



Prostatectomía radical robótica

versus

SBRT



Cáncer de Próstata

- El cáncer de próstata es el segundo cáncer más común en hombres.
- Se producen 1,1 millones de casos nuevos al año en el mundo. Globocan 2012

014



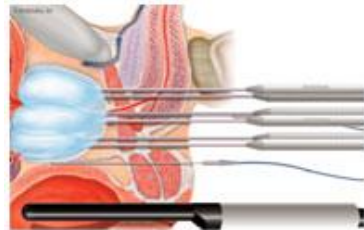
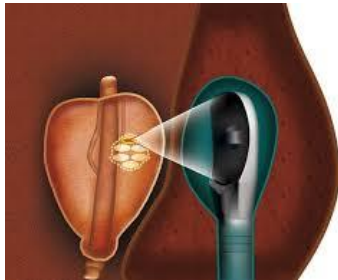
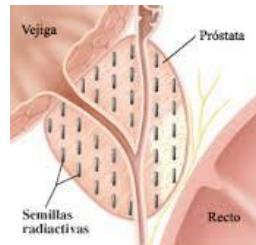
Cáncer de Próstata

Ante el diagnóstico de cáncer de próstata solo un 20% de los pacientes eventualmente fallecerá de la enfermedad

El diagnóstico precoz permite un manejo exitoso de la enfermedad

S.A. Boorjian et al. A critical analysis of the long-term impact of radical prostatectomy on cancer control and function outcomes. Eur Urol. 2012;61:664-675

Ante el diagnóstico de cáncer de próstata surgen una serie de opciones de tratamiento incluyendo la vigilancia activa.





Cirugía robótica

versus

SBRT

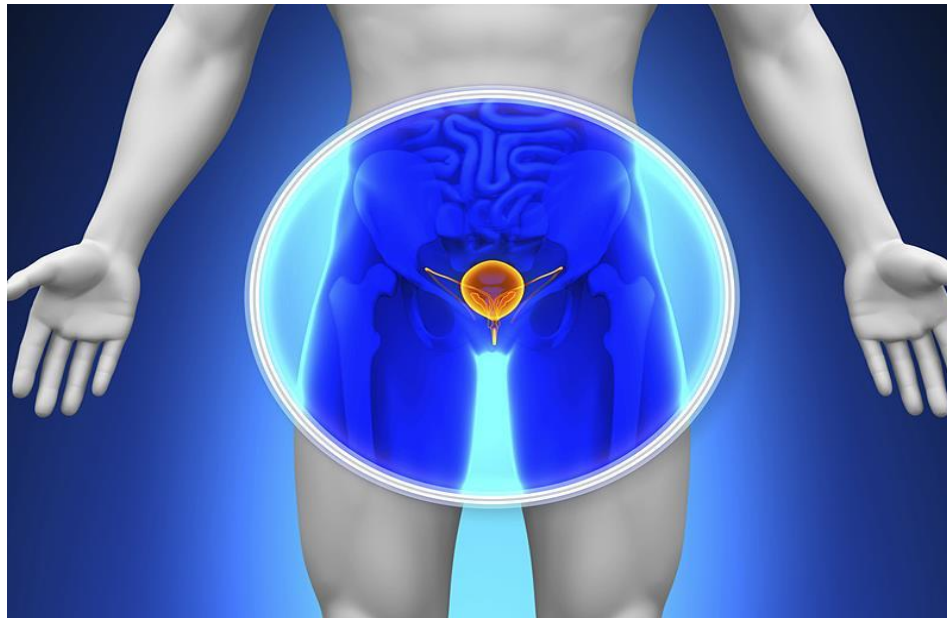
Da Vinci

(cyberknife)



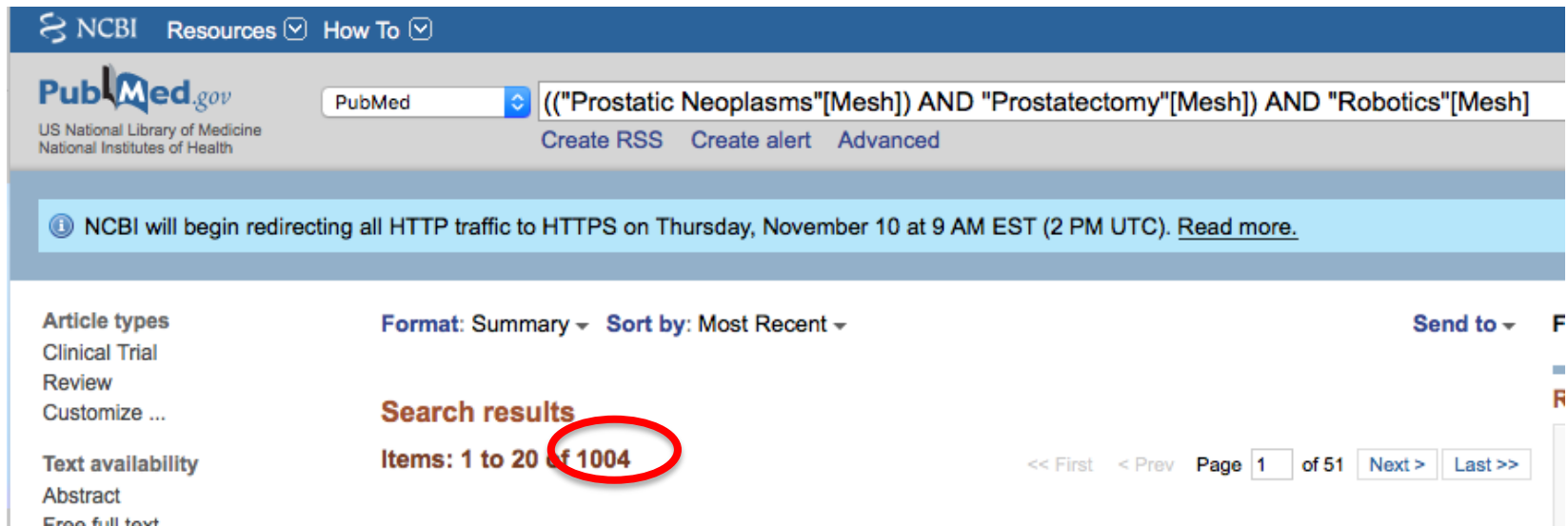
¿Comparación?

Ambos equipos fueron aprobados por la FDA el Año 2001 para el tratamiento del cáncer de próstata



No se han publicado trabajos comparativos randomizados

Prostatectomía Robótica



The screenshot shows the PubMed website interface. At the top, the NCBI logo and navigation links are visible. The search bar contains the query: `((("Prostatic Neoplasms"[Mesh]) AND "Prostatectomy"[Mesh]) AND "Robotics"[Mesh])`. Below the search bar, a notification banner states: "NCBI will begin redirecting all HTTP traffic to HTTPS on Thursday, November 10 at 9 AM EST (2 PM UTC). [Read more.](#)".

On the left side, there are filters for "Article types" (Clinical Trial, Review, Customize ...) and "Text availability" (Abstract, Free full text). The main content area displays "Search results" with "Items: 1 to 20 of 1004". The number "1004" is circled in red. To the right of the results, there are navigation controls: "<< First", "< Prev", "Page 1 of 51", "Next >", and "Last >>".

1004

No se han publicado trabajos comparativos randomizados

NCBI Resources How To

PubMed.gov
US National Library of Medicine
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PubMed ("Radiosurgery"[Mesh] AND "Prostatic Neoplasms"[Mesh]) Search

Create RSS Create alert Advanced

NCBI will begin redirecting all HTTP traffic to HTTPS on Thursday, November 10 at 9 AM EST (2 PM UTC). [Read more.](#)

Article types
Clinical Trial
Review
Customize ...

Text availability
Abstract

Format: Summary Sort by: Most Recent

Send to Filters: [Manage Filters](#)

Search results
Items: 1 to 20 of 221

Find related data
Database: Select

Find items

221

Indicaciones

Cirugía robótica

Cáncer de próstata localizado de riesgo bajo intermedio y alto.

SBRT:

Cáncer de próstata de bajo riesgo y riesgo intermedio .

Tratamiento

Cirugía Robótica

Requiere anestesia general y una hospitalización de 1 a 2 días

SBRT

El hipofraccionamiento permite acortar el tratamiento a periodos de 5 días manteniendo al paciente ambulatorio en todo momento

Complicaciones

Cirugia Robótica

Incontinencia , disfunción sexual

Bianco, F.J., Jr., et al. Radical prostatectomy: long-term cancer control and recovery of sexual and urinary function . Urology, 2005. 66: 83.

SBRT

Toxicidad genitourinaria

Toxicidad Rectal

Disfunción sexual

Katz AJ Stereotactic body radiotherapy for organ-confined prostate cancer.

BMC Urol 2010



- No existe aun información randomizada de Cirugía Robótica versus SBRT
- Al no haber trabajos randomizados uno debe basarse en la información disponible y discutir con el paciente en relación a sus perfil de riesgo y tolerancia a los efectos adversos esperables.

Resultados oncológicos de SBRT

Table 1 Population characteristics and protocol for the management of localized PCa using Cyberknife®.

	Analysis type	LE	N	Risk group	Median (range) Initial PSA, ng/mL	Protocol
Choi et al., 2007 [1]	Prospective, P2	2b	44	Low, Intermediate, High	–	32 Gy (4 × 8 Gy) 36 Gy (4 × 9 Gy)
Fuller et al., 2008 [2]	Prospective, P2	2b	10	Low, Intermediate	6.9 (1.3–11.45)	38 Gy (4 × 9 Gy)
King et al., 2009 [3]	Prospective, P2	2b	41	Low	5.6 (0.7–10)	36.25 Gy (5 × 7.25 Gy)
Friedland et al. 2009 [4]	Prospective, P2	2b	112	Low, Intermediate	5.2 (1.1–17.2)	35 Gy (5 × 7 Gy)
Meier et al. 2009 [5]	Prospective, P1	2b	29	Low, Intermediate	<20	36.25 Gy (5 × 7.25 Gy)
Aluwini et al. 2010 [6]	Prospective, P1	2b	10	Low, Intermediate	8.3 (1.3–13.6)	38 Gy (4 × 9.5 Gy)
Katz et al. 2010 [7]	Prospective, P2	2b	304	Low, Intermediate, High	5.8 (0.7–27.3)	35 Gy (5 × 7 Gy) 36.25 Gy (5 × 7.25 Gy)
Bolzicco et al. 2010 [8]	Prospective, P2	2b	45	Low, Intermediate	8.07 (2–20)	35 Gy (5 × 7 Gy)
Mc Bride et al. 2011 [9]	Prospective, P1	2b	45	Low	4.9 (1.4–9.4)	36.25 Gy (5 × 7.25 Gy) 37.5 Gy (5 × 7.5 Gy)
Freeman et al. 2011 [10]	Prospective, P2	2b	41	Low	5.4 (3–7.8)	36.25 Gy (5 × 7.25 Gy)
Katz et al. 2011 [11]	Prospective, P2	1b	82	Low, Intermediate	5.35 (0.9–13.2)	35 Gy (5 × 7 Gy) 36.25 Gy (5 × 7.25 Gy)
Kang et al. 2011 [12]	Retrospective	3	44	Low, Intermediate, High	–	32 GY (4 × 8 Gy) 34 Gy (4 × 8.5 Gy) 36 Gy (4 × 9 Gy)
King et al. 2012 [13]	Prospective, P2	2b	67	Low	<10	36.25 Gy (5 × 7.25 Gy)

Resultados oncológicos de SBRT (Cyberknife)

Table 2 Oncological results for localized PCa management using Cyberknife®.

	Median (range) follow-up, months	Median PSA, ng/mL	Median PSA nadir, ng/mL	% of patients with benign PSA bounce (value)	Median time to benign PSA bounce, months	bPFS rate, %	Recurrence
Choi et al. 2007 [1]	13 (4–46)	–	–	–	–	78.3	–
Fuller et al. 2008 [2]	4	0.97	0.97	–	–	–	–
King et al. 2009 [3]	33 (6–45)	0.4	0.32	29 (0.4 ng/mL)	18	100	0
Friedland et al. 2009 [4]	24	0.6	0.5	–	–	97.4	2L, 1M
Meier et al. 2009 [5]	18	0.4	0.35	38	–	100	0
Aluwini et al. 2010 [6]	5.1	1.6	1.6	0	–	100	0
Katz et al. 2010 [7]	30 (26–37)	0.3	0.3	16 (0.35 ng/mL)	18	98.7	1L
Bolzicco et al. 2010 [8]	20 (6–42)	0.4	–	–	–	100	0
Mc Bride et al. 2011 [9]	44.5 (0–62)	0.2	0.2	20 (0.4 ng/mL)	11.6 (7.2–18.2)	97.7	0
Freeman et al. 2011 [10]	60	0.35	0.3	–	–	92.7	3L
Katz et al. 2011 [11]	51 (45–58)	0.1	0.1	–	–	97.6	2M
Kang et al. 2011 [12]	40 (12–78)	–	–	–	–	100	0
King et al. 2012 [13]	32.4	0.5	–	–	–	94	2L

L, local recurrence; M, metastatic recurrence.



Contents lists available at [ScienceDirect](#)

Radiotherapy and Oncology

journal homepage: www.thegreenjournal.com



Phase II trial

Stereotactic body radiotherapy for localized prostate cancer: Pooled analysis from a multi-institutional consortium of prospective phase II trials☆☆



Christopher R. King^{a,*}, Debra Freeman^b, Irving Kaplan^c, Donald Fuller^d, Giampaolo Bolzicco^e, Sean Collins^f, Robert Meier^g, Jason Wang^a, Patrick Kupelian^a, Michael Steinberg^a, Alan Katz^h

Table 2

5-year Kaplan–Meier PSA relapse-free survival rates as a function of risk group, use of ADT and dose.

	5-yr bRFS	p-Value
Low Risk	95.2%	*
Intermediate Risk	84.1%	$p = 0.03$
High Risk	81.2%	$p < 0.0001$
ADT use	92.6%	*
No ADT	91.3%	$p = 0.71$
Dose 35 Gy	92.5%	*
Dose 36.25 Gy	90.7%	$p = 0.08$
Dose 38–40 G y	95.8%	$p = 0.83$

* Reference group.

Comparisons of 5-year PSA relapse-free survival rates by risk group and substratified by use of ADT or total dose.

	Low risk		Intermediate risk		High risk	
	5-yr bRFS	p-Value	5-yr bRFS	p-Value	5-yr bRFS	p-Value
ADT use	96.8%	*	97.2%	*	82.5%	*
No ADT	95.1%	0.46	79.7%	0.17	80.2%	0.50
Dose 35 Gy	95.8%	*	72.3%	*	NE	*
Dose 36.25 Gy	95.0%	0.77	87.2%	0.73	74.1%	0.99
Dose 38–40 Gy	94.4%	0.41	96.7%	0.58	NE	1.0

NE, no events.

* Reference group.

Resultados oncológicos de la Prostatectomía Radical Robótica

Table 10 Biochemical recurrence rates in robot-assisted radical prostatectomy series

First author	Institution	Cases, <i>n</i>	Study design	Follow-up, mo	Adjuvant therapy	Definition of BCR, ng/ml	BCR rate
Carlucci, 2009 [31]	Mount Sinai Medical Center, New York, NY, USA	700	Prospective case series	12	Not reported	PSA ≥ 0.2	Recurrence at follow-up: 2%
Murphy, 2009 [36]	Melbourne, Australia	395	Prospective case series	22	10%	PSA ≥ 0.2	5-yr BCR: 74%
Shikanov, 2009 [38]	University of Chicago, Chicago, IL, USA	1398	Prospective case series	12	Not reported	PSA ≥ 0.2	Recurrence at follow-up: 4%
Shikanov, 2009 [73]	University of Chicago, Chicago, IL, USA	380	Prospective case series	22	Not reported	PSA ≥ 0.05	1-yr BCR: 96% 2-yr BCR: 91%
Menon, 2010 [6]	Vattikuti Urology Institute, Detroit, MI, USA	1384	Prospective case series	60	0	PSA > 0.2	3-yr BCR: 90% 5-yr BCR: 87% 7-yr BCR: 81%

Recurrencia Bioquímica

PSA menor a 0,2ngr/ml

90% a 3 años

87% a 5 años

81% a 7 años

Sobrevida cáncer específica a 7 años **99,5%**

M. Menon et al. Biochemical recurrence following robot-assisted radical prostatectomy: analysis of 1384 patients with a median 5-year follow-up.

Eur Urol. 2010

Manejo de las recurrencias

Cirugía Robótica

Radioterapia adyudante

SBRT

Crioterapia

Hifu

Prostatectomía de rescate



Requerimientos de terapia adyudante de la Prostatectomía Radical Robótica

Table 9 Use of adjuvant therapies in robot-assisted radical prostatectomy series

First author	Institution	Cases, <i>n</i>	Study design	Adjuvant therapy, %	Follow-up, mo	PSA recurrence, %
Murphy 2009 [36]	Melbourne, Australia	395	Prospective case series	10	22	13
Menon, 2010 [6]	Vattikuti Urology Institute, Detroit, MI, USA	1384	Prospective case series	0.5	60	14
Novara, 2011 [72]	University of Padua, Padua, Italy	242	Prospective case series	4	14	6
Jayram, 2011 [24]	University of Chicago, Chicago, IL, USA	148 D'Amico high risk	Prospective case series	23	18	21
Overall				4		

4% de pacientes con radioterapia post operatoria.

Dado lo breve del seguimiento no hay claras recomendaciones sobre el manejo de rescate en los pacientes que progresen luego de SBRT



Incontinencia y respuesta sexual

Prostatectomía robótica

TABLE 5 Continence outcomes

Reference	N patients	Ages, years	Follow-up, months	Continence % at n months				
				Immediate	1	3	6	12
Joseph <i>et al.</i> [11]	325	60	6	24	56	93	96	–
Borin <i>et al.</i> [15]	400	61.2	6	–	70.5	89	97	–
Zorn <i>et al.</i> [54]	300	59.4	24	–	23	47	68	90
Krambeck <i>et al.</i> [20]	294	61	12	–	–	–	–	91.8
Murphy <i>et al.</i> [21]	400	60.2	>18	–	–	–	–	91.4
Rocco <i>et al.</i> [22]	120	63	12	–	–	70	93	97
Novara <i>et al.</i> [52]	304	61.6	12	–	–	–	–	90
Motttrie <i>et al.</i> [13]	184	60	6	–	43	–	95	–
Patel <i>et al.</i> [50]	1100	58	18	–	6 weeks 67.7	85.4	95.7	97.4
Tewri <i>et al.</i> [39]	N* 214	64.3	13	13.1	35.2	50.2	61.9	82.1
	P* 304	62.8	13	27	59	76.6	85.6	91.2
	T* 182	61.2	6	38.4	82.5	91.3	97.1	–
Menon <i>et al.</i> [51]	1142	60.2	12	–	–	–	–	92
van der Poel <i>et al.</i> [53]	151	60	12	–	–	–	54	70
Weighted mean		60.35		25.17	58.54	79.08	87.89	91.85

N, no reconstruction; P, posterior reconstruction; T*, total reconstruction.

Continencia Completa

91,85% a 12 meses (70-97%)

Pate VR , et al . BJUI 2011

TABLE 6 Potency outcomes

Reference	N	Age, years	Type of NS, %			Follow-up, months	Potency, %		Overall potency at n months			
			Uni.	Bi.	None		Uni.	Bi.	3	6	12	18
Joseph et al. [11]	325	60	23.6	70	6.4	12	58	80.6	–	77.1	–	–
Zorn et al. [54]	300	59.4	26.4	59.6	14	24	62	83	47	58	74	76.5
Krambeck et al. [20]	294	61	91	9	12	–	–	–	–	70	–	–
Murphy et al. [21]	394	60.2	28.2	65.3	–	12	–	–	–	–	62	–
Rocco et al. [22]	120	63	–	–	–	12	–	–	31	43	61	–
Novara et al. [52]	304	61.6	7	66	27	12	–	–	–	–	49	–
Motttrie et al. [13]	184	62	13	64.5	18.1	6	47	70	–	66.6	–	–
Patel et al. [50]	1100	58	–	–	–	18	–	–	–	68.8	91.5	96.6
Tewari et al. [67]	215	60	11	85	4	12	–	87	–	–	–	–
Menon et al. [51]	1142	60.2	25	33	>18	–	100	–	–	–	70	100
van der Poel and de Block [68]	107	59.6	45.8	54.2	–	6	40.8	63.8	–	53	–	–
Finley et al. [69] with cautery	42	56.5	26	74	–	>18	50	67.8	8.3	14.7	43.2	63.1
Finley et al. [69] without cautery	62	57	26	74	–	>18	80	93	32.1	57.1	76.6	89.6
Weighted mean		59.75	28.64	43.89	15.47		79.42	79.45	38.85	65.49	73.90	95.09

Uni., unilateral; Bi, bilateral.

Capacidad de matener una erección suficiente para la penetración
95% promedio (76- 98%)

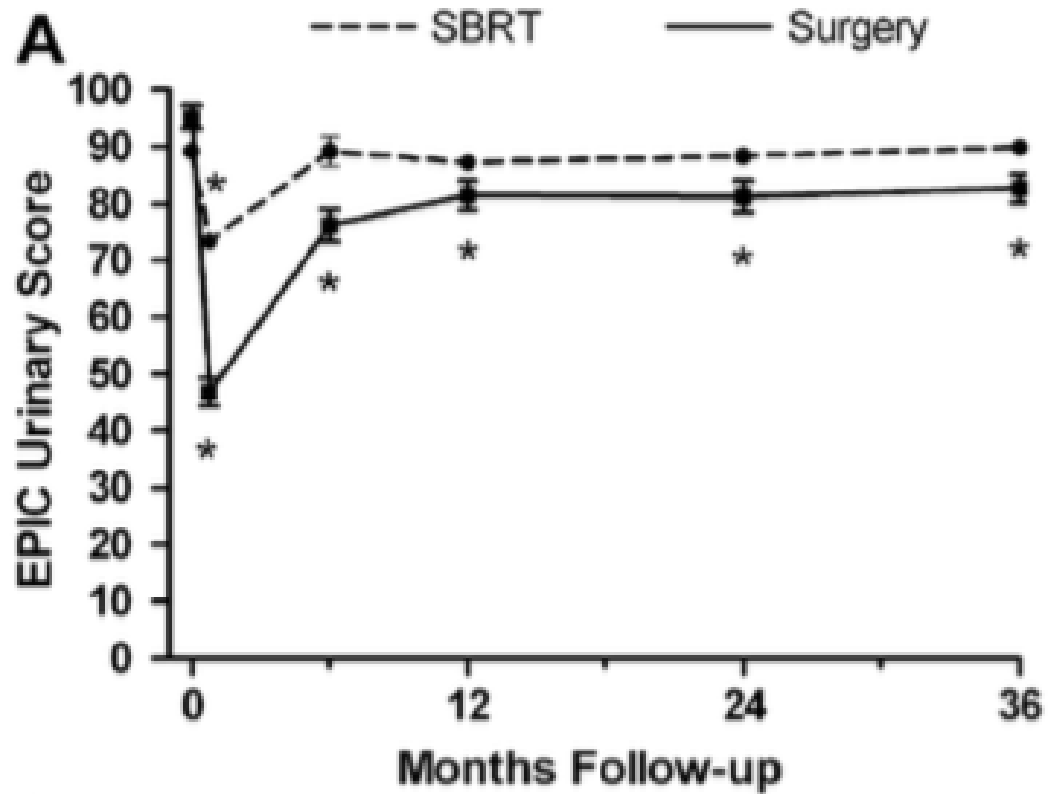
Pate VR et al BJUI, 2011

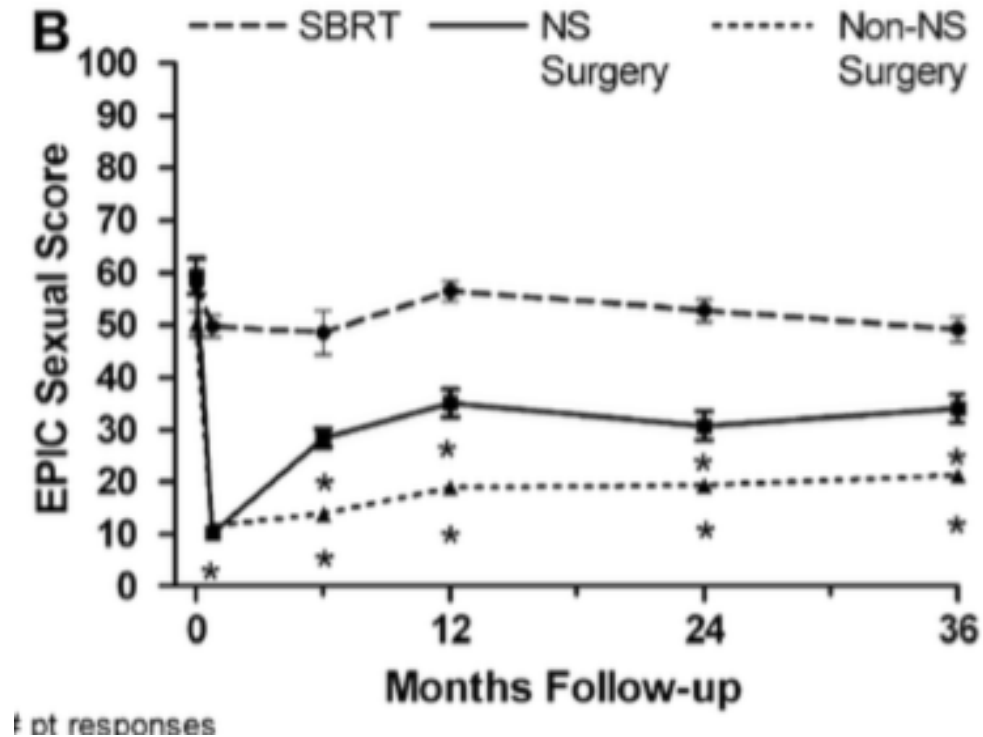
RESEARCH

Open Access

Comparison of quality of life after stereotactic body radiotherapy and surgery for early-stage prostate cancer

Alan Katz^{1*}, Montserrat Ferrer^{2,3,4}, José Francisco Suárez⁵
and Multicentric Spanish Group of Clinically Localized Prostate Cancer





Pacientes sin tratamiento hormonal
(274)

RESEARCH

Open Access

Patient-reported urinary incontinence following stereotactic body radiation therapy (SBRT) for clinically localized prostate cancer

Leonard N Chen^{1†}, Simeng Suy^{1†}, Hongkun Wang², Aditi Bhagat¹, Jennifer A Woo¹, Rudy A Moures¹, Joy S Kim¹, Thomas M Yung¹, Siyuan Lei¹, Brian T Collins¹, Keith Kowalczyk³, Anatoly Dritschilo¹, John H Lynch³ and Sean P Collins^{1*}

204 pacientes (George town)

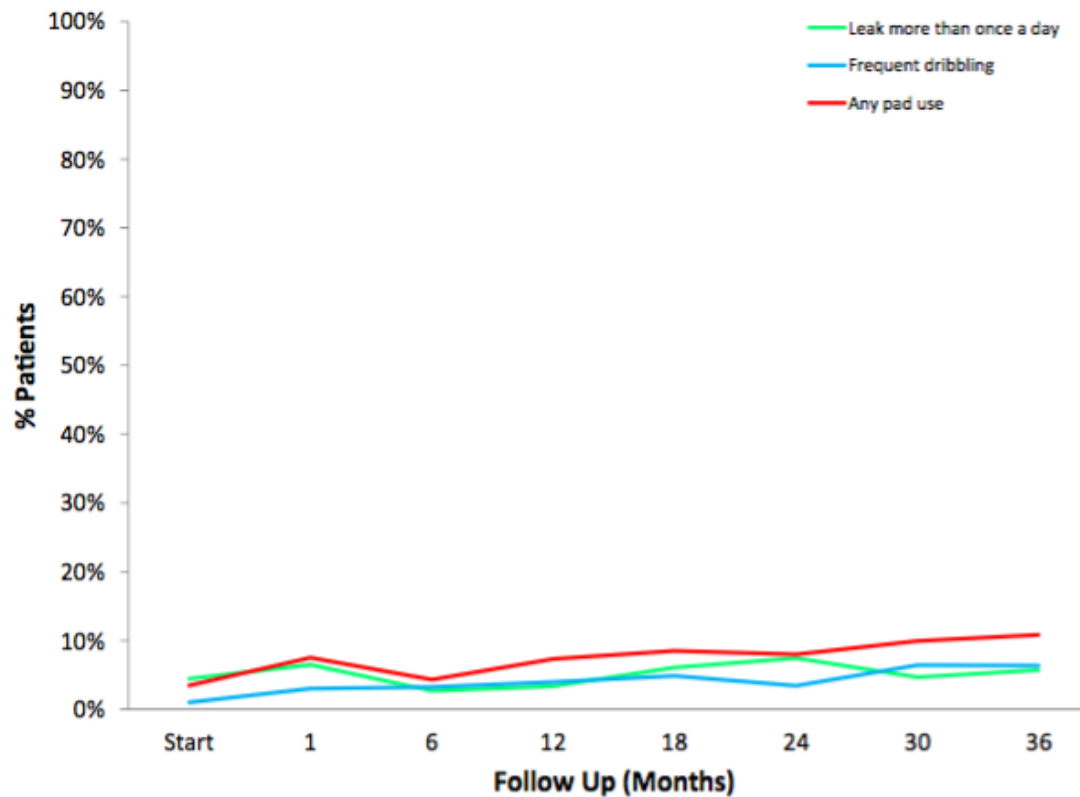
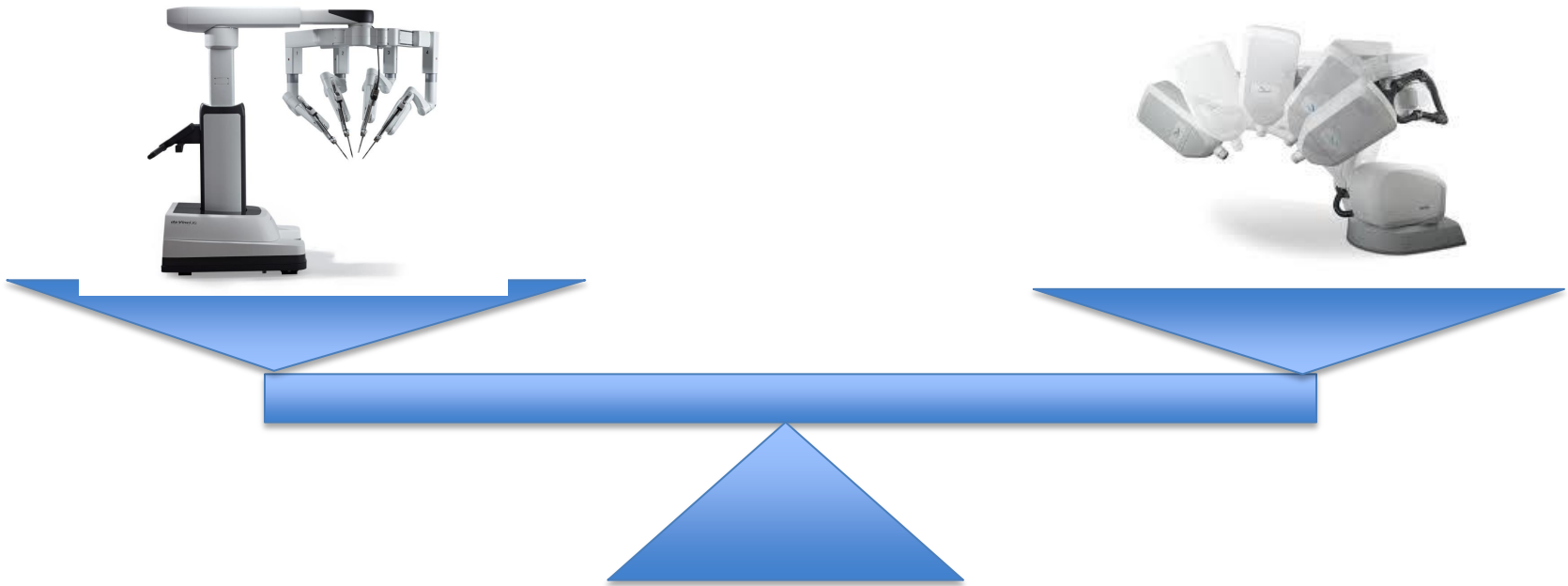


Figure 1 Differences in rates of urinary incontinence based on definition. Percentage of patients with leakage > 1 time a day, frequent dribbling or daily pad usage.

Table 3 Urinary Incontinence following SBRT for prostate cancer: patient-reported responses to EPIC-26 questions 1 (frequency of leakage), 2 (urinary control), 3 (pad usage), 4a (dripping or leaking urine) and UI domain scores

	Start	1 M	6 M	12 M	18 M	24 M	30 M	36 M
N=	204	200	186	178	165	175	171	157
Frequency of leakage								
Never leak	79.3%	69.5%	69.9%	69.1%	69.7%	68.0%	65.5%	64.3%
Leak ≤ 1 time/day	16.3%	24.0%	27.4%	27.5%	24.2%	24.6%	29.8%	29.9%
Leak >1 time/day	4.4%	6.5%	2.7%	3.4%	6.1%	7.4%	4.7%	5.7%
Urinary Control								
Total Control	72.9%	61.8%	61.8%	54.8%	57.6%	65.1%	59.1%	57.3%
Occasional dribbling	26.1%	35.2%	34.9%	41.2%	37.0%	31.4%	34.5%	36.3%
Frequent dribbling	0.0%	2.0%	1.6%	1.7%	3.0%	3.4%	5.8%	4.5%
No control	1.0%	1.0%	1.6%	2.3%	1.8%	0.0%	0.6%	1.9%
Pad Usage								
No pads	96.6%	92.5%	95.7%	92.7%	91.5%	92.0%	90.1%	88.2%
1 pad/day	3.0%	5.5%	3.2%	5.1%	6.1%	5.1%	6.4%	6.3%
≥ 2 pads/day	0.5%	2.0%	1.1%	2.2%	2.4%	2.9%	3.5%	4.5%
Bother-dripping/leaking								
No problem	75.9%	62.9%	68.3%	61.8%	64.2%	60.6%	60.8%	58.0%
Small problem	23.2%	34.5%	30.1%	34.8%	29.7%	33.7%	34.5%	35.7%
Mod-Big problem	1.0%	2.5%	1.6%	3.4%	6.1%	5.7%	4.7%	6.4%
UI Domain								
Mild (70-100)	90.1%	85.5%	86.6%	84.8%	81.8%	85.1%	83.6%	84.7%
Moderate (50-69)	7.4%	11.0%	11.8%	12.4%	14.5%	9.1%	11.1%	8.3%
Severe (0-49)	2.5%	3.5%	1.6%	2.8%	3.6%	5.7%	5.3%	7.0%

- No existe aun información randomizada de Cirugía Robótica versus SBRT



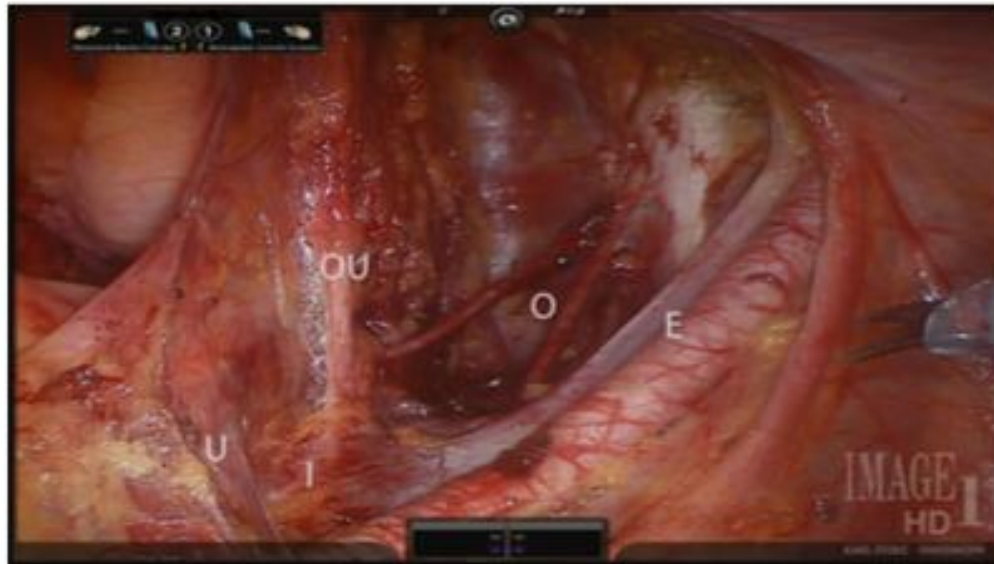
Consideraciones ante la opción en pacientes específicos.

Muchos pacientes en el momento del diagnóstico presentan además síntomas de uropatía obstructiva baja los que podrían agravarse con el uso de la SBRT sobre todo en pacientes con próstatas de mayor volumen (>50 cc)

Stereotactic body radiation therapy (SBRT) for prostate cancer in men with large prostates (≥ 50 cm³)
Janowski et al, Radiation Oncology 2014

- La cirugía robótica tiene la posibilidad de resolver la uropatía obstructiva además de ofrecer la curación del cáncer

- Las cirugía robótica puede tratar pacientes con distintos riesgos gracias a la posibilidad de controlar eventuales metástasis ganglionares



available at www.sciencedirect.com
journal homepage: www.europeanurology.com



European Association of Urology



Platinum Priority – Review – Prostate Cancer

Editorial by Francesco Montorsi on pp. 928–930 of this issue

The Role of Robot-assisted Radical Prostatectomy and Pelvic Lymph Node Dissection in the Management of High-risk Prostate Cancer: A Systematic Review

Bertram Yuh^{a,*}, Walter Artibani^b, Axel Heidenreich^c, Simon Kimm^d, Mani Menon^e,
Giacomo Novara^f, Ashutosh Tewari^g, Karim Touijer^d, Timothy Wilson^a, Kevin C. Zorn^h,
Scott E. Eggenerⁱ

- La SBRT podría ser usado en pacientes de mayor riesgo si se le agrega terapia de bloqueo hormonal la que ha demostrado una mejoría en el pronóstico en series con radioterapia convencional.

Edad

Tenemos poco seguimiento para saber los resultados de la SBRT a largo plazo

Las terapias de rescate para recidiva post cirugía son standar y con buen perfil de riesgo.

El rescate en la SBRT aunque poco común no tiene claros resultados .

En ausencia de trabajos randomizados uno debe basarse en la información disponible y discutir con el paciente en relación a sus perfil de riesgo y tolerancia a los efectos adversos esperables y los riesgos ante una eventual recidiva.

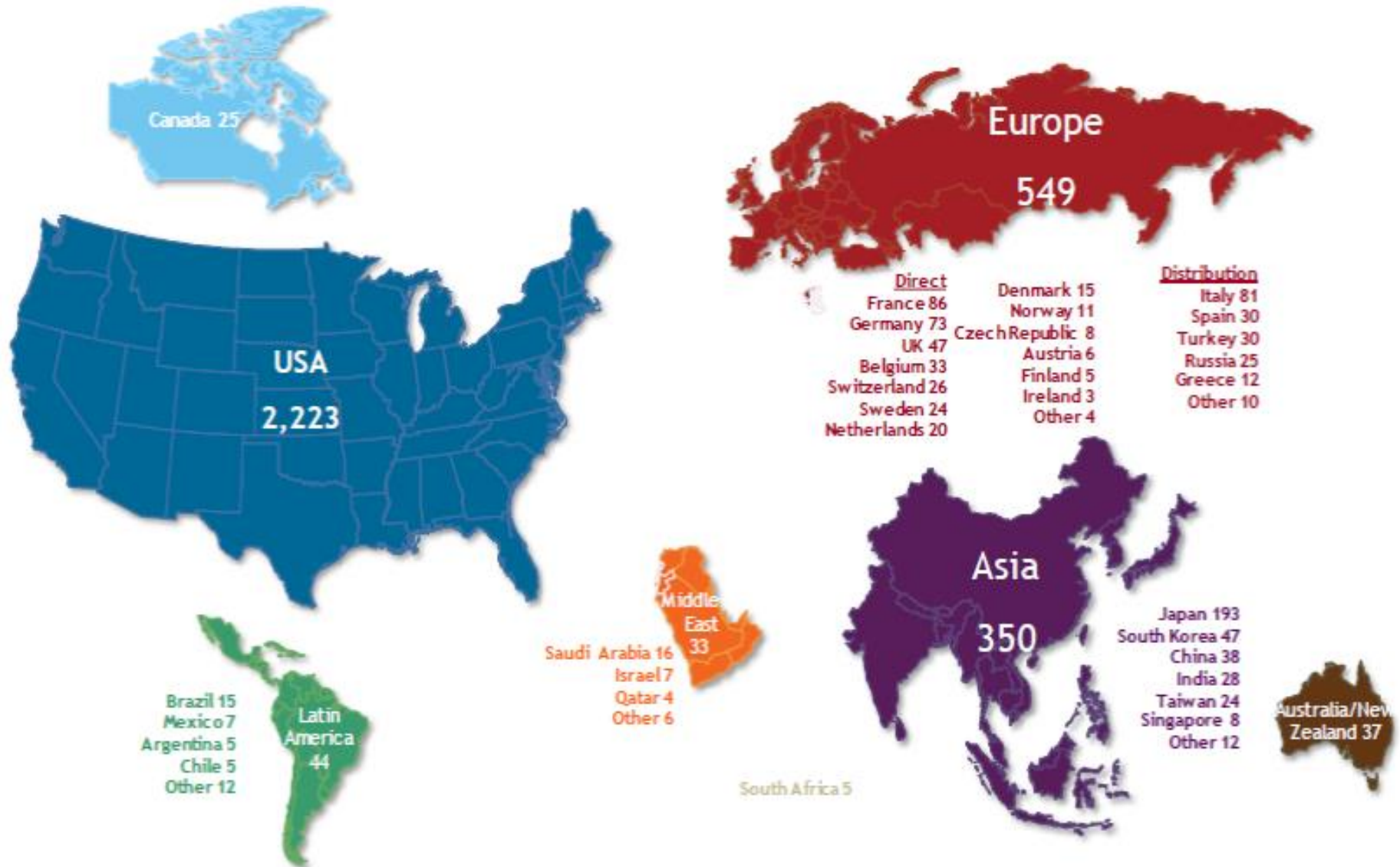


Centro Integrado Robótico Automatizado





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