Orthotopic bladder substitutes in female

Why we should do it!

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Declining use of orthotopic reconstruction worldwide – what went wrong?

Richard E. Hautmann

National trends in urinary diversion over the past 20 years: an Australian study

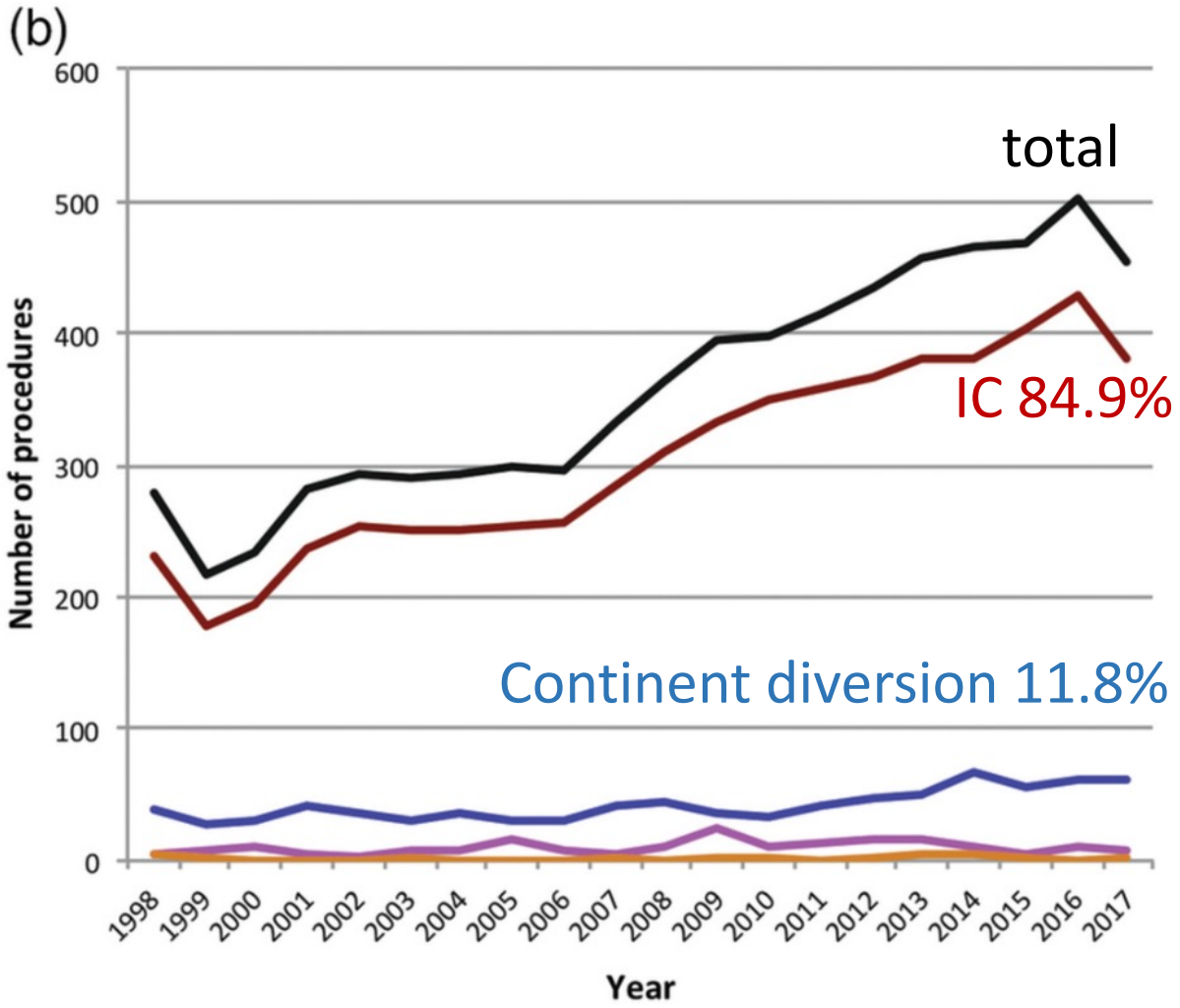

Table 1 Urinary diversion procedures subsidized by Medicare over the past 20 years

Type of urinary diversion	Male, *n* (%)	Female, *n* (%)	Total (%)
Ureterocutaneous	15 (0.2)	15 (0.2)	30 (0.4)
Ureterocolonic	139 (1.9)	70 (1.0)	209 (2.9)
Conduit	4287 (59.8)	1797 (25.0)	6084 (84.9)
Unilateral	391 (5.5)	193 (2.7)	584 (8.1)
Bilateral	3896 (54.4)	1604 (22.4)	5500 (76.8)
Continent reservoir (neobladder/pouch)	706 (9.9)	137 (1.9)	843 (11.8)
Total	5147 (71.8)	2019 (28.2)	7166

13.7% 6.7%

ANZ Journal of Surgery, First published: 15 April 2019, DOI: (10.1111/ans.15134)

Reasons against continent diversion in Women:

- Inferior oncological outcome
- Risk of urethral/local recurrence

- Inferior functional outcome

Survival after cystectomy:

- Multicenter: inferior (Messer 2014, Kluth 2014, Otto 2012)
- Singlecenter: no difference (Soave 2015, Pichler 2017, Mitra 2014, Stangl 2023, Marioti 2023)

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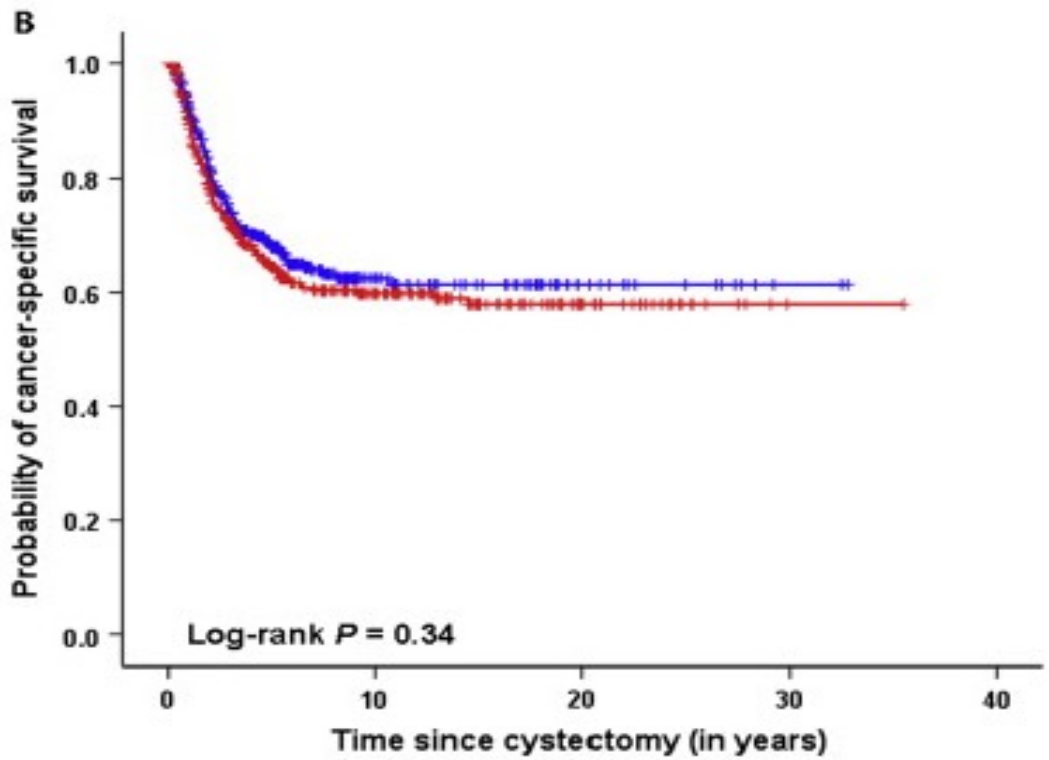
Urologic Oncology: Seminars and Original Investigations 32 (2014) 52.e1–52.e9

UROLOGIC ONCOLOGY

Original article

Effect of gender on outcomes following radical cystectomy for urothelial carcinoma of the bladder: A critical analysis of 1,994 patients

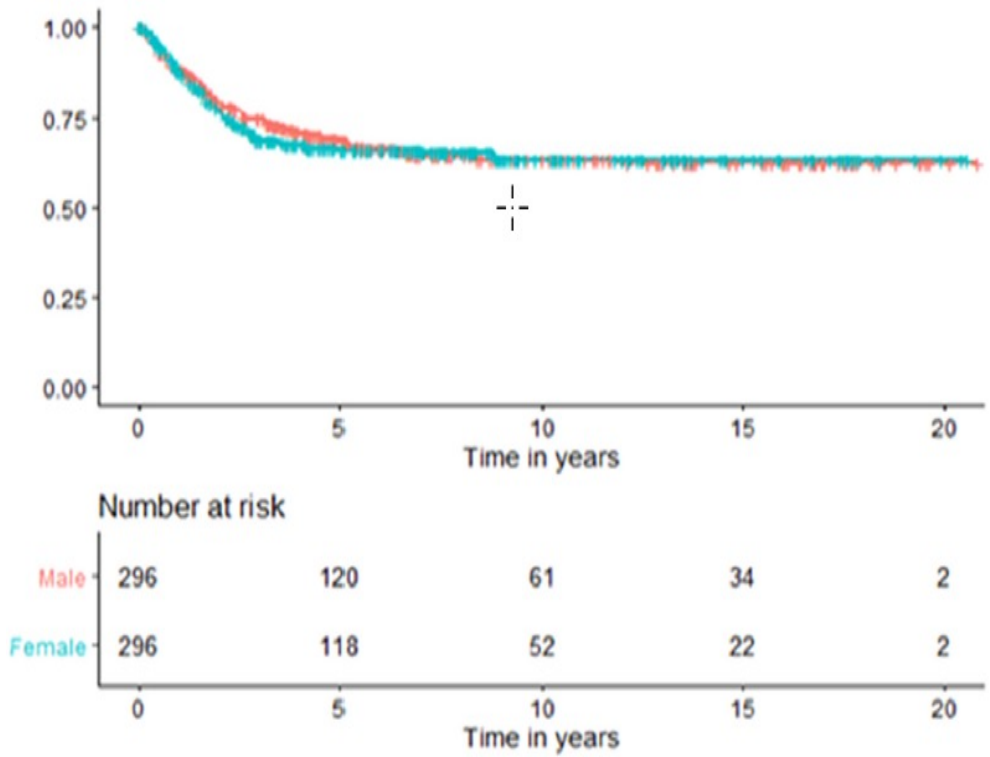
Anirban P. Mitra, M.D., Ph.D.[a,b], Eila C. Skinner, M.D.[c], Anne K. Schuckman, M.D.[d], David I. Quinn, M.D., Ph.D.[e], Tanya B. Dorff, M.D.[e], Siamak Daneshmand, M.D.[d,*]



Mitra et al. Urol Oncol 2014

Sex Does Not Affect Survival: A Propensity Score-Matched Comparison in a Homogenous Contemporary Radical Cystectomy Cohort

Fabian P. Stangl,[1,#] Oliver D. Buehler,[1,#] Patrick Y. Wuethrich,[2] Marc A. Furrer,[1] Fiona C. Burkhard[1]



Stangl et al. Clin Genitourin Cancer 2023

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Check for updates

UROLOGIC ONCOLOGY

Urologic Oncology: Seminars and Original Investigations 38 (2020) 639.e1–639.e9

Clinical-Bladder cancer

Impact of sex on response to neoadjuvant chemotherapy in patients with bladder cancer

Review

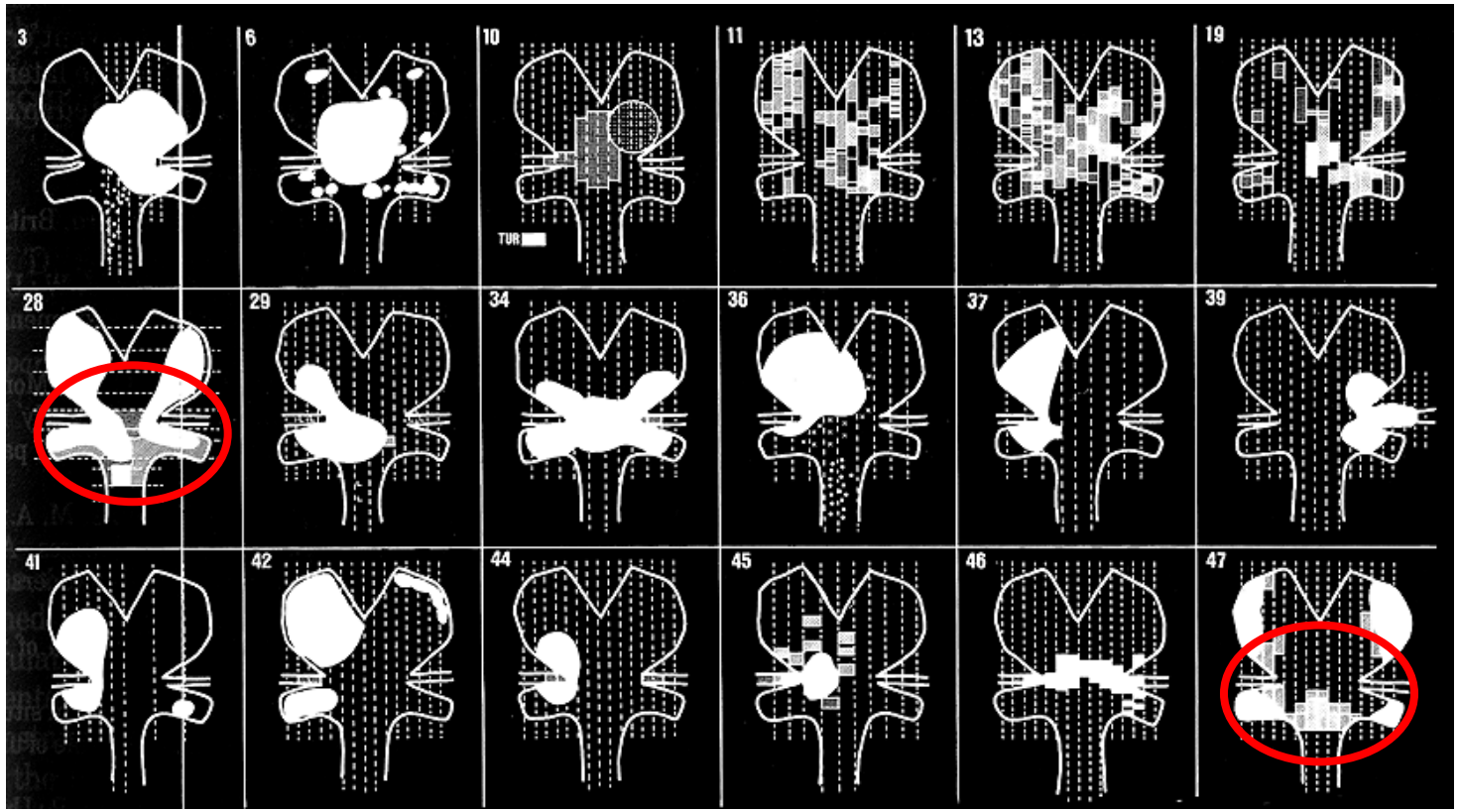
Check for updates

Impact of Gender on Chemotherapeutic Response and Oncologic Outcomes in Patients Treated With Radical Cystectomy and Perioperative Chemotherapy for Bladder Cancer: A Systematic Review and Meta-Analysis

Conclusion: Our study generates the hypothesis that NAC equalizes the preoperative disparity in pathologic stage between males and females suggesting a possible differential response between sexes. This might be the explanation underlying the comparable survival outcomes between sexes despite females presenting with more advanced tumor stage

Kimura et al. Clin Genitourin Cancer 2019

Urethral involvement in female bladder cancer



Urethral involvement 7-13%

only when bladder neck positive

Coloby et al. J. Urol 1994
Stein et al. Urology 1998

Urethral recurrence:

Urethral recurrence rate 2 %

- solitary in 0.6%

Risk factors:

- positive urethral margin
- bladder neck involvement
- trigonal tumor not a risk factor

Gakis et al. Urol Oncol 2015
Khanna et al. J Urol 2021
Stein et al. J Urol 2008

Functional outcome men

Table 3 Functional studies in men undergoing RC and orthotopic reconstruction.

Reference	Number of patients (% male)	Median follow-up, months	Continence rate			CISC needed (%)
			Day, %	Night, %	Time of assessment*, years	
Barre, P; 1996 [16]	110 (100)	32	93	74	NR	1
Cancrini, A; 1996 [17]	96 (93)	28	98	74	1	NR
Elmajian, D; 1996 [18]	295 (100)	42	87	86	1	8
Hautmann et al. 1999 [19]	363 (100)	57	96	95	NR	6
Steven et al. 2000 [20]	166 (100)	32	98	80	3	NR
			100	95	5	NR
Abol-Enein, H; 2001 [21]	450 (78)	38	93	80	NR	NR
Madersbacher et al. 2002 [22]	176 (100)	95	92	70	5	NR
Carrion, R; 2004 [23]	138 (82)	41	91	70	NR	12
Sevin, G; 2004 [24]	124 (100)	NR	92	90	4	NR
Stein, J; 2004 [25]	209 (81)	33	87	72	NR	25**
Total number	2127 (92%)		93	83		

*NR, not reported; *Time point at which all patients were assessed after surgery; **20% of men and 43% of women.*

87-100% 74-95% 1-20%

Lee et al. BJUI 2013

Functional outcome women

Author	Year	No. of patients	Median follow-up (months)	Median age (years)	Definition of continence	Continence (daytime, %)	Continence (night-time, %)	Clean intermittent catheterization (%)
Stenzl *et al.* [13]	2001	83	24	63	≤1 safety pad/12 h	82	72	11
Granberg *et al.* [19]	2008	49	29	62	No use of pads	90	57	35
Ali-El-Dein[20]	2008	177	54	51	No pads/no medication	89	70	16
Stein *et al.* [21]	2009	56	69	69	Questionnaire-based	87	66	61
Jentzmik *et al.* [22]	2012	50	73	61	≤1 pad/12 h	82	77	58
Anderson *et al.* [23]	2012	49	37	61	≤1 pad/12 h	57	45	31
Pichler *et al.* [24]	2013	39	37	66	≤1 pad/24 h	84	84	20
Rouanne *et al.* [25]	2014	46	68	65	Questionnaire-based	74	71	31

BCI, Bladder Cancer Index Questionnaire.

57-90% 45-84% 11-61%

Gakis et al. Curr Opin Urol, 2015

Degree of Preservation of the Neurovascular Bundles During Radical Prostatectomy Urinary Continence 1 Year after Surgery.

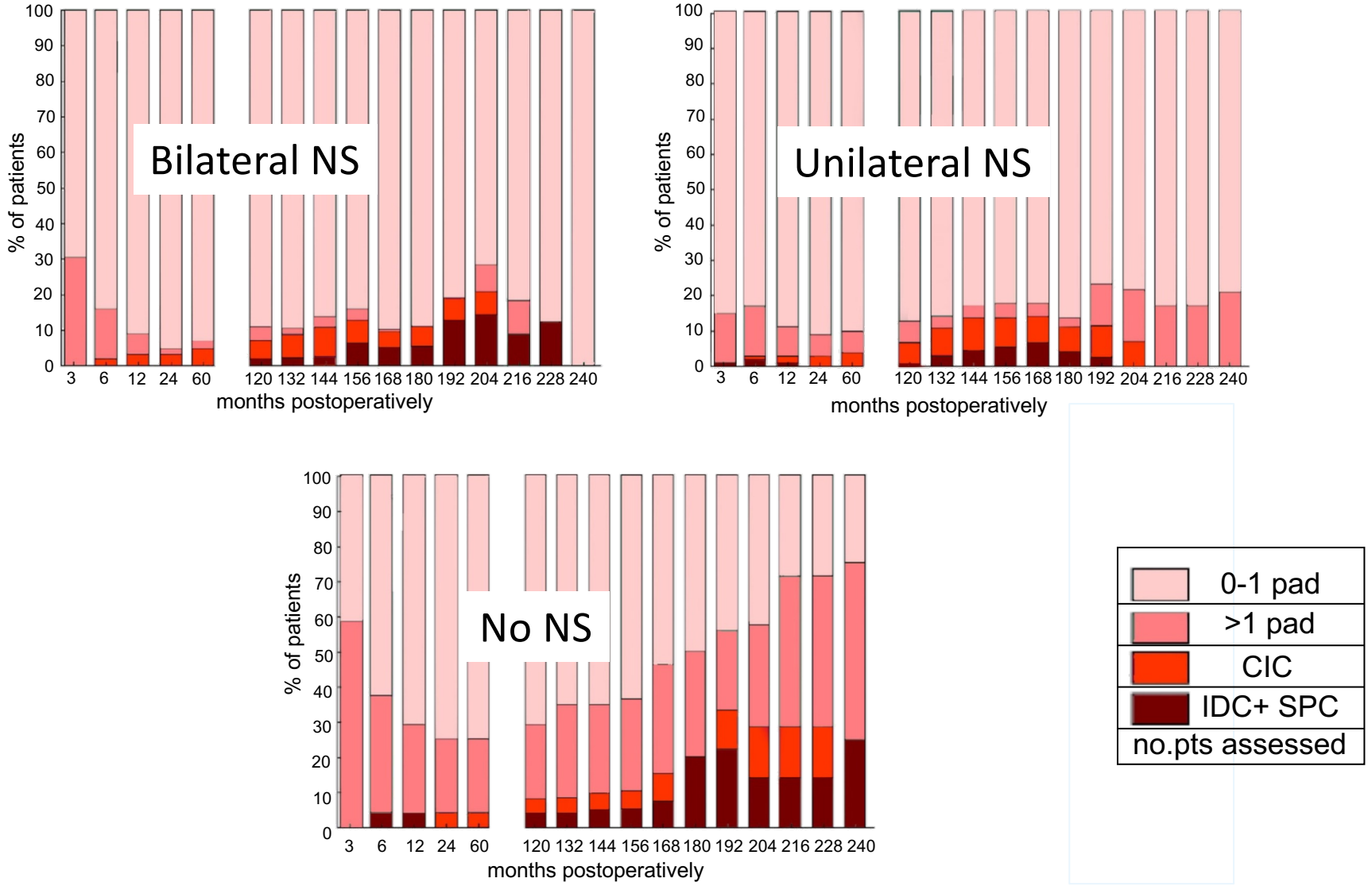
Design, setting, and participants: More than 100 surgeons in 14 centers prospectively collected data …. , data were available for 3379 men.

Results and limitations: A strong association was found between the degree of bundle preservation and urinary incontinence 1 yr after surgery…...
For the men in the six groups, ordered according to the degree of preservation, we obtained the following relative risks (95% confidence interval [CI]): 1.07 (0.63–1.83), 1.19 (0.77–1.85), 1.56 (0.99–2.45), 1.78 (1.13–2.81), 2.27 (1.45–3.53), and 2.37 (1.52–3.69). In the latter group, no preservation of any of the bundles was performed. The pattern was similar for preoperatively impotent men and for elderly men….

Conclusions: We found that the degree of preservation of the two neurovascular bundles during radical prostatectomy predicts the rate of urinary incontinence 1 yr after the operation….

Steineck et al. Eur Urol 2015

Nerve sparing surgery: Continence day



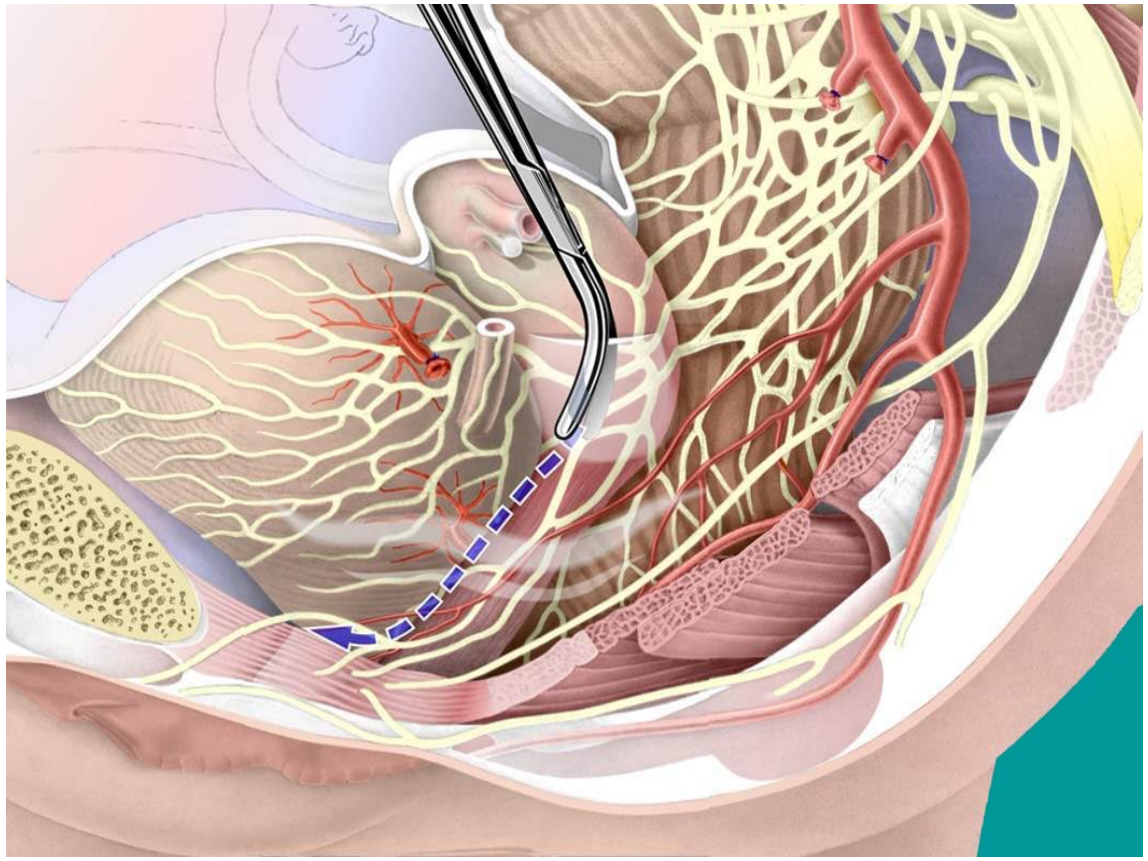
Furrer et al. BJUI 2018

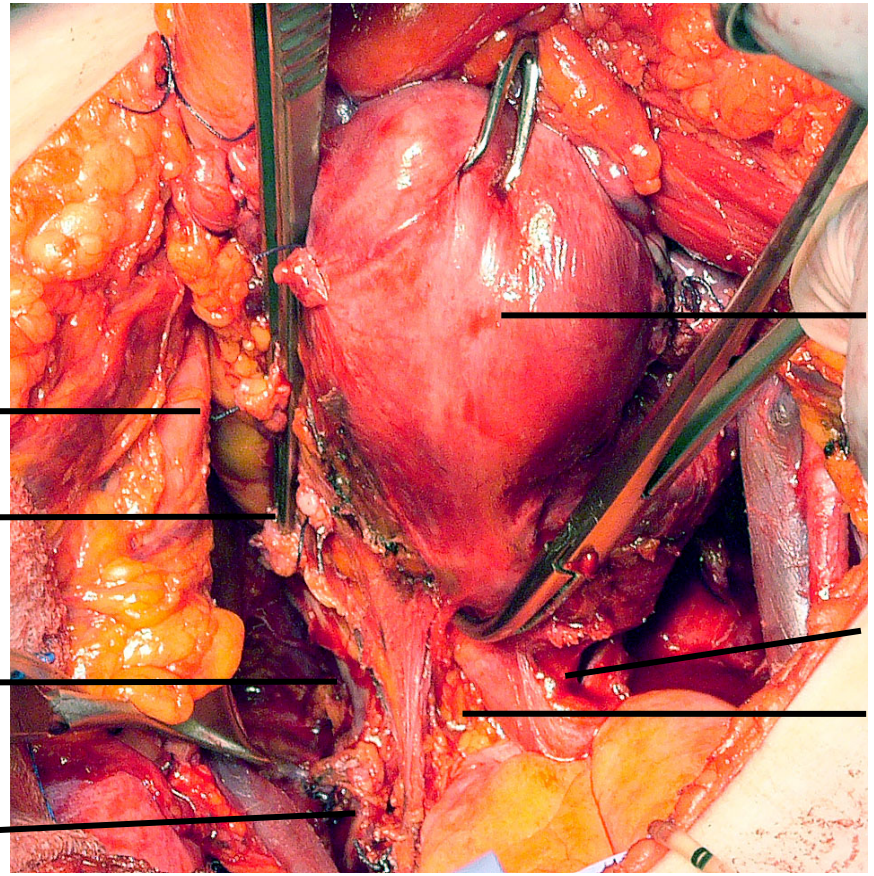
Conventional versus nerve-sparing radical surgery for cervical cancer: a meta-analysis

Hee Seung Kim[1,2], Keewon Kim[3], Seung-Bum Ryoo[4], Joung Hwa Seo[5], Sang Youn Kim[6], Ji Won Park[4], Min A Kim[7], Kyoung Sup Hong[8], Chang Wook Jeong[9], Yong Sang Song[1,2,10]; On behalf of FUSION Study Group*

Urinary incontinence and frequency were less common after nerve-sparing radical surgery, supporting the efficacy of autonomic nerve preservation by NSRS on urinary function.

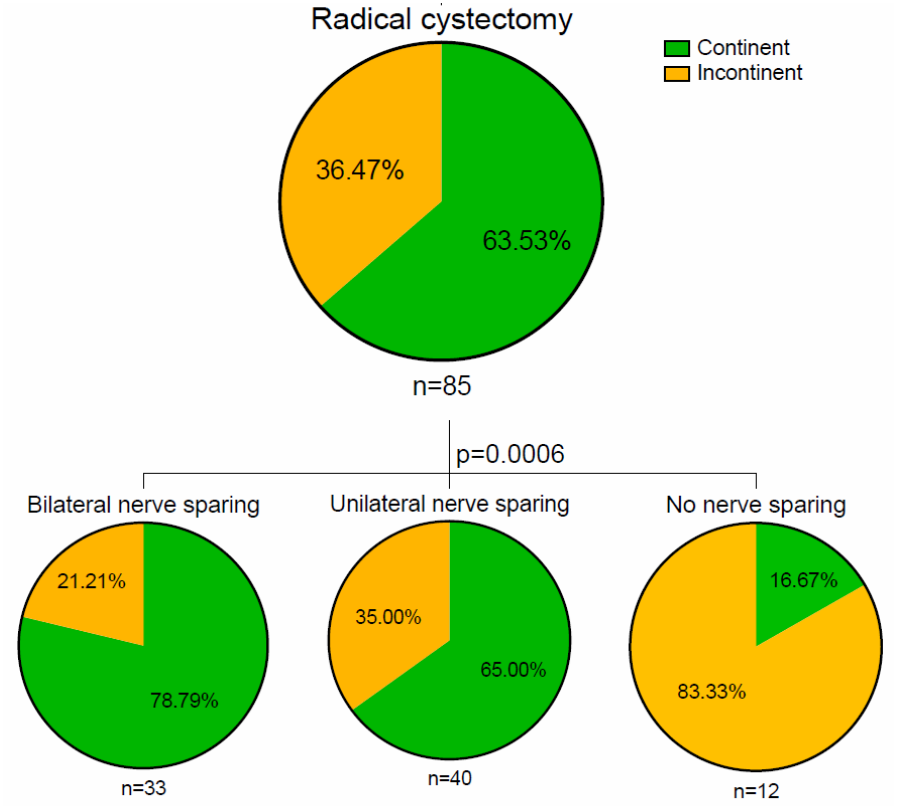
J Gynecol Oncol, 2015



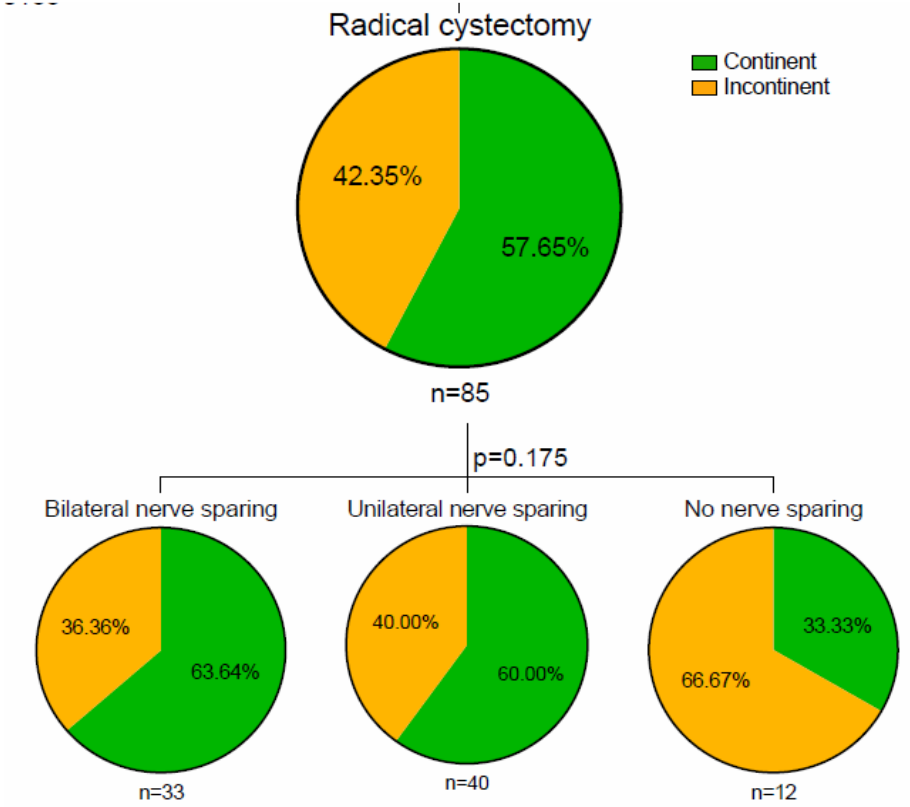

Uterus
ligated supraves. artery
ligated ureter
vaginal lumen
pelvic plexus
vaginal wall
hypogastric nerve

Continence and attempted nerve sparing cystectomy in females

Daytime



Nighttime



Gross T et al. BJU Int. 2018

Reproductive organ involvement in female bladder cancer

	No. Patients (%)
Involvement of gynecologic tract by urothelial carcinoma	11 (5)
Sites of gynecologic involvement	
Vagina	6 (2.7)
Uterus	4 (1.8)
Cervix	3 (1.3)
Adnexal soft tissue	3 (1.4)
Ovary	2 (0.9)
Fallopian tube	1 (0.5)
Pathologic stage of patients with urothelial carcinoma spread to gynecologic tract	
pT4a, N2	5
pT4a, N1	3
pT4a, N0	2
pT3a, N1, M1	1

UC 5-7.5%

Risk factors:

- Palpable mass
- Hydronephrosis
- Positive lymph nodes

Tran et al., Int J Gyn Path, 2017
Djaladat et al., J.Urol, 2012

Functional outcome ROSPC women

Reproductive organ sparing, genital organ sparing, pelvic organ sparing

References	Case, *n*	Type of diversion	Time analysed, months	Duration of follow-up, months, mean (range) or mean (SD)	Type of measurement	Daytime continence rate, % or *n/N*)	Night-time continence rate, % or *n/N*	Self-catheterisation rate, %
Chang et al. [14]	21	Neobladder	6–12	12 (1–36)	Pad-test	71	NR	9.5
Ali-El-Dein et al. [15]	13	Hautmann neobladder	NR	72 (37–99)	Self-impression	13/13	12/13	NR
Horenblas et al. [17]	3	Neobladder,	6–12	42 (24–72)	Self-impression	2/3	2/3	NR
Koie et al. [18]	30	'U'-shaped neobladder	6–12	41 (4–98)	Pad-test	93.3	80	0
Kulkarni et al. [19]	14	Hautmann neobladder	6–12	24.5 (12–65)	Pad-test	9/14	7/14	29
Nesrallah et al. [20]	29	'J'-shaped neobladder	1–6	37.5 (14-96)	Self-impression	97	86	10
Anderson et al. [21]	51	Neobladder	6–12	37.2 (37.2)	Pad-test	57.1	42.9	30.6
Rouanne et al. [23]	46	'Z'-shaped neobladder	6–12	68 (6–204)	Pad-test	64.5	71.0	29
Gross et al. [24]	73	Neobladder	>12	64 (12–227)	Self-impression	58.9	NR	NR
Wishahi et al. [25]	13	'U'-shaped neobladder	>12	132 (60–180)	Pad-test	69.3	NR	30.7
Moursy et al. [26]	18	Hautmann neobladder	3, 6, 12	70 (39–95)	Self-impression	100	89	22

NR, not reported.

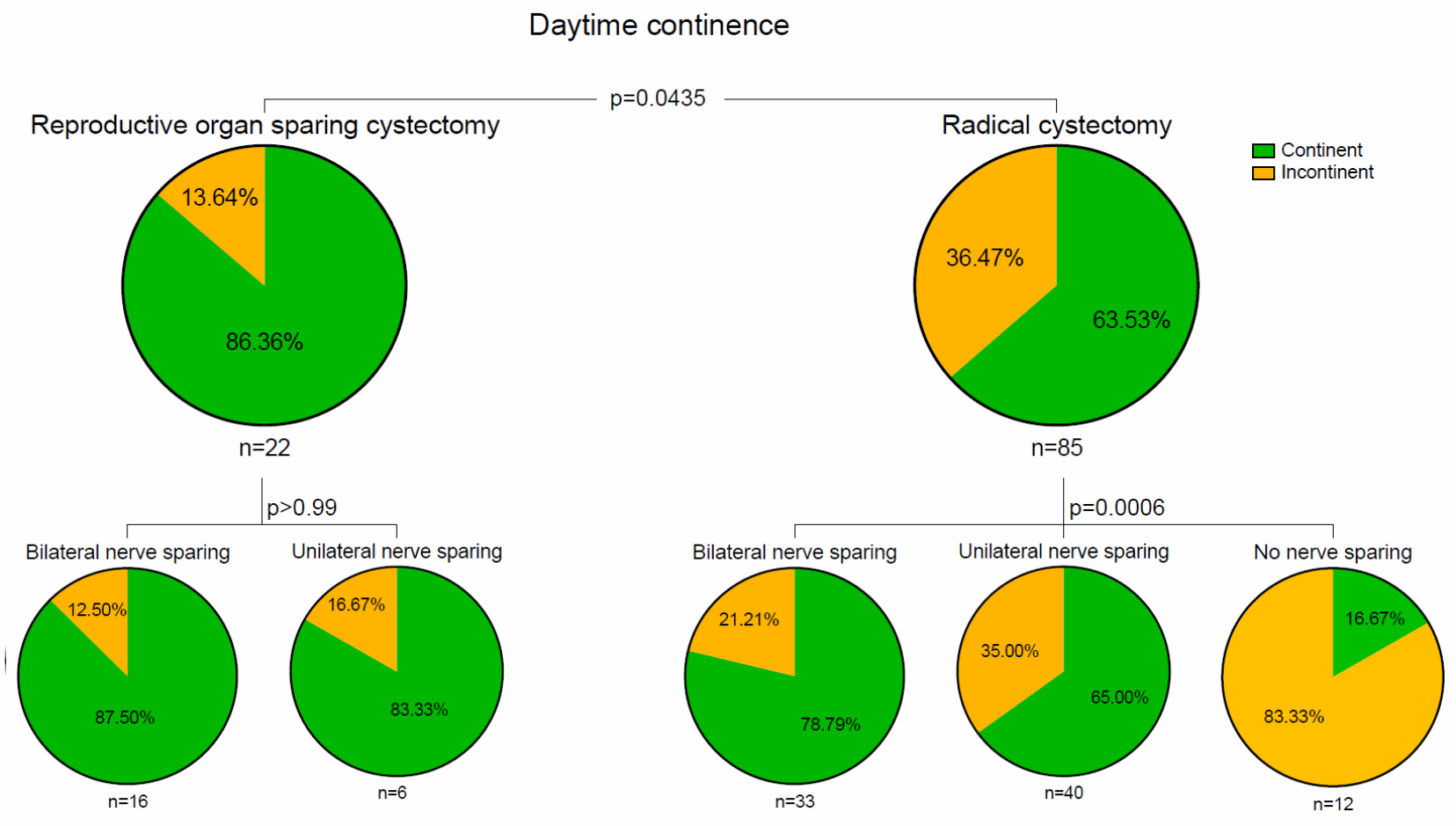
Veskimäe et al BJUI 2017

Functional outcome

Daytime continence:	57 – 100% (77-97%)
Nighttime continence:	50 – 100% (66-86%)
Intermittent self catheterisation:	0 – 31% (10 – 61%)
Sexual function:	improved ? limited data

Veskimäe et al. BJUI 2023
Hautmann RE et al. ICUD-EAU International Consultation on Bladder Cancer 2012: Urinary diversion. Eur Urol 2013

Continence and attempted nerve sparing cystectomy in females



ISC 12% in both groups

Gross et al. BJU Int. 2018

BJUI
BJU International

Review | Open Access

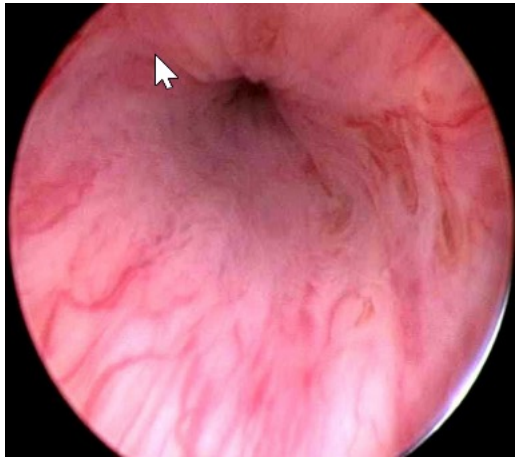
Urinary function in female patients after traditional, organ-sparing and nerve-sparing radical cystectomy for bladder cancer: a systematic review and pooled analysis

	Daytime	Nighttime	ISC
Traditional RC	75.2%	59.5%	27.6%
ROPRC	79.3%	70.7%	20.6%
NSRC	71.2%	71.7%	16.8%

Laukhtina et al . BJUI 2023

How to avoid voiding problems

- Resection of the proximal 0.5 – 1 cm of urethra



- Nerve-sparing or organ-sparing approach
- Prevent posterior displacement (round ligaments/omentum)
- Check for and correct prolapse

Stenzl et al. Crit Rev Oncol Hematol 2003
Zharan et al. Urol Oncol 2017

Review

Influence of Simple and Radical Cystectomy on Sexual Function and Pelvic Organ Prolapse in Female Patients: A Scoping Review of the Literature

Marcia Voigt MD, Kshipra Hemal BS, Catherine Matthews MD

Despite the high risk for sexual dysfunction and pelvic organ prolapse after cystectomy and urinary diversion, a paucity of data and attention to these issues exists in women.
This is in stark contrast to the attention paid to male sexual function undergoing similar urologic procedures.
Whereas consideration of surgical approach and technique on male outcomes is widespread, female outcomes are lacking in comparison.

Voight et al. Sex Med Rev 2019

Climacteric. 2016 Dec;19(6):546-550. Epub 2016 Sep 20.

Female sexual dysfunction post radical cystectomy and urinary diversion.

Zahran MH[1], Fahmy O[2,3], El-Hefnawy AS[1], Ali-El-Dein B[1].

Loss of sexual desire and orgasm disorders were the most frequently reported (49% and 39%). Dyspareunia and vaginal lubrication disorders were reported in 25% and 9.5%, respectively.

The incidence of sexual dysfunction was 10% in 30 patients receiving genital- or nerve-sparing cystectomy vs. 59% receiving conventional cystectomy.

Bladder Cancer

Health-related Quality of Life for Patients Undergoing Radical Cystectomy: Results of a Large Prospective Cohort

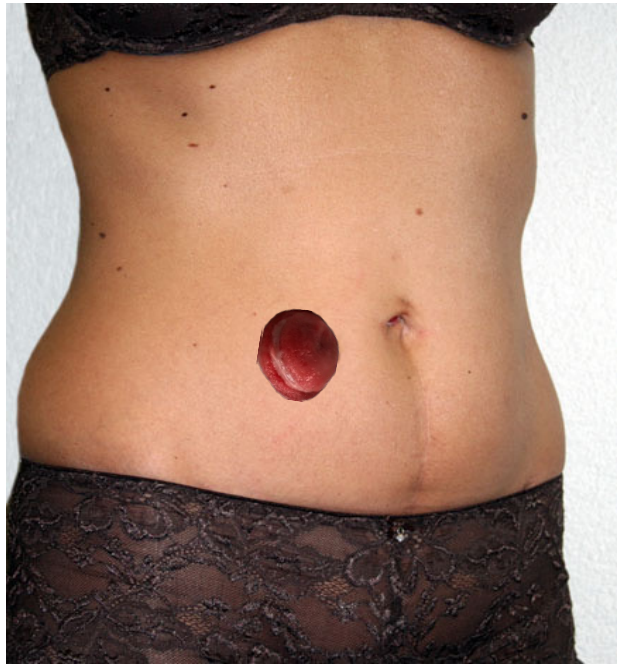
Matthew B. Clements[a], *Thomas M. Atkinson*[b], *Guido M. Dalbagni*[a], *Yuelin Li*[b], *Andrew J. Vickers*[c], *Harry W. Herr*[a], *S. Machele Donat*[a], *Jaspreet S. Sandhu*[a], *Daniel S. Sjoberg*[c], *Amy L. Tin*[c], *Bruce D. Rapkin*[d], *Bernard H. Bochner*[a,*]

RC patients reported favorable HRQOL recovery within 24 months in most areas other than body image (ileal conduits) and sexual function (both).

Importantly, large measurable decreases in scores were not reported by 3 months after RC.

Clements et al. Eur Urol 2022

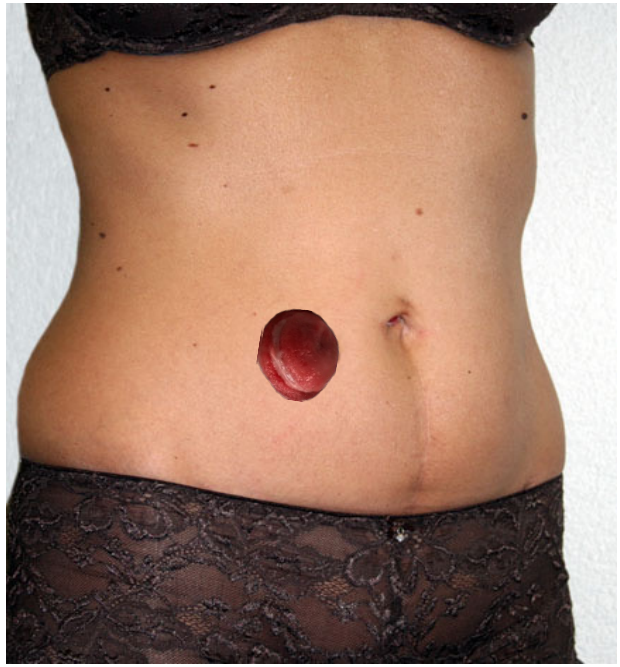
Body image



Ileal conduit

Orthotopic
Bladder substiute

Body image

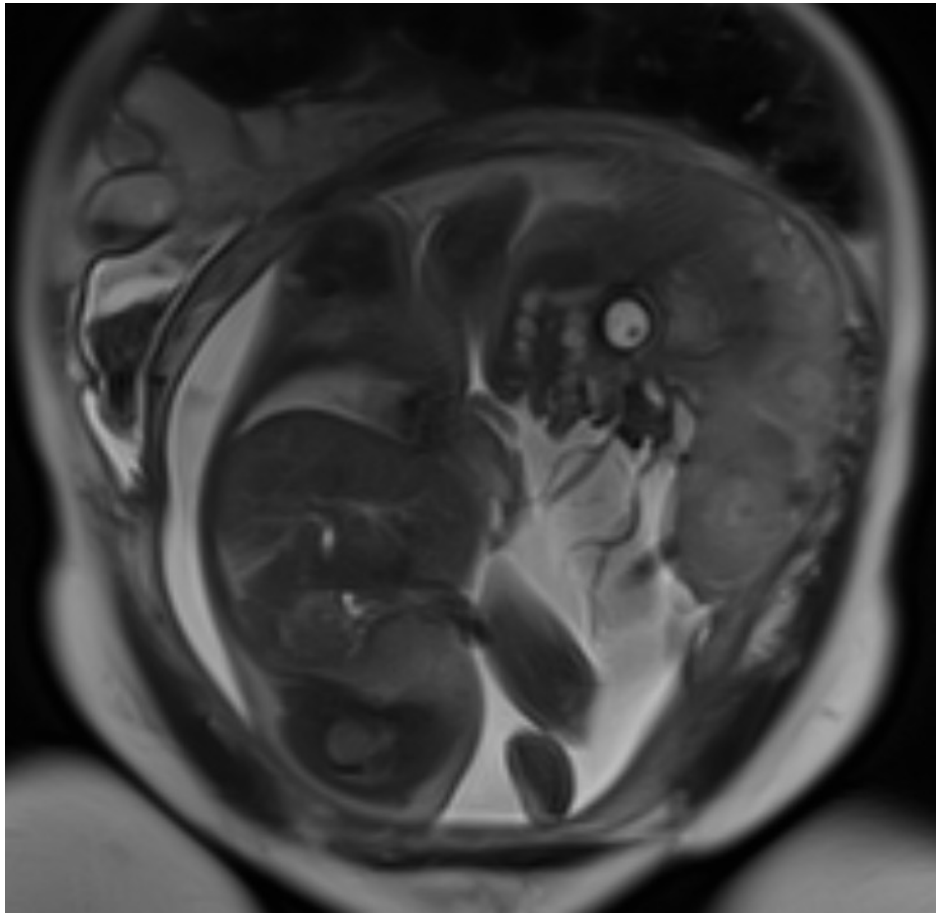


Ileal conduit

Orthotopic
Bladder substiute

Heterotopic
Bladder substitute

Pregnancy after organ sparing cystectomy



Summary

Orthotopic bladder substitution in women :

Good outcome with:

- Patient selection
- Nerve- or organsparing technique
- Meticulous surgery

So do it!

Pregnancy after cystectomy

Thank you