



Natural Orifice Specimen Extraction (NOSE) during DE surgery



Attila Bokor

Semmelweis University, Department of Obstetrics and Gynecology

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16.2.2021 | Bernd Hudelist, MD
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Conventional laparoscopic bowel resection



Laparotomy of 4-5cm



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Outline

NOSE

Transvaginal specimen extraction

Transrectal NOSE-colectomy

LARS after NOSE- colectomy

NOSERES - Prospective Randomized Trial

Conclusions



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NOSE-Natural Orifice Specimen Extraction



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Advantage:

- No laparotomy for specimen extraction / anvil introduction
- Richter's hernia
- Less abdominal pain
- Postoperative adhaesion formation
- Better esthetical outcome
- Shorter recovery
- Faster?



(Bokor et al., 2018; Wolthuis et al 2012, 2014)

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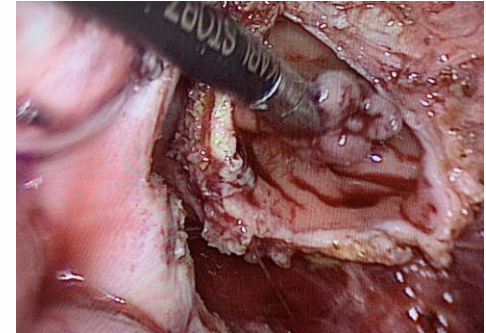
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Further advantages:

Dysplastic polyps resected

Other specimens can be removed



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Natural orifice specimen extraction in colorectal surgery: patient selection and perspectives

Kevin M Izquierdo

Ece Unal

John H Marks

Division of Colorectal Surgery,
Lankenau Medical Center,
Wynnewood, PA, USA

The ideal patient in whom NOSE would be feasible and beneficial

- ↪ is a non-obese (BMI <30)
- ↪ woman with pathology involving the distal colon or rectum
- ↪ where the specimen has a maximum width <6.5 cm

Majority of DE cases?



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Laparoscopic resection with natural orifice specimen extraction versus conventional laparoscopy for colorectal disease: a meta-analysis.

Ma et al.

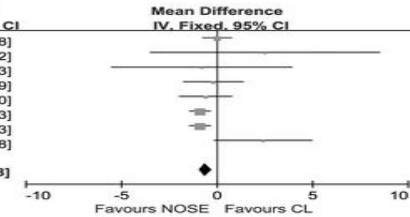
Int J Colorectal Dis. 2015



A: Duration of hospital stay

Study or Subgroup	NOSE			CL			Weight	Mean Difference	IV, Fixed, 95% CI
	Mean	SD	Total	Mean	SD	Total			
Leung 2013	5	1.25	35	5	2	35	18.5%	0.00 [-0.78, 0.78]	
Christoforidis 2012	12.25	9.12	10	9.75	4.75	20	0.3%	2.50 [-3.52, 8.52]	
Costantino 2011	6.62	3.98	17	7.43	6.65	9	0.5%	-0.81 [-5.55, 3.93]	
Hisada 2014	11	3	20	11.2	3.2	50	4.5%	-0.20 [-1.79, 1.39]	
Kim 2014	6.5	3.8	58	7.1	3.9	58	5.7%	-0.60 [-2.00, 0.80]	
Park 2011	7.9	0.8	34	8.8	1.5	34	34.6%	-0.90 [-1.47, -0.33]	
Zhang 2014	9	1.9	65	9.9	2	132	34.2%	-0.90 [-1.47, -0.33]	
Awad 2014	7.7	5.17	20	5.3	2.81	20	1.7%	2.40 [-0.18, 4.98]	
Total (95% CI)			259			358	100.0%	-0.62 [-0.95, -0.28]	

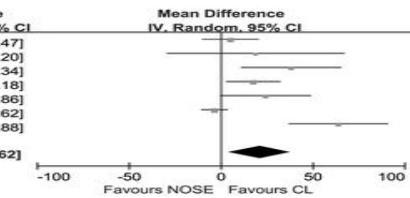
Heterogeneity: Chi² = 10.83, df = 7 (P = 0.15); I² = 35%
Test for overall effect: Z = 3.61 (P = 0.0003)



B: Operation time

Study or Subgroup	NOSE			CL			Weight	Mean Difference	IV, Random, 95% CI
	Mean	SD	Total	Mean	SD	Total			
Leung 2013	105	27.5	35	100	37.75	35	16.9%	5.00 [-10.47, 20.47]	
Christoforidis 2012	220	70.24	10	201.25	48.5	20	7.4%	18.75 [-29.70, 67.20]	
Hisada 2014	278	39	20	240	77	50	12.9%	38.00 [10.65, 65.34]	
Kim 2014	149.3	39.8	58	131.9	41.4	58	17.1%	17.40 [2.62, 32.18]	
Park 2011	170.8	46.4	34	146.7	57.2	34	13.8%	24.10 [-0.66, 48.86]	
Zhang 2014	111.6	25.4	65	115.3	23	132	19.0%	-3.70 [-11.02, 3.62]	
Awad 2014	221.1	41.7	20	157.35	45.75	20	13.0%	63.75 [36.62, 90.88]	
Total (95% CI)			242			349	100.0%	20.97 [4.33, 37.62]	

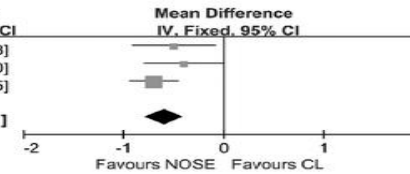
Heterogeneity: Tau² = 365.00; Chi² = 33.98, df = 6 (P < 0.00001); I² = 82%
Test for overall effect: Z = 2.47 (P = 0.01)



C: Time to first flatus

Study or Subgroup	NOSE			CL			Weight	Mean Difference	IV, Fixed, 95% CI
	Mean	SD	Total	Mean	SD	Total			
Kim 2014	2.2	1.1	58	2.7	1.2	58	20.3%	-0.50 [-0.92, -0.08]	
Park 2011	2.7	0.9	34	3.1	0.8	34	21.7%	-0.40 [-0.80, 0.00]	
Zhang 2014	2.7	0.8	65	3.4	0.9	132	58.0%	-0.70 [-0.95, -0.45]	
Total (95% CI)			157			224	100.0%	-0.59 [-0.78, -0.41]	

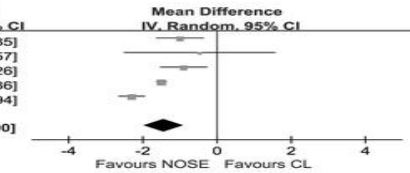
Heterogeneity: Chi² = 1.78, df = 2 (P = 0.41); I² = 0%
Test for overall effect: Z = 6.17 (P < 0.00001)



D: Pain score

Study or Subgroup	NOSE			CL			Weight	Mean Difference	IV, Random, 95% CI
	Mean	SD	Total	Mean	SD	Total			
Leung 2013	1	1.25	35	2	1.5	35	20.2%	-1.00 [-1.65, -0.35]	
Costantino 2011	2.81	2.6	17	3.28	2.49	9	5.5%	-0.47 [-2.51, 1.57]	
Kim 2014	4.9	1.6	58	5.8	1.9	58	20.4%	-0.90 [-1.54, -0.26]	
Park 2011	4.2	0.3	34	5.7	0.3	34	28.4%	-1.50 [-1.64, -1.36]	
Zhang 2014	3.8	1.2	65	6.1	1.2	132	25.6%	-2.30 [-2.66, -1.94]	
Total (95% CI)			209			268	100.0%	-1.43 [-1.95, -0.90]	

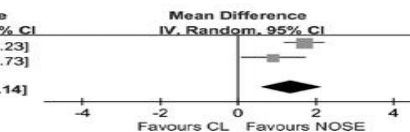
Heterogeneity: Tau² = 0.25; Chi² = 25.30, df = 4 (P < 0.0001); I² = 84%
Test for overall effect: Z = 5.28 (P < 0.00001)



E: Cosmetic result

Study or Subgroup	NOSE			CL			Weight	Mean Difference	IV, Random, 95% CI
	Mean	SD	Total	Mean	SD	Total			
Kim 2014	8	1.4	58	6.3	1.5	58	58.4%	1.70 [1.17, 2.23]	
Park 2011	7.5	1.7	34	6.6	1.8	34	41.6%	0.90 [0.07, 1.73]	
Total (95% CI)			92			92	100.0%	1.37 [0.59, 2.14]	

Heterogeneity: Tau² = 0.19; Chi² = 2.53, df = 1 (P = 0.11); I² = 60%
Test for overall effect: Z = 3.47 (P = 0.0005)



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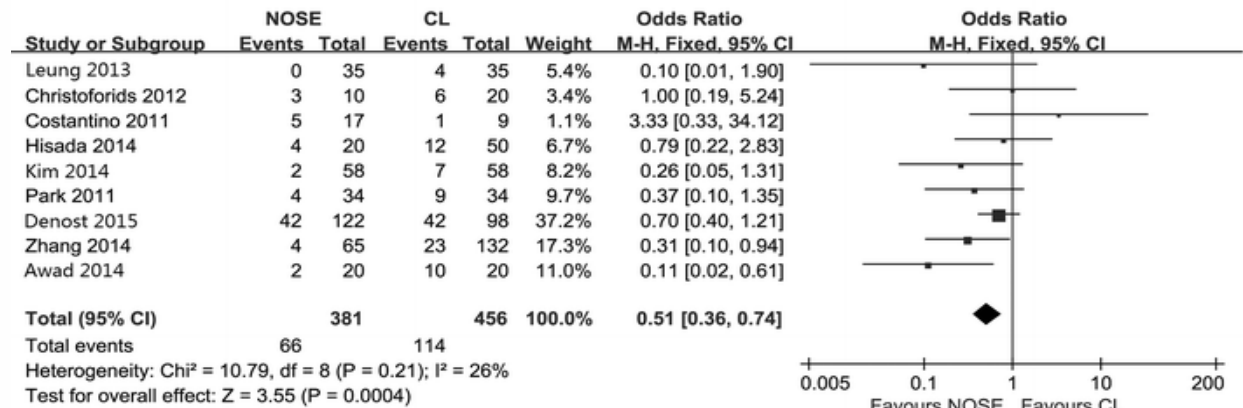
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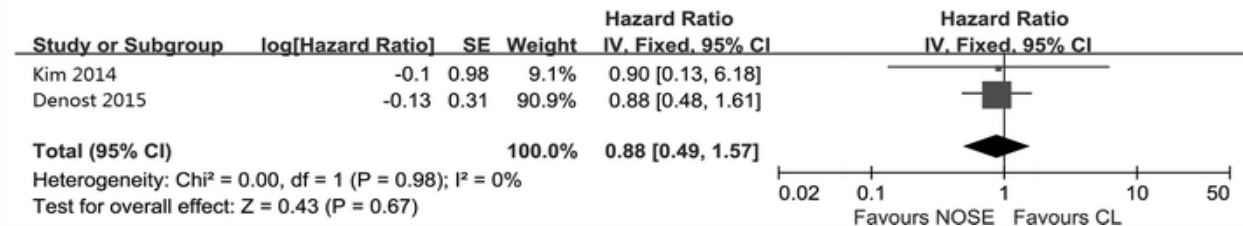
Int J Colorectal Dis. 2015



A: Postoperative complications



B: Disease-free survival



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Safety and Oncological Outcomes of Laparoscopic NOSE Surgery Compared With Conventional Laparoscopic Surgery for Colorectal Diseases: A Meta-Analysis

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Edited by:

Rui-Ji Liu^{1*}, Chun-Dong Zhang^{1,2†}, Yu-Chen Fan¹, Jun-Peng Pei¹, Cheng Zhang¹ and Dong-Qiu Dai^{1,3*}

Surgical outcomes

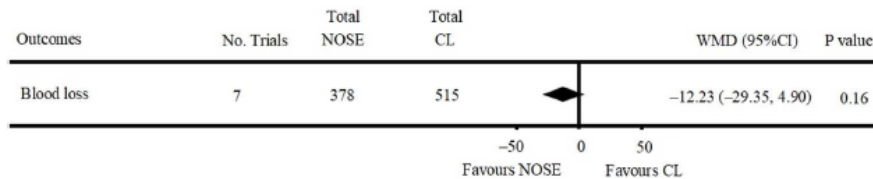
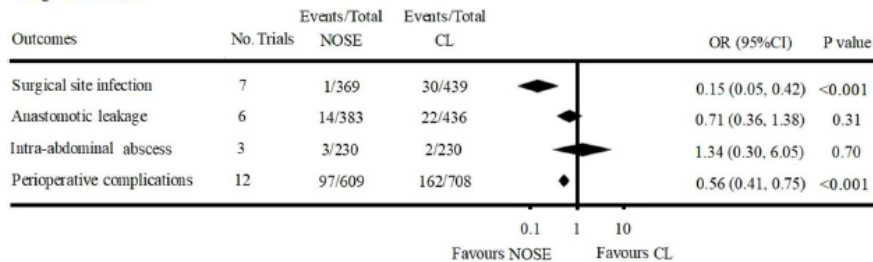


FIGURE 4 | Forest plot of surgical outcomes following NOSE compared with CL.

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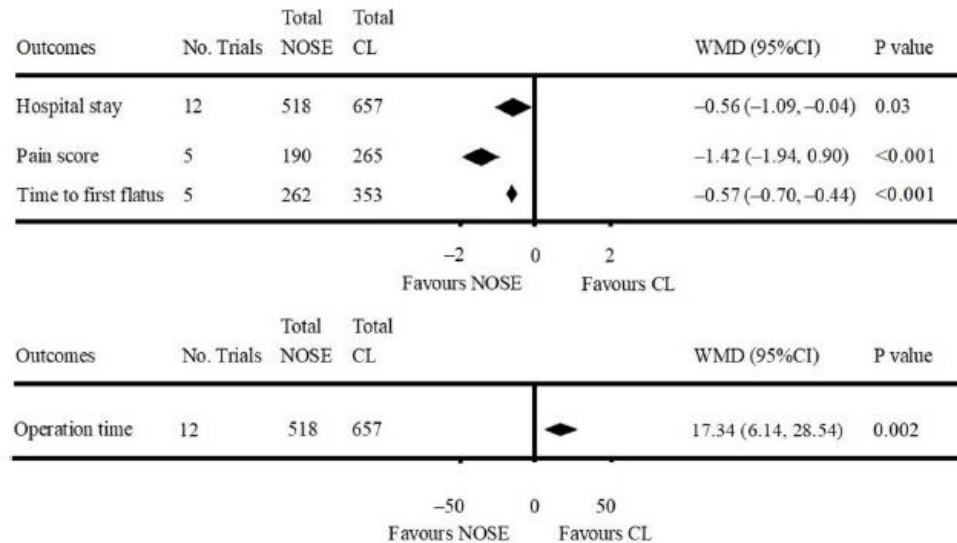


FIGURE 5 | Forest plot of other outcomes following NOSE compared with CL.

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Transrectal Natural Orifice Specimen Extraction (NOSE) With Oncological Safety: A Prospective and Randomized Trial

Zhou et al.,

ONCOLOGY | VOLUME 254, P16-22, OCTOBER 01, 2020

A total of 254 were randomly divided into the NOSE group ($n = 122$) and the conventional laparoscopic group ($n = 119$).

The incidence of postoperative complications was significantly lower in the NOSE group (11/122, 9%) than in the non-NOSE group (25/119, 21%).

The NOSE group had a longer operation time, less blood loss, and a lower postoperative visual analog scale score than the non-NOSE group.

The time for intestinal function recovery (ventilation) and the length of hospital stay were significantly longer in the non-NOSE group.

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Randomized clinical trial of laparoscopic colectomy with or without natural-orifice specimen extraction

A. M. Wolthuis¹, S. Fieuws², A. Van Den Bosch¹, A. de Buck van Overstraeten¹ and A. D'Hoore¹

¹Department of Abdominal Surgery, University Hospital Leuven, and ²Interuniversity Institute for Biostatistics and Statistical Bioinformatics, KU Leuven, Leuven, Belgium

Correspondence to: Dr A. M. Wolthuis, Department of Abdominal Surgery, University Hospital Gasthuisberg Leuven, Herestraat 49, 3000 Leuven, Belgium (e-mail: albert.wolthuis@uzleuven.be)



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Table 1 Baseline patient characteristics

	Laparoscopic NOSE colectomy (n = 20)	Conventional laparoscopic colectomy (n = 20)
Age (years)*	54 (31–72)	58 (40–73)
Sex ratio (M : F)	5 : 15	10 : 10
BMI (kg/m ²)*	23.5 (18–29)	24 (20–29)
ASA fitness grade		
I	5	6
II	15	14
Indication		
Diverticulitis	15	15
Tumour	5	5

Table 2 Surgical and postoperative data

	Laparoscopic NOSE colectomy (n = 20)	Conventional laparoscopic colectomy (n = 20)	P†
Duration of surgery (min)*	90 (70–125)	75 (50–160)	0.017
Conversion	1	0	1.000‡
Blood loss (ml)*	10 (0–100)	0 (0–250)	0.389
Technical difficulties	8	5	0.501‡
Length of specimen (cm)*	25 (12–44)	18 (12–33)	0.019
Lymph node harvest*	12 (7–14)	11 (7–27)	1.000
Perioperative intravenous fluids (litres)*	1.5 (0.9–2.5)	1.5 (0.7–3.5)	0.816
Procedural cost (€)*	2455.8 (1808.5–3161.5)	1962.1 (1462.4–2904)	< 0.001
Length of hospital stay (days)*	4 (2–8)	4 (3–17)	0.888
Complications	3	3	1.000‡
Major	2	2	
Minor	1	1	
Readmission within 30 days	2	2	1.000‡

*Values are median (range). NOSE, natural-orifice specimen extraction. †Mann–Whitney *U* test, except ‡Fisher's exact test.

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Table 3 Analgesia requirements

	Laparoscopic NOSE colectomy (n = 20)	Conventional laparoscopic colectomy (n = 20)	P†
Piritramide requirement			
No. of patients	1	10	0.003‡
Dose (mg)*	1.0(4.5); 0 (0–20)	16.0(24.1); 7.5 (0–100)	0.002
Piritramide requirement 'as treated'			
No. of patients	1 of 19	10 of 21	0.004‡
Dose (mg)*	1.1(4.6); 0 (0–20)	15.6(23.8); 0 (0–100)	0.003
Tramadol requirement (mg)*	10.0(44.7); 0 (0–200)	40.0(104.6); 0 (0–400)	0.298
Combined piritramide + tramadol	2	13	<0.001‡
Paracetamol requirement (g)*	11.0(3.9); 11 (4–18)	17.0(1.2); 17 (15–19)	<0.001
PCEA dose (ml)*	116(45); 93 (82–247)	221(72); 221 (123–358)	<0.001

*Values are mean(s.d.); median (range). NOSE, natural-orifice specimen extraction; PCEA, patient-controlled epidural analgesia. †Mann–Whitney U test, except ‡Fisher's exact test.

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Patients operated for bowel cancer - not benign conditions



- ↳ Limitations: oncological patients mostly operated for CRC
- ↳ Different age groups and nutrition status

Left colon resection with transrectal specimen extraction: current status.
Zattoni D, Popeskou GS, Christoforidis D.
Tech Coloproctol. 2018 Jun;22(6):411-423. Review.

Prospective evaluation of peritoneal fluid contamination following transabdominal vs. transanal specimen extraction in laparoscopic left-sided colorectal resections.
Costantino FA, Diana M, Wall J, Leroy J, Mutter D, Marescaux J.
Surg Endosc. 2012 Jun;26(6):1495-500.

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How do patients score cosmesis after laparoscopic natural orifice specimen extraction colectomy?

A. M. Wolthuis*, **C. Meuleman†**, **C. Tomassetti†**, **T. D'Hooghe†**, **S. Fieuws‡**, **A. de Buck van Overstraeten*** and **A. D'Hoore***

*Department of Abdominal Surgery, University Hospital Leuven, Leuven, Belgium, †Department of Obstetrics and Gynaecology, Leuven University Fertility Centre, University Hospital Leuven, Leuven, Belgium and ‡Interuniversity Centre for Biostatistics and Statistical Bioinformatics, University Hospital Leuven, Leuven, Belgium



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Table 2 Case-matched comparison of cosmetic outcome with two different scar assessment scoring systems in patients undergoing NOSE colectomy or conventional laparoscopic colectomy for bowel endometriosis.

	NOSE-colectomy (<i>n</i> = 49)	Conventional laparoscopic colectomy (<i>n</i> = 49)	<i>P</i>
Body image scale	6 (5–8)	7 (6–9)	0.106
Cosmetic scale	8 (6–12)	11 (8–14)	0.032
Body image questionnaire	15 (11–21)	18 (15–22)	0.027
PSAQ overall	56 (52–67)	71 (62–79)	0.002
Appearance	14 (13–17)	16 (15–21)	0.0003
Symptoms	7 (6–9)	8 (6–9)	0.154
Scar consciousness	9 (8–10)	11 (9–12)	0.009
Satisfaction with appearance	13 (8–16)	16 (14–17)	0.006
Satisfaction with symptoms	6 (5–10)	8 (6–10)	0.289

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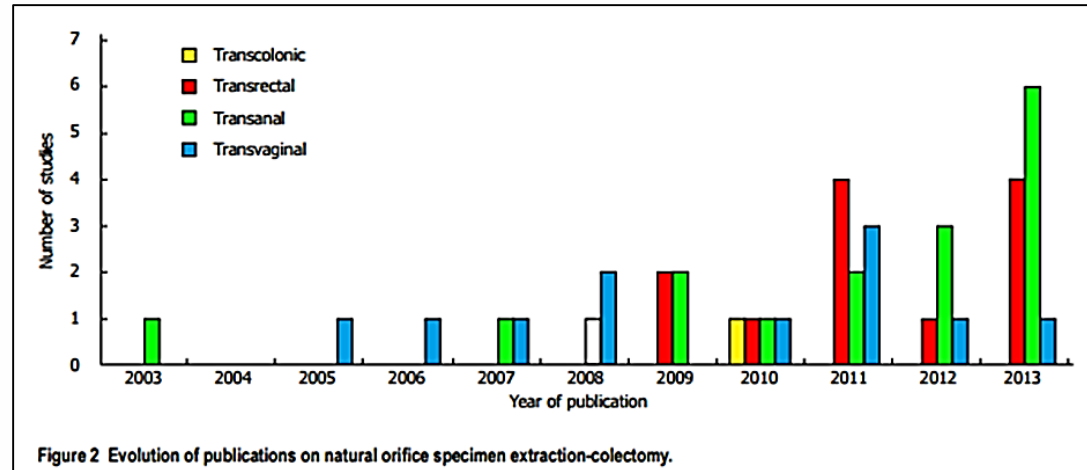
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Albert M Wolthuis, Anthony de Buck van Overstraeten, André D'Hoore



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Table 1 Studies reporting on natural orifice specimen extraction-colectomy

Ref.	Type of study	Patients (n)	Type of surgery	Type of NOSE	Indication
Akamatsu <i>et al</i> ^[9] , 2009	Case series	16	Sigmoid resection	Transrectal	Malignant
Cheung <i>et al</i> ^[10] , 2009	Case series	10	Sigmoid resection	Transrectal	Malignant
Christoforidis <i>et al</i> ^[4] , 2013	Case-matched	11	Sigmoid resection	Transrectal	Benign
Costantino <i>et al</i> ^[6] , 2012	Case-matched	17	Sigmoid resection	Transrectal	Benign
Franklin <i>et al</i> ^[9] , 2013	Case series	277	Sigmoid and anterior resection	Transrectal	Benign and malignant
Fuchs <i>et al</i> ^[9] , 2013	Case series	15	Sigmoid resection	Transrectal	Benign
Han <i>et al</i> ^[6] , 2013	Case series	34	Sigmoid and anterior resection	Transrectal	Malignant
Leroy <i>et al</i> ^[6] , 2011	Case series	16	Sigmoid resection	Transrectal	Diverticulitis
Nishimura <i>et al</i> ^[6] , 2011	Case series	16	Sigmoid resection	Transrectal	Malignant
Saad <i>et al</i> ^[6] , 2010	Case series	8	Sigmoid resection	Transrectal	Benign and malignant
Wolthuis <i>et al</i> ^[9] , 2011	Case-matched	21	Sigmoid resection	Transrectal	Endometriosis
Wolthuis <i>et al</i>^[9], 2011	Case-matched	21	Sigmoid resection	Transrectal	Endometriosis
Akamatsu <i>et al</i> ^[9] , 2009	Case series	7	TME	Transanal	Malignant
Bie <i>et al</i> ^[9] , 2013	Case series	131	TME	Transanal	Malignant
Choi <i>et al</i> ^[4] , 2009	Case series	13	TME	Transanal(11 patients)	Malignant
de Lacy <i>et al</i> ^[6] , 2013	Case series	20	TME	Transanal	Malignant
Dumont <i>et al</i> ^[6] , 2012	Case series	4	TME	Transanal	Malignant
Gaujoux <i>et al</i> ^[4] , 2011	Case series	2	TME	Transanal	Malignant
Hara <i>et al</i> ^[4] , 2011	Case series	9	Sigmoid resection	Transanal	Malignant
Kang <i>et al</i> ^[6] , 2012	Comparative	53	TME	Transanal	Malignant
Lacy <i>et al</i> ^[6] , 2013	Case series	3	TME	Transanal	Malignant
Lamadé <i>et al</i> ^[9] , 2010	Case series	3	RPC	Transanal	IBD (UC)
Marks <i>et al</i> ^[6] , 2010	Case series	79	TME	Transanal (36 TATA)	Malignant
Prete <i>et al</i> ^[4] , 2007	Case series	10	TME	Transanal	Malignant
Rullier <i>et al</i> ^[6] , 2003	Case series	32	TME	Transanal	Malignant
Sylla <i>et al</i> ^[6] , 2013	Case series	5	TME	Transanal	Malignant
Velthuis <i>et al</i> ^[9] , 2013	Case series	5	TME	Transanal	Malignant
Wang <i>et al</i> ^[9] , 2013	Case series	21	TME	Transanal (16 patients)	Malignant
Watanabe <i>et al</i> ^[9] , 2000	Case series	7	TME	Transanal	Malignant
Zorron <i>et al</i> ^[6] , 2012	Case series	2	TME	Transanal	Malignant
Abrão <i>et al</i> ^[6] , 2005	Case series	8	Sigmoid resection	Transvaginal	Endometriosis
Abrão <i>et al</i>^[6], 2005	Case series	8	Sigmoid resection	Transvaginal	Endometriosis
Boni <i>et al</i> ^[6] , 2007	Case series	11	Sigmoid resection	Transvaginal	Endometriosis
Breitenstein <i>et al</i> ^[4] , 2006	Case series	2	Sigmoid resection	Transvaginal	Diverticulitis
Ghezzi <i>et al</i>^[6], 2008	Case series	33	Sigmoid resection	Transvaginal	Endometriosis
Ghezzi <i>et al</i> ^[6] , 2008	Case series	33	Sigmoid resection	Transvaginal	Endometriosis
McKenzie <i>et al</i> ^[6] , 2010	Case series	4	Right hemicolectomy	Transvaginal	Benign and malignant
Palanivelu <i>et al</i> ^[6] , 2008	Case series	7	Restorative proctocolectomy	Transvaginal	Fap
Park <i>et al</i> ^[6] , 2011	Case-matched	34	Right hemicolectomy	Transvaginal	Malignant
Tarantino <i>et al</i> ^[6] , 2011	Case series	34	Sigmoid resection	Transvaginal	Diverticulitis
Torres <i>et al</i> ^[6] , 2012	Case series	21	Sigmoid and high anterior resection	Transvaginal	Benign and malignant

FAP: Familial adenomatous polyposis; IBD: Inflammatory bowel disease; UC: Ulcerative colitis; TATA: Transanal transabdominal; TME: Total mesorectal excision; RPC: Restorative proctocolectomy.



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Laparoscopic sigmoid resection with transrectal specimen extraction: a novel technique for the treatment of bowel endometriosis

A.M. Wolthuis^{1,*}, C. Meuleman², C. Tomassetti², T. D'Hooghe², S. Fieuwis³, F. Penninckx¹, and A. D'Hoore¹

¹Department of Abdominal Surgery, University Hospital Leuven, Herestraat 49, 3000 Leuven, Belgium ²Leuven University Fertility Centre, Department of Obstetrics and Gynaecology, University Hospital Leuven, Herestraat 49, 3000 Leuven, Belgium ³Interuniversity Centre for Biostatistics and Statistical Bioinformatics, University Hospital Leuven, Kapucijnenvoer 35, blok D, 3000 Leuven, Belgium

*Correspondence address. Tel: +32-16-34-42-65; Fax: +32-16-34-48-32; E-mail: albert.wolthuis@uzleuven.be

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Table II Reported case series of laparoscopic bowel resection with NOSE for severe endometriosis.

Author, year	Patients (n)	BMI (kg/m ²)	Operating time (min.)	Specimen length (cm)	Length of hospital stay (days)	Technique
Redwine and Sharpe (1991)	1	NA	180	10	4	Transrectal
Redwine <i>et al.</i> (1996)	5	NA	275 (169–290) ^a	NA	5 (3–5) ^a	Transvaginal
	3	NA	365 (270–400) ^a	NA	4 (4–5) ^a	Transvaginal
Jerby <i>et al.</i> (1999)	7	NA	240 (180–390) ^a	NA	5 (5–7) ^a	Transvaginal
Abrao <i>et al.</i> (2005)	8	NA	178 (119–251) ^a	NA	4.1 (2–5) ^a	Transvaginal
Boni <i>et al.</i> (2007)	11	NA	240 (mean)	NA	5 (mean)	Transvaginal
Ghezzi <i>et al.</i> (2008)	33	19.6 (16–22) ^a	280 (200–390) ^a	NA	6.7 (mean)	Transvaginal
Ebert <i>et al.</i> (2009)	1	NA	210	NA	8	Transvaginal
Knol <i>et al.</i> (2009)	1	20.7	113	NA	10	Transrectal
Current series	21	23 (18–31) ^a	90 (65–120) ^a	21 (7–32) ^a	6 (4–13) ^a	Transrectal

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Laparoscopic sigmoid resection with transrectal specimen extraction: a novel technique for the treatment of bowel endometriosis

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¹Department of Abdominal Surgery, University Hospital Leuven, Herestraat 49, 3000 Leuven, Belgium ²Leuven University Fertility Centre, Department of Obstetrics and Gynaecology, University Hospital Leuven, Herestraat 49, 3000 Leuven, Belgium ³Interuniversity Centre for Biostatistics and Statistical Bioinformatics, University Hospital Leuven, Kapucijnenvoer 35, blok D, 3000 Leuven, Belgium

*Correspondence address. Tel: +32-16-34-42-65; Fax: +32-16-34-48-32; E-mail: albert.wolthuis@uzleuven.be

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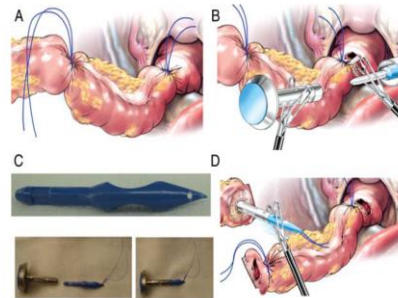


Figure 1 Technique for full laparoscopic sigmoid resection. (A) The specimen is isolated: the proximal sigmoid colon and proximal rectum are tied off with a non-absorbable suture. (B) The rectum is opened semi-circumferentially using a vessel-sealing device and the anvil is delivered into the abdomen transrectally. The spike from the circular stapler is connected to a mono-filament suture and connected to the anvil. (C) A mono-filament suture is connected to the hole in the spike and the spike is attached to the anvil intracorporeally. (D) The proximal bowel is opened using a vessel-

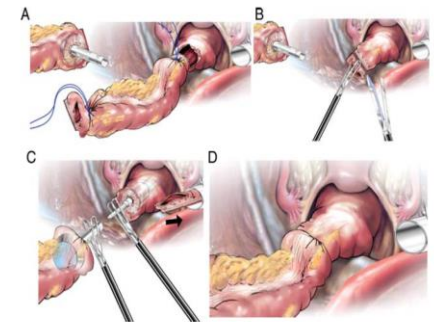


Figure 2 Technique for full laparoscopic sigmoid resection. (A) After complete rectal transection, the specimen is extracted transrectally with a specimen retrieval pouch. (B) The proximal rectum is closed with a stapler. (C and D) The rim of rectum is extracted via the 12-mm port in the right iliac fossa and the anastomosis is made using a circular stapler.

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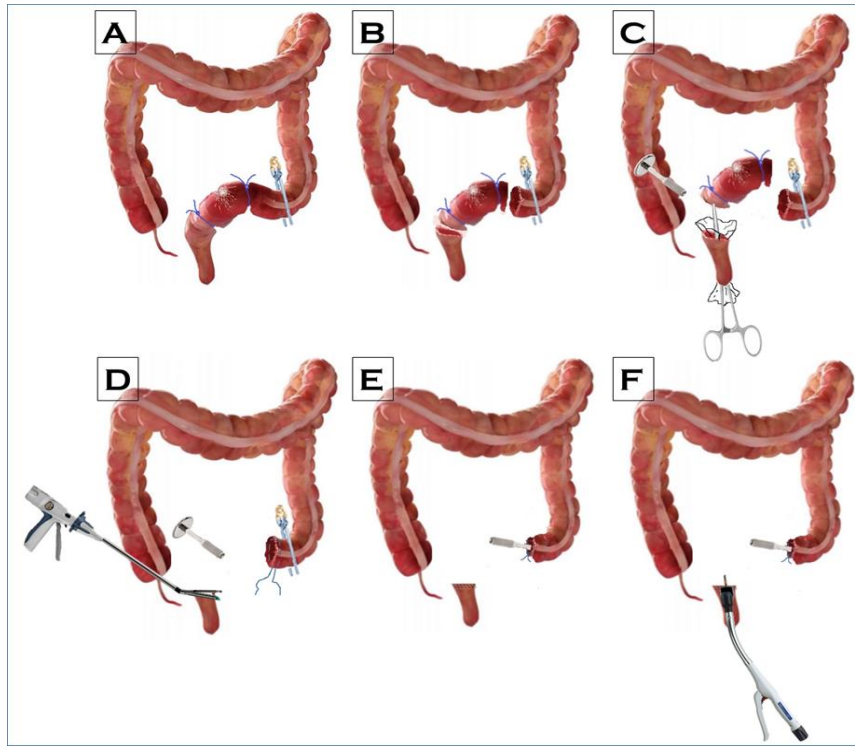
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Original Article

Natural Orifice Specimen Extraction during Laparoscopic Bowel Resection for Colorectal Endometriosis: Technique and Outcome

Attila Bokor, MD, PhD, Peter Lukovich, MD, Noemi Csibi, MD, Thomas D'Hooghe, MD, PhD, Dan Lebovic, MD, Reka Brubel, MD, PhD, and Janos Rigo, MD, PhD



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Table 2

	Conventional (n = 60)	NOSE (n = 30)	p Value (Conventional vs NOSE)
Surgical data			
Operative Data (N = 90)			
Duration of surgeries (min), median (range)	121 (85–250)	96 (60–190)	.005
Intraoperative blood loss (mL), median (range)	35 (0–150)	15 (0–30)	.82
Conversion rate, n (%)	0 (0)	0 (0)	1.00
Need for transfusion, n (%)	1 (1.7)	0 (0)	1.00
Number of DIE lesions of the bowel, n (%)			
1	35 (58)	17 (57)	.88
2: Sigmoid and rectum	4 (7)	1 (3)	.66
Multilocular			
Sigmoid colon and rectum	17 (28.3)	8 (26)	.87
Cecum and sigmoid/rectum	2 (3.3)	2 (7)	.6
Appendix and sigmoid/rectum	2 (3.3)	2 (7)	.6
Length of the resected bowel (cm), median (range)	10 (5–29)	7 (5–17)	.31
Low rectum resection, n (%)	31 (52)	17 (57)	.65
Other localizations of endometriosis, n (%)			
Endometrioma: unilateral	17 (28)	13 (43)	.15
Bilateral	5 (8)	2 (7)	1.00
Peritoneal	53 (88)	26 (86)	1.00
Bladder	11 (18)	6 (20)	.85
Ureter: unilateral	10 (17)	2 (7)	.32
Bilateral	1 (1.7)	1 (3)	1.00
Rectovaginal septum	53 (88)	25 (83)	.52
Vagina (transmural involvement)	8 (13)	2 (7)	.28
Diaphragm	1 (1.7)	2 (7)	.26
Cecum/ileum	2 (3.3)	0 (0)	.55
Nervus ischiadicus	1 (1.7)	0 (0)	1.00
Liver	1 (1.7)	0 (0)	1.00
Umbilicus	1 (1.7)	0 (0)	1.00
Chromopertubation, n (%)			
Bilateral patency	22 (37)	6 (20)	.11
Unilateral patency	22 (37)	3 (10)	.011
Bilateral occlusion	16 (26)	21 (70)	<.0001
Infertility, n (%)	20 (33)	17 (57)	.034
Mean hospital stay, median (range)	7 (5–13)	6 (3–11)	<.001

DIE = deep infiltrating endometriosis.

Bokor et al., 2018

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Complication rates: Clavien Dindo III. or more



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Table 3

The Short-term outcome of conventional laparoscopic rectum/sigmoid resections and natural orifice specimen extraction (NOSE) colectomies performed for colorectal deep infiltrating endometriosis

	Conventional (n = 60), n (%)	NOSE (n = 30), n (%)	p Value (Conventional vs NOSE)
Recurrence	1 (1.7)	0 (0)	1.00
Anastomosis insufficiency	2 (3.3)	0 (0)	.55
Rectovaginal fistula	1 (1.7)	0 (0)	1.00
Postoperative bleeding	1 (1.7)	0 (0)	1.00
Injury of the ureter	0 (0)	0 (0)	1.00
Rectal bleeding	1 (1.7)	2 (6)	.26
Gastrointestinal infection	2 (3.3)	0 (0)	.55
Incisional hernia	0 (0)	0 (0)	1.00
Hematoma in the wound	0 (0)	0 (0)	1.00
Subileus	0 (0)	1 (3)	1.00
Neurogenic bladder dysfunction (maximum of 7 days)	2 (3.3)	1 (3)	1.00

Bokor et al., 2018

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Transvaginal/Pull trough NOSE



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Colpotomy for specimen extraction+bowel opening



Transvaginal specimen extraction without the necessity of vaginal vault resection, in case of concomitant bowel surgery, is not recommended since it increases the chance of rectovaginal fistula formation.

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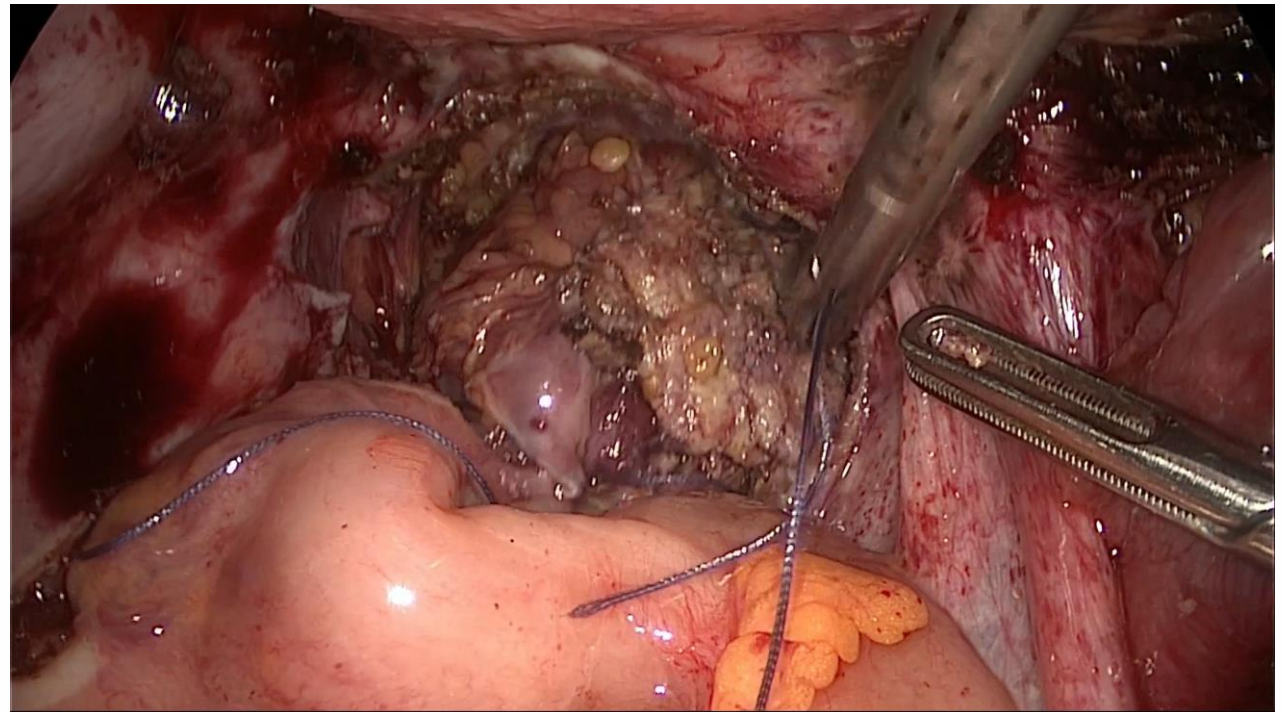
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Transrectal NOSE- colectomy



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Autonomic innervation of the pelvis

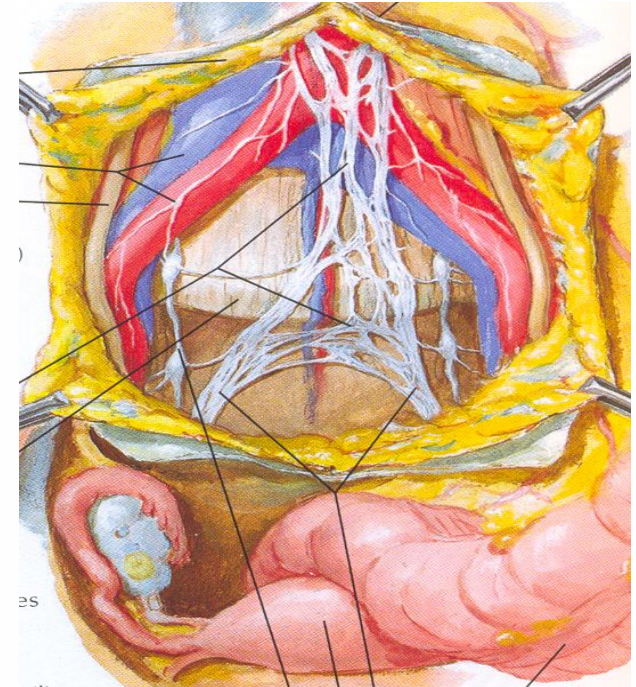
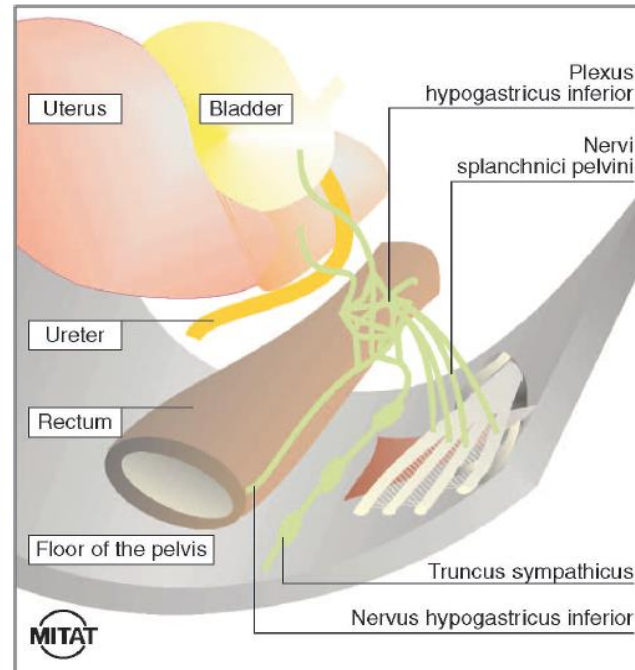


Figure 4. Functional cartography of the pelvic autonomous neurosystem.

Possover et al., 2014

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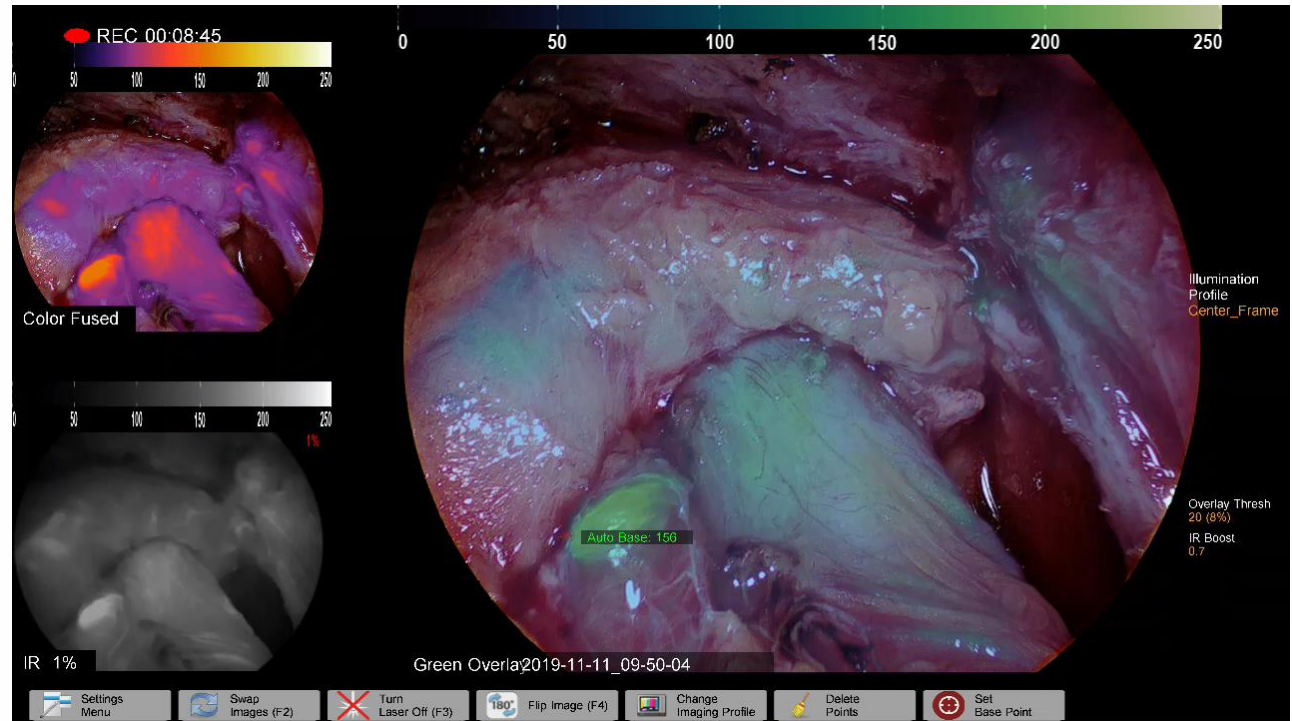
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Quantitative analysis of rectal perfusion patterns using ICG angiography



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Robotic surgery



Robotic natural orifice specimen extraction (NOSE) total colectomy with ileorectal anastomosis: a step-by-step video-guided technical note.

Chen TC, Liang JT.

Tech Coloproctol. 2020 Jan;24(1):79-84.

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Low Anterior Resection Syndrome (LARS) following different surgical approaches for low rectal endometriosis: a retrospective case-control multicenter study

Attila Bokor MD, MSc, PhD^{1†*}, Gernot Hudelist MD, PD, MSc^{2†}, Noémi Dobó MD¹, Bernhard Dauser MD³, Marilena Farella MD⁴, Réka Brubel MD, PhD¹, Jean-Jacques Tuech MD, PhD⁵, Horace Roman MD, PhD^{4,5}.



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Bordeaux (n=66/47) Disc resection/ Anterior resection
Budapest (n =51) Anterior resection- NOSE
Vienna (n=37) Anterior resection

Patients with low rectum resection
(7cm and below)

LARS scores with a median
follow-up-time
of 48±11 months



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Surgical data



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Total (n=205)	Segmental resection (n=139)	Discoid resection (n=66)	p-value
Duration of surgery (min; mean±SD)	226,3±100,8	218,6±71,4	0,001
Laparoscopy, n (%)	136 (95,1%)	66 (100%)	0,021
Laparotomy, n (%)	7 (4,9%)	0 (0%)	0,051
Protective ileostomy, n (%)	45 (31,3%)	49 (74,2%)	<0,000
AFSr stage I, n (%)	1 (0,005%)	0 (0%)	0,0497
AFSr stage II, n (%)	9 (6,3%)	11 (16,7%)	0,017
AFSr stage III, n (%)	19 (13,2%)	6 (0,1%)	0,394
AFSr stage IV, n (%)	115 (79,9%)	49 (0,7%)	0,361
Height of stapler anastomosis <7cm	139 (100%)	66 (100%)	-
Vaginal opening and resection	111 (77,1%)	57 (86,4%)	0,119
Postoperative complications >Clavien-Dindo Grade IIIb; (n, %)			
Rectovaginal fistula	5 (3,5%)	7 (10,6%)	0,039
Anastomotic insufficiency	2 (1,4%)	0 (0%)	0,336
Atonic bladder	3 (2,1%)	11 (16,7%)	<0,000

Fisher's Exact test

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	Segmental resection (n=139)	Discoid resection (n=66)	p-value
LARS (n, %)	44 (31,7%)	25 (37,9%)	0,4
Minor LARS (n, %)	27 (19,4%)	14 (21,2%)	
Major LARS (n, %)	17 (12,2%)	11 (16,7%)	

	No Stoma (n=108)	Ileo/colostomy (n=91)	
LARS (n, %)	32 (28,1%)	37 (40,7%)	0,058
Minor LARS (n, %)	24 (21,1%)	17 (18,7%)	
Major LARS (n, %)	8 (7%)	20 (22%)	

	No Stoma (n=108)	Ileostomy (n=87)	Colostomy (n=4)	p-value
LARS (n, %)	28 (25,9%)	37 (40,7%)	4 (66,7%)	0,02
Minor LARS (n, %)	21 (19,4%)	17 (18,7%)	3 (50%)	
Major LARS (n, %)	7 (6,5%)	20 (22%)	1 (16,7%)	

Pearson ChiSquare test

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LARS score NOSE vs CL

p=0.03



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Lars- NOSE Crosstabulation			NOSE/CL		Total
			CL	Nose	
Lars	No Lars	Count	110	26	136
		% within Lars3	80,9%	19,1%	100,0%
		% within NOSE	62,9%	86,7%	66,3%
	Minor Lars	Count	37	4	41
		% within Lars3	90,2%	9,8%	100,0%
		% within NOSE	21,1%	13,3%	20,0%
	Major Lars	Count	28	0	28
		% within Lars3	100,0%	,0%	100,0%
		% within NOSE	16,0%	,0%	13,7%
Total	Count	175	30	205	
	% within Lars3	85,4%	14,6%	100,0%	
	% within NOSE	100,0%	100,0%	100,0%	

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LARS : Validated Questionnaire



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LARS-score - Scoring Instructions

Add the scores from each 5 answers to one final score.

Do you ever have occasions when you cannot control your flatus (wind)?

- No, never
 Yes, less than once per week
 Yes, at least once per week

0
4
7

Do you ever have any accidental leakage of liquid stool?

- No, never
 Yes, less than once per week
 Yes, at least once per week

0
3
3

How often do you open your bowels?

- More than 7 times per day (24 hours)
 4-7 times per day (24 hours)
 1-3 times per day (24 hours)
 Less than once per day (24 hours)

4
2
0
5

Do you ever have to open your bowels again within one hour of the last bowel opening?

- No, never
 Yes, less than once per week
 Yes, at least once per week

0
9
11

Do you ever have such a strong urge to open your bowels that you have to rush to the toilet?

- No, never
 Yes, less than once per week
 Yes, at least once per week

0
11
16

Total Score:

Interpretation:

- 0-20: No LARS
 21-29: Minor LARS
 30-42: Major LARS

LARS pontszám – pontozási útmutató

A végső pontszámhoz adja össze a következő 5 kérdés pontszámát!

Előfordult valaha Önnel, hogy nem volt képes kontrollálni a bélgázok irtását?	
Nem, soha	0
Igen, hetente egynél ritkábban	4
Igen, hetente legalább egyszer	7
Tapasztalt valaha akaratlan híg székletszivárgást?	
Nem, soha	0
Igen, heti egynél ritkábban	3
Igen, hetente legalább egyszer	3
Milyen gyakran irtja a székletét?	
Több mint 7 alkalommal naponta (24 óra)	4
4-7 alkalommal naponta (24 óra)	2
1-3 alkalommal naponta (24 óra)	0
Naponta (24 óra) kevesebb, mint egy alkalommal	5
Előfordult valaha Önnel, hogy az utolsó székletürítésétől számított egy órán belül újra irtenie kellett a székletét?	
Nem, soha	0
Igen, hetente egynél ritkábban	9
Igen, hetente legalább egyszer	11
Tapasztalt valaha olyan sürgős székletürítési ingert, ami miatt azonnal a mosdóba kellett sietnie?	
Nem, soha	0
Igen, hetente egynél ritkábban	11
Igen, hetente legalább egyszer	16
Összpontszám:	

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International Consensus Definition of Low Anterior Resection Syndrome

Celia Keane, M.B.Ch.B.¹ • Nicola S. Fearnhead, D.M.²
Liliana G. Bordeianou, M.D., M.P.H.³ • Peter Christensen, DM.Sci.⁴
Eloy Espin Basany, M.D.⁵ • Soren Laurberg, M.D., D.M.Sc.⁴
Anders Mellgren, M.D., Ph.D.⁶ • Craig Messick, M.B.Ch.B., M.D.⁷
Guy R. Orangio, M.D.⁸ • Azmina Verjee, B.Sc.⁹ • Kirsty Wing, B.Nurs.¹⁰
Ian Bissett, M.B.Ch.B., M.D.^{1,11} on behalf of the LARS International Collaborative Group*

1 Department of Surgery, University of Auckland, Auckland, New Zealand
2 Department of Colorectal Surgery, Cambridge University Hospital NHS Foundation Trust, Cambridge, United Kingdom
3 Colorectal Surgery Centre/Department of Surgery at the Massachusetts General Hospital and Harvard Medical School, Boston, MA
4 Danish Cancer Society National Research Centre for Survivorship and Late Side Effect to Cancer in the Pelvic Organs, Department of Surgery, Aarhus University Hospital, Aarhus, Denmark
5 Colon and Recto Unit, Department of General Surgery, Vall de Hebron Hospital, Universitat Autonoma de Barcelona, Spain
6 Division of Colon & Rectal Surgery, Department of Surgery, University of Illinois at Chicago, Illinois
7 Department of Surgical Oncology, Section of Colon and Rectal Surgery, The University of Texas MD Anderson Cancer Center, Houston and Sugar Land, Texas
8 Department of Surgery/School of Medicine, Louisiana State University, New Orleans, Louisiana
9 Bowel Disease Research Foundation, London, England, United Kingdom
10 Otago Community Hospice, Dunedin, New Zealand
11 Department of Surgery, Auckland City Hospital, Auckland, New Zealand

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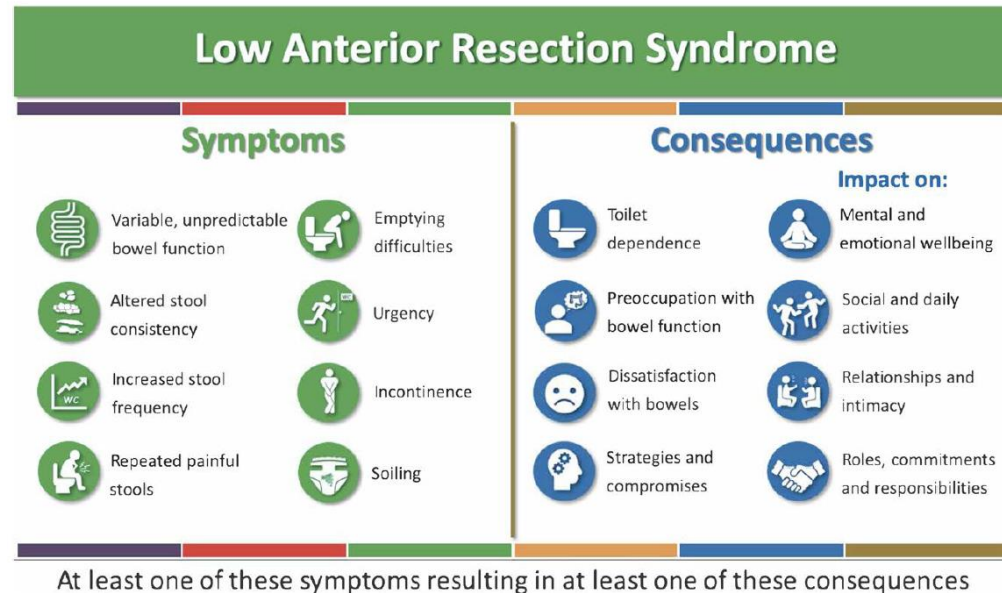


FIGURE 5. Consensus definition of low anterior resection syndrome. To meet the definition, a patient must have had an anterior resection (sphincter-preserving rectal resection) and experience at least 1 of these symptoms that results in at least one of these consequences.

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NOSERES: Prospective Randomized Study

Clinical Trial Registration: <http://www.clinicaltrials.gov/ct2/home>; ID: NCT04109378



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- Study sample (N =278) included two independent groups
 1. Conventional laparoscopic colectomy (CL, N=145)
 2. NOSE (Natural Orifice Specimen Extraction, N=133)
- Sample collection: May 2018 – September 2020 at Semmelweis University, Department of Obstetrics and Gynecology, Budapest, Hungary
- Methods: Prospective, randomized trial
- Simple randomization
 - ↳ Online questionnaire-based study on patient records at the admission and follow-up at 30days, 6months, 1yr, 2yrs

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Study design



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■ Measurements

Demographic and endometriosis-related variables

Pain symptoms (VAS): dysmenorrhoea, CPP, dyspareunia, dyschezia, dysuria

Endometriosis Health Profile (EHP-30)

Pain Catastrophizing Scale (PCS)

Gastrointestinal Quality of Life Index (GIQLI)

Low Anterior Resection Syndrome (LARS) scale

Fertility Outcome

Hypothesis and aim

to compare QoL results of the postoperative period at 30 days , six months, 1 year and 2yrs. with the preop.data

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Conclusion



- ▶ Patient selection criteria for NOSE-colectomy fits for the colorectal DE patients
- ▶ NOSE colectomy is as safe as the conventional segmental resection and offers a number of benefits for our patients
- ▶ Shorter hospital stay, lower postop pain and better cosmetic results

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Thank you for your attention

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