

Supplementary Online Content

Veld JV, Amelung FJ, Borstlap WAA, et al; Dutch Snapshot Research Group. Comparison of decompressing stoma vs stent as a bridge to surgery for left-sided obstructive colon cancer. *JAMA Surg*. Published online January 8, 2020. doi:10.1001/jamasurg.2019.5466

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This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1. Comparison of baseline characteristics between selected patients versus unselected patients after propensity score matching, for DS and SEMS separately.

	DS as BTS			SEMS as BTS		
	Selected N = 121 (%)	Unselected N = 119 (%)	P	Selected N = 121 (%)	Unselected N = 82 (%)	P
Male sex	72 (59.5)	77 (64.7)	0.41	73 (60.3)	42 (51.2)	0.20
Age, mean (SD), years	69.8 (11.0)	67.2 (11.7)	0.07	70.1 (12.1)	71.1 (11.2)	0.57
BMI, mean (SD), kg/m²	25.3 (4.3)	24.6 (3.6)	0.09	25.2 (3.9)	26.3 (6.5)	0.11
ASA score 3-4	26 (21.5)	27 (22.7)	0.82	26 (21.5)	22 (26.8)	0.38
Prior abdominal surgery	36 (29.8)	52 (43.7)	0.03	32 (26.4)	11 (13.4)	0.03
Tumor location			<0.001			0.13
Splenic flexure	6 (5.0)	36 (30.3)		8 (6.6)	2 (2.4)	
Descending colon	23 (19.0)	21 (17.6)		18 (14.9)	20 (24.4)	
Sigmoid	92 (76.0)	62 (52.1)		95 (78.5)	60 (73.2)	
pN stage			0.22			0.04
pN0	51 (42.1)	44 (37.0)		54 (44.6)	49 (59.8)	
pN1	47 (38.8)	41 (34.5)		42 (34.7)	26 (31.7)	
pN2	23 (19.0)	34 (28.6)		25 (20.7)	7 (8.5)	
cM1 stage			0.32			0.56
Lung	0 (0.0)	1 (0.8)		1 (0.8)	0 (0.0)	
Liver	10 (8.3)	4 (3.4)		5 (4.1)	6 (7.3)	
Peritoneal	0 (0.0)	3 (2.5)		2 (1.7)	1 (1.2)	
Other	0 (0.0)	1 (0.8)		1 (0.8)	1 (1.2)	
Length of stenosis, mean (SD), cm	4.1 (1.7)	4.6 (2.0)	0.16	3.9 (1.5)	3.8 (1.6)	0.55
Year of resection^a			<0.001			<0.001
2009	5 (31.3)	0 (0.0)		11 (68.8)	35 (100)	
2010	17 (47.2)	0 (0.0)		19 (52.8)	26 (100)	
2011	20 (69.0)	4 (25.0)		9 (31.0)	12 (75.0)	
2012	13 (39.4)	8 (53.3)		20 (60.6)	7 (46.7)	
2013	25 (55.6)	14 (93.3)		20 (44.4)	1 (6.7)	
2014	12 (75.0)	20 (100)		4/ (25.0)	0 (0.0)	
2015	16 (45.7)	36 (97.3)		19 (54.3)	1 (2.7)	
2016	13 (40.6)	37 (100)		19 (59.4)	0 (0.0)	

PS = propensity-score, BTS = bridge to surgery, SEMS = self-expanding metal stent, SMD = standardized mean difference, SD = standard deviation, BMI = body mass index, ASA = American Society of Anesthesiologists

^a Percentage of row instead of column total

eTable 2. DS-related complications.

	DS as BTS N = 121 (%)
DS-related complication	12/115 (10.4)
Stoma necrosis	2/114 (1.8)
Abscess (intra-abdominal)	1/114 (0.9)
Bleeding	1/114 (0.9)
Stoma prolaps	1/114 (0.9)
Parastomal hernia	0/114 (0.0)
Retraction	1/114 (0.0)
High output	3/115 (2.6)
Other	3/114 (2.6)

DS = decompressing stoma, BTS = bridge to surgery

eTable 3. SEMS-specific outcomes.

	SEMS as BTS N = 121 (%)
Technical success	102/119 (85.7)
Reason for technical failure	
Guidewire does not pass tumor	6/17 (35.3)
Stent does not pass tumor	4/17 (23.6)
No proper stent deployment	3/17 (17.6)
Perforation	2/17 (11.8)
Unknown	2/17 (11.8)
SEMS-related complication	7/115 (6.1)
Perforation (clinically relevant)	3/115 (2.6)
Migration	2/113 (1.8)
Obstruction	1/113 (0.9)
Rectal/abdominal pain	1/113 (0.9)
SEMS-related perforation	9/112 (8.0)
Clinically relevant	3/115 (2.6)
Perforation observed during resection	4/115 (3.5)
Micro perforation in histological specimen	2/107 (1.9)

SEMS = self-expandable metal stent, BTS = bridge to surgery

eTable 4. Sub analysis of either blowhole or double loop DS versus SEMS patients in propensity-score matched samples.

	DS as BTS N = 121 (%)	SEMS as BTS N = 121 (%)	cOR	95% CI	P
Type of DS					-
Double loop DS	100/113 (88.5)	-	-	-	
Blowhole DS	13/113 (11.5)	-	-	-	
Hospital stay during BTS interval, median (IQR), days					
Directly after DS/SEMS without readmissions					
Double loop DS	7.0 (5.0-10.8)	4.0 (2.0-6.0)	0.88	0.81-0.94	<0.001
Blowhole DS	9.0 (5.5-13.5)	4.0 (2.0-6.0)	0.48	0.25-0.92	0.03
Readmission during BTS interval					
Double loop DS	1/93 (1.1)	1/113 (0.9)	_*	_*	1.00*
Blowhole DS	0/12 (0.0)	1/113 (0.9)	**	**	**
Including readmissions during BTS interval					
Double loop DS	7.0 (5.0-10.8)	4.0 (2.0-6.0)	0.88	0.81-0.94	<0.001
Blowhole DS	9.0 (5.5-13.5)	4.0 (2.0-6.0)	0.60	0.39-0.92	0.02
Hospital stay directly after resection, median (IQR), days^a					
Double loop DS	6.0 (5.0-9.0)	7.0 (5.0-14.0)	1.04	1.00-1.09	0.03
Blowhole DS	8.0 (6.5-16.5)	7.0 (5.0-14.0)	1.01	0.96-1.06	0.69
Total hospital stay, median (IQR), days^b					
Double loop DS	14.5 (11.0-21.0)	13.0 (9.0-20.0)	0.99	0.96-1.01	0.35
Blowhole DS	23.0 (17.0-34.0)	13.0 (9.0-20.0)	0.99	0.95-1.03	0.60

DS = decompressing stoma, SEMS = self-expandable metal stent, BTS = bridge to surgery, IQR = interquartile range, cOR = conditional odds ratio, CI = confidence interval

^a Without readmissions

^b Combination of hospital stay during BTS interval including readmissions and hospital stay after resection including readmissions* McNemar test instead of conditional logistic regression due to < 5 observations, therefore no cOR and 95% confidence interval reported

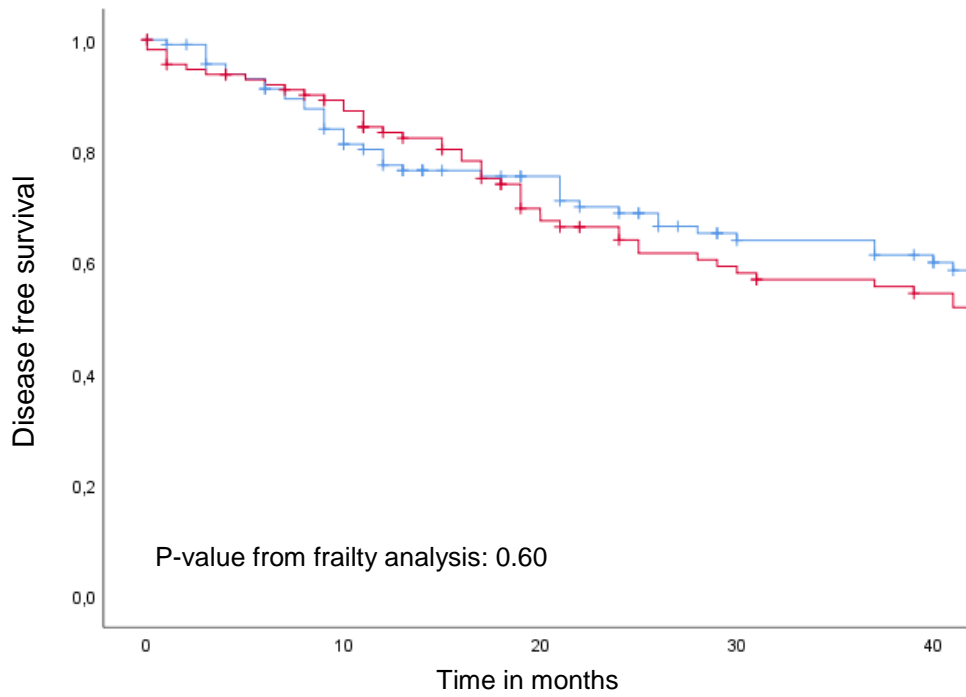
** Due to 0 observations in one or both group(s), no P-value could be calculated with the McNemar test

eTable 5. Comparison of SEMS patients in high-volume versus low-volume SEMS centers.

	High-volume center N = 50 (%)	Low-volume center N = 71 (%)	P
Technical success	45/50 (90.0)	57/69 (82.6)	0.30
SEMS-related complication	1/48 (2.1)	7/67 (10.4)	0.14
SEMS-related perforation	2/49 (4.1)	7/63 (11.1)	0.29
Clinically overt perforation	1/48 (2.1)	2/66 (3.0)	1.00
3-year locoregional recurrence (%)	16.7	14.7	0.57
Number of events after 36 months of FU	7	20	
Number of patients at risk after 36 months of FU	27	81	
3-year disease free survival (%)	66.5	58.4	0.53
Number of events after 36 months of FU	15	64	
Number of patients at risk after 36 months of FU	25	70	
3-year overall survival (%)	84.4	72.0	0.54
Number of events after 36 months of FU	7	41	
Number of patients at risk after 36 months of FU	30	86	

SEMS = self-expandable metal stent, FU = follow-up

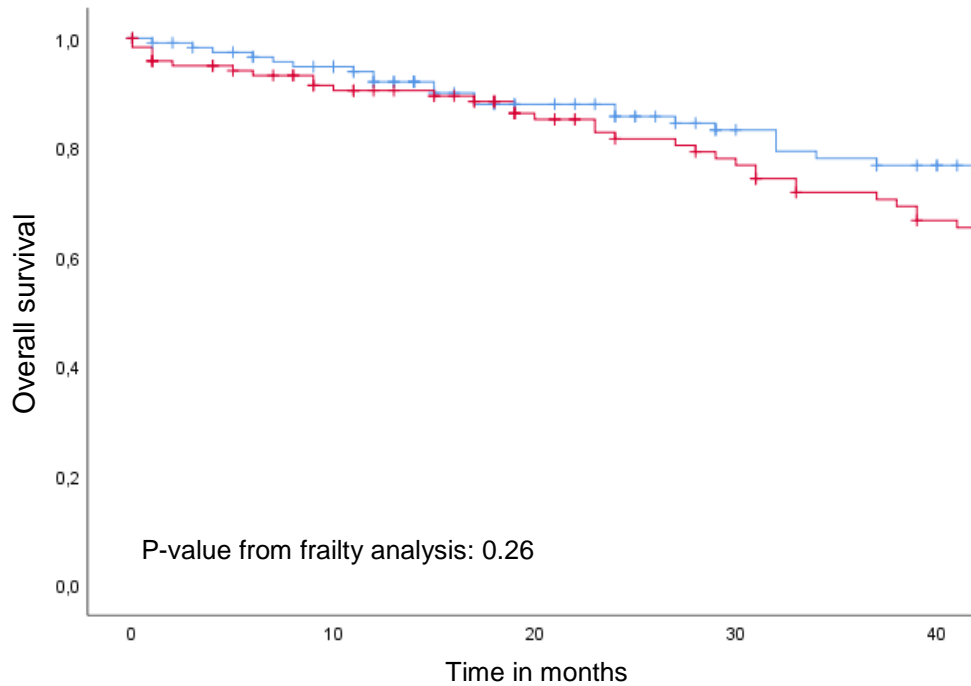
eFigure 1. Disease free survival (2A) and overall survival (2B) for DS versus SEMS as BTS, truncated at a third of patients at risk (propensity-score matched samples).
2A



Number at risk
 DS
 SEMS

	116	91	69	50	44
DS	116	91	69	50	44
SEMS	113	92	62	49	43

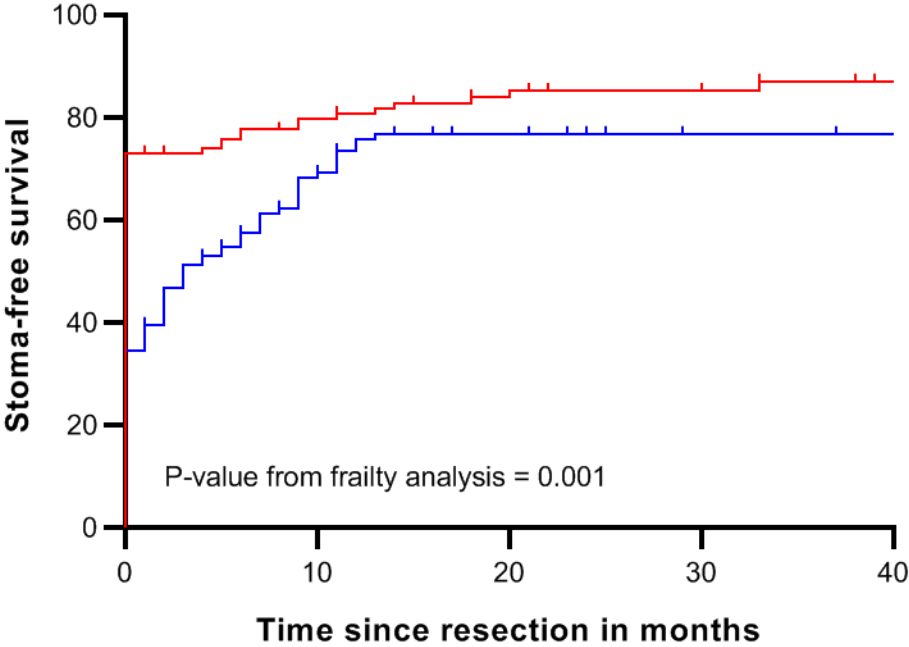
2B



Number at risk
 DS
 SEMS

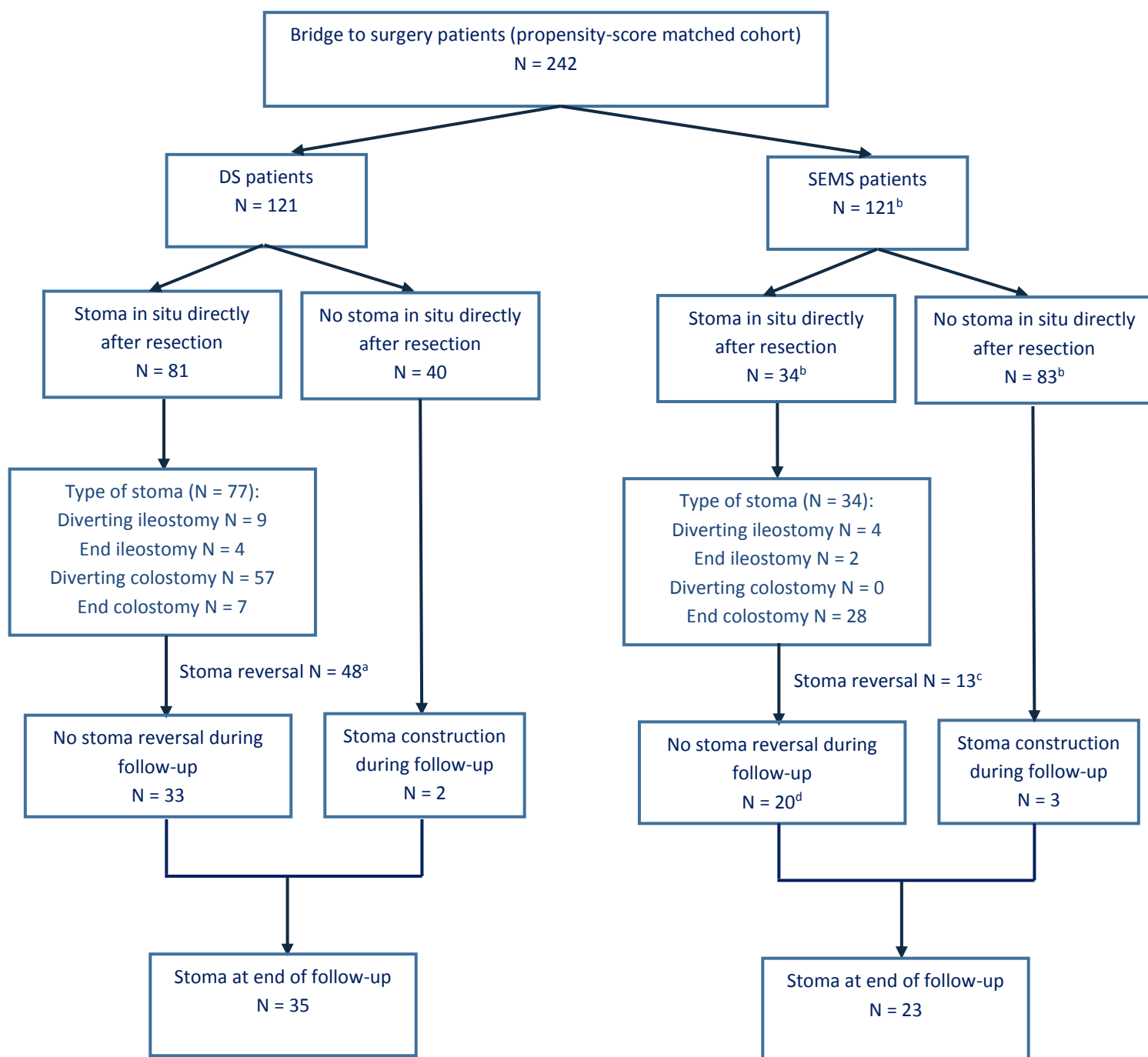
	119	105	81	64	56
DS	119	105	81	64	56
SEMS	120	97	76	63	51

eFigure 2. Stoma-free survival after resection for DS versus SEMS as BTS (propensity-score matched).



Number at risk					
DS	116	32	16	10	9
SEMS	119	22	13	9	5

eFigure 3. Flowchart of patients with a stoma in situ directly after resection.



DS = decompressing stoma, SEMS = self-expandable metal stent

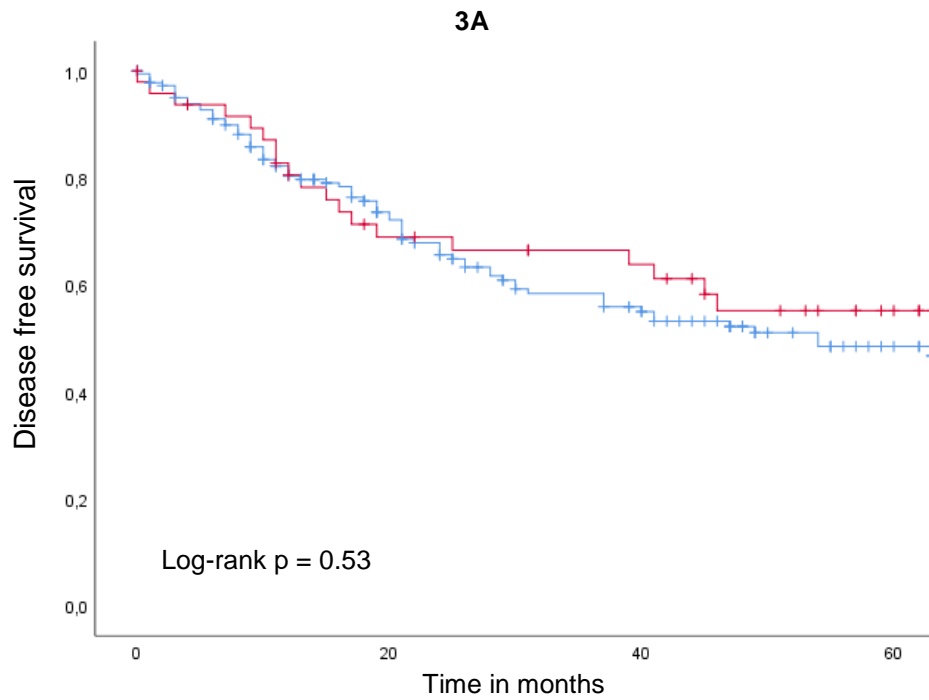
^a Median time from primary tumor resection to stoma reversal (interquartile range): 4.5 months (2.0-9.0)

^b In 4 SEMS patients, it was unknown if they had a stoma constructed directly after resection

^c Median time from primary tumor resection to stoma reversal (interquartile range): 9.0 months (5.0-16.0)

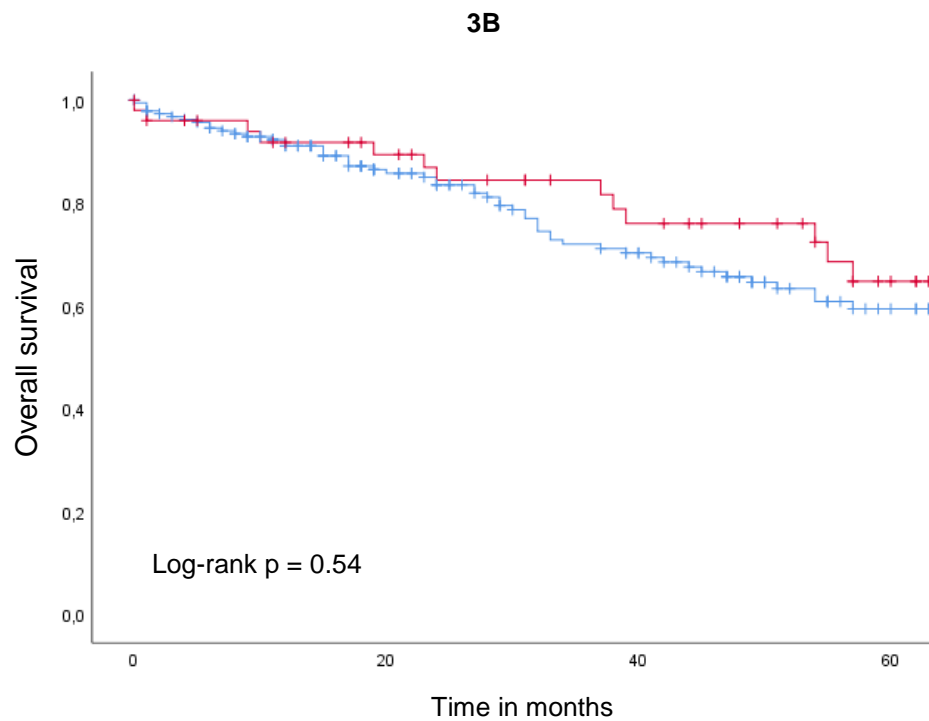
^d In 1 SEMS patient, it was unknown if the stoma was reversed during follow-up

eFigure 4. Disease free survival (3A) and overall survival (3B) following SEMS placement for high-volume versus low-volume SEMS centers.



Number at risk
 Low-volume
 High-volume

182	102	63	30
47	29	24	11



Number at risk
 Low-volume
 High-volume

189	119	80	38
50	38	27	13