Ospedale Niguarda

NETHERLANDS CANCER INSTITUTE
ANTONI VAN LEEUWENHOEK

Urological Association Niguarda

LUMC
LEIDEN UNIVERSITY MEDICAL CENTER

Retzius-Sparing robot-assisted radical prostatectomy

Paolo Dell'Oglio, MD

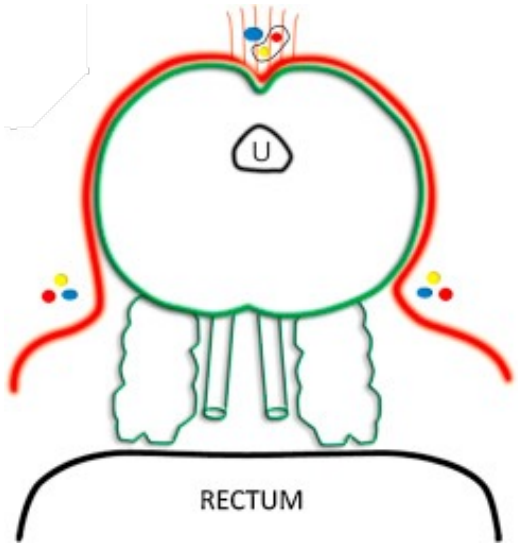
Department of Urology, ASST Grande Ospedale Metropolitano Niguarda, Milan, Italy;

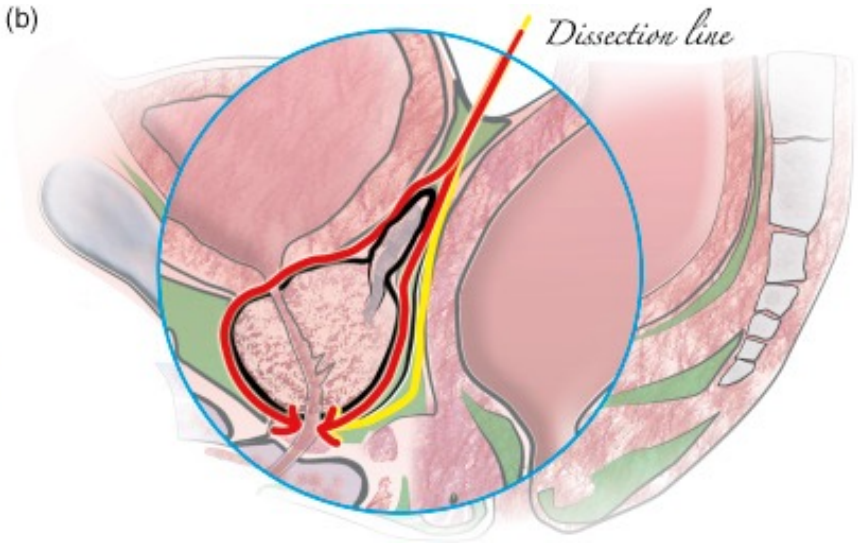
Department of Urology, Netherlands Cancer Institute-Antoni van Leeuwenhoek Hospital, Amsterdam, the Netherlands;

Leiden University Medical Center, Leiden, The Netherlands

@paolo_delloglio

European Association of Urology Guidelines





European Association of Urology

6.1.2.3.1 Robotic anterior versus Retzius-sparing dissection

Robot-assisted RP has typically been performed via the anterior approach, first dropping the bladder to expose the space of Retzius. However, the posterior approach (Retzius-sparing [RS-RARP]) has been used to minimise injury to support structures surrounding the prostate.

Galfano *et al.*, first described RS-RARP in 2010 [505]. This approach commences dissection posteriorly at the pouch of Douglas, first dissecting the SVs and progressing caudally behind the prostate. All of the anterior support structures are avoided, giving rise to the hypothetical mechanism for improved early post-operative continence. Retzius-sparing-RARP thus offers the same potential advantage as the open perineal approach, but without disturbance of the perineal musculature.

EAU Prostate cancer guidelines 2023

Retzius-Sparing vs. anterior RARP: where do we stand?

Retzius-sparing robot-assisted radical prostatectomy vs the standard approach: a systematic review and analysis of comparative outcomes

Enrico Checcucci*, Alessandro Veccia[†,‡,§], Cristian Fiori*, Daniele Amparore*, Matteo Manfredi*, Michele Di Dio*, Ivano Morra*, Antonio Galfano[¶], Riccardo Autorino[§], Aldo Massimo Bocciardi[¶], Prokar Dasgupta** and Francesco Porpiglia*

Retzius sparing robotic assisted radical prostatectomy vs. conventional robotic assisted radical prostatectomy: a systematic review and meta-analysis

Chandan Phukan[1] · Andrew Mclean[1] · Arjun Nambiar[2] · Ankur Mukherjee[2] · Bhaskar Somani[3] · Rajbabu Krishnamoorthy[4] · Ashwin Sridhar[5] · Prabhakar Rajan[5] · Prasanna Sooriakumaran[5] · Bhavan Prasad Rai[2]

Effects of Retzius sparing on robot-assisted laparoscopic prostatectomy: a systematic review with meta-analysis

Ting-En Tai[1] · Chien-Chih Wu[1,2,3] · Yi-No Kang[4,5] · Jeng-Cheng Wu[1,3,6]

Retzius-sparing versus standard robotic-assisted laparoscopic prostatectomy for the treatment of clinically localized prostate cancer. (Review)

Rosenberg JE, Jung JH, Edgerton Z, Lee H, Lee S, Bakker CJ, Dahm P

Retzius Sparing Radical Prostatectomy Versus Robot-assisted Radical Prostatectomy: Which Technique Is More Beneficial for Prostate Cancer Patients (MASTER Study)? A Systematic Review and Meta-analysis

Bara Barakat[a,], Hazem Othman[a], Ulrich Gauger[b], Ingmar Wolff[c], Boris Hadaschik[d], Christian Rehme[d]*

Comparison of Retzius-Sparing Robot-Assisted Radical Prostatectomy vs. Conventional Robot-Assisted Radical Prostatectomy: An Up-to-Date Meta-Analysis

Jiang-Nan Xu[1†], Zhen-Yu Xu[2†] and Hu-Ming Yin[1]*

RESEARCH ARTICLE

Outcomes of Retzius-sparing versus conventional robot-assisted radical prostatectomy: A KSER update series systematic review and meta-analysis

Doo Yong Chung[1], Hae Do Jung[2], Do Kyung Kim[3], Min Ho Lee[4], Sin Woo Lee[5], Sunghyun Paick[6], Joo Yong Lee[7,8]*, Seung Hyun Jeon[9]*

Anterior *vs.* Retzius-sparing robotic assisted radical prostatectomy: can the approach really make a difference?

Simone ALBISINNI [1] *, Cyrielle DASNOY [1], Romain DIAMAND [2], Georges MJAESS [3], Fouad AOUN [2, 3], Francesco ESPERTO [4], Francesco PORPIGLIA [5, 6], Cristian FIORI [5, 6], Thierry ROUMEGUERE [1, 2], Cosimo DE NUNZIO [7]

Retzius-Sparing vs. anterior RARP: where do we stand?

Retzius-sparing versus standard robotic-assisted laparoscopic prostatectomy for the treatment of clinically localized prostate cancer. (Review)

Cochrane Library

Cochrane Database of Systematic Reviews

- **5 RCTs (502 patients)**.
- RS-RARP improved continence at 1 week post catheter removal compared to standard RARP (RR: 1.74) [**moderate certainty evidence**].
- RS-RARP improved continence at 3 months post-operatively (RR: 1.33) [**low-certainty evidence**].
- RS-RARP results in little to no difference in continence recovery at 12 months (RR: 1.01) [**moderate certainty evidence**].
- RS-RARP appears to increase the risk of positive margins (RR: 1.95) [**low-certainty evidence**].
- Uncertain about the effect of RS-RALP on potency recovery 12 months after surgery (RR: 0.98) and on BCR (HR: 0.45) [**very low-certainty evidence**].

Rosenberg JE. et al, Cochrane Database Syst Rev. 2020

BIAS: INITIAL Retzius-sparing experience vs. SOLID Anterior RARP experience

Forest plot for overall positive surgical margins

A	RS–RARP		S–RARP			Odds Ratio		Odds Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M–H, Random, 95% CI	Year	M–H, Random, 95% CI

The difference in PSM rate between Retzius-sparing RARP vs. standard RARP might be related to the **learning curve associated with the Retzius sparing approach**

First cases

First cases

First cases

First cases

60 cases

Checcucci E. et al, BJU int. 2020

24-month Trifecta Results in RS-RARP: Niguarda experience

Table 2. Cancer control and functional outcomes of 1240 prostate cancer patients treated with the Retzius-sparing approach at a single European high-volume center

Functional and cancer control outcomes (*n* = 1240)	
Positive surgical margins, *n* (%)	215 (17.3)
BCR, *n* (%)	149 (11.9)
Urinary continence at 24 months, *n* (%)	
No pad	981 (79.5)
Safety pad	171 (13.8)
More than 1 pad/day	88 (6.7)
Sexual potency at 24 months, *n* (%)	
Spontaneous erections	379 (30.6)
PDE-5 inhibitors	264 (21.3)
Intracavernous injections	34 (2.7)
ED	563 (45.4)
Overall trifecta outcome, *n* (%)	522 (42.1)
Trifecta outcome for age groups, years, %	
Younger than 56	62.2
56-60	58.2
61-65	45.8
66-70	34.2
71-75	26.1
Older than 75	9.1
Trifecta outcome for NS technique, %	
Full NS	49.9
Partial NS	38.8
Non-NS	20.7

Immediate: 68%

24-mo: 93.3%

51.9%

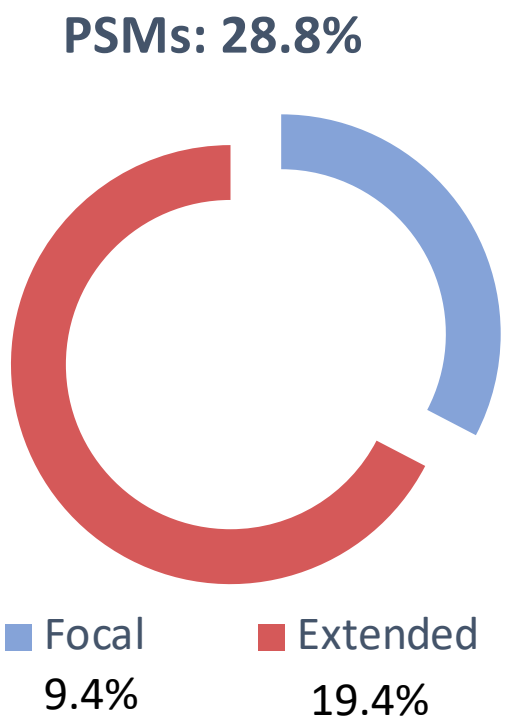
Ospedale Niguarda

Urological Association Niguarda

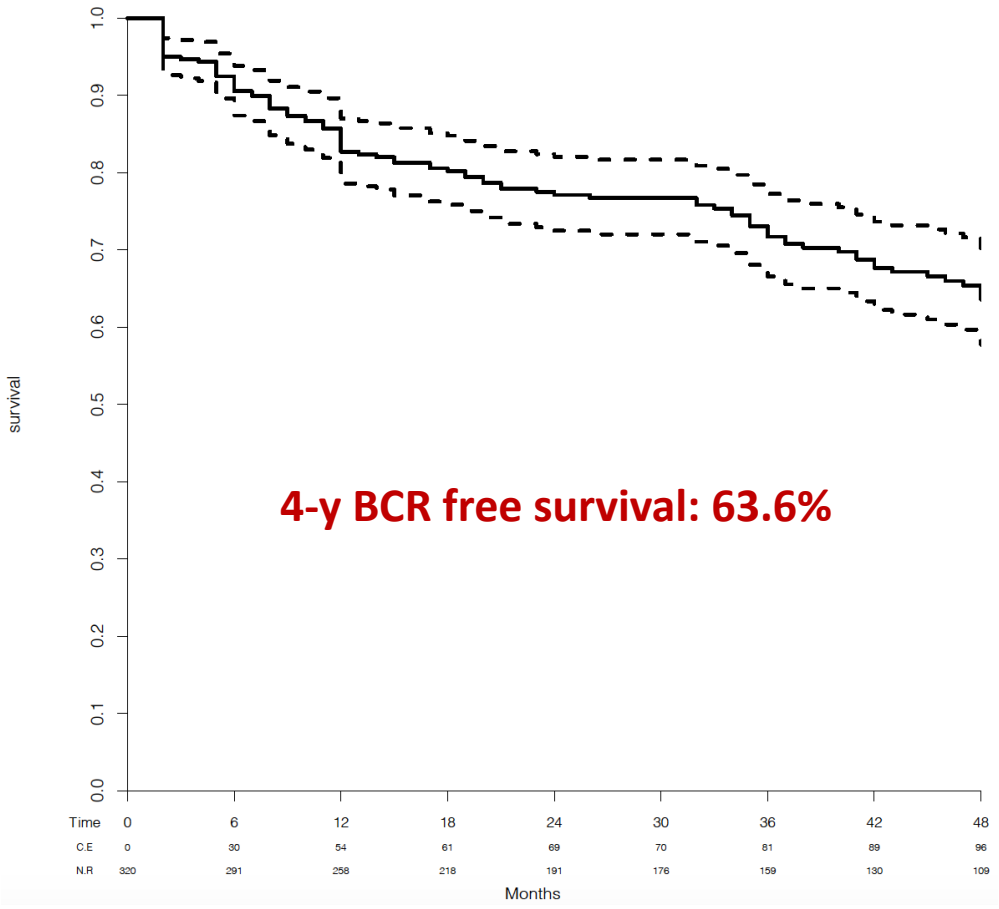
Olivero A. et al, Mini-invasive Surg. 2022

Retzius-sparing RARP in high-risk PCa: Niguarda experience

340 D'Amico high-risk PCa patients who underwent Retzius-sparing RARP at a **single high-volume centre** between **2011** and **2020**.



Biochemical recurrence-free survival



Ospedale Niguarda

Urological Association Niguarda

Dell'Oglio P. et al, Eur Urol Open Science 2022

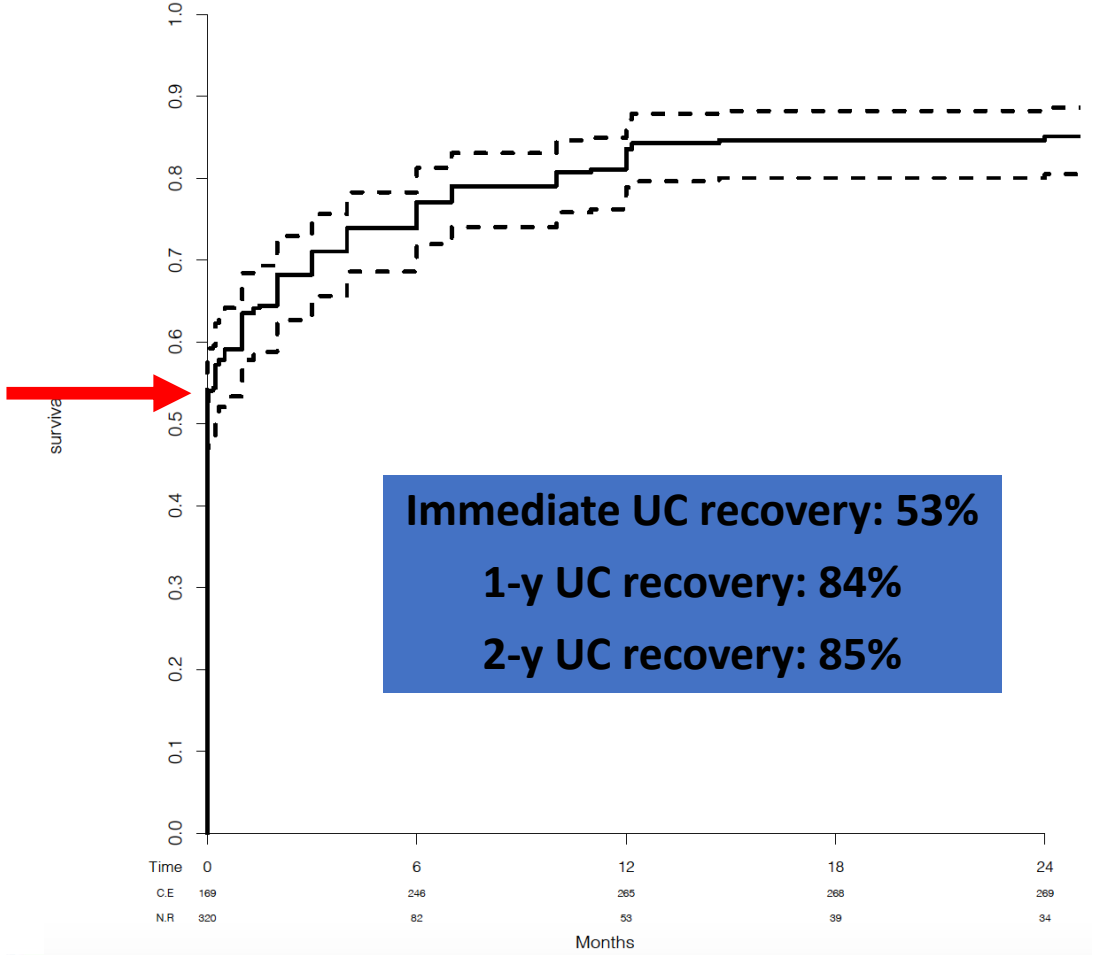
Positive Surgical Margins in High-risk & Locally Advanced PCa

	Disease characteristics	N. of pts	Technique	PSM
Abdollah 2015	D'Amico High-risk	1100	Anterior RARP	34.8%
Abdollah 2016	D'Amico High-risk	868	Anterior RARP	34%
Kumar 2017	D'Amico High-risk	557	Anterior RARP	25.2%
Dell'Oglio 2022	D'Amico High-risk	340	**Posterior** RARP	28.8%
Galfano 2022	D'Amico High-risk	579	**Posterior** RARP	31.3%
Mitchell 2012	cT3-4	843	ORP	56%
Joniau 2015	cT3a	759	ORP or anterior RARP	43%
Gandaglia 2017	cT3-4	94	Anterior RARP	32.3%
Poelaert 2019	cT3 or pT3	796	Anterior RARP	55%
Mazzone 2021	T3 at MRI	89	Anterior RARP	27%

Retzius-sparing RARP in high-risk PCa: Niguarda experience

Functional outcomes (n=320)

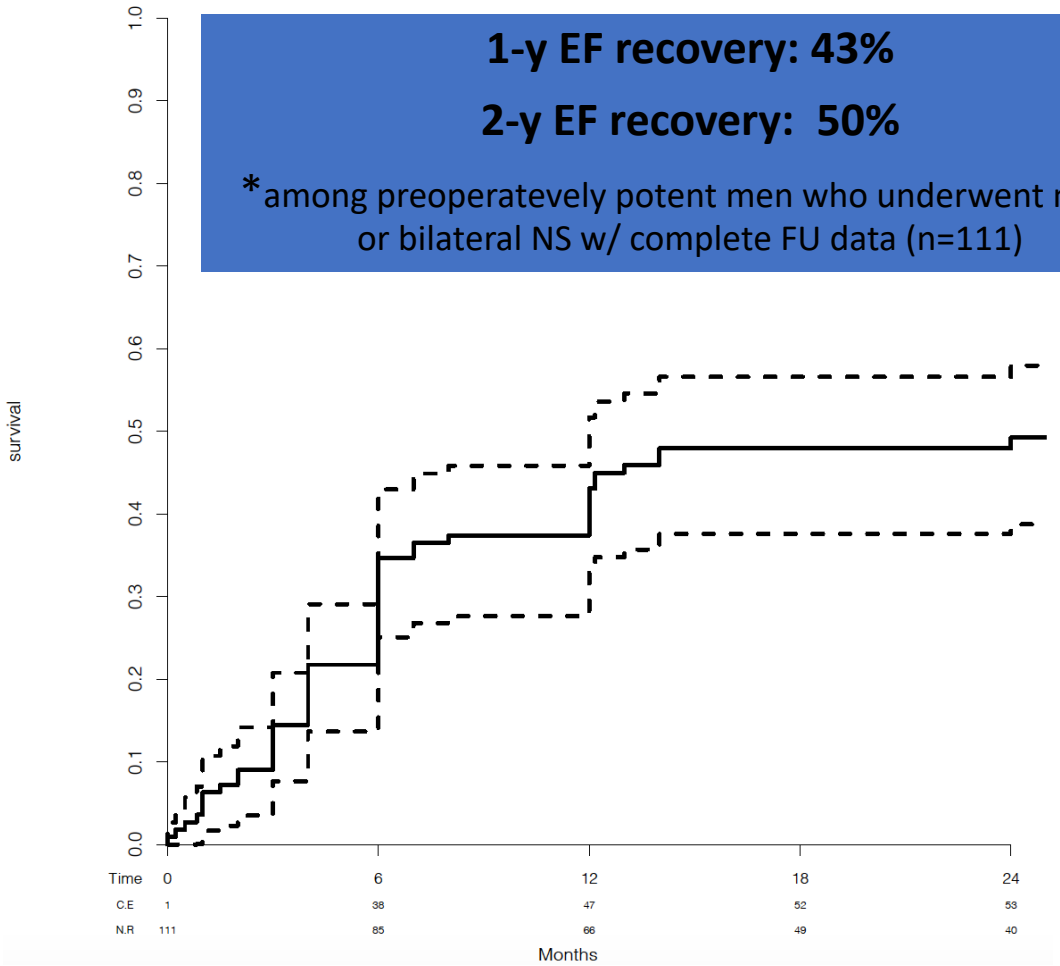
Median follow-up 47 mo. (24-70)



Immediate UC recovery: 53%

1-y UC recovery: 84%

2-y UC recovery: 85%



1-y EF recovery: 43%

2-y EF recovery: 50%

*among preoperatively potent men who underwent mono or bilateral NS w/ complete FU data (n=111)

Ospedale Niguarda

Urological Association Niguarda

Dell'Oglio P. et al, Eur Urol Open Science 2022

Functional outcomes in High-risk & Locally Advanced PCa

	Disease characteristics	Number of pts	Technique	Immediate Urinary continence	Urinary Continence (1-year)	Urinary continence (2-year)	Erectile function (1-year)	Erectile function (2-year)
Abdollah 2017	D'Amico High-risk	769	Anterior RARP	0%	85.2%	89%	33.8%	52.3%
Dell'Oglio 2022	D'Amico High-risk	340	**Posterior** RARP	53%	84%	85%	43%	50%
Galfano 2022	D'Amico High-risk	579	**Posterior** RARP	66%	--	89%	--	--
Loeb 2007	High risk cT2b-cT3	288	ORP	--	--	92%	--	60%
Gandaglia 2017	cT3-T4	94	Anterior RARP	--	64%	83%	31%	45%
Mazzone 2021	T3 at MRI	89	Anterior RARP	38%	84%	--	--	--

Retzius-sparing RARP with novel robotic platforms

✓Retzius-sparing RARP with **Hugo RAS System**

Hugo RAS system: key features

Hugo RAS system: key features

Available evidence on anterior RARP with Hugo RAS system

> Urologia. 2022 Nov;89(4):603-609. doi: 10.1177/03915603221107855. Epub 2022 Jun 28.

The new surgical robotic platform HUGO™ RAS: System description and docking settings for robot-assisted radical prostatectomy

Angelo Totaro [1], Marco Campetella [1], Riccardo Bientinesi [1], Carlo Gandi [1], Giuseppe Palermo [1], Andrea Russo [2], Paola Aceto [2], PierFrancesco Bassi [1], Emilio Sacco [1]

> J Endourol. 2022 Oct 7. doi: 10.1089/end.2022.0461. Online ahead of print.

Robot-Assisted Laparoscopic Radical Prostatectomy utilizing Hugo RASTM platform - Initial experience

Narasimhan Ragavan [1], Shivraj Barath Kumar [2], Pradeep Chirravur [3], Sindhu Sankaran [4]

> Int Braz J Urol. 2023 Mar-Apr;49(2):211-220. doi: 10.1590/S1677-5538.IBJU.2023.9902.

Implementation and outcomes of Hugo(TM) RAS System in robotic-assisted radical prostatectomy

Claudia González Alfano [1], Marcio Covas Moschovas [2 3], Vianette Montagne [1], Irela Soto [1], James Porter [4], Vipul Patel [2 3], Ruben Ureña [1], Elias Bodden [1]

> BJU Int. 2022 Nov;130(5):671-675. doi: 10.1111/bju.15819. Epub 2022 Jun 26.

Robot-assisted radical prostatectomy feasibility and setting with the Hugo™ robot-assisted surgery system

Luca Sarchi [1 2], Angelo Mottaran [1 2 3], Carlo Andrea Bravi [1 2], Marco Paciotti [1 2 4], Rui Farinha [1], Pietro Piazza [1 3], Stefano Puliatti [1 5], Ruben De Groote [2], Geert De Naeyer [2], Anthony Gallagher [1], Alberto Breda [6], Alexandre Mottrie [1 2]

Case Reports > Eur Urol. 2022 Aug;82(2):233-237. doi: 10.1016/j.eururo.2022.04.029. Epub 2022 May 12.

Robot-assisted Radical Prostatectomy with the Novel Hugo Robotic System: Initial Experience and Optimal Surgical Set-up at a Tertiary Referral Robotic Center

Carlo A Bravi [1], Marco Paciotti [2], Luca Sarchi [3], Angelo Mottaran [4], Luigi Nocera [5], Rui Farinha [6], Pieter De Backer [6], Marie-Hélène Vinckier [3], Geert De Naeyer [3], Frederiek D'Hondt [3], Ruben De Groote [3], Alexandre Mottrie [3]

> Eur Urol Focus. 2023 Jul;9(4):642-644. doi: 10.1016/j.euf.2023.01.008. Epub 2023 Jan 21.

Outcomes of Robot-assisted Radical Prostatectomy with the Hugo RAS Surgical System: Initial Experience at a High-volume Robotic Center

Carlo A Bravi [1], Marco Paciotti [2], Eleonora Balestrazzi [3], Adele Piro [4], Federico Piramide [5], Maria Peraire [6], Luca Sarchi [6], Angelo Mottaran [3], Luigi Nocera [7], Pieter De Backer [8], Geert De Naeyer [6], Frederiek D'Hondt [6], Ruben De Groote [6], Alexandre Mottrie [6]

> Eur Urol Focus. 2023 Aug 25;S2405-4569(23)00187-6. doi: 10.1016/j.euf.2023.08.001. Online ahead of print.

Robot-assisted Radical Prostatectomy Performed with Different Robotic Platforms: First Comparative Evidence Between Da Vinci and HUGO Robot-assisted Surgery Robots

Carlo Andrea Bravi [1], Eleonora Balestrazzi [2], Manon De Loof [3], Silvia Rebuffo [4], Federico Piramide [5], Angelo Mottaran [2], Marco Paciotti [6], Gabriele Sorce [7], Luigi Nocera [7], Luca Sarchi [8], Maria Peraire [3], Claudia Colla'-Ruvolo [9], Nicola Frego [6], Adele Piro [10], Marco Ticonosco [10], Pieter De Backer [3], Rui Farinha [3], Hannes Van Den Bossche [11], Geert De Naeyer [12], Frederiek D'Hondt [12], Ruben De Groote [12], Alexandre Mottrie [3]

Niguarda case series (n=26): surgical outcomes

Baseline characteristics

Age (yr), median (IQR)	64 (61 – 68)
BMI (kg/m^2), median (IQR)	26.4 (24.1 – 28.8)
Charlson Comorbidity index, n (%) 0 1 2 or more	 16 (62) 5 (19) 5 (19)
Preoperative PSA (ng/ml), median (IQR)	6.3 (3.9 – 9.2)
Prostate volume on preoperative MRI (cm^3), median (IQR)	52 (38 – 64)
T3 stage on preoperative MRI, n (%)	2 (7.7)
Clinical T stage, n (%) T1c T2a T2b T2c	 12 (46) 9 (35) 3 (12) 2 (7.7)
Biopsy ISUP grade group, n (%) 1 2 3	 12 (46) 9 (35) 5 (19)
Preoperative urinary continence (ICIQ-SF=0), n (%)	26 (100)
Preoperative erectile dysfunction, n (%) No (IIEF 22-25) Mild (IIEF 17-21) Mild to moderate (IIEF 12-16) Moderate (IIEF 8-11)	 12 (46) 8 (31) 3 (12) 3 (12)

Intra and perioperative data

Docking time (min), median (IQR)	9 (8.2-10)
Total Operative Time (min), median (IQR)	215 (181-262)
Console time (min), median (IQR)	190 (150-243)
Estimated blood loss (ml), median (IQR)	90 (54-100)
Extended pelvic LND performed, n (%)	10 (38)
Intra-operative complications, n (%)	0 (0)
Length of stay (d), median (IQR)	3 (2 – 3)
Suprapubic catheter removal, (d), median (IQR)	7 (7-7)
ISUP grade group at final pathology, n (%) 1 2 3 5	 4 (15) 14 (54) 4 (15) 4 (15)
pT stage, n (%) pT2 pT3a	 22 (85) 4 (15)
pN stage, n (%) pN0 pNx	 10 (38) 16 (62)
Number of nodes removed, median (IQR)	19 (17-20)
Positive surgical margins, n (%) No Focal Extended	 18 (69) 3 (12) 5 (19)

Niguarda case series (n=26): surgical outcomes

Postoperative data

Postoperative complications, n (%)	2 (7.7)
Grade of postoperative complications (Clavien-Dindo Classification), n % I II III IV V	 1 0 1 0 0
Undetectable PSA (<0.1 ng/ml) after surgery, n (%)	23 (89)
Follow up (months), median (range)	2 (2-4)

Functional outcomes	
Immediate continence recovery, n (%)	19 (73)
Urinary continence recovery at 2 months (0-1 safety pad), n (%)	24 (92)
Urinary continence recovery at 2 months (ICIQ-SF≤10), n (%)	22 (85)
Erectile dysfunction at 2 months, n (%)* No (IIEF 22-25) Mild (IIEF 17-21) Mild to moderate (IIEF 12-16) Moderate (IIEF 8-11) Severe (IIEF 5-7)	 1 (4.8) 1 (4.8) 4 (19) 5 (24) 10 (48)
Worsening erectile dysfunction of at least one IIEF category at 2 months, n (%)*	18 (86)
Follow up (months), median (range)	2 (2-4)

*Available for 21 patients

Conclusions

- RS-RARP represents **a valid surgical treatment option** for PCa patients.
- It yields **excellent immediate urinary continence recovery**.
- However, this procedure **with the novel Hugo RAS system** is associated with a **non-negligible rate of PSMs**.
- These findings overwhelmingly underline that a **learning process** for the novel robotic platform is required **even in expert hands for RS-RARP**