving Periurethral Anatomical Structures in the Space of Retzius and Sparing the Pouch of Douglas, Enabling Early Return of Continence Without Compromising Surgical Margin Rates.** *Eur Urol.* 2021;80(2):213–221. PMID 33067016. DOI: 10.1016/j.eururo.2020.09.044

Wald G, Posada L, Suzman E, Lama J, Winograd J, Ting M, Pothier C, Zhong J, Kowalczyk KJ, Hu JC. **Posterior Approach to Endopelvic Neurovascular Total Sparing Robotic-Assisted Radical Prostatectomy Improves Recovery of Erectile Function (PATENTS).** *JU Open Plus.* 2025;3(12):e00154. DOI: 10.1097/JU9.0000000000000394. (Erratum: PMID 41584061, DOI: 10.1097/JU9.0000000000000420)

Basourakos SP, Zhu A, Lewicki PJ, Ramaswamy A, Cheng E, Dudley V, Yu M, Karir B, Hung AJ, Khani F, Hu JC. **Clipless Robotic-assisted Radical Prostatectomy and Impact on Outcomes.** *Eur Urol Focus.* 2022;8(5):1176–1185. PMID 34246618. DOI: 10.1016/j.euf.2021.06.010

Randomized and comparative outcome studies

Dalela D, Jeong W, Prasad MA, et al., Menon M. **A Pragmatic Randomized Controlled Trial Examining the Impact of the Retzius-sparing Approach on Early Urinary Continence Recovery After Robot-assisted Radical Prostatectomy.** *Eur Urol.* 2017;72(5):677–685. PMID 28483330. DOI: 10.1016/j.eururo.2017.04.029

Menon M, Dalela D, Jamil M, et al. **Functional Recovery, Oncologic Outcomes and Postoperative Complications after Robot-Assisted Radical Prostatectomy: An Evidence-Based Analysis Comparing the Retzius Sparing and Standard Approaches.** *J Urol.* 2018;199(5):1210–1217. PMID 29225060. DOI: 10.1016/j.juro.2017.11.115

Dall CP, Mason JB, Choudhury E, Mora-Garijo B, Egan J, Hu JC, Kowalczyk KJ. **Long-term outcomes of pelvic-fascia sparing robotic-assisted radical prostatectomy versus standard technique: Superior urinary function and quality of life without compromising oncologic efficacy in a single-surgeon series.** *Urol Oncol.* 2024;42(3):67.e17–67.e24. PMID 38212151. DOI: 10.1016/j.urolonc.2023.11.020

Vargo EH, Vetter JM, Figenshau RS, Kim EH. **A Hybrid Approach to Hood-Sparing Robotic Prostatectomy to Maximize Functional Outcomes and Maintain Early Oncologic Efficacy.** *J Endourol.* 2024;38(10):997–1003. PMID 38877796. DOI: 10.1089/end.2024.0203

Simpson KRS, Krishnan J, Taylor L, McNeill A, Good DW. **The learning curve for hood-sparing robotic-assisted radical prostatectomy: A single-surgeon experience.** *BJUI Compass.* 2024;6(1):e463. PMID 39877573. DOI: 10.1002/bco2.463

Shimmura H, Banno T, Nakamura K, et al. **A single-center retrospective comparative analysis of urinary continence in robotic prostatectomy with a combination of umbilical ligament preservation and Hood technique.** *Int J Urol.* 2023;30(10):889–895. PMID 37345368. DOI: 10.1111/iju.15227

Meta-analyses and systematic reviews (2024–2025)

Huang S, Chen DC, Qu L, Papa N, Qin K, Adam A, Bolton D, Kelly BD, Murphy DG, Lawrentschuk N, Perera ML. **A meta-analysis of Retzius-sparing and hood-technique robot-assisted radical prostatectomy.** *BJU Int.* 2025;136 Suppl 2:S18–S27. PMID 40625109. DOI: 10.1111/bju.16847

Ficarra V, Rossanese M, Romito I, et al. **Impact of transperitoneal anterior, retzius-sparing, extraperitoneal, transvesical and perineal approaches on urinary continence recovery after robot-assisted radical prostatectomy: a systematic review and meta-analysis of comparative studies.** *Prostate Cancer Prostatic Dis.* 2025;28(2):328–341. PMID 39929994. DOI: 10.1038/s41391-025-00943-2

Marimpietri FS, Tourinho-Barbosa R, Roldan-Testillano R, Batista LT, Sanchez-Salas R. **Lower urinary tract symptoms after robot-assisted radical prostatectomy: a systematic review.** *J Robot Surg.* 2025;20(1):23. PMID 41243047. DOI: 10.1007/s11701-025-02916-y

Reviews — anatomy and technique synthesis

Gangidi S, Wald G, Hu JC. **Technical modifications to improve erectile function recovery after radical prostatectomy.** *Nat Rev Urol.* 2025 Dec 8. PMID 41361530. DOI: 10.1038/s41585-025-01115-6

Mandel A, Choudhary M, Tillu N, Maheshwari A, Kolanukuduru K, Wagaskar V, Tewari A. **Hood Technique for Radical Prostatectomy.** *J Endourol.* 2025;39(S1):S35–S38. PMID 40100831. DOI: 10.1089/end.2024.0303

Czarnogórski MC, Settaf-Cherif L, Koper K, Petrasz P, Ostrowski A, Juszczak K, Drewa T, Adamowicz J. **Nerve-sparing techniques in robot-assisted radical prostatectomy — anatomical approach.** *Expert Rev Med Devices.* 2024;21(12):1101–1110. PMID 39604130. DOI: 10.1080/17434440.2024.2436123

Martini A, Falagario UG, Villers A, et al., Tewari AK, Wiklund NP, Hemal AK. **Contemporary Techniques of Prostate Dissection for Robot-assisted Prostatectomy.** *Eur Urol.* 2020;78(4):583–591. PMID 32747200. DOI: 10.1016/j.eururo.2020.07.017

Jo SB, Kim JW. **Recent Advances in Radical Prostatectomy: A Narrative Review of Surgical Innovations and Outcomes.** *Cancers (Basel).* 2025;17(5):902. PMID 40075749. DOI: 10.3390/cancers17050902

Rassweiler J, Sander S. **Surgical techniques to improve continence after robot-assisted laparoscopic radical prostatectomy based on video-anatomy — a review.** *Urologie.* 2025;64(11):1173–1186. PMID 40522376. DOI: 10.1007/s00120-025-02627-0

Single-port and modified-Hood technical reports

Lin PH, Wang HJ, Kan HC, Pang ST, Yu KJ, Wu CT. **Comparable oncological and functional outcomes of robot-assisted radical prostatectomy with conventional anterior approach and Hood technique using DAVINCI SP system.** *Sci Rep.* 2025;15(1):45652. PMID 41315721. DOI: 10.1038/s41598-025-30245-5

Ji X, Zhang H, Zhang G, et al. **Total periurethral reconstruction with preservation of "Hood" structures promotes early recovery of urinary continence in extraperitoneal single-port robot-assisted radical prostatectomy.** *Transl Androl Urol.* 2025;14(5):1466–1475. PMID 40529025. DOI: 10.21037/tau-2025-56

Zhang H, Ning Z, Jia G, et al. **Modified hood technique for single-port robot-assisted radical prostatectomy contributes to early recovery of continence.** *Front Surg.* 2023;10:1132303. PMID 37206347. DOI: 10.3389/fsurg.2023.1132303

Patient-reported outcomes and morbidity baseline

Hoffman KE, Penson DF, Zhao Z, et al. **Patient-Reported Outcomes Through 5 Years for Active Surveillance, Surgery, Brachytherapy, or External Beam Radiation With or Without Androgen Deprivation Therapy for Localized Prostate Cancer.** *JAMA.* 2020;323(2):149–163. DOI: 10.1001/jama.2019.20675

Sacco E, Prayer-Galetti T, Pinto F, et al. **Urinary incontinence after radical prostatectomy: incidence by definition, risk factors and temporal trend in a large series with a long-term follow-up.** *BJU Int.* 2006. (See PMID 16686718.)

Article metadata for indexed references retrieved from PubMed. Bibliographic synthesis and clinical interpretation by the course director.