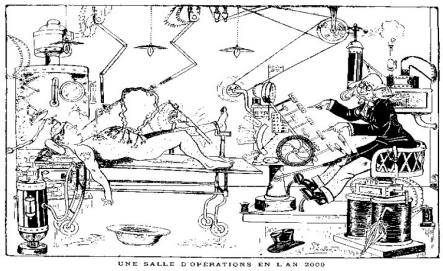
Vollständig Roboterassistierte Zystektomie und Harnableitung: Bringt sie Vorteile ?

Pflegekongress Suhr, 23.9.21



UNE SALLE D'OPERATIONS EN L'AN 2000

A French comic drawing from 1914 showing how the artist envisioned the operating room of year 2000

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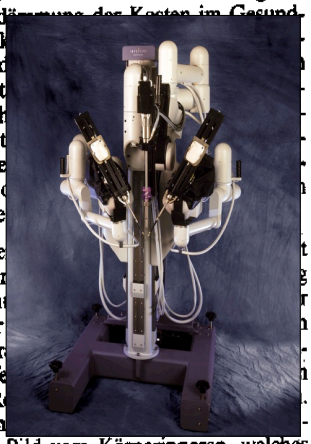
Roboter entfernt Prostata

NZZ 7.9.02

Schweizer Premiere am Universitätsspital

bto. Beides passt zwar schlecht zusammen, beides ist aber Realität: Während hier über Möglichkeiten zur Eind[illegible] heitswesen disk[illegible] schritt der Med[illegible] Universitätsspit[illegible] gangenen Woch[illegible] ten fünf Prost[illegible] zung eines Ope[illegible] den. Diese W[illegible] über erste Erke[illegible]

Auch bei de[illegible] der Roboter ei[illegible] arbeitet, aber n[illegible] ihr unmittelbar [illegible] USZ der Oper[illegible] tionstisch entfe[illegible] dreiarmigen R[illegible] Der Chirurg h[illegible]



dimensionales Bild vom Körperinneren, welches aus den Bildern von zwei Kameras an den Roboterarmen erzeugt wird.

Geräten allein. Weil an die Stelle des bisherigen zweidimensionalen Bildes ein dreidimensionales [illegible] sei es einfacher, feine Strukturen im Körper [illegible] nen. Das sei insbe- [illegible] r Ziele Kontinenz- [illegible] Bei der totalen Pro- [illegible] den Roboter am [illegible] wie möglich einset- [illegible] Jahren kann gesagt [illegible] inische Erfolg der [illegible] im Vergleich zur [illegible] uerst muss der wei- [illegible] n einer genügend [illegible] tersucht sein.

[illegible] icht billig: Das Ge- [illegible] onen Franken, und [illegible] ich zu einem bisher [illegible] insatz Mehrkosten [illegible] n. USZ-Direktorin [illegible] er Hauri halten den

Ausbau aber für durchaus gerechtfertigt. Erstens könnten die Patienten schneller wieder in den Arbeitsprozess einsteigen, und zweitens sei davon

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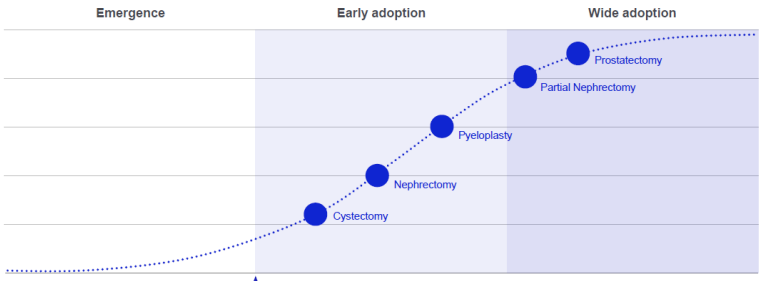
The da Vinci system use in Urology



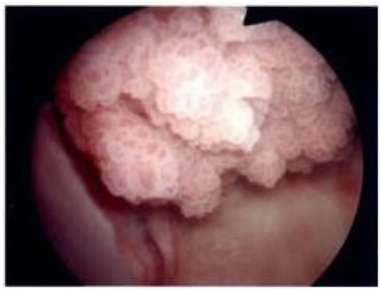
"Crossing the Chasm" starts when adoption reaches

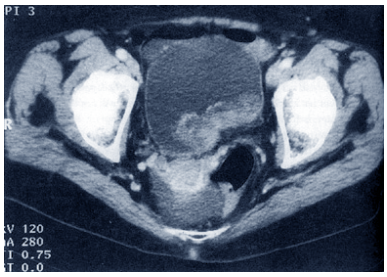
16%[2,3]

[1] Intuitive internal estimates. Data on file.
[2] Crossing the Chasm, Geoffrey Moore
[3] Accelerating Diffusion of Innovation: Maloney's 16% Rule

Source: Intuitive Surgical

Diagnostik





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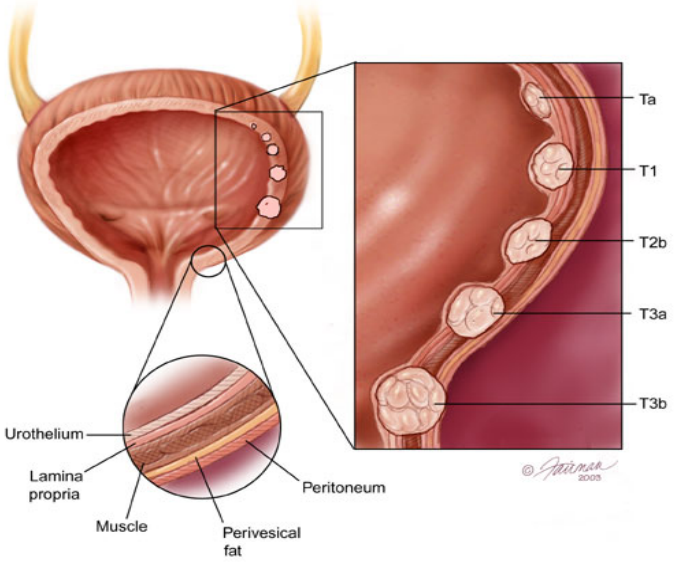
Blasen-Tumorstadien



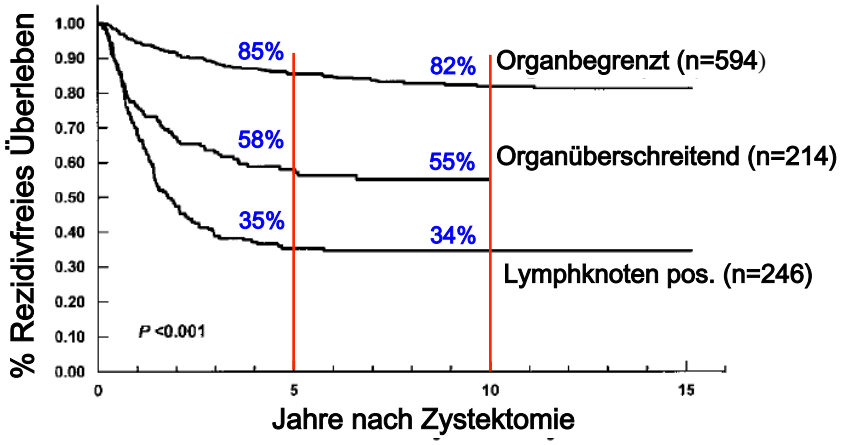
2 Indikation zur Zystektomie

Muskelinvasives Harnblasenkarzinom

Schrumpfblase (entzündl., radiogen, etc.)

neurogene Harnblasenentleerungsstörungen

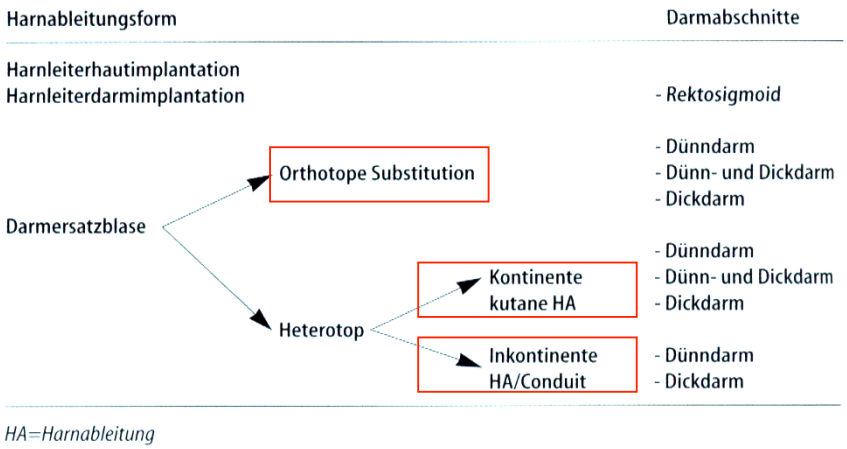
Rezidivfreies Überleben



Stein et al. JCO 19(3):666-675, 2001

3 Harnableitung

1. Effektive Ableitung des Urins
2. Schutz des oberen Harntraktes
   - Harntransportstörungen (Obstruktion)
   - Reflux
   - Infektion
3. Funktionalität und Lebensqualität



3 Extrakorporale vs intrakorporale Technik

Extrakorporal: "Hilfslaparotomie"

Intrakorporal: ganzer Eingriff laparoskopisch

Resultate KSW 3/2011- 7/2020

- Overall **128 patients** were eligible for analysis
- Patients treated with RARC and ECUD between 03/2011 and 01/2015
- Patients treated with RARC and ICUD between 02/2015 and 07/2020

- Functional cystectomies, tumours with origin outside the bladder and salvage cystectomies were excluded
- **41 patients with ECUD**
- **87 patients with ICUD**

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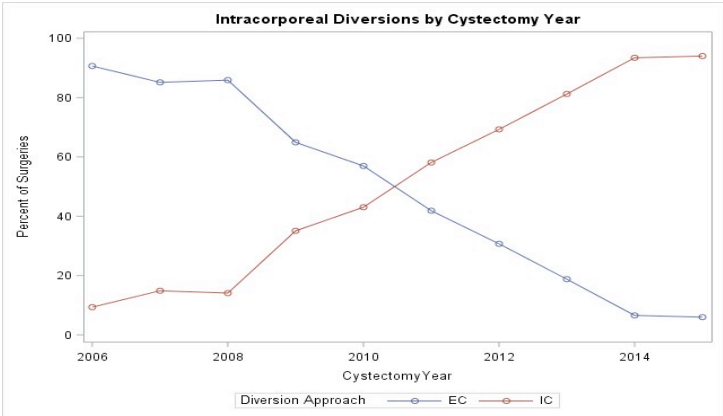
Entwicklung von extra- und intrakorporaler Ableitung Karolinska- Stockholm



Source: P. Wiklund, with courtesy

KSW-series

Preoperative patient characteristics n=128		
	ECUD (N=41)	**ICUD (N=87)**
Gender, n (%)		
Women	7 (17%)	4 (4.5%)
Men	34 (83%)	83 (95.5%)
Type of diversion, n (%)		
Neobladder	13 (31.7%)	28 (32.2%)
Ileum condiut	28 (68.3%)	59 (67.8%)
Neoadjuvant Treatment, n (%)	1/41 (2.4%)	17 (19.5%)
Clinical Tumour Stage, n (%)		
cTis	6 (14.6%)	5 (5.7%)
cT1/cTa	18 (44%)	34 (39.1%)
cT2	16 (39%)	46 (52.9%)
cT3/4	1 (2.3%)	2 (2.3%)
Concomitant CIS	14 (34%)	37 (42.5%)

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Postoperative patient characteristics n=128		
	ECUD (N=41)	**ICUD (N=87)**
Pathological Tumour Stage, n (%)		
pTis	3 (7.3%)	10 (11.5%)
pT0	2 (4.9)	2 (2.3%)
pTa / pT1	12 (29.3%)	23 (26.5%)
pT2	12 (29.3%)	21 (24.1%)
pT3	8 (19.5%)	27 (31%)
pT4	4 (9.7%)	4 (4.6%)
Concomitant CIS	16 (39%)	43 (49.4%)
Nodal Status n (%)		
pN0	33 (80.5%)	71 (81.6%)
pN1	1 (2.4%)	6 (6.9%)
pN2	6 (14.7%)	8 (9.2%)
pN3	1 (2.4%)	2 (2.3%)
Number of resected Lymphnodes, n	18 (13-22)	21 (16-27)
Surgical margins, n(%)		
Postive	4 (9.7%)	7 (8%)
Negative	37 (90.3%)	80 (92%)

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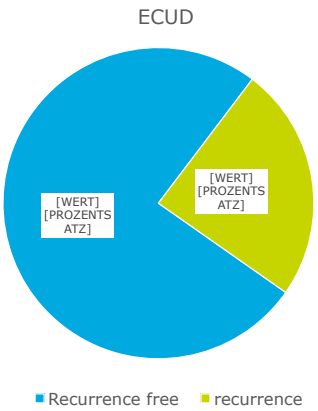
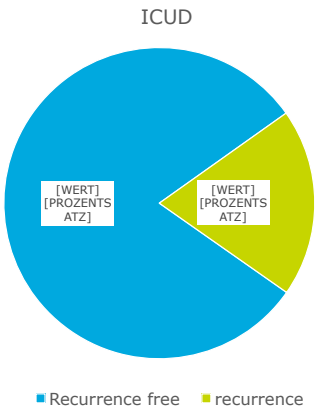
Table 1: Pattern of recurrence ECUD versus ICUD (n=128)

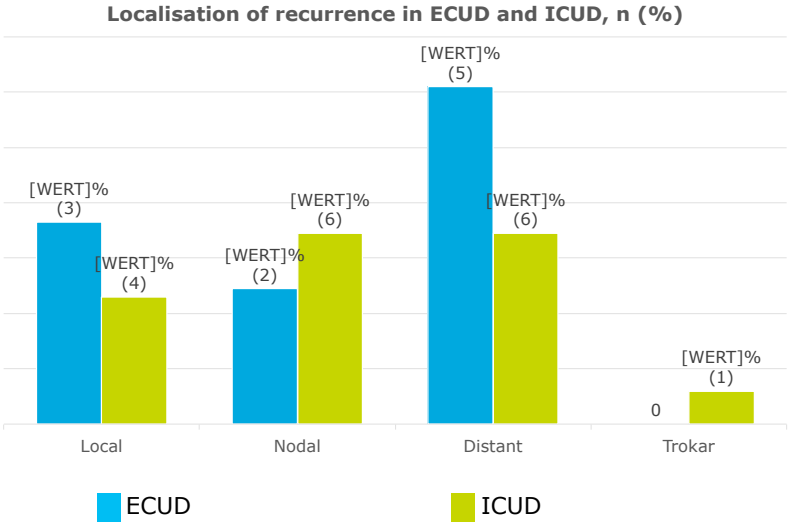
		ECUD (N=41)		ICUD (N=87)	
Median follow-up [months]		39		24	
Recurrence (at 2 years)		10 (24.4%)		17 (19.5%)	p = 0.530
Location	Local	3 (7.3%)	Local	4 (4.6%)	
	Nodal	2 (4.9%)	Nodal	6 (6.9%)	
	Distant	5 (12.2%)	Distant	6 (6.9%)	
	Trocar	0 (0%)	Trocar	1 (1.2%)	
Distant recurrence	Peritoneal	1 (2.4%)	Peritoneal	2 (2.3%)	
	Visceral	2 (4.9%)	Visceral	0 (0%)	
	Bone	1 (2.4%)	Bone	2 (2.3%)	
	Pulmonary	1 (2.4%)	Pulmonary	2 (2.3%)	

KSW-series: Recurrence at 2 years

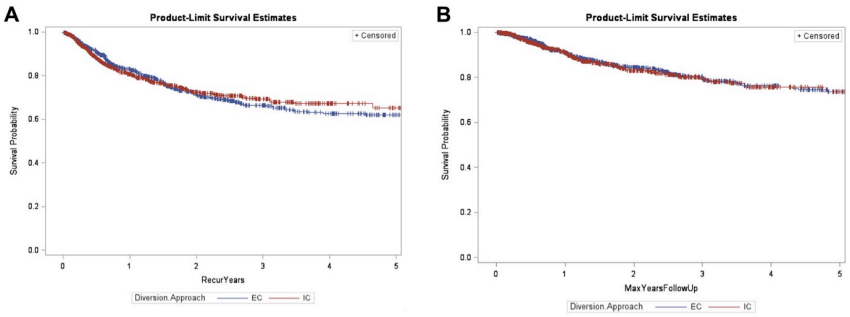




Our Cohort, Pattern of recurrence



Robotic Cystectomy with Intracorporeal versus Extracorporeal Urinary Diversion



Hussein et. al., The Journal of Urology 2018

4 Ileum Conduit und orthotope Ersatzblase

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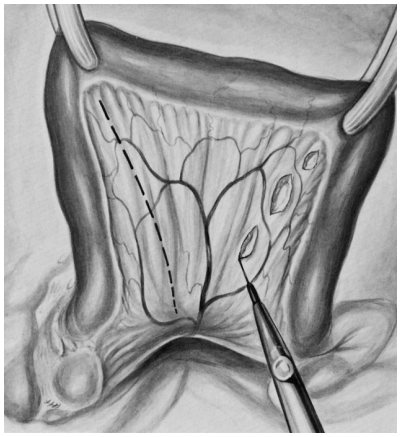
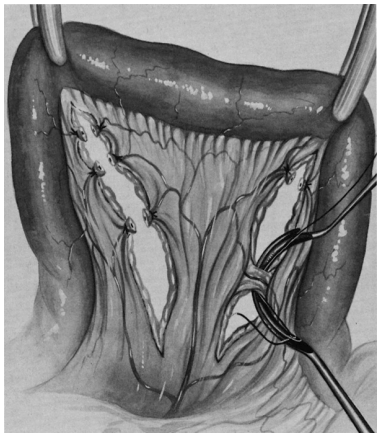
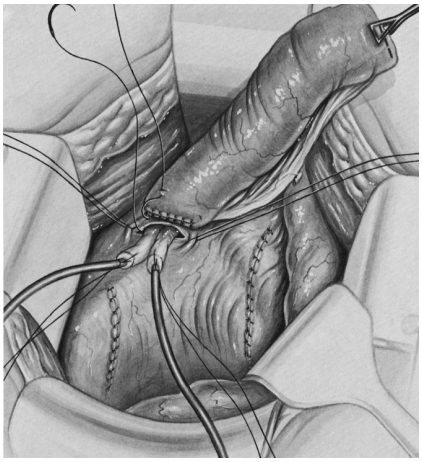
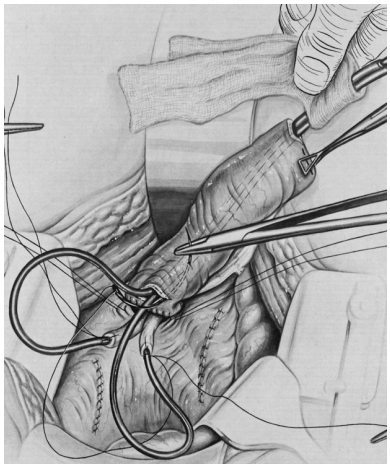
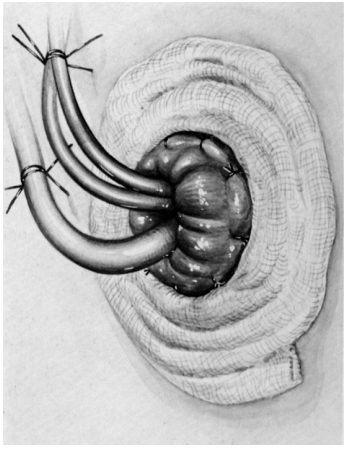
Ileum-Conduit

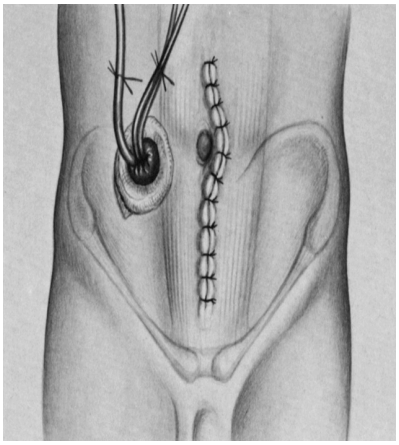


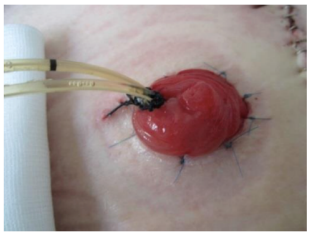












Beispiel Urostoma: gute Prominenz, gute Durchblutung, feuchte Schleimhaut, reizlose parastomale Haut

Stomaprolaps

flaches retrahiertes Stoma

Orthotope Ersatzblase

intakte Urethra

kompetenter Sphinktermechanismus

hohe Patientencompliance

ausreichende Nierenfunktionsreserve

keine Störungen des Gastrointestinaltraktes

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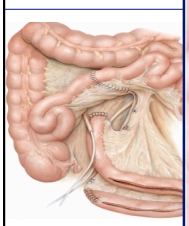
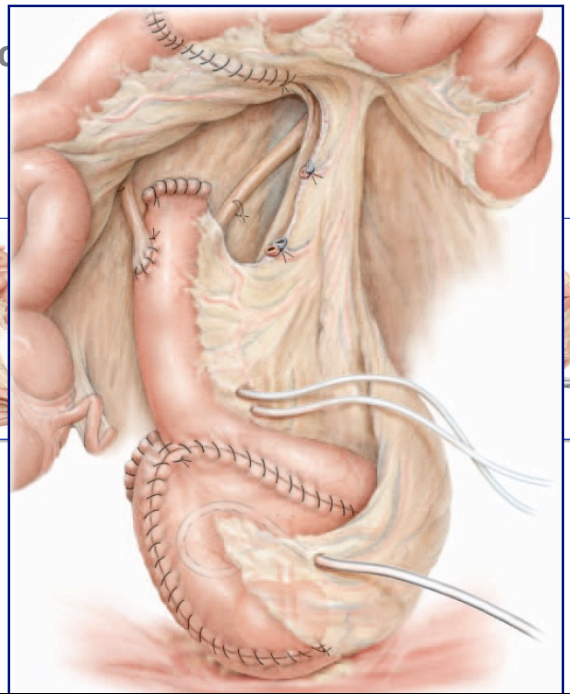
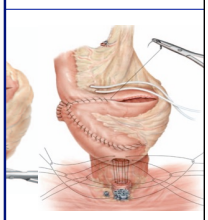
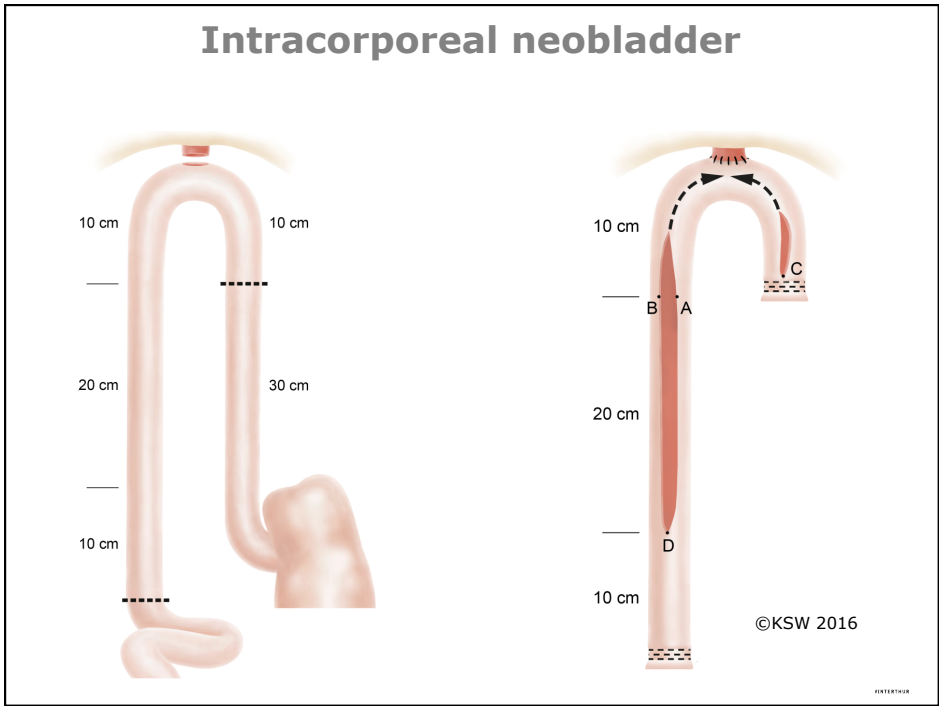
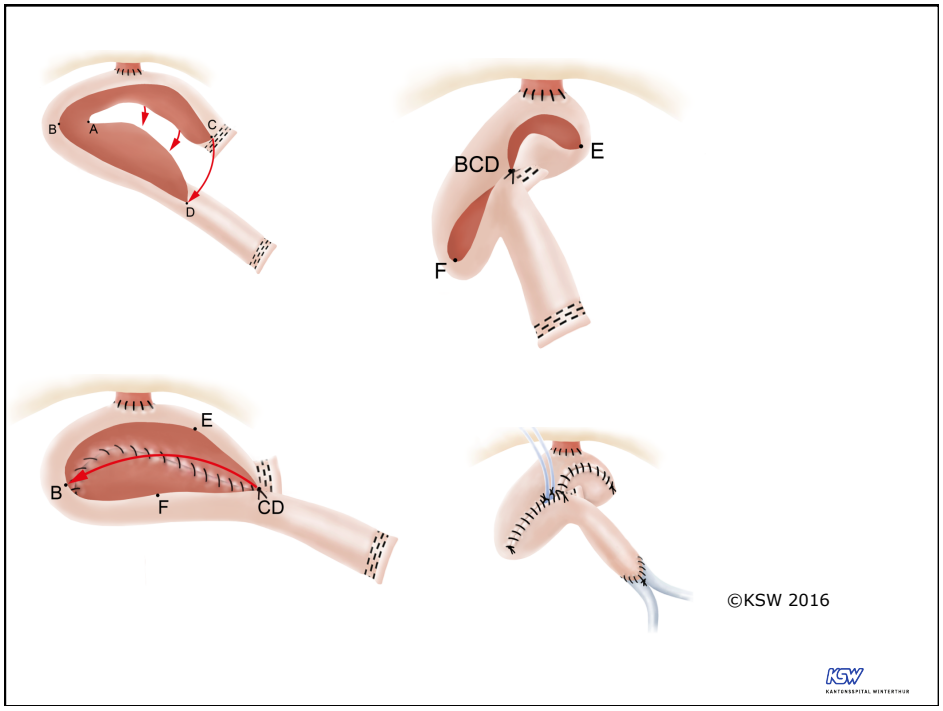
Ileum-Ne








Intracorporeal neobladder
10 cm
10 cm
20 cm
30 cm
10 cm
10 cm
B
A
C
20 cm
D
10 cm
©KSW 2016


B
A
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Laparoscopic robot-assisted intracorporeal modified Studer orthotopic neobladder following radical cystectomy

Department of Urology, Kantonsspital Winterthur, Switzerland
Head: Prof. Dr. med. Hubert John

Affiliated Academic Hospital of the Faculty of Medicine at the University of Zurich
Universität Zürich UZH
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Funktionelle Resultate Ersatzblase (offene Technik, Literatur)

- ca. 90 % tagsüber kontinent
- 20 % nächtliche Inkontinenz
- (bis 50 % bei über 70-jährigen)
- fehlender Spinalreflex, erhöhte Urinproduktion durch Reabsorption, hohe Drücke durch Kontraktion
- 10-15 % intermittierender Selbstkatheterismus
- Frauen häufiger hyperkontinent

Funktionelle Resultate Ersatzblase (roboterassistiert, KSW, 1 Jahr, N=14)

Variable	
Bladder capacity, mL	403.5 (253 – 670)
Pressure at maximal capacity, cm H_2O	15 (5 – 28)
Functional urethral length without stress, mm	30 (20 – 76)
Functional urethral length with stress, mm	28 (10 – 56)
Bladder compliance, mL/cmH_2O	21.8 (15 – 59.6)
Postvoid residual volume, mL	0 (0 – 30)
Maximal flow, mL/s	19.6 (7.3 – 43.2)
Pads at daytime, n (%)	
- 0	7 (58%)
- 1	5 (42%)
Pads at nighttime, n (%)	
- 0	5 (42%)
- 1	4 (33%)
- 2	3 (25%)

Table 1: Urodynamic and continence results. All data given as median (range), where not otherwise specified.

Obrecht F et al: Asian Journal of Andrology 22: 145-148, 2020

4 Offene versus robotische Operation

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Robotic vs. Open cystectomy

RAZOR Trial, Lancet 2018

- 150 patients with robotic versus 152 patients with open cystectomy
- **Extracorporal urinary diversion only**
- 2-year progression free survival 72.3% (robotic) and 71.6% (open)
- Indicating non-inferiority of robotic cystectomy

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Robotic Cystectomy with Intracorporeal Urinary Diversion

Collins et. al., European Urology 2016

- 717 patients who underwent RARC with ICUD at nine different institutions with a minimum follow-up of 12 months
- Recurrence free survival at 3, 12, and 24 month was 95.9%, 80.2%, and 74.6% respectively
- Early recurrence rates and locations appear to be similar to those for open radical cystectomy series

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Robotic vs. Open cystectomy

Swedish National Registry Bladder Cancer

Das Bildeleme

	After propensity matching		
	ORC (n=1554)	RARC (n=874)	p
POSTOPERATIVE PARAMETERS			
Removed lymph nodes, n (%)	14 (8, 24)	20 (15, 27)	<0.001
Missing	90 (6.6)	21 (2.6)	

Das Bildeleme

	After propensity matching		
	ORC (n=1554)	RARC (n=874)	p
INTRAOPERATIVE PARAMETERS			
Estimaed blood loss (ml)	700 (400, 1300)	150 (100, 300)	<0.001
Missing	19 (1.2)	22 (2.5)	
Intra-OP blood transfusion, n (%)	572 (38.7)	63 (7.7)	<0.001
Missing	75 (4.8)	59 (6.8)	
Peri-OP blood transfusion**, n (%)	429 (50.8)	143 (20.7)	<0.001
Missing	137 (14.0)	12 (1.7)	

** Total no of patients receiving transfusions during hospitalisation (including intra-OP transfusions). Variable reported since 2014 (denominator pre matching ORC n=1233, RARC n=704 and post matching ORC n=844 and RARC 691)

Das Bildeleme

	After propensity matching		
	ORC (n=1554)	RARC (n=874)	p
INTRAOPERATIVE PARAMETERS			
Operation time (min)	323 (250, 407)	320 (260, 380)	0.5
Missing	32 (2.1)	29 (3.3)	

Das Bildeleme

	After propensity matching		
	ORC (n=1554)	RARC (n=874)	p
POSTOPERATIVE PARAMETERS			
Lenghts of stay (days)	13 (10, 17)	9 (6, 13)	<0.001
Missing	34 (2.2)	10 (1.1)	
Re-hospitalization in 90d, n (%)	393 (26.1)	294 (34.3)	<0.001
Missing	48 (3.1)	17 (1.9)	

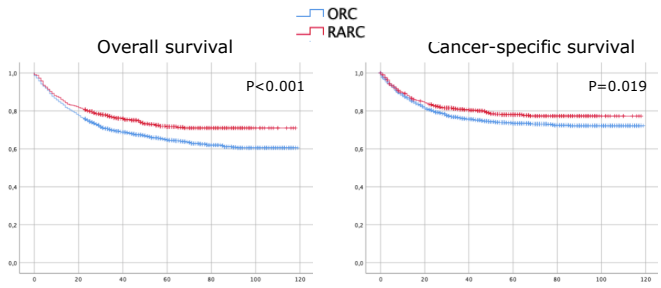
Das Bildeleme

	After propensity matching		
	ORC (n=1554)	RARC (n=874)	p
POSTOPERATIVE PARAMETERS			
Clavien-Dindo classification, n (%)			0.001
I-II	404 (27.0)	286 (33.3)	
III	284 (19.0)	122 (14.2)	
IV	46 (3.1)	19 (2.2)	
V	27 (1.8)	7 (0.8)	
Missing	59 (3.8)	14 (1.6)	
Re-operation, n (%)	182 (12.0)	81 (9.4)	0.05
Missing	41 (2.6)	11 (1.3)	

High-grade (CD ≥III) complications RARC vs. ORC:

17.2% vs. 23.9%, <u>OR=0.66</u>, 95% CI: 0.54-0.82; p<0.001

Median follow-up time 57 months (IQR 38, 82)



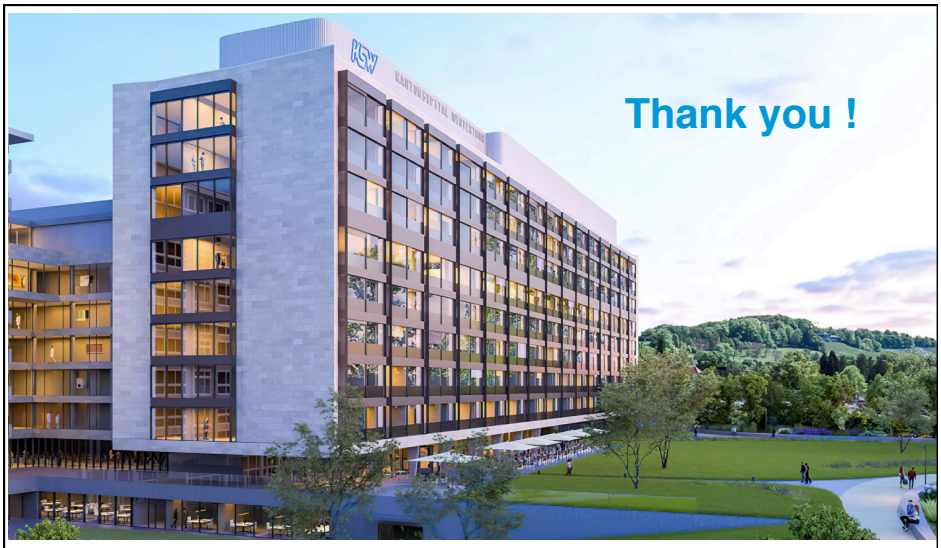
Estimated 5y OS: RARC 72% vs. ORC 65%
Hazard ratio RARC vs. ORC: 0.75, 95% CI: 0.64-0.87; p<0.001

Conclusions

Swedish National Registry Bladder Cancer and / vs KSW

- Number of removed lymph nodes was higher after RARC
- Increased number of neobladder formation after RARC
- OR time no difference
- Increased overall survival after RARC
- Decreased high grade complications after RARC
- Length of stay shorter after RARC
- 90 days Re-hospitalization higher after RARC

44



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