New Evidence on Bowel Function Following Colonic Cancer Surgery, and what about LARS?

26th Annual Conference of The Egyptian Society of Colon & Rectal Surgeons
National 3rd International Turkish Colon and Rectal Surgery Congress
27-29 August 2025, Hilton Heliopolis Hotel, Cairo, Egypt

Peter Christensen, Professor, Consultant Surgeon

The Danish Cancer Society National Research Centre for late adverse effect to cancer in the pelvic organs

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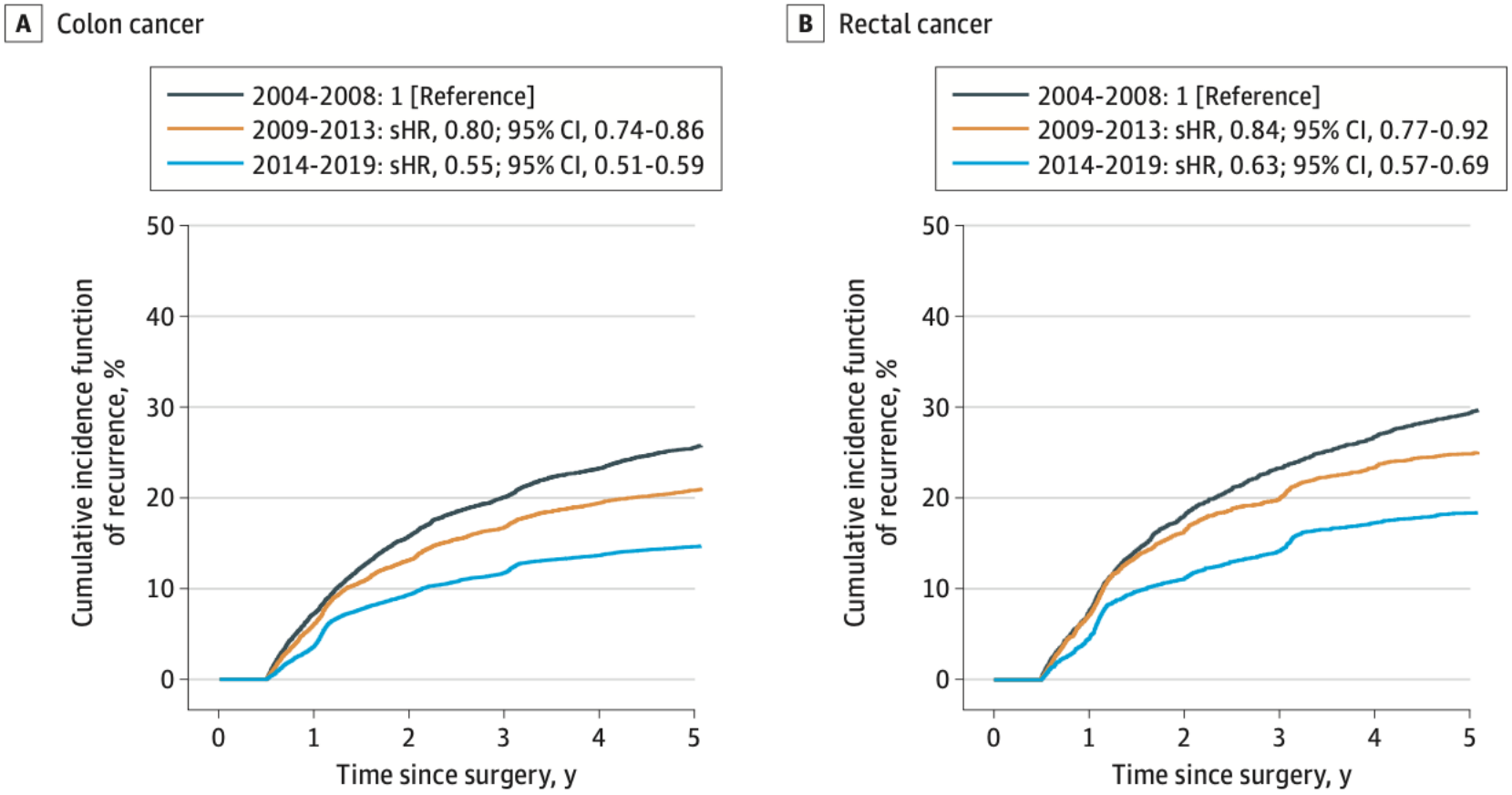
JAMA Oncology | Original Investigation

JAMA Oncology January 2024 Volume 10, Number 1

Incidence of Recurrence and Time to Recurrence in Stage I to III Colorectal Cancer
A Nationwide Danish Cohort Study

Jesper Nors, MD; Lene Hjerrild Iversen, MD, DMSc; Rune Erichsen, MD, PhD; Kåre Andersson Gotschalck, MD, PhD; Claus Lindbjerg Andersen, PhD



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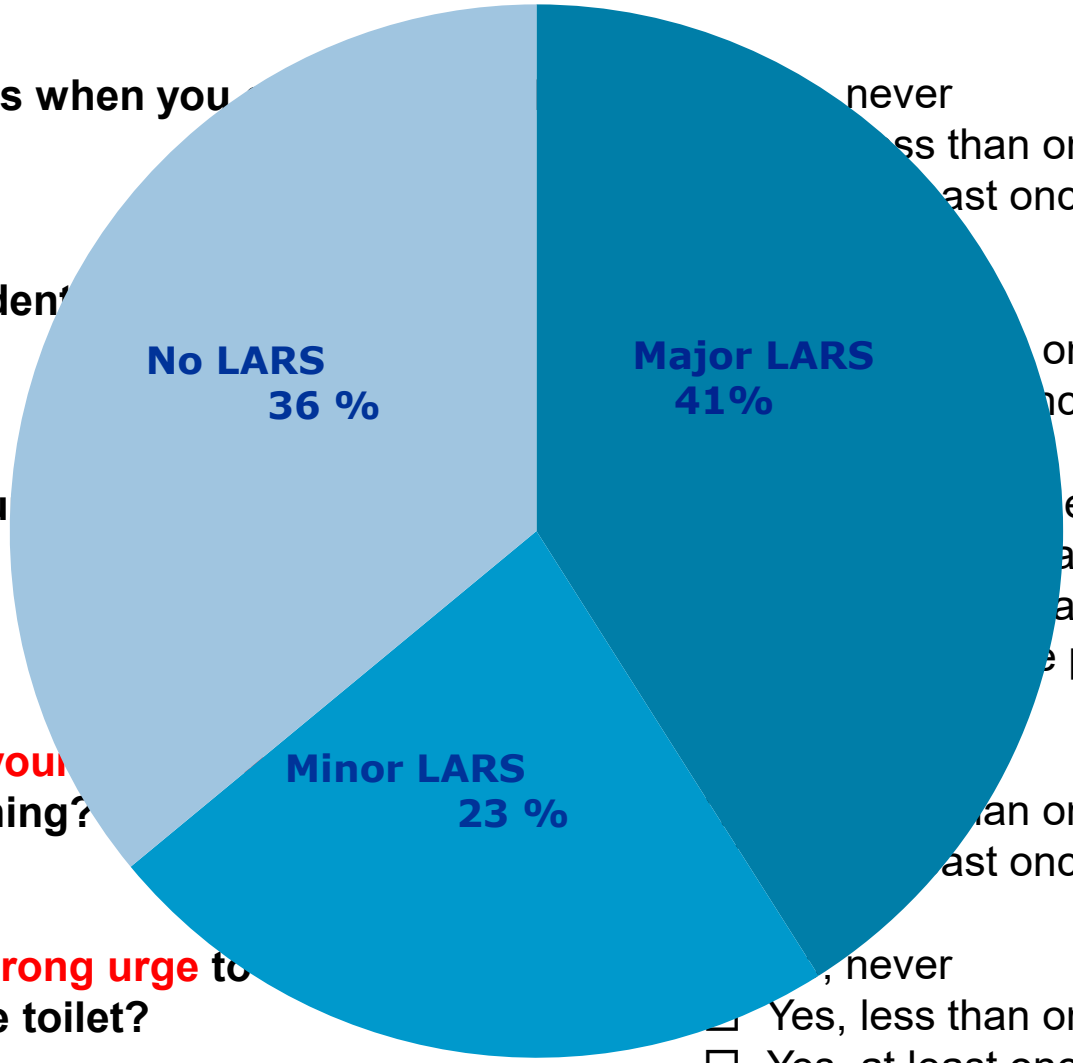
Interpretation of the LARS score



- **Do you ever have occasions when you**
  your flatus (wind)?

  never 0
  ss than once per week 4
  ast once per week 7

- **Do you ever have any accident**
  leakage of liquid stool?

  0
  once per week 3
  nce per week 3

- **How often do you open you**

  es per day (24 hours) 4
  ay (24 hours) 2
  ay (24 hours) 0
  per day (24 hours) 5

- **Do you ever have to open your**
  hour of the last bowel opening?

  0
  an once per week 9
  ast once per week 11

- **Do you ever have such a strong urge to**
  that you have to rush to the toilet?

  , never 0
  ☐ Yes, less than once per week 11
  ☐ Yes, at least once per week 16

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0-20 = **No LARS** 21-29 = **Minor LARS** 30-42 = **Major LARS**

International validation and dissemination of the LARS score

Validated and published translations: 24 languages

With non- validated translations it sums up to 39 languages

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Low Anterior Resection Syndrome

Symptoms

- Variable, unpredictable bowel function
- Emptying difficulties
- Altered stool consistency
- Urgency
- Increased stool frequency
- Incontinence
- Repeated painful stools
- Soiling

Consequences

Impact on:

- Toilet dependence
- Mental and emotional wellbeing
- Preoccupation with bowel function
- Social and daily activities
- Dissatisfaction with bowels
- Relationships and intimacy
- Strategies and compromises
- Roles, commitments and responsibilities

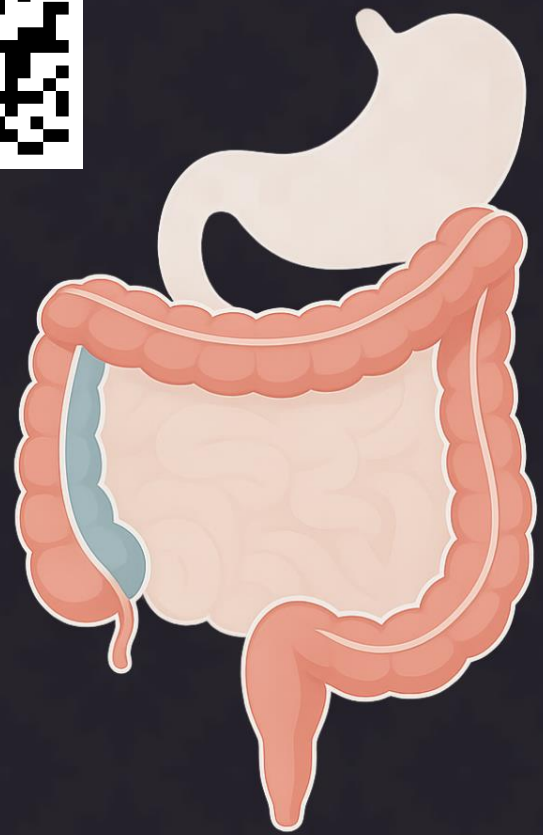
Colorectal Dis. 2020 Mar;22(3):331-341.

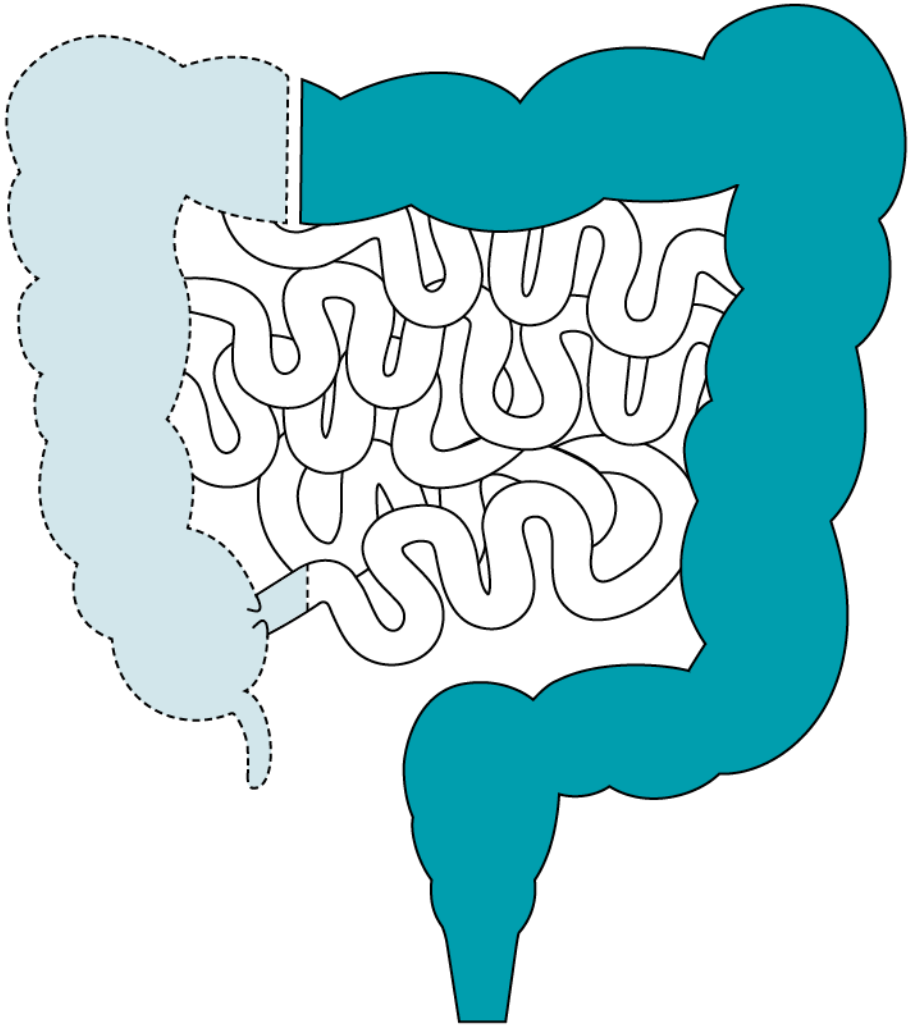
United for Change

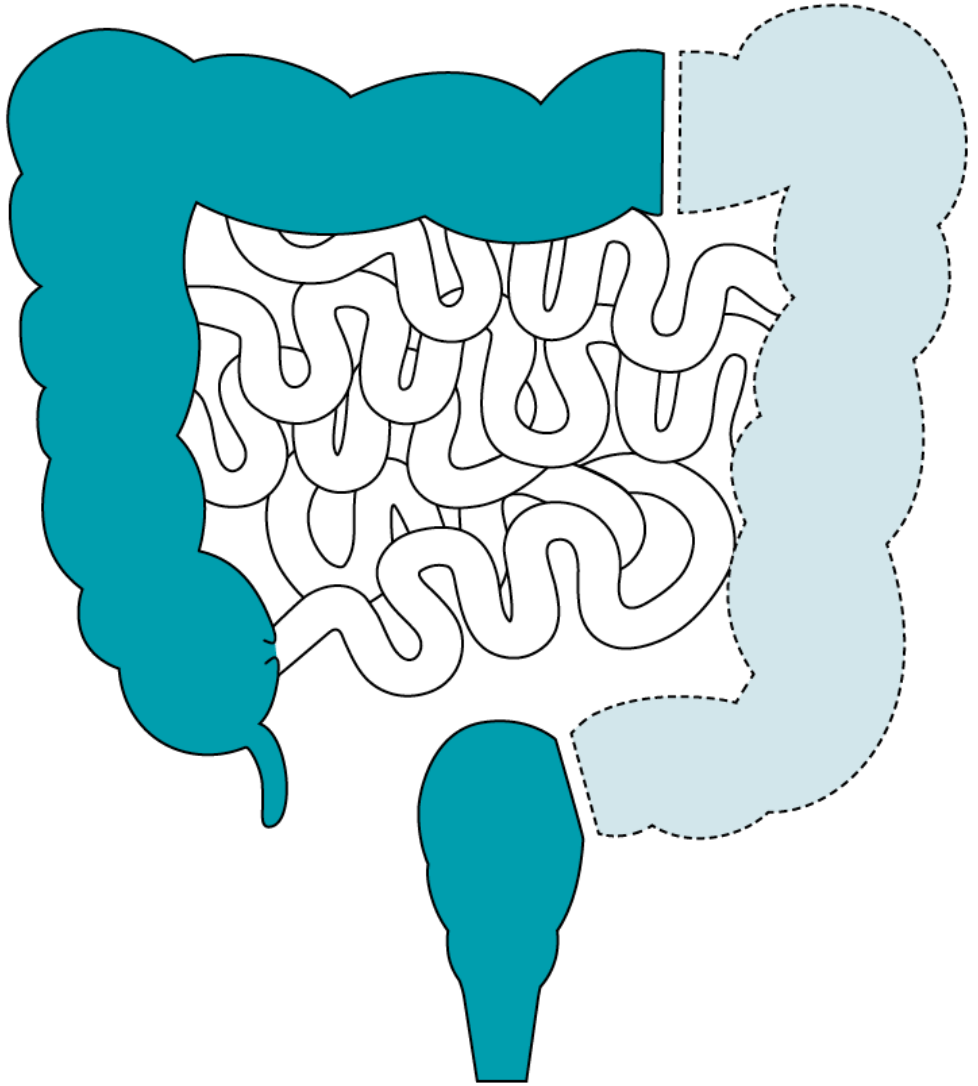
Advancing Care and Research for LARS

We are a diverse group of healthcare providers, researchers, and persons living with Low Anterior Resection Syndrome (LARS), united by a shared goal: to tackle LARS and its sequelae. Together we are dedicated to providing top-notch, patient-centered resources and being a hub for new research and ideas to improve LARS care. Learn more about our expertise and the mission that defines our work.

Read More



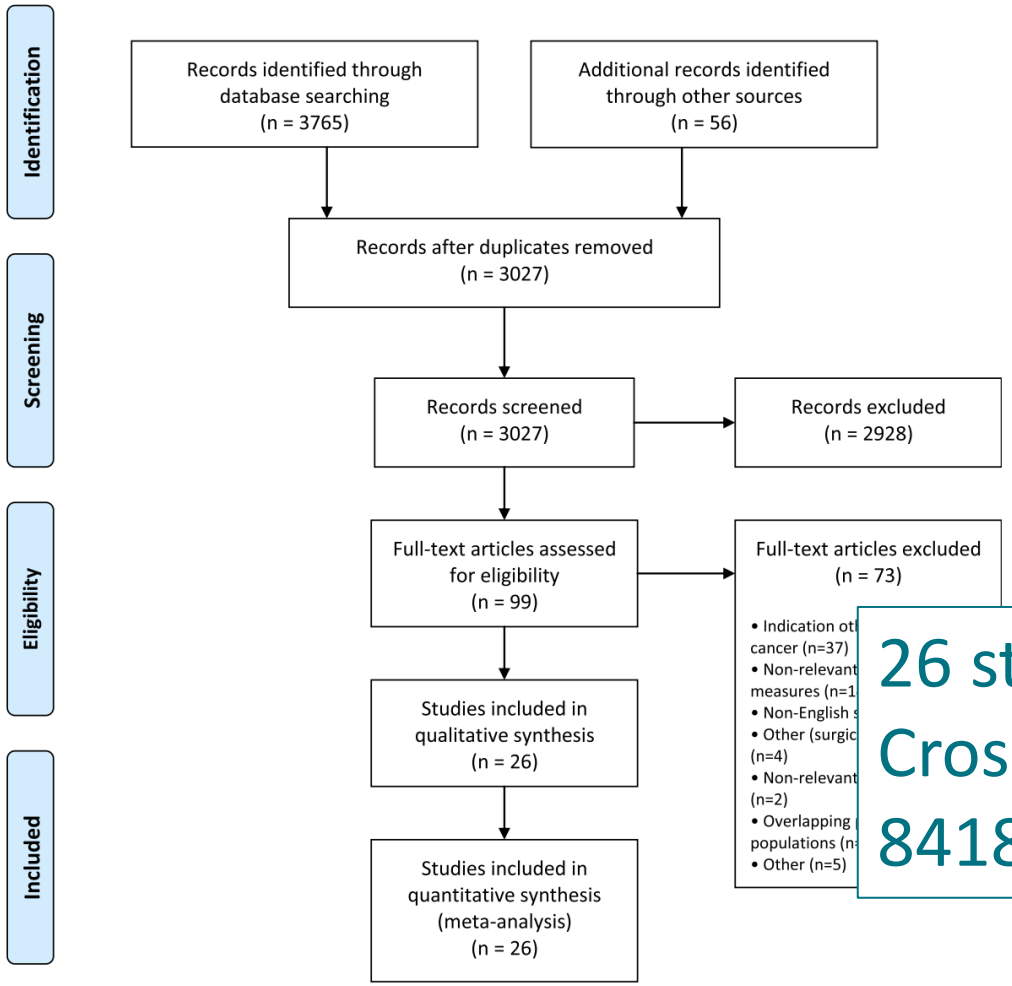




Functional outcomes of surgery for colon cancer: A systematic review and meta-analysis

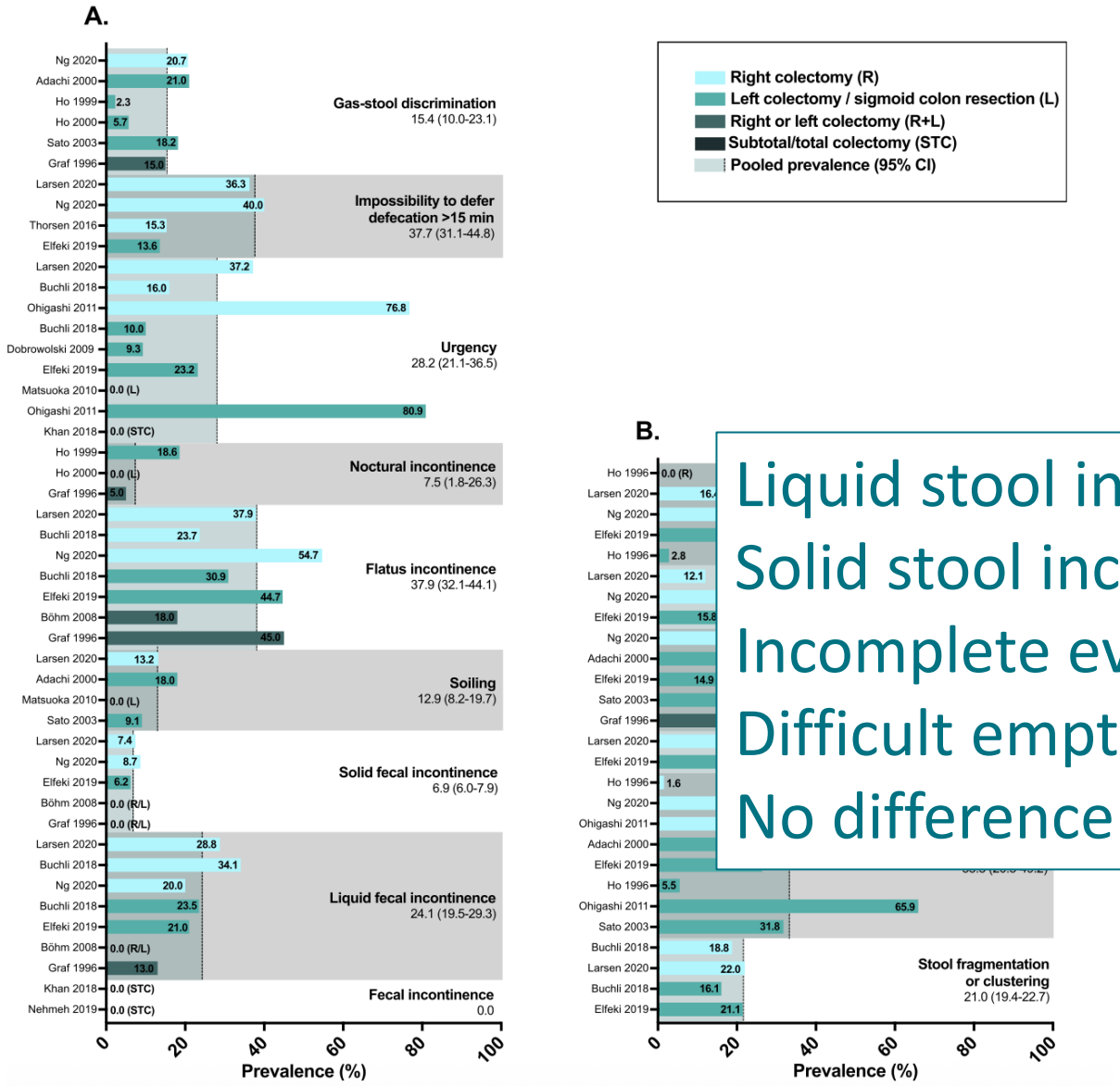
Sanne J. Verkuijl [a, *], Jara E. Jonker [a], Monika Trzpis [a], Johannes G.M. Burgerhof [b], Paul M.A. Broens [a, c], Edgar J.B. Furnée [d]

European Journal of Surgical Oncology 47 (2021) 960–969



26 studies
Cross sectional or retrospective
8418 right or left colectomies

Bowel dysfunction and type of colectomy



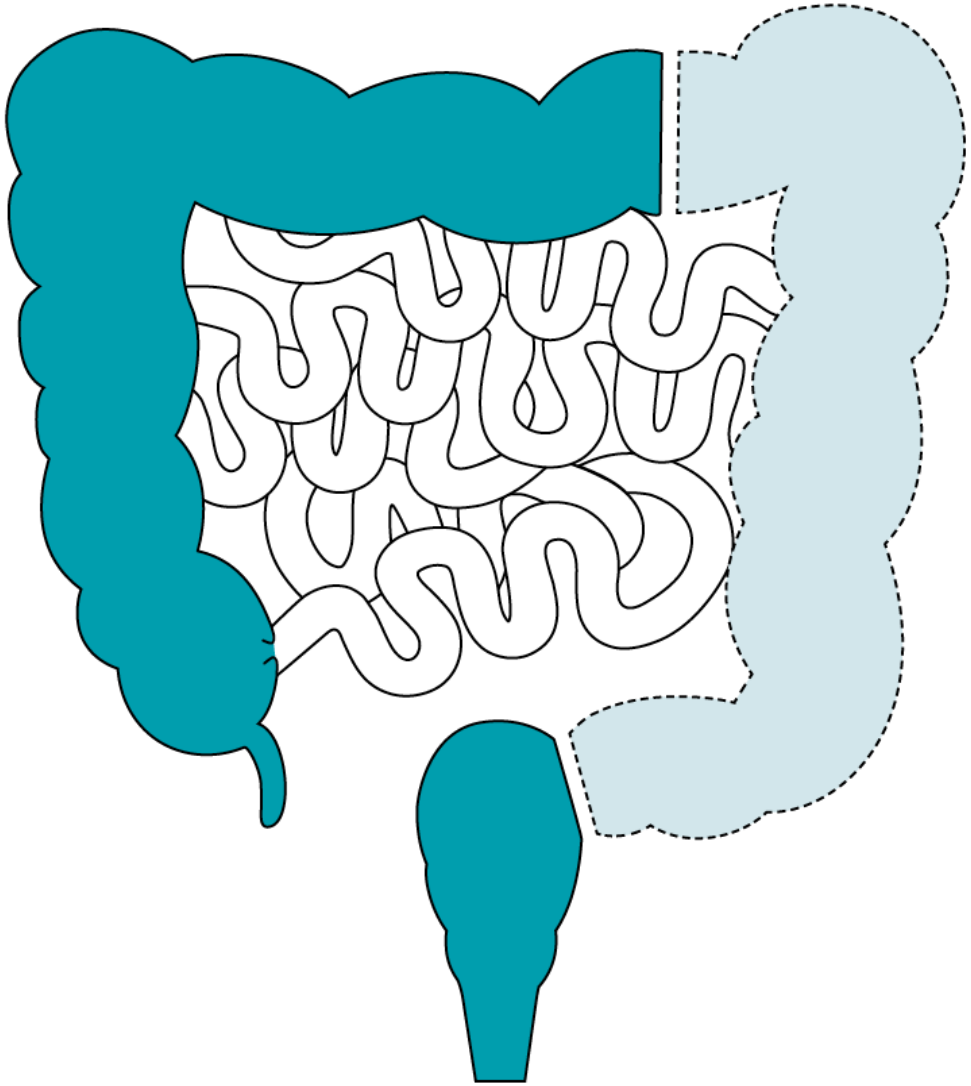
Liquid stool incontinence: 24.1%

Solid stool incontinence: 6.9%

Incomplete evacuation: 33.3%

Difficult emptying: 31.4%

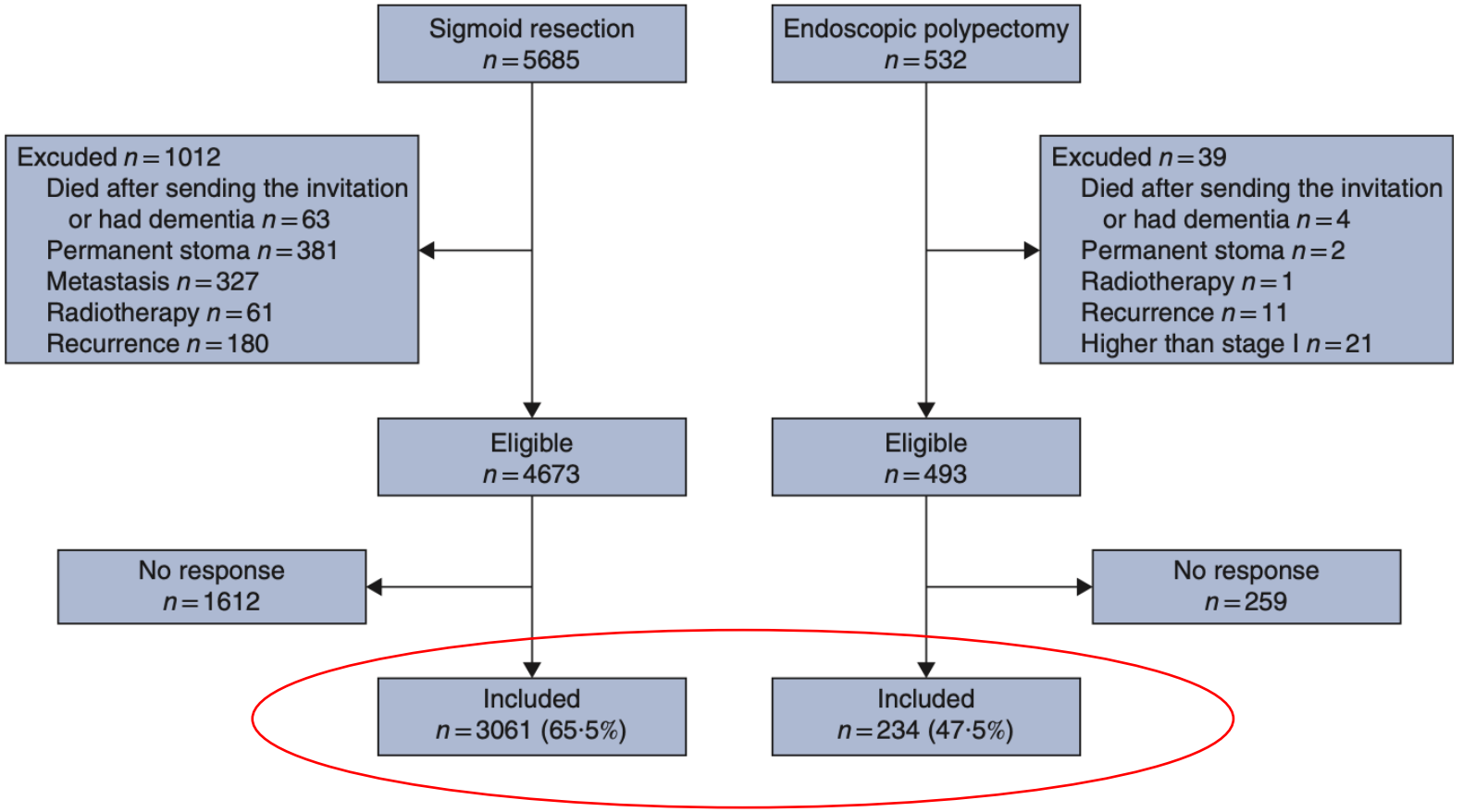
No difference between type of colectomy



Bowel dysfunction after sigmoid resection for cancer and its impact on quality of life

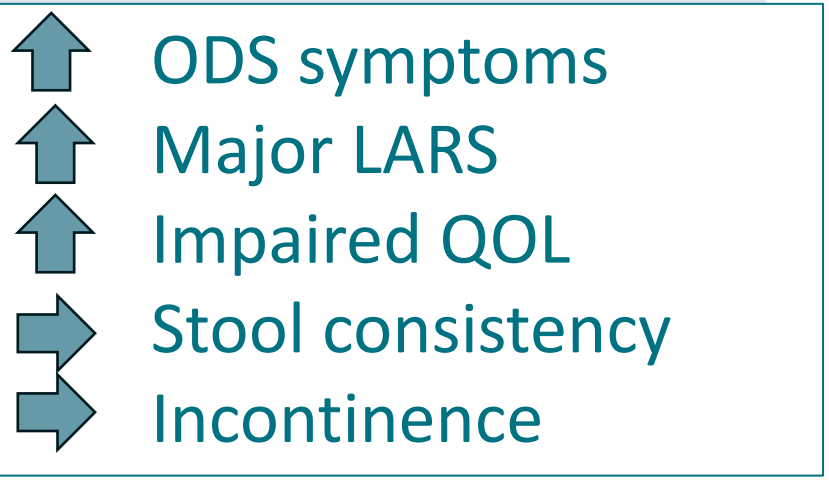
BJS 2019; **106**: 142–151

H. Elfeki[1,3], H. M. Larsen[1], K. J. Emmertsen[1,2], P. Christensen[1], M. Youssef[3], W. Khafagy[3], W. Omar[3] and S. Laurberg[1]



Sigmoid resection and patterns of bowel dysfunction

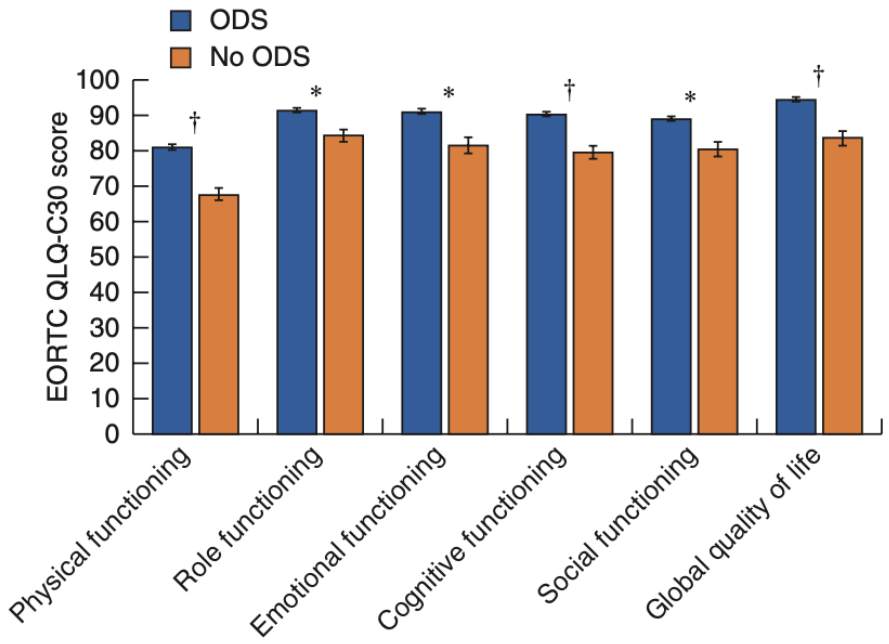
	Sigmoid resection ($n=3061$)	Polypectomy ($n=234$)	P†	Odds ratio*	Adjusted odds ratio*‡
Obstructed defaecation symptoms	546 of 3043 (17·9)	17 of 232 (7·3)	<0·001	2·76 (1·67, 4·57)	2·57 (1·54, 4·26)
BSS score	$n=2951$	$n=225$			
1–2	619 (21·0)	40 (17·8)	0·254	1·19 (0·83, 1·70)	
3–5	2202 (74·6)	170 (75·6)	0·765	1·00 (reference)	
6–7	130 (4·4)	15 (6·7)	0·117	0·66 (0·38, 1·16)	
Wexner incontinence score > 9	173 of 3002 (5·8)	7 of 230 (3·0)	0·099	1·94 (0·99, 4·19)	1·75 (0·81, 3·81)
Major LARS	680 of 2993 (22·7)	35 of 226 (15·5)	0·011	1·61 (1·11, 2·33)	1·60 (1·09, 2·34)
Any change in lifestyle for incontinence	687 of 3038 (22·6)	27 of 232 (11·6)	<0·001	2·21 (1·47, 3·34)	2·09 (1·38, 3·17)
Quality of life	$n=3014$	$n=228$			
Not impaired (no or little impact)	2515 (83·4)	205 (89·9)			
Impaired (some or major impact)	499 (16·6)	23 (10·1)			



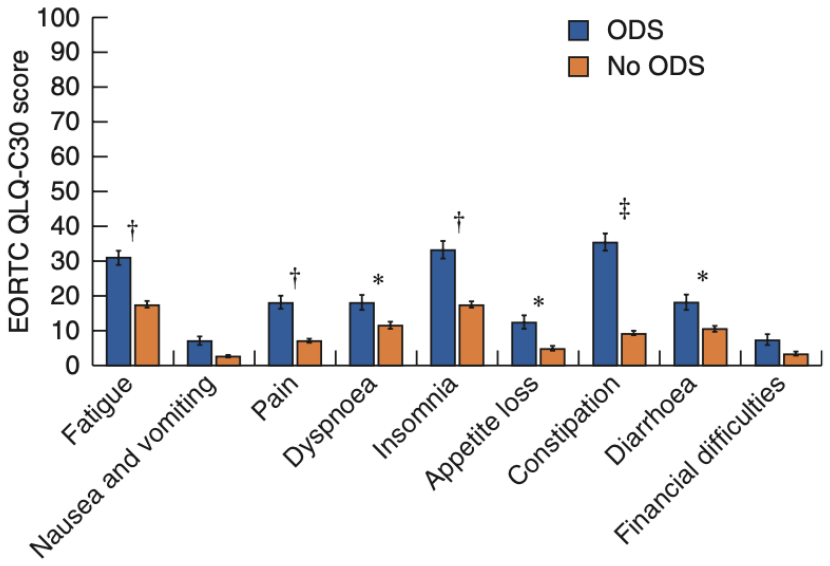
Obstructed defecation syndrome / QOL

No. of symptoms	Sigmoid resection ($n = 3043$)	Polypectomy ($n = 232$)	Crude odds ratio	P
All 6	174 (5·7)	6 (2·6)	2·28 (1·00, 5·21)	0·044
≥5	546 (17·9)	17 (7·3)	2·76 (1·67, 4·57)	<0·001
≥4	1050 (34·5)	49 (21·1)		
≥3	1584 (52·1)	87 (37·5)		
≥2	2182 (71·7)	148 (63·8)		

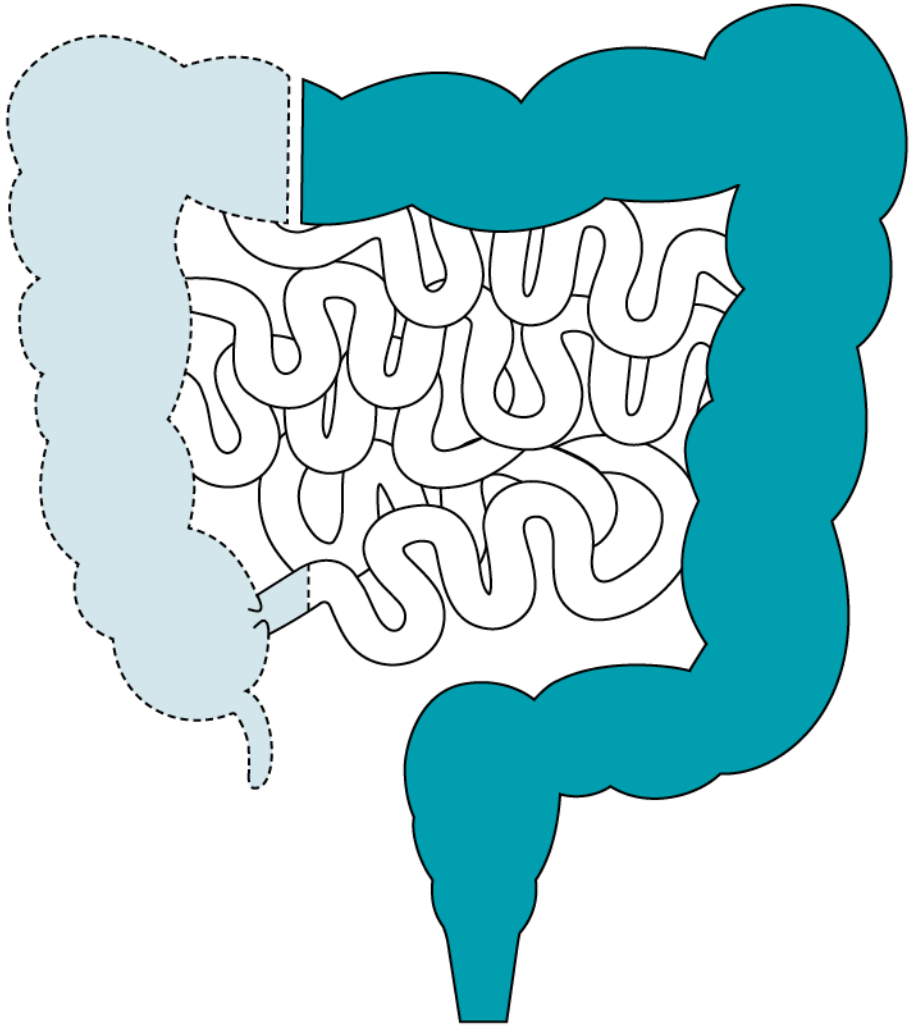
The number of ODS symptoms significantly increase



c Function: ODS *versus* no ODS



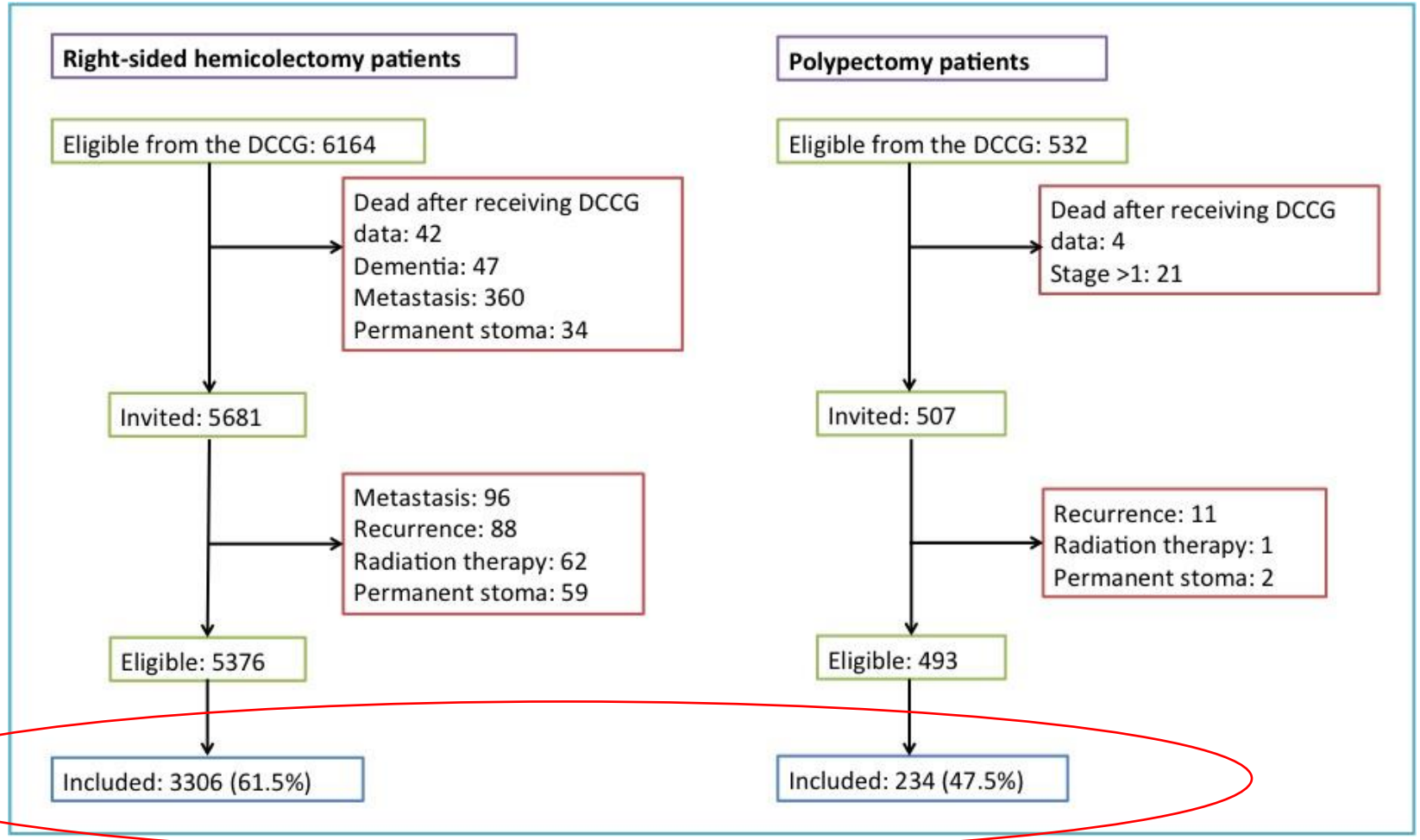
d Symptoms: ODS *versus* no ODS



Long-term bowel dysfunction after right-sided hemicolectomy for cancer

ACTA ONCOLOGICA
2020, VOL. 59, NO. 10, 1240–1245
https://doi.org/10.1080/0284186X.2020.1772502

Helene Mathilde Larsen, Hossam Elfeki, Katrine Jøssing Emmertsen & Søren Laurberg



Right hemicolectomy - patterns of bowel dysfunction

Table 1. Frequency of bowel symptoms in the right-sided hemicolectomy (RHC) and polypectomy group.

Bowel symptom	RHC	Polypectomy	*p*	*OR [95%-CI]*	Adjusted *OR [95%-CI]*
Bristol stool chart			.001		
Type 1	65 (2.1)	5 (2.2)			
Type 2	411 (13.1)	35 (15.6)			
Type 3	506 (16.1)	52 (23.1)			
Type 4	1294 (41.2)	99 (44.0)			
Type 5	377 (12.0)	19 (8.4)			
Type 6	392 (12.5)	14 (6.2)			
Type 7	94 (3.0)	1 (0.4)			
Type 1–5	2653 (84.5)	210 (93.3)			
Type 6–7	486 (15.5)	15 (6.7)		2.56 [1.51–4.37]	2.64 [1.52–4.59]
Defecation frequency			.075		
6 times a week or less	505 (15.8)	30 (13.1)			
1–3 times a day	2409 (75.5)	187 (81.7)			
>4 times a day	279 (8.7)	12 (5.2)			
Alternating stool consistency	1400 (42.9)	72 (31.0)	<.001	1.67 [1.26–2.23]	1.86 [1.38–2.51]
Urgency			<.001		
Never	944 (28.9)	101 (43.9)			
<1 time a week	1106 (33.9)	81 (35.2)			
1–6 times a week	598 (18.3)	28 (12.2)			
Daily	614 (18.8)	20 (8.7)			
Ability to defer defecation			<.001		
>15 minutes	1182 (36.3)	128 (55.7)			
6–15 minutes	1282 (39.4)	70 (30.4)			
<5 minutes	792 (24.3)	32 (13.9)			
Unproductive call to stool			.224		
Never	1822 (55.8)	133 (57.8)			
<1 time a week	1051 (32.2)	78 (33.9)			
1 or more times a week	394 (12.1)	19 (8.3)			
Defecation duration >5 minutes	889 (27.2)	69 (29.9)	.378	0.88 [0.65–1.17]	0.84 [0.62–1.13]
Strain to defecate			.020		
Never	1705 (52.1)	100 (43.5)			
<1 time a week	1032 (31.5)	90 (39.1)			
1–6 times a week	374 (11.4)	23 (10.0)			
Daily	163 (5.0)	17 (7.4)			
Clustering			.148		
Never	1587 (48.8)	124 (53.7)			
<1 time a week	948 (29.2)	70 (30.3)			
1–6 times a week	473 (14.5)	27 (11.7)			
Daily	244 (7.5)	10 (4.3)			
Blood in stool	196 (6.0)	23 (10.0)	.017	0.58 [0.37–0.91]	0.67 [0.41–1.08]
Mucus in stool	524 (16.1)	34 (14.7)	.586	1.11 [0.76–1.62]	1.15 [0.77–1.70]
Nocturnal defecation	660 (20.2)	29 (12.6)	.005	1.76 [1.18–2.62]	1.85 [1.23–2.79]
Incontinence, flatus			.754		
Never	1109 (34.0)	85 (36.8)			
<1 time a week	917 (28.1)	65 (28.1)			
1–6 times a week	639 (19.6)	44 (19.1)			
Daily	600 (18.4)	37 (16.0)			
Incontinence, liquid stool	941 (28.8)	31 (13.5)	<.001	2.60 [1.77–3.82]	2.53 [1.70–3.77]
Incontinence, solid stool	240 (7.4)	10 (4.3)	.080	1.77 [0.93–3.38]	1.41 [0.74–2.72]
Use of pad	616 (18.9)	18 (7.8)	<.001	2.77 [1.70–4.51]	1.96 [1.15–3.34]

- ↑ 6+7 Bristol Stool Type
- ↑ Bowel Frequency
- ↑ Urgency
- ↑ Liquid incontinence
- ↑ Soiling
- ↑ Use of medication
- ↑ Use of pads
- ↑ Impaired QOL
- → Constipation

Impact of bowel function on quality of life <.001

	RHC BSC 1–5	RHC BSC 6–7
None	1394 (53.3)	89 (18.5)
Minor	888 (33.9)	199 (41.3)
Major	334 (12.8)	194 (40.3)

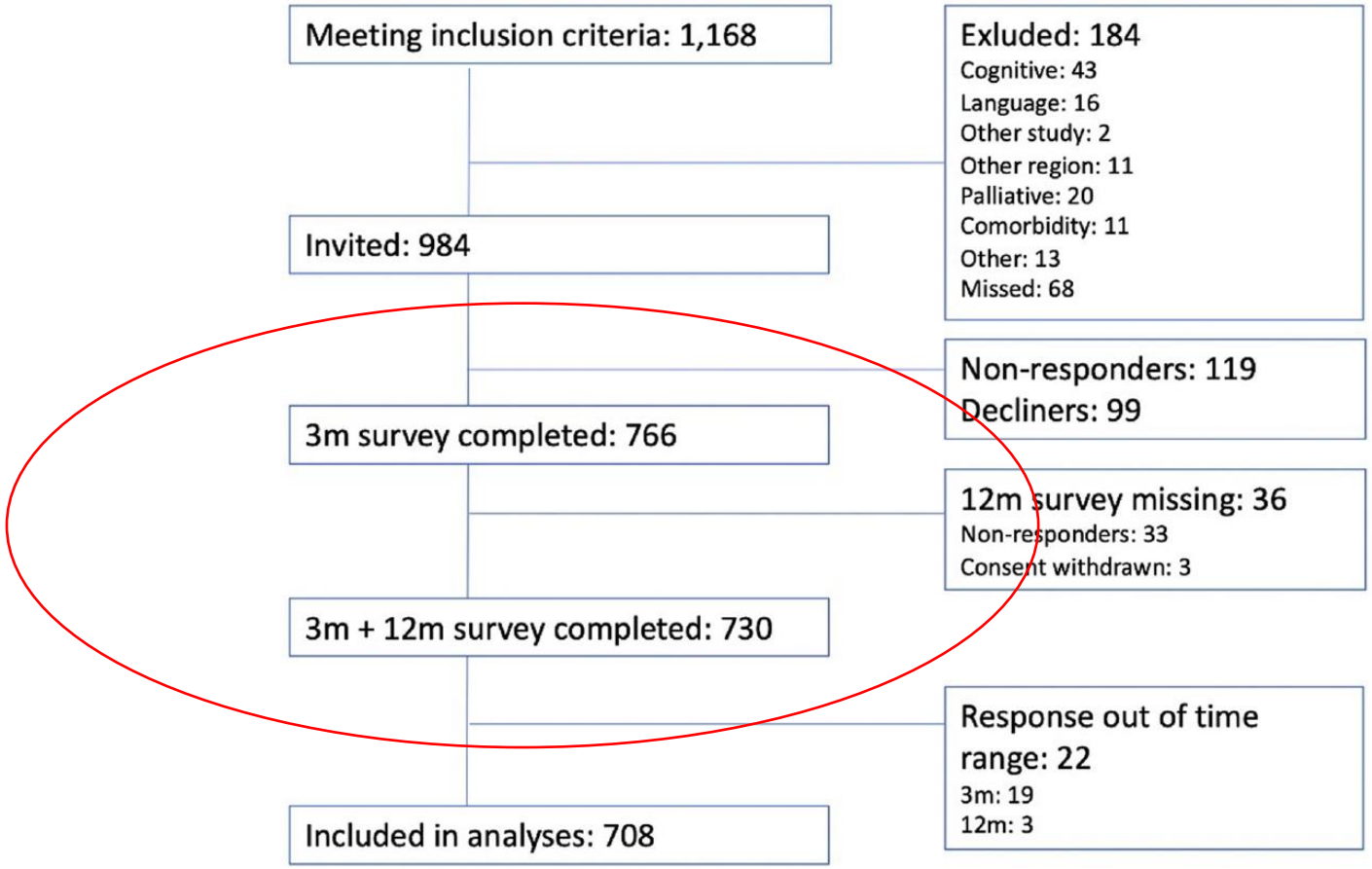
ACTA ONCOLOGICA
https://doi.org/10.1080/0284186X.2023.2246102

Taylor & Francis
Taylor & Francis Group

ORIGINAL ARTICLE

Prospective evaluation of bowel function and quality of life after colon cancer surgery – is it time for routine screening for late sequelae?

Annette Boesen Bräuner[a,b,c], Nicolas Avellaneda[d,e], Peter Christensen[b,c,e], Asbjørn Mohr Drewes[b,f,g], Katrine Jøssing Emmertsen[b,c,h], Klaus Krogh[b,i], Søren Laurberg[b,c], Michael Bødker Lauritzen[b,j], Uffe Schou Løve[a,c], Ole Thorlacius-Ussing[b,g,j] and Therese Juul[b,c,e]



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Bowel dysfunction and type of colectomy

Table 3. Bowel symptoms in right- and left-sided colon resections 12 months after surgery ($n = 677$).

	Right-sided colon	Left-sided colon	Difference (95% CI)	p
Bowel function scores and single items				
Bristol stool chart, *n* (%)				
1–2 (hard)	24 (6.0)	26 (10.2)	−4.2 (−8.6; 0.1)	0.046
3–5 (normal)	298 (74.0)	216 (84.7)	−10.8 (−16.9; −4.6)	0.001
6–7 (loose)	81 (20.1)	13 (5.1)	15.0 (10.3; 19.8)	<0.001
PAC SYM, median (IQR)				
Abdominal	0.25 (0.00–1.00)	0.50 (0.00–0.75)	−0.25 (−0.34; −0.16)	<0.001*
Rectal	0.00 (0.00–0.67)	0.00 (0.00–0.67)	0.00 (−0.12; 0.12)	1.00
Stool	0.40 (0.20–1.00)	0.80 (0.40–1.40)	−0.40 (−0.50; −0.30)	<0.001*
Total	0.42 (0.16–0.83)	0.50 (0.25–0.92)	−0.08 (−0.17; 0.01)	0.07
LARS Score items				
Flatus i				
Neve				0.01
perw				0.87
>/=				0.01
Incontin				
Neve				<0.001
<1 p				0.03
>/=				0.005
Bowel n				
>/=				0.13
1–3				0.40
<1				0.81
Fragmer				
Neve				0.64
<1 p				0.09
>/=				0.20
Urgency				
Never	122 (29.8)	122 (46.9)	−17.2 (−24.7; −9.7)	<0.001
<1 per week	152 (37.1)	79 (30.4)	6.7 (−0.6; 14.0)	0.08
>/= 1 per week	136 (33.2)	59 (22.7)	10.5 (3.7; 17.3)	0.004
St. Mark's Incontinence Score, median (IQR)				
Total score	4.00 (0.50–7.00)	3.5 (0.5–7.00)	0.5 (−0.20; 1.20)	0.16
Night-time defaecation[a], *n* (%)				
Never	340 (82.9)	200 (76.9)	6.0 (−0.3; 12.3)	0.06
<1 week	45 (11.0)	36 (13.9)	−2.9 (−8.1; 2.3)	0.27
>/= 1 week	25 (6.1)	24 (9.2)	−3.1 (−7.4; 1.1)	0.13

Right vs. Left colectomy

↑ Flatus incontinence

↑ Liquid stool incontinence

↑ Urgency

→ ODS

Table 2. Change in bowel function from 3 m to 12 m after surgery, for patients undergoing a right-sided or a left-sided colon resection ($n = 662$).

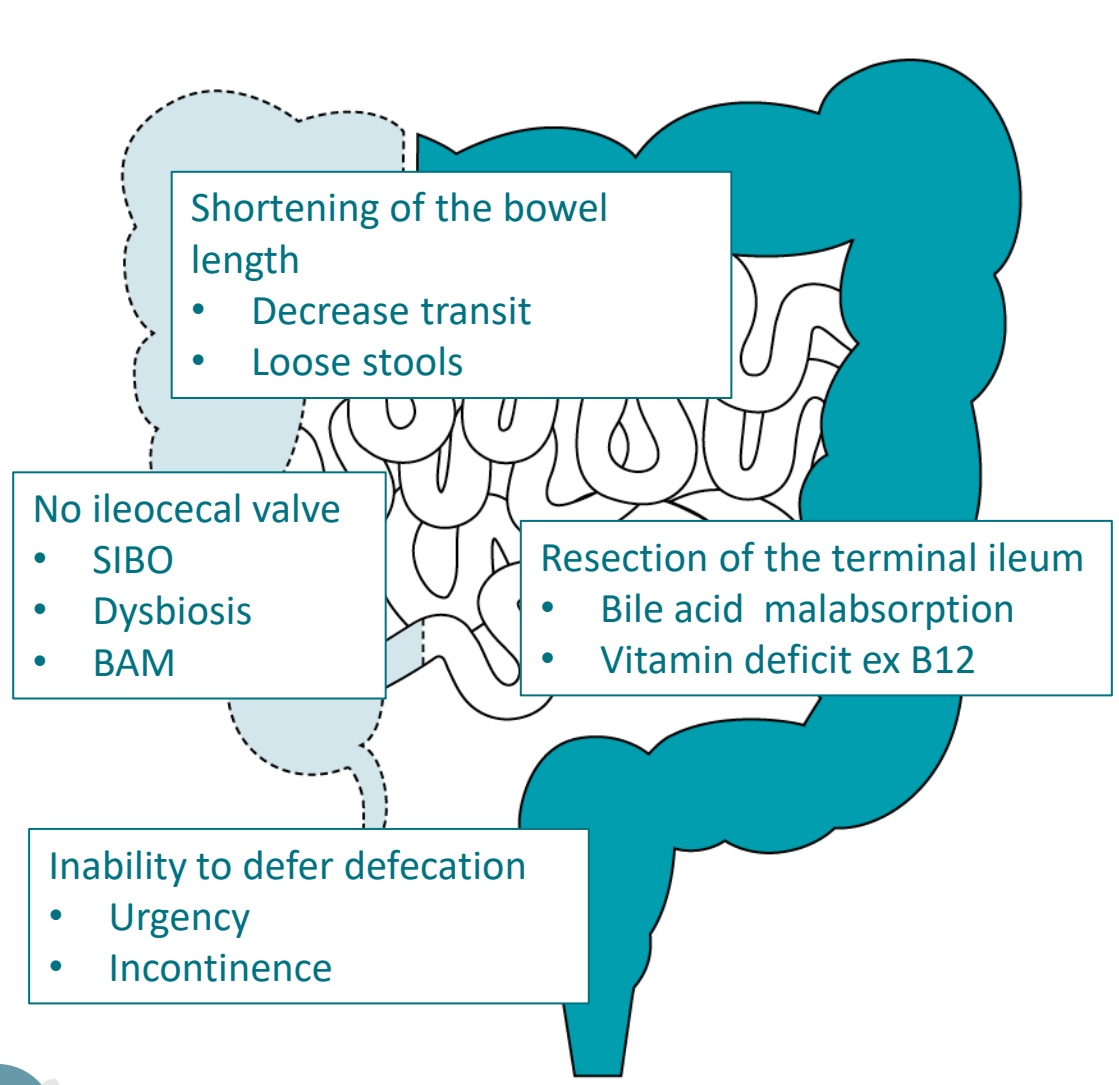
	Right-sided colon resection ($n = 410$) Comparison of 3 m versus 12 m				Left-sided colon resection ($n = 252$) Comparison of 3 m versus 12 m			
	Bowel function scores and items							
	3 m	12 m	Difference (95% CI)	*p*	3 m	12 m	Difference (95%CI)	*p*
Bowel function scores and single items								
Bristol Stool Chart, *n* (%)								
1–2 (hard)	24 (6.2)	21 (5.4)	−0.8 (−4.2; 2.6)	0.63	25 (10.3)	24 (9.8)	−0.4 (−5.7; 4.9)	0.87
3–5 (normal)	291 (75.0)	289 (74.5)	−0.5 (−5.7; 4.7)	0.84	199 (81.6)	207 (84.8)	3.3 (−2.9; 9.5)	0.27
6–7 (loose)	73 (18.8)	78 (20.1)	1.3 (−3.3; 5.9)	0.56	20 (8.2)	13 (5.3)	−2.9 (−6.6; 0.8)	0.09
PAC-SYM, median (IQR)								
Abdominal	0.5 (0.0–1.0)	0.25 (0.0–1.0)	0.00 (−0.05; 0.05)*	0.91	0.5 (0.0–0.8)	0.5 (0.0–0.8)	−0.01 (−0.08; 0.06)*	0.63
Rectal	0.0 (0.0–0.5)	0.0 (0.0–0.7)	0.07 (0.02; 0.13)*	0.005	0.0 (0.0–0.3)	0.0 (0.0–0.3)	−0.01 (−0.08; 0.05)*	0.64
Stool	0.4 (0.2–0.8)	0.4 (0.2–1.0)	0.02 (−0.03; 0.08)*	0.30	0.8 (0.4–1.2)	0.8 (0.4–1.4)	0.02 (−0.05; 0.10)*	0.93
Total	0.4 (0.2–0.8)	0.4 (0.2–0.8)	0.02 (−0.02; 0.06)*	0.37	0.5 (0.3–0.8)	0.5 (0.3–0.9)	0.00 (−0.05; 0.05)*	0.91
LARS Score items								
Flatus incontinence, *n* (%								
Never								0.66
<1 per week								0.015
>/= 1 per week							9)	0.022
Incontinence liquid stool								
Never								0.07
<1 per week								0.39
>/= 1 per week							1)	<0.001
Bowel movement freque								
>/= 4 daily								0.24
1–3 daily								0.43
<1 daily								1.00
Fragmented defaecation,								
Never								1.00
<1 per week								0.39
>/= 1 per week								0.31
Urgency, *n* (%)								
Never,								<0.001
<1 per week								0.91
>/= 1 per week							5)	< 0.001
St. Mark's Faecal Incontiner								
Total score							13)*	0.008
Night-time defaecation[a], *n*								
Never								0.027
<1 week	44 (11.0)	45 (11.3)	0.3 (−3.7; 4.2)	0.89	38 (15.5)	34 (13.8)	_1.6 (−7.7; 4.4)	0.57
>/= 1 week	24 (6.0)	24 (6.0)	0.00 (−2.7; 2.7)	1.00	32 (13.0)	19 (7.7)	−5.3 (−9.6; −1.0)	0.009
Use of medication and fibre supplements								
Constipating agents, *n* (%) (St. Mark's Faecal Incontinence Score item)								
Yes	23 (5.9)	22 (5.6)	−0.3 (−3.0; 2.5)	0.84	10 (4.1)	11 (4.5)	0.40 (−3.5; 4.3)	0.82
Laxatives[a], *n* (%)								
Yes	65 (16.5)	54 (13.7)	−2.8 (−6.2; 0.6)	0.09	47 (19.4)	50 (20.7)	−1.2 (−4.1; 6.6)	0.62
Fibre supplements[a], *n* (%)								
Yes	98 (24.8)	101 (25.6)	0.8 (−3.6; 5.1)	0.71	72 (29.4)	66 (26.9)	−2.5 (−8.3; 3.4)	0.38
Self-rated bowel function and quality of life								
Self-rated bowel function[a], *n* (%)								
Very good/good	278 (68.6)	258 (63.7)	−4.9 (−10.1; 0.2)	0.047	152 (61.3)	155 (62.5)	1.2 (−5.6; 8.0)	0.71
Acceptable	101 (24.9)	120 (29.6)	4.7 (−0.8; 10.2)	0.08	76 (30.7)	77 (31.1)	0.4 (−6.9; 7.7)	0.91

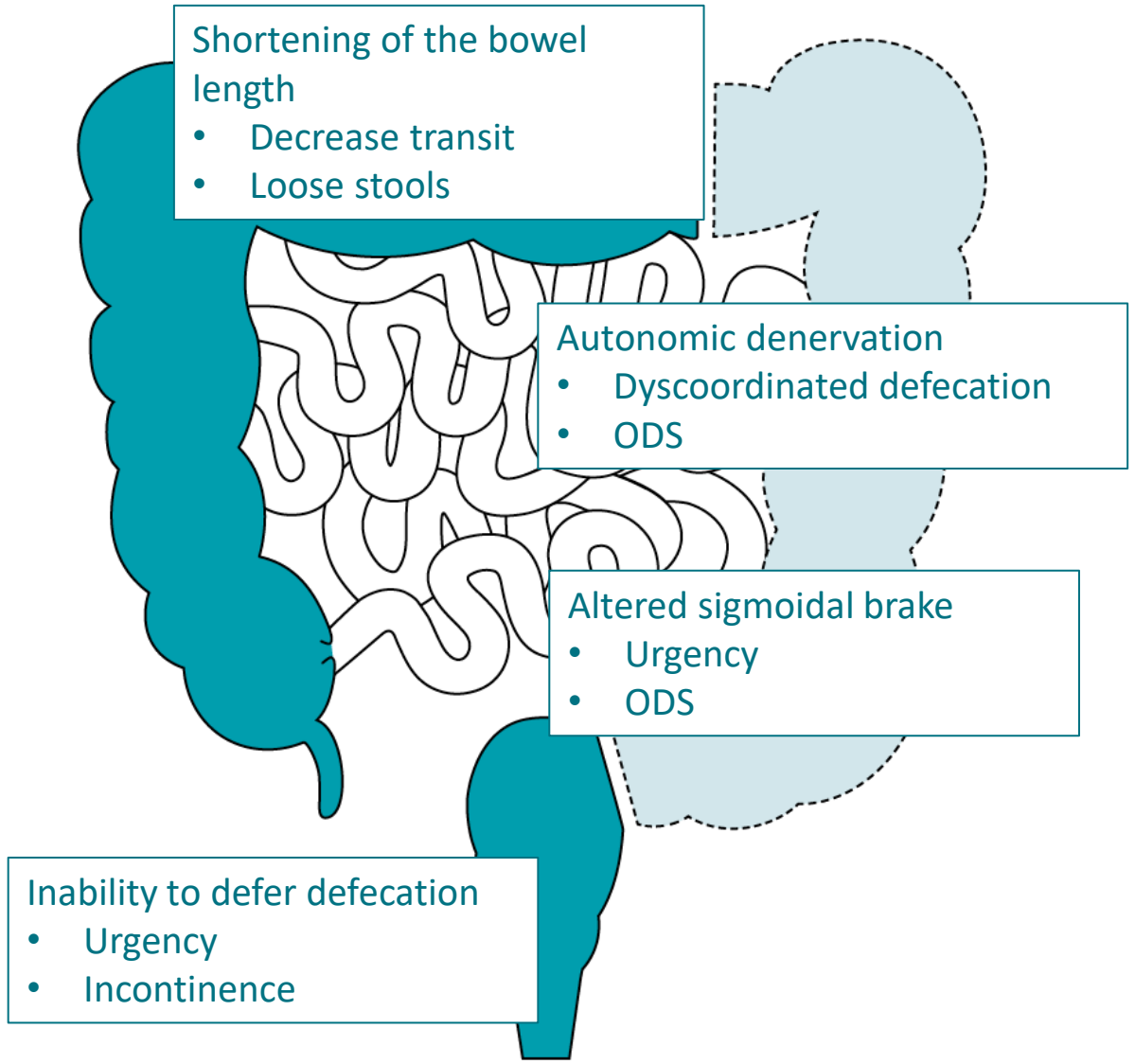
(*continued*)

Most symptoms do not change
Incontinence symptoms increase
(flatal and liquid + urgency)

Do not wait until the bowel returns to normal; it will not!

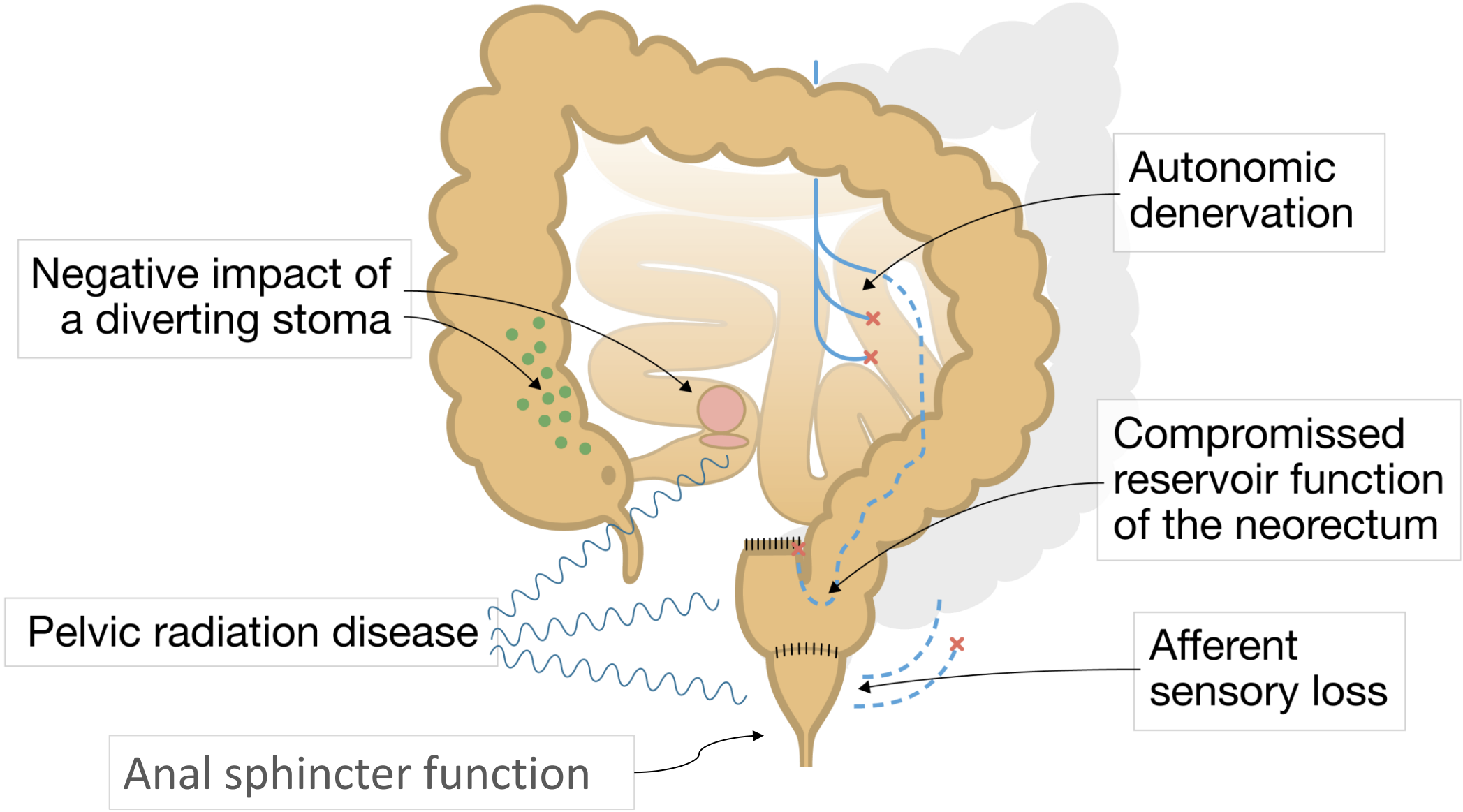
Right or left hemicolectomy - different pathophysiology





AUH Surgery
Surgical Research

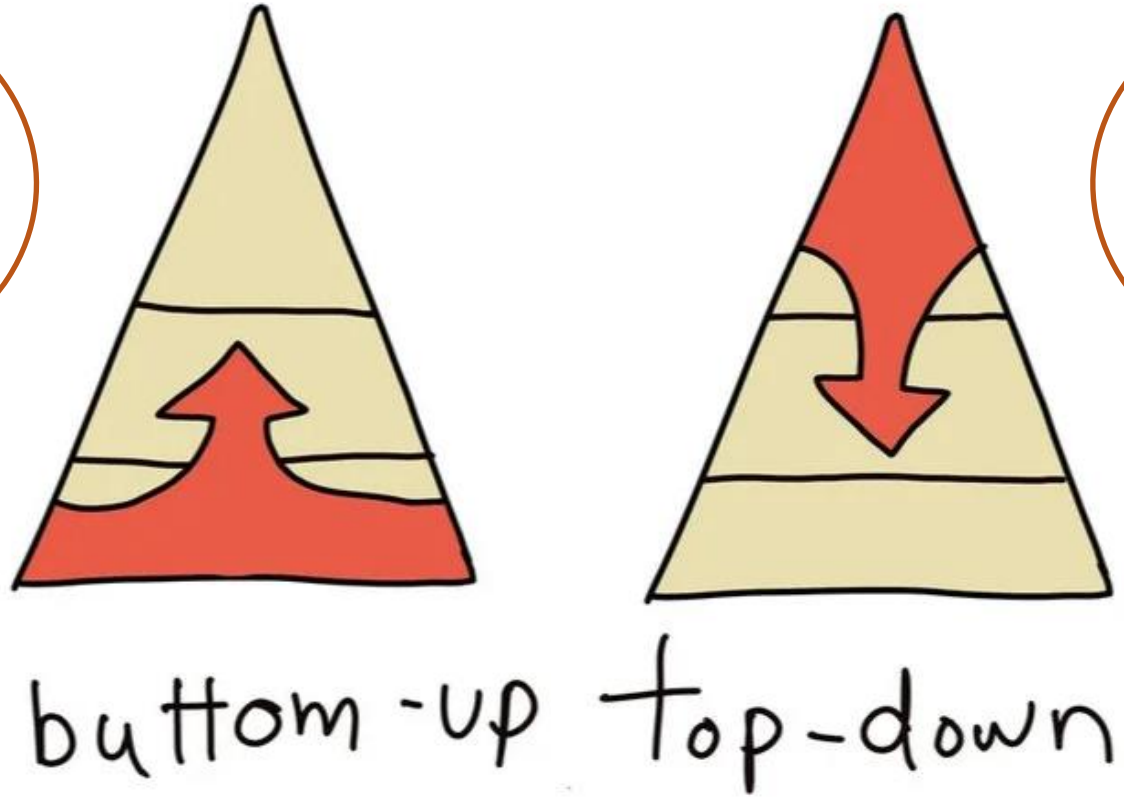
Mixed pathophysiological model for LARS |

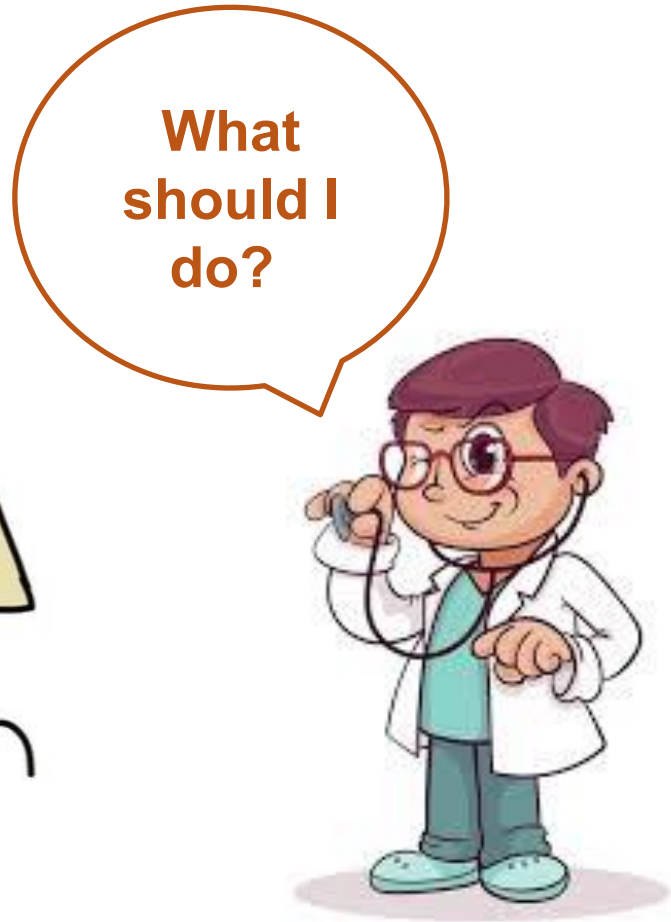



HELP
SUPPORT
ADVICE
GUIDANCE
ASSISTANCE

Guided by symptoms
Nurse led
Less costs

Driven by diagnosis
Physician led
More costs






Fordøjelsessystemet
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Bugspytkirtel
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Tyndtarm
Endetarm
Coloplast
Coloplast Danmark A/S, Mellevej 11-15, 2990 Nivå
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midt


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opiumtinktu
Dropizol
10 mg/ml
10 ml


MOVICOL
Effective relief
from constipation
30 sachets
NORGINE

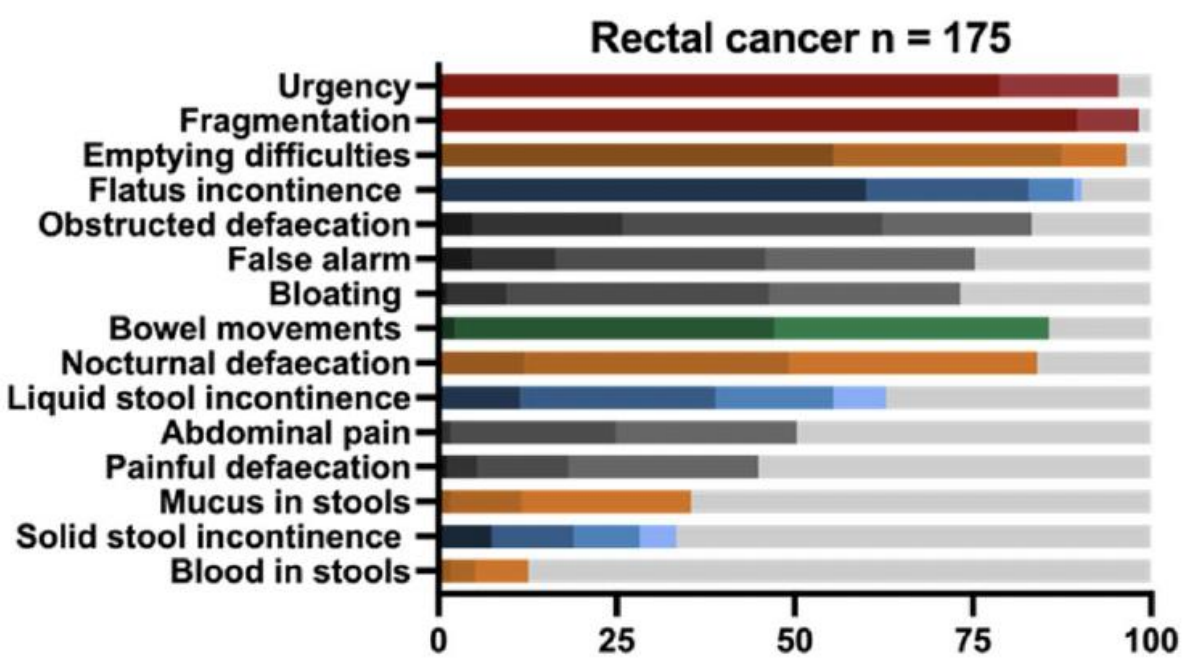

detsundeliv.dk

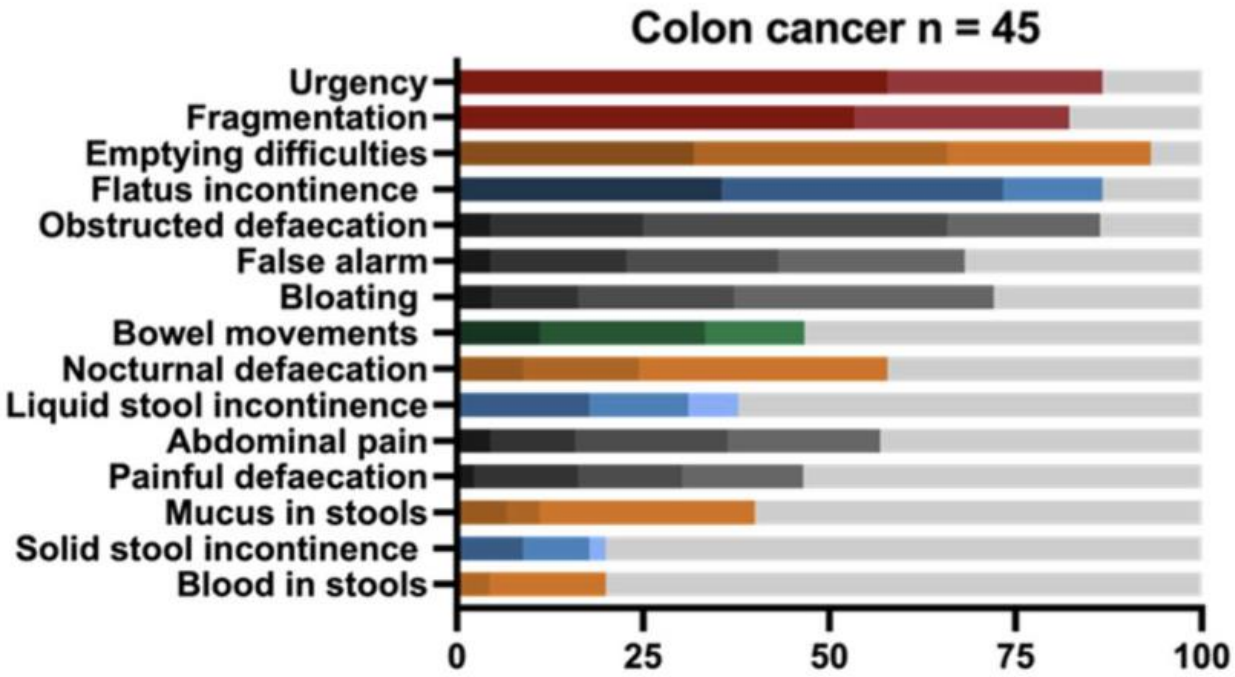

90°
35°
Vs.
UNHEALTHY
HEALTHY
BATHROOM POSTURE

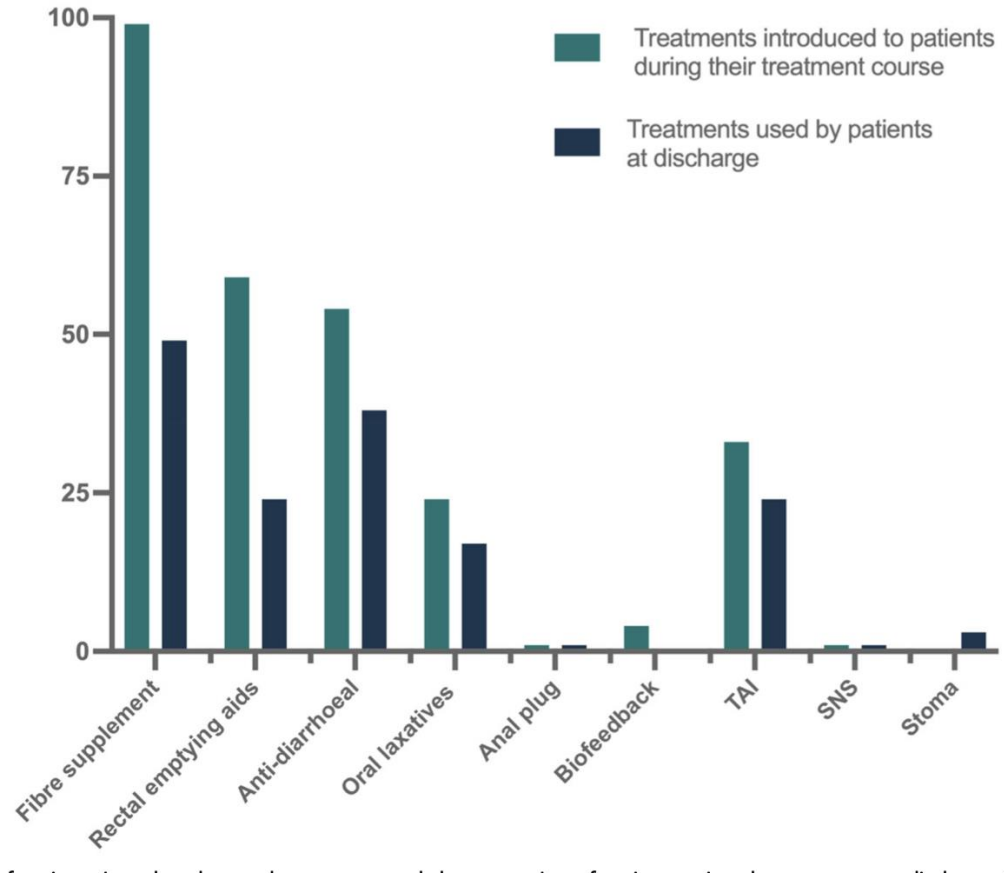
Bowel dysfunction following pelvic organ cancer: a prospective study on the treatment effect in nurse-led late sequelae clinics

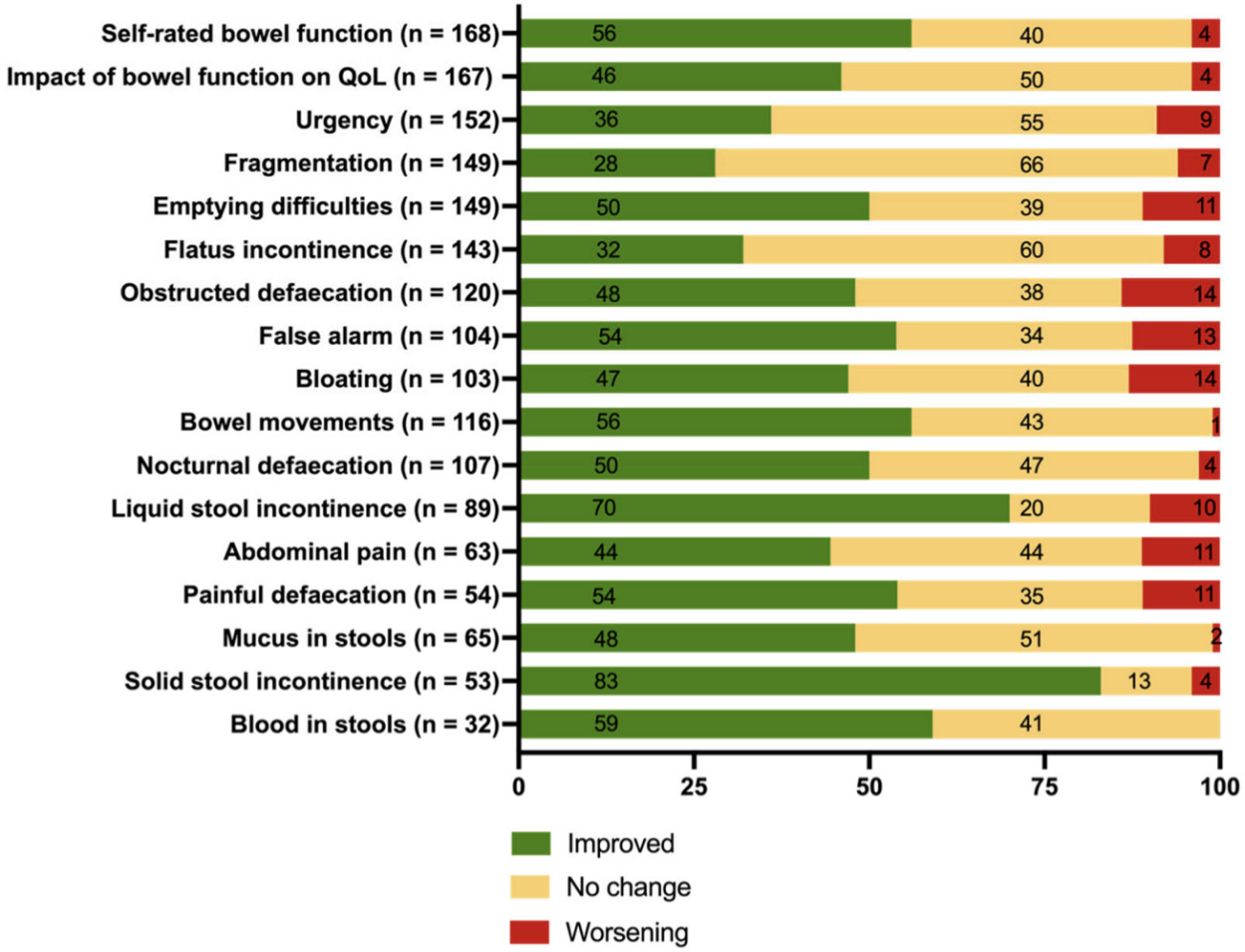
ACTA ONCOLOGICA
2023, VOL. 62, NO. 1, 70–79

Mira Mekhael[a,b,c], Helene M. Larsen[a,c,f], Michael B. Lauritzen[c,d], Ole Thorlacius-Ussing[c,d,e], Søren Laurberg[a,c], Klaus Krogh[c,f], Asbjørn M. Drewes[c,g], Peter Christensen[a,c] and Therese Juul[a,b,c]







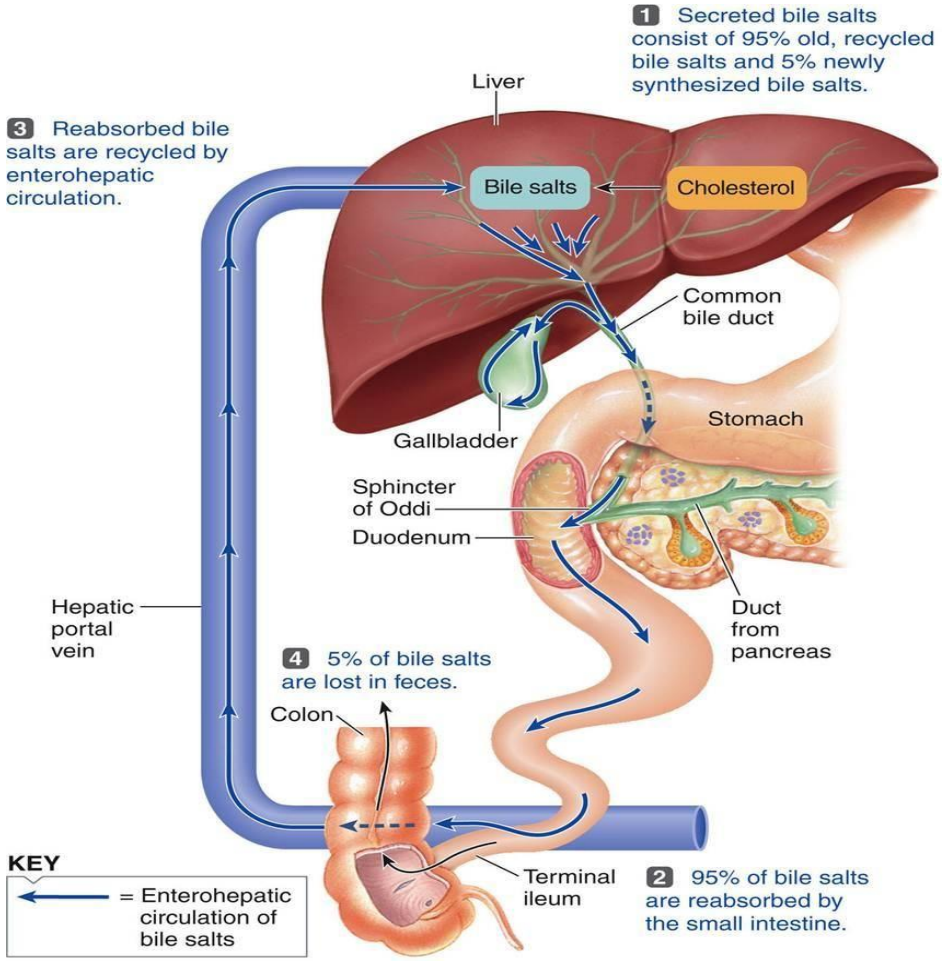


AUH Surgery
Surgical Research

Work up by the Gastroenterologist |

- **Search for diagnosis –**
  specific treatment
- Basic GI evaluation:
  celiac disease, lactose intolerans, IBD etc
- Small bowel bacterial overgroth:
  Hydrogen breath test / doudenal aspiration
- Bile Acid Malabsorption:
  seHCAT scan
- Neuropathy:
  Small bowel and colonic transit

Bile Acid Malabsorption



Under recognized

- ileal dysfunction impairing the ability to absorb bile acid

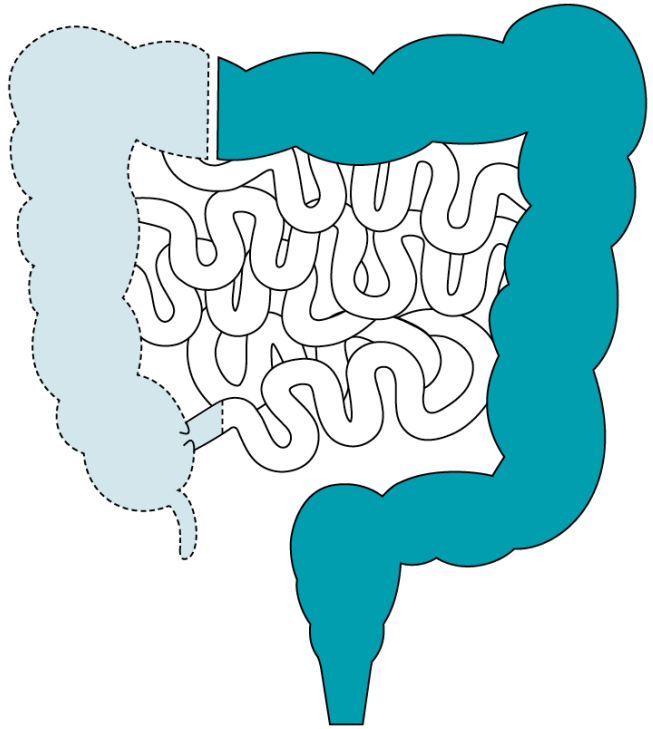
Excess bile acid in the colon

- diarrhoea, physical discomfort, faecal urgency, and risk of incontinence

Chronic loose stools following right-sided hemicolectomy for colon cancer and the association with bile acid malabsorption and small intestinal bacterial overgrowth

Colorectal Disease. 2023;25:600–607.

Helene Mathilde Larsen[1,2] | Klaus Krogh[1,3] | Mette Borre[1,3] | Tine Gregersen[4] | Mette Mejlby Hansen[3] | Anne K Arveschoug[4] | Peter Christensen[1,2] | Asbjørn Mohr Drewes[1,5] | Katrine Jøssing Emmertsen[1,6] | Søren Laurberg[1,2] | Janne Ladefoged Fassov[1,3]



45 symptomatic vs 19 controls

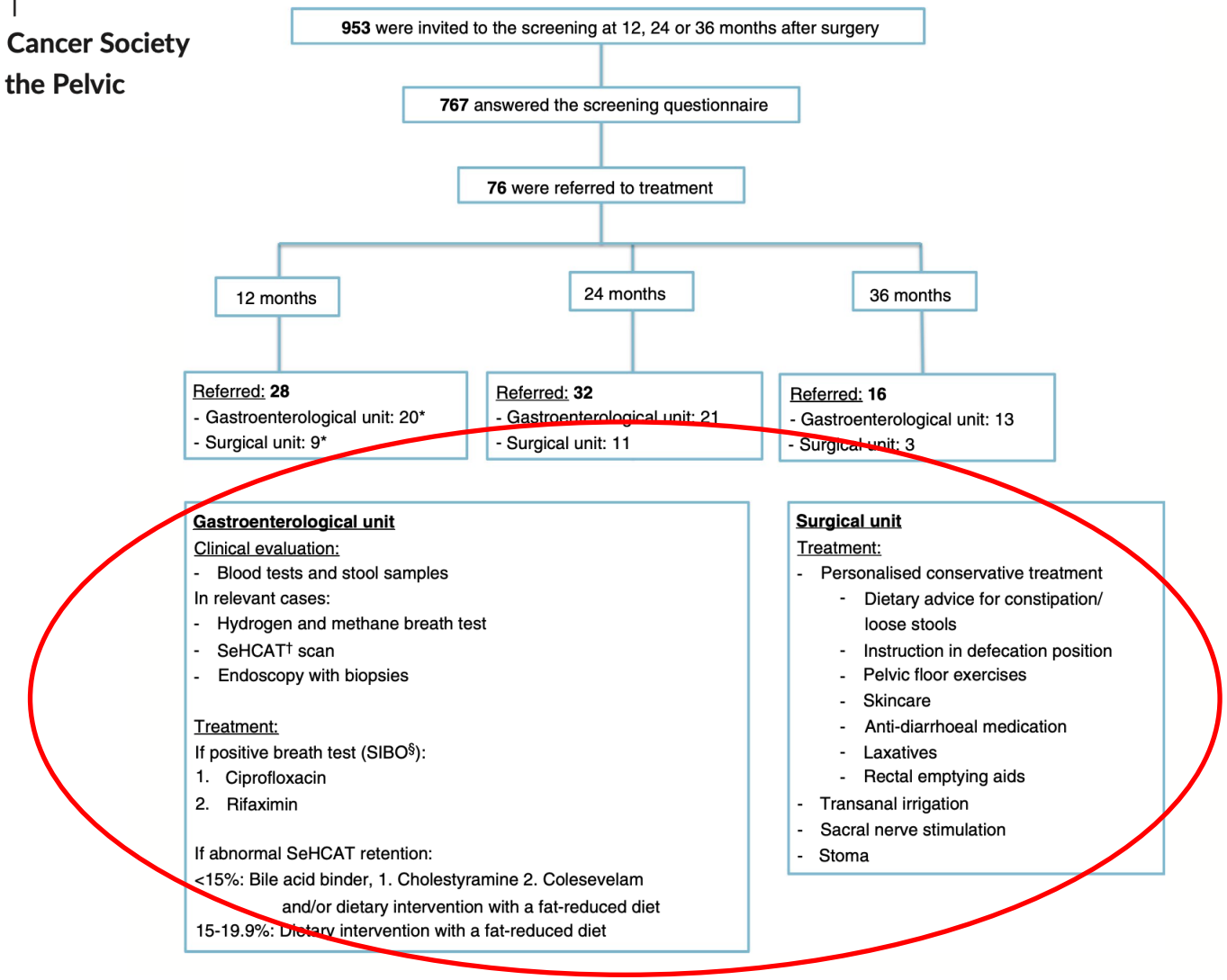
- Bile Acid Malabsorption
- Small bacterial overgrowth
- Transit time

	Cases	Controls	*p*-value
SeHCAT			
≥1			.001
<1			
Seve			
M			.020
M			
Se			
Breath test			
Negative	12 (26.7)	5 (26.3)	0.977
Positive	33 (73.3)	14 (73.7)	
GITT, median (IQR)	1.0 (0.6–1.6)	1.2 (0.7–2.6)	0.127
FGF19, pg/ml, median (IQR)	90.7 (67.9–135.8)	93.9 (78.1–115.0)	0.894

Long-term gastrointestinal sequelae in colon cancer survivors: prospective pilot study on identification, the need for clinical evaluation and effects of treatment

Colorectal Disease. 2021;23:356–366.

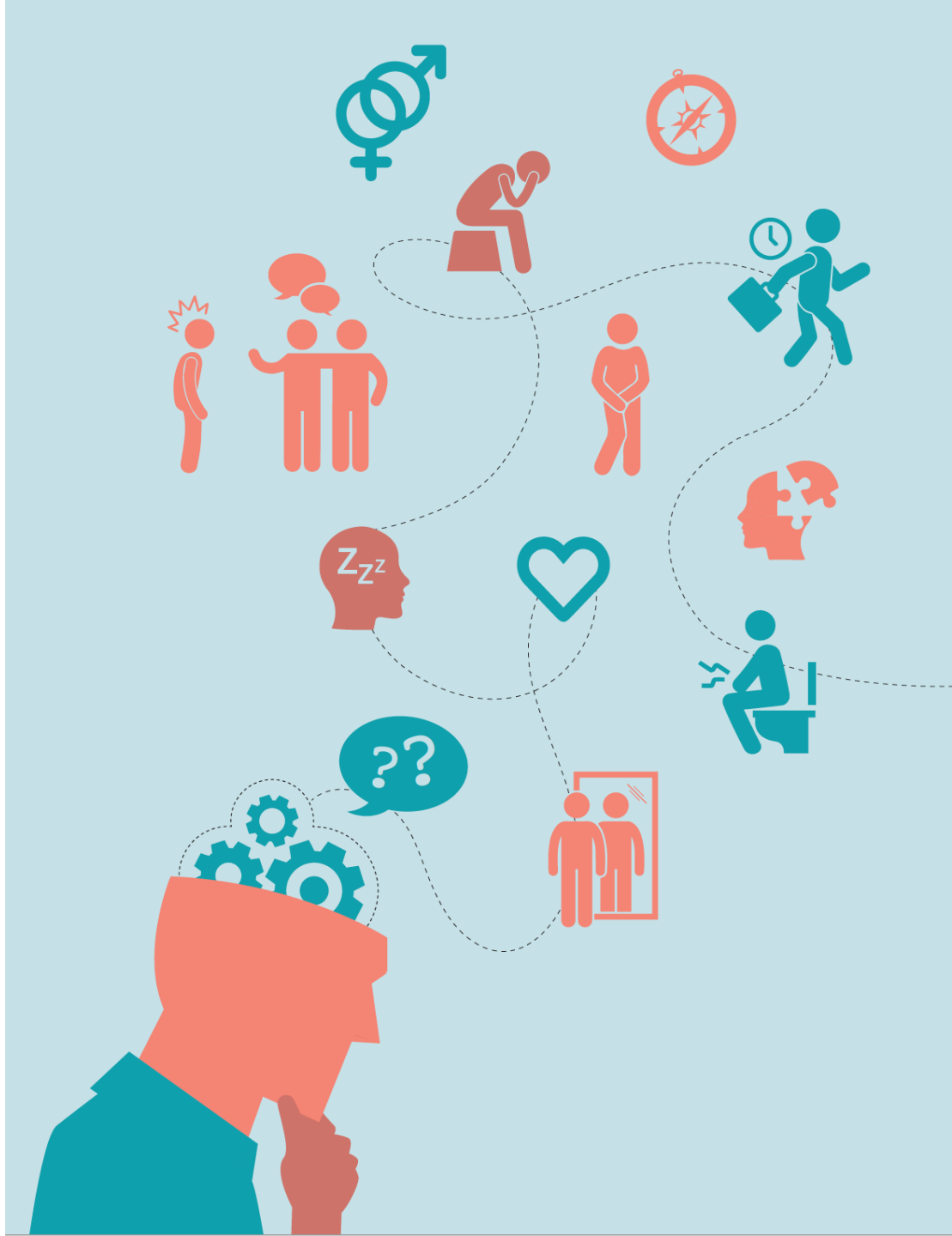
Helene M. Larsen[1,2,3] | Mira Mekhael[1,3] | Therese Juul[1,3,4] | Mette Borre[2,3] | Peter Christensen[1,3] | Asbjørn Mohr Drewes[3,5] | Ole Thorlacius-Ussing[3,6] | Søren Laurberg[1,3] | Klaus Krogh[2,3] | Janne Ladefoged Fassov[2,3] | Danish Cancer Society Centre for Research on Survivorship and Late Adverse Effects after Cancer in the Pelvic Organs Study Group



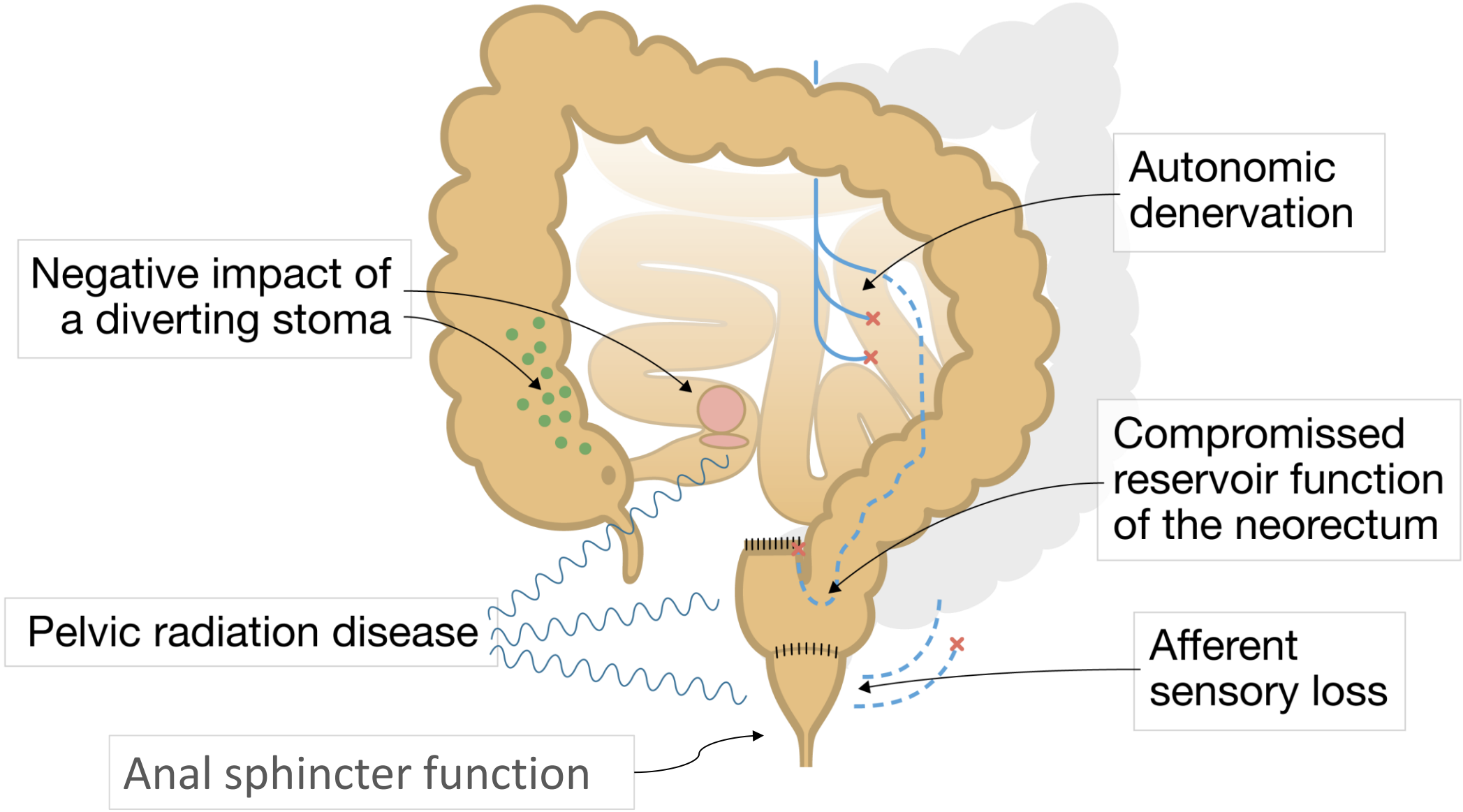
And what did we find?

	Right colon (*n* = 35)	Left colon (*n* = 17)
Diagnostic findings		
Lactose intolerance	1 (3)	1 (6)
Coeliac disease	–	–
f-elastase 1 < 100 µg/g	4 (11)	–
Vitamin B_{12} deficiency	2 (6)	2 (12)
Folate deficiency	1 (3)	–
Vitamin D deficiency	3 (9)	–
Breath test		
Negative	5 (14)	2 (12)
Positive	19 (54)	9 (53)
SeHCAT retention		
Normal (>15%)	4 (11)	1 (6)
10–15%	3 (9)	–
<10%	11 (31)	–

66 new diagnoses in 52 patients



Mixed pathophysiological model for LARS |



ESA-Randomized Controlled Trial

OPEN

The Role of Pelvic Floor Muscle Training on Low Anterior Resection Syndrome

A Multicenter Randomized Controlled Trial

Anne Asnong, PT, MSc, André D'Hoore, MD, PhD,†*
Marijke Van Kampen, PT, PhD, Albert Wolthuis, MD, PhD,†*
Yves Van Molhem, MD,‡ Bart Van Geluwe, MD,§ Nele Devoogdt, PT, PhD,‖*
An De Groef, PT, PhD,¶# Ipek Guler Caamano Fajardo, MSc,***
*and Inge Geraerts, PT, PhD**

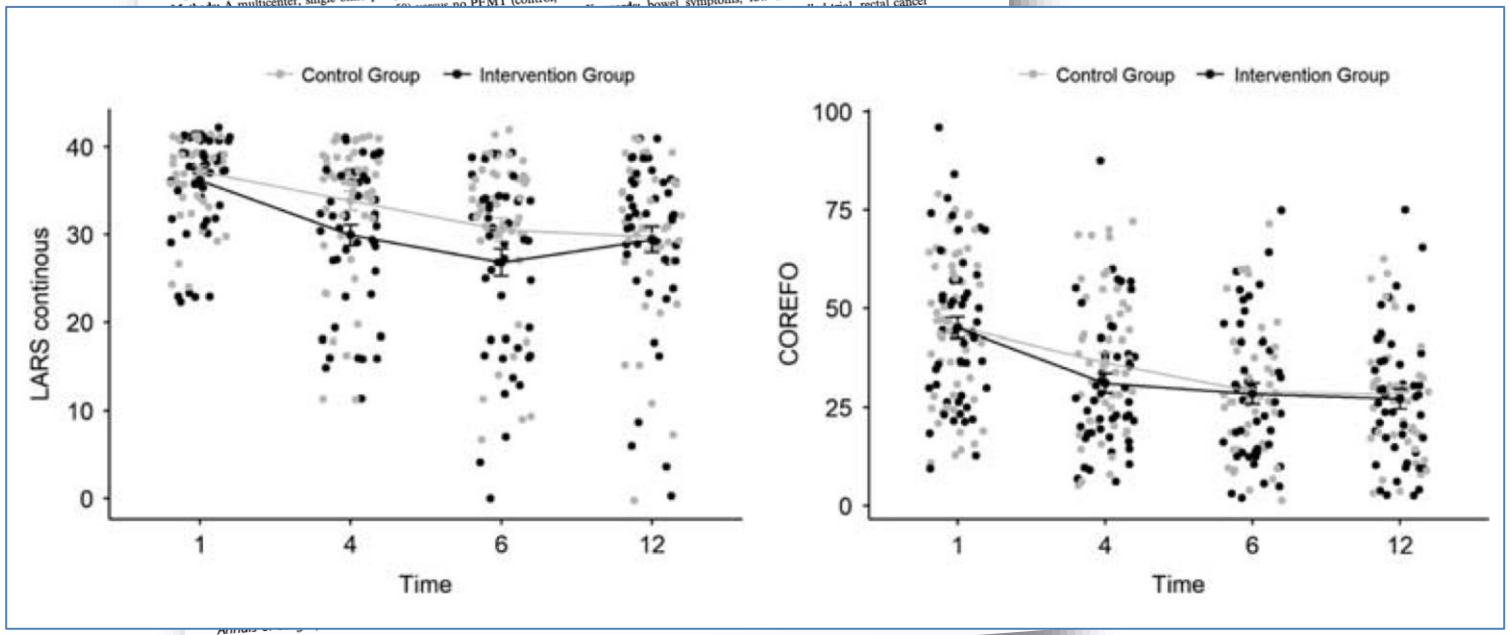
Background and Objective: Total mesorectal excision (TME) for rectal cancer (RC) often results in significant bowel symptoms, commonly known as low anterior resection syndrome (LARS). Although pelvic floor muscle training (PFMT) is recommended in noncancer populations for treating bowel symptoms, this has been scarcely investigated in RC patients. The objective was to investigate PFMT effectiveness on LARS in patients after TME for RC.

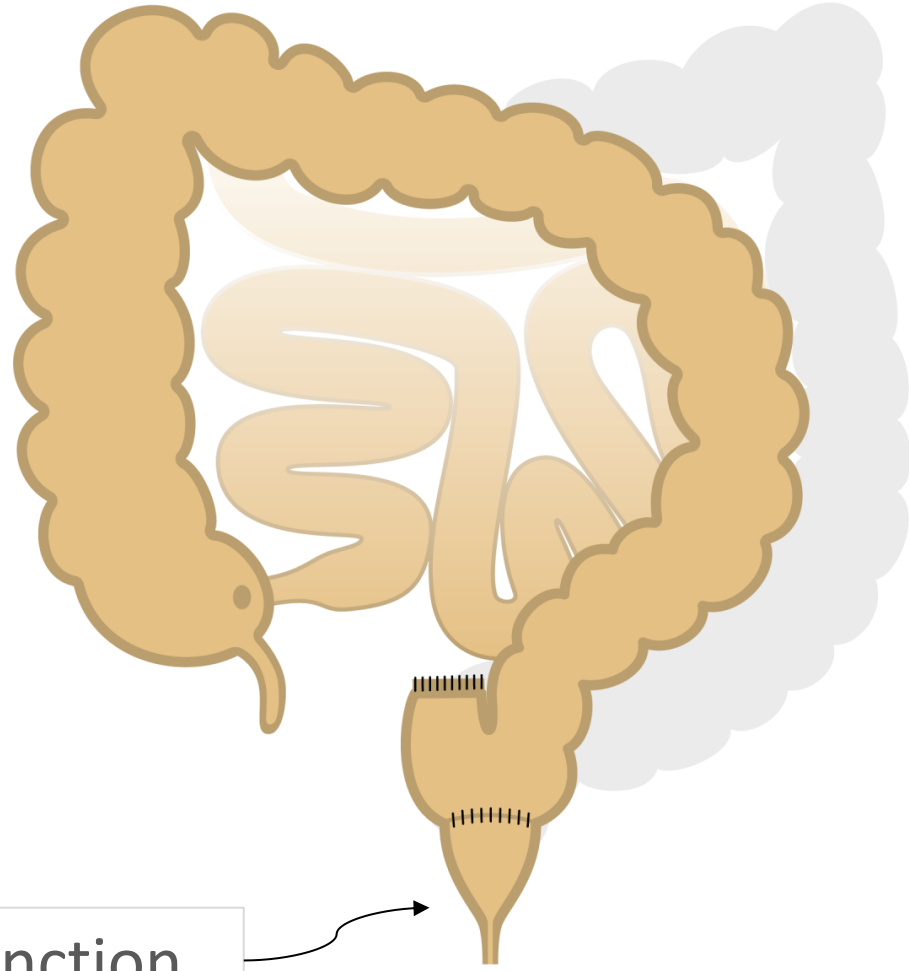
A multicenter, single-blind prospective randomized controlled [illegible] no PFMT (control;

Outcome scores ($P=0.0369$) and frequency of bowel movements ($P=0.0277$), solid stool leakage (day, $P=0.0241$; night, $P=0.0496$) and the number of clusters ($P=0.0369$), derived from the stool diary. No significant differences were found for the Numeric Rating Scale/quality of life scores.

Conclusions: PFMT for bowel symptoms after TME resulted in lower proportions and faster recovery of bowel symptoms up to 6 months after surgery/stoma closure, justifying PFMT as an early, first-line treatment option for bowel symptoms after RC.

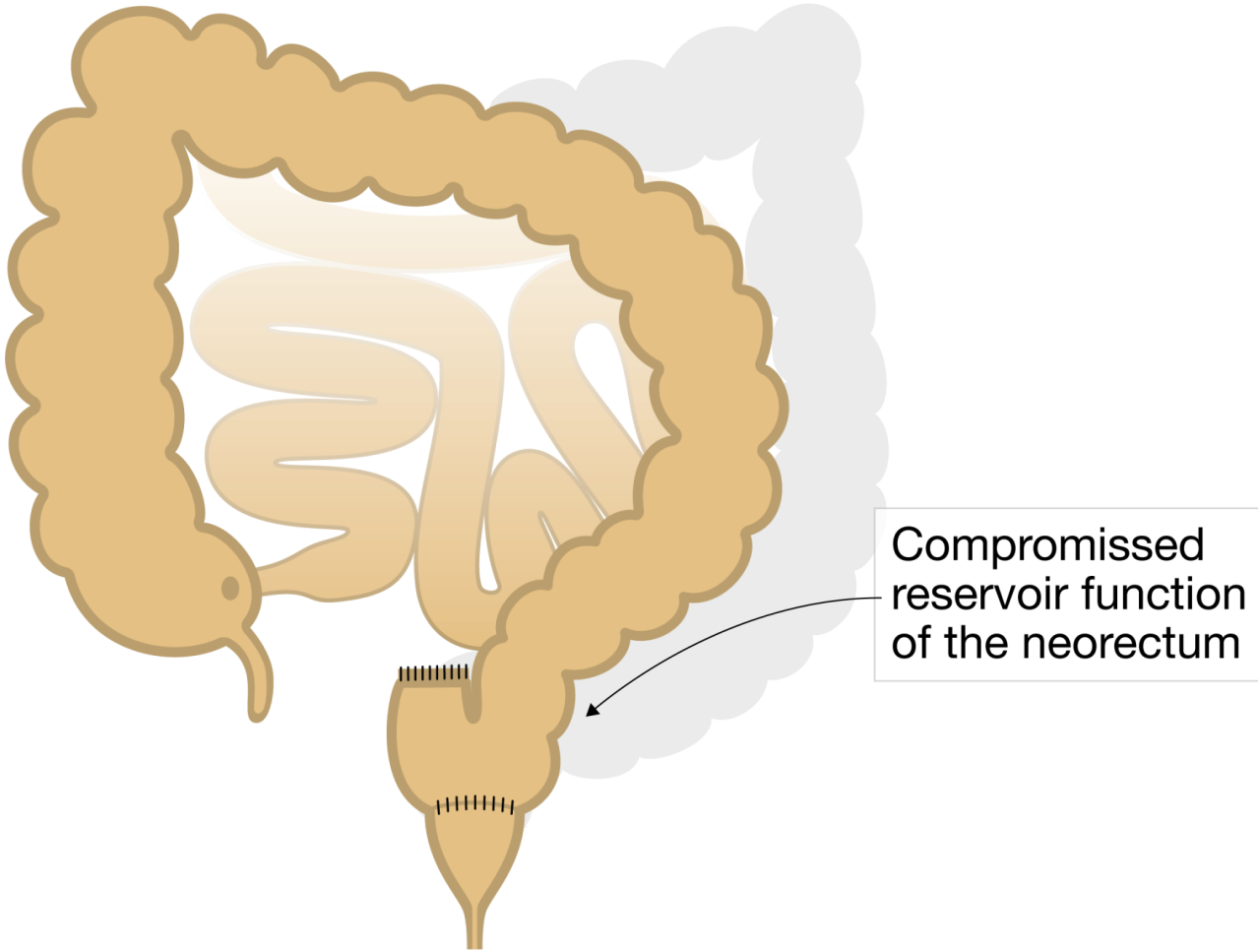
[illegible] bowel symptoms, low anterior resection syndrome, pelvic [illegible] rectal cancer



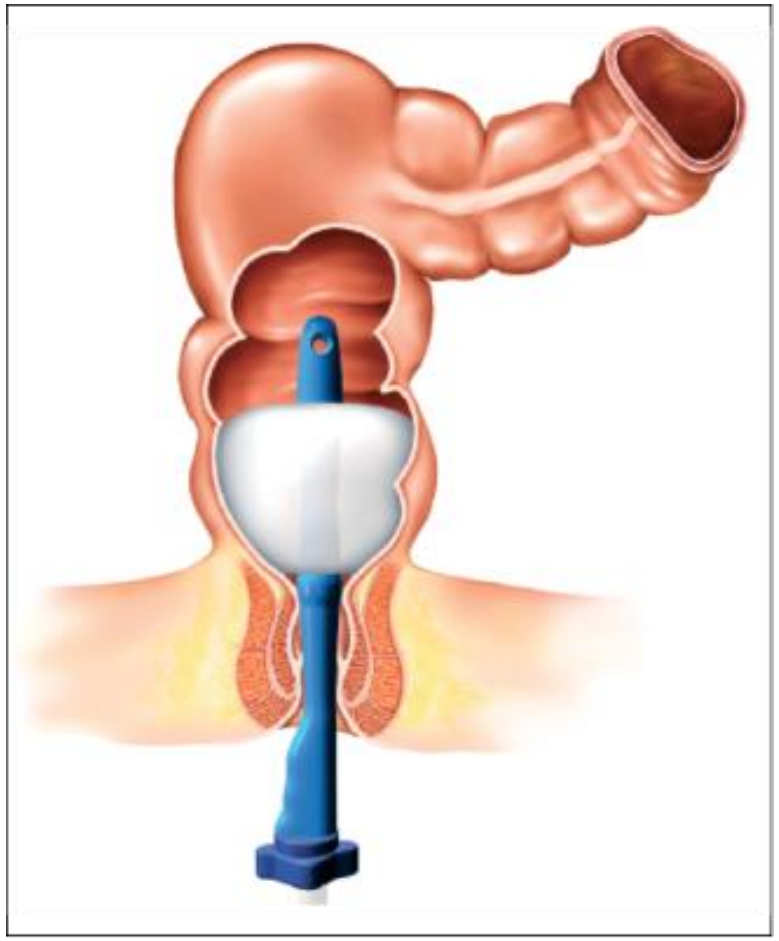


Anal sphincter function

And what about transanal irrigation?



Transanal irrigation



Faecal incontinence

- Effective emptying prevents accidents between irrigations
- Regain control with time and place for defecation

Fragmented defecation

- Effective regular emptying treats constipation

RANDOMIZED CONTROLLED TRIAL

A Randomized Controlled Clinical Trial of Transanal Irrigation Versus Conservative Treatment in Patients With Low Anterior Resection Syndrome After Rectal Cancer Surgery

Emil H.A. Pieniowski, MD,†✉ Charlotta M. Bergström, BS,‡§*
Caroline A.M. Nordenvall, PhD,†‖ Karin S. Westberg, PhD,†‡ Asif M. Johar, MSc,†
Susanne F. Tumlin Ekelund, PhD,¶ Kristina R. Larsson, MSc,†*
Klas J. Pekkari, PhD,‡# Gabriella C. Jansson Palmer, PhD,†‖
*Pernilla Lagergren, PhD,†** and Mirna Abraham-Nordling, PhD†‖*

Objective: The aim of the study was to evaluate transanal irrigation (TAI) as a treatment for low anterior resection syndrome (LARS).

Background: LARS is a bowel disorder that is common after sphincter preserving rectal cancer surgery. Despite symptomatic medical treatment of LARS many patients still experience bowel symptoms that may have a negative impact on quality of life (QoL). TAI is a treatment strategy, of which the clinical experience is promising but scientific evidence is limited.

Materials and Methods: A multicenter randomized trial comparing TAI (intervention) with conservative treatment (control) was performed. Inclusion criteria were major LARS, age above 18 years, low anterior resection with anastomosis and a defunctioning stoma as primary surgery, >6 months since stoma reversal, anastomosis without signs of leakage or stricture, and no signs of recurrence at 1-year follow-up. The primary endpoint was differences in bowel function at 12-month follow-up measured by LARS score, Cleveland Clinic Florida Fecal Incontinence Score, and 4 study-specific questions. The secondary outcome was QoL.

Results: A total of 45 patients were included, 22 in the TAI group and 23 in the control group. Follow-up was available for 16 and 22 patients, respectively. At 12 months, patients in the TAI group reported significantly lower LARS scores (22.9 vs 32.4; $P = 0.002$) and Cleveland Clinic Florida Fecal Incontinence Score (6.4 vs 9.2; $P = 0.050$). In addition, patients in the TAI group also scored significantly higher QoL [8 of 16 European Organisation for the Research and Treatment of Cancer Quality of Life Questionnaire Core 30 (EORTC QLQ-C30) QoL aspects] compared with the control group.

Conclusions: The results confirm our clinical experience that TAI reduces symptoms included in LARS and improves QoL.

Keywords: transanal irrigation, TAI, low anterior resection syndrome, LARS, rectal cancer, bowel disorder, quality of life

(*Ann Surg* 2023;277:30–37)

From the *Department of Surgery, South General Hospital (Södersjukhuset), Stockholm, Sweden; †Department of Molecular Medicine and Surgery, Karolinska Institute, Stockholm, Sweden; ‖Department of Colorectal Cancer, Karolinska University Hospital, Stockholm, Sweden; ¶Department of Clinical Science and Education, Karolinska Institute, Södersjukhuset, Stockholm, Sweden; **Department of Surgery and Cancer, Imperial College London, London, UK; ‡Department of Surgery, Danderyd Hospital, Stockholm, Sweden; §Department of Women's and Children's Health, Karolinska Institute, Stockholm, Sweden; and #Department of Clinical Sciences, Karolinska Institute, Danderyd Hospital, Stockholm, Sweden.

✉ emil.pieniowski@regionstockholm.se.

E.H.A.P. and C.M.B. shared their first authorship.

Financial support was provided through the Regional agreement on medical training and clinical research by the Stockholm County Council and Karolinska Institutet (ALF-project). P.L. is supported by NIHR Imperial Biomedical Research Centre (BRC) for her Imperial College London affiliation.

Podium meeting presentation has been made presenting only results from the interim analysis.

Author contributions: M.A.-N., E.H.A.P., C.M.B., C.A.M.N., G.C.J.P., S.F.T.E., K.J.P., K.S.W., P.L., A.M.J., and K.R.L.: study concepts, manuscript editing, and manuscript review. M.A.-N., E.H.A.P., C.M.B., C.A.M.N., G.C.J.P., S.F.T.E., and K.J.P.: study design. C.M.B., E.H.A.P., M.A.-N., K.R.L., K.J.P., and K.S.W.: data acquisition. E.H.A.P. and C.M.B.: quality control of data and algorithms, manuscript preparation. A.M.J., E.H.A.P., M.A.-N., C.A.M.N., and G.C.J.P.: data analysis and interpretation. A.M.J. and E.H.A.P.: statistical analysis.

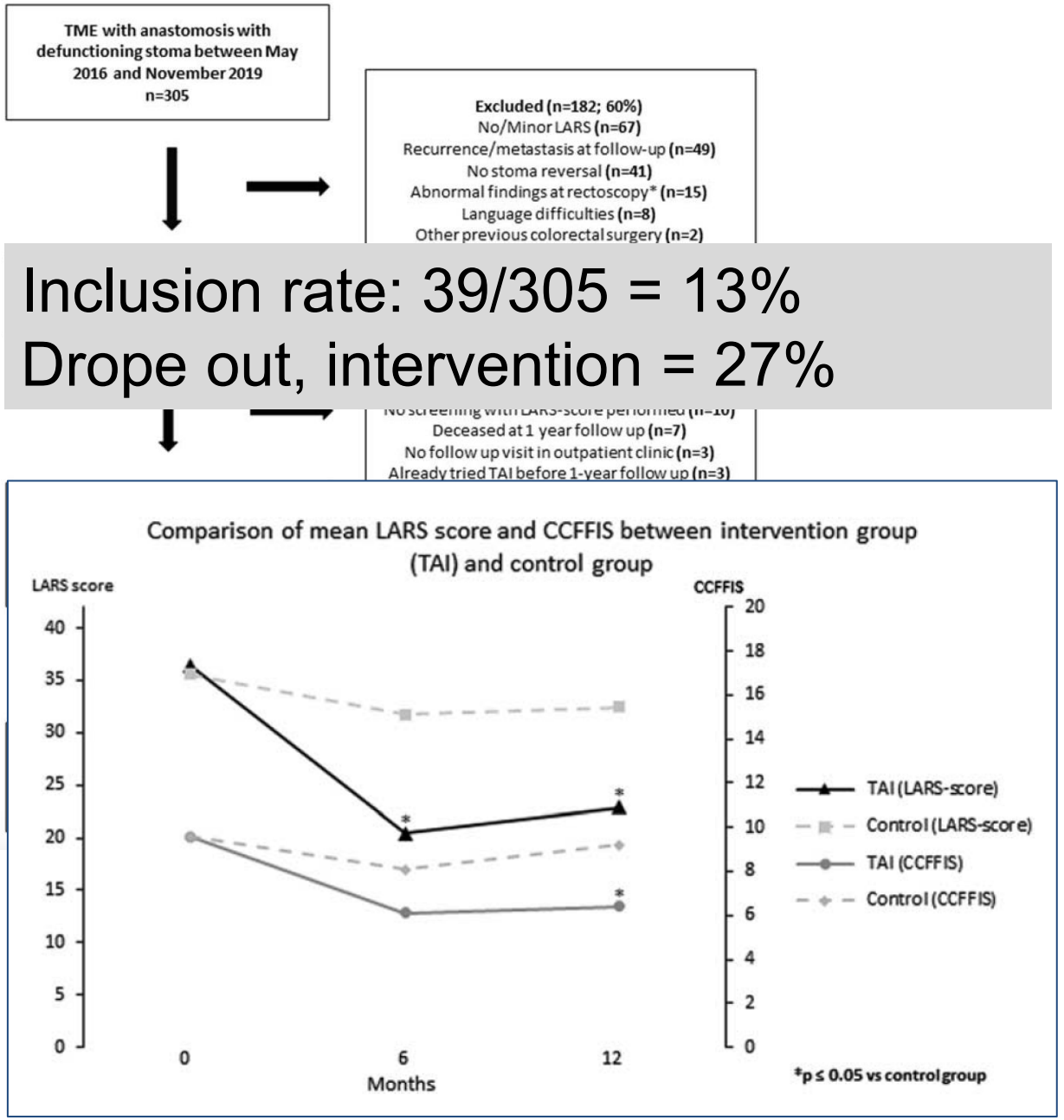
C.M.B. has been compensated by Coloplast (around €500) for a lecture in 2018 and he was a member of Coloplast's Bowel Advisory board between 2016 and 2019 (compensated with around €1000 in total). The remaining authors report no conflicts of interest.

ISSN: 0003-4932/23/27701-0030
DOI: 10.1097/SLA.0000000000005482

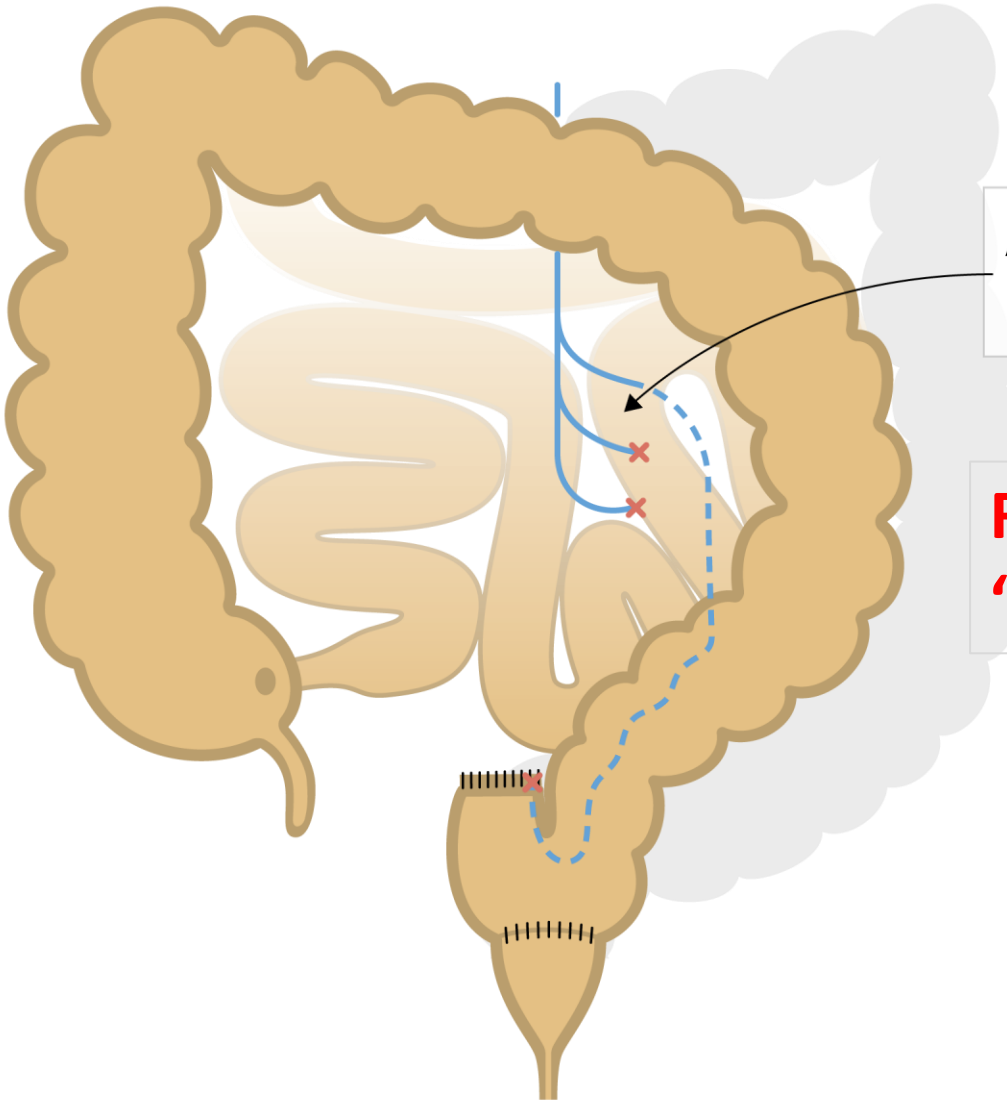
Among patients undergoing sphincter sparing rectal cancer surgery many experience significantly impaired bowel function, low anterior resection syndrome (LARS).[1–4] LARS can be categorized into 3 groups according to the validated LARS score questionnaire, no LARS, minor LARS, and major LARS.[5] The prevalence of major LARS varies between 18% and 53% and major LARS is shown to be associated with impaired quality of life (QoL).[1,2,6] The symptoms included in the LARS score questionnaire are incontinence for flatus and/or feces, urgency, fragmentation, emptying difficulties, and frequent bowel movements.[5] Although questionnaires are available for evaluation of LARS there has been a lack of consensus definition of LARS.[7] In 2020, an international consensus definition of LARS was published which required at least 1 symptom combined with at least 1 consequence in daily life to be defined as LARS.[8]

The treatment of LARS aims to reduce symptoms but there is no curative treatment. The scientific evidence of treatments such as pelvic floor rehabilitation, biofeedback therapy and sacral nerve stimulation in patients with LARS is scarce.[9–12] Likewise, the effect of serotonin receptor antagonists (5-HT_3) and probiotics seems to be limited.[13,14] Current treatment for LARS in the county of Stockholm/Gotland mainly consists of dietary regimes and medical treatment with bulk-forming agents and loperamide.[15]

Transanal irrigation (TAI) assists the evacuation of feces from the bowel by introducing water to the bowel through the anus. Regular irrigations aim to ensure emptying of the left



Inclusion rate: 39/305 = 13%
Drope out, intervention = 27%

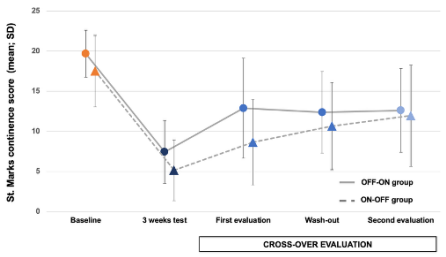


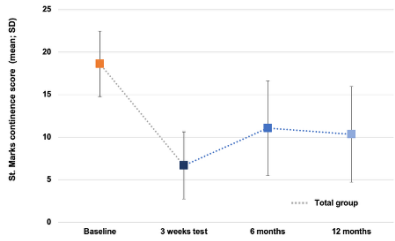
Re- establish
‘the sigmoidal break’

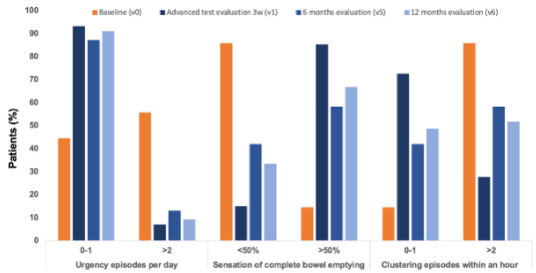
ORIGINAL CONTRIBUTION

Sacral Neuromodulation in Patients With Low Anterior Resection Syndrome: The SANLARS Randomized Clinical Trial

Franco Marinello, M.D., Ph.D.[1] • Doménico Fraccalvieri, M.D., Ph.D.[2]
Pere Planellas, M.D., Ph.D.[3] • Montse Adell Trapé, M.D.[1] • Julia M. Gil, M.D.[3]
Esther Kreisler, M.D., Ph.D.[2] • Gianluca Pellino, M.D., Ph.D.[1]
Eloy Espín-Basany, M.D. Ph.D.[1]



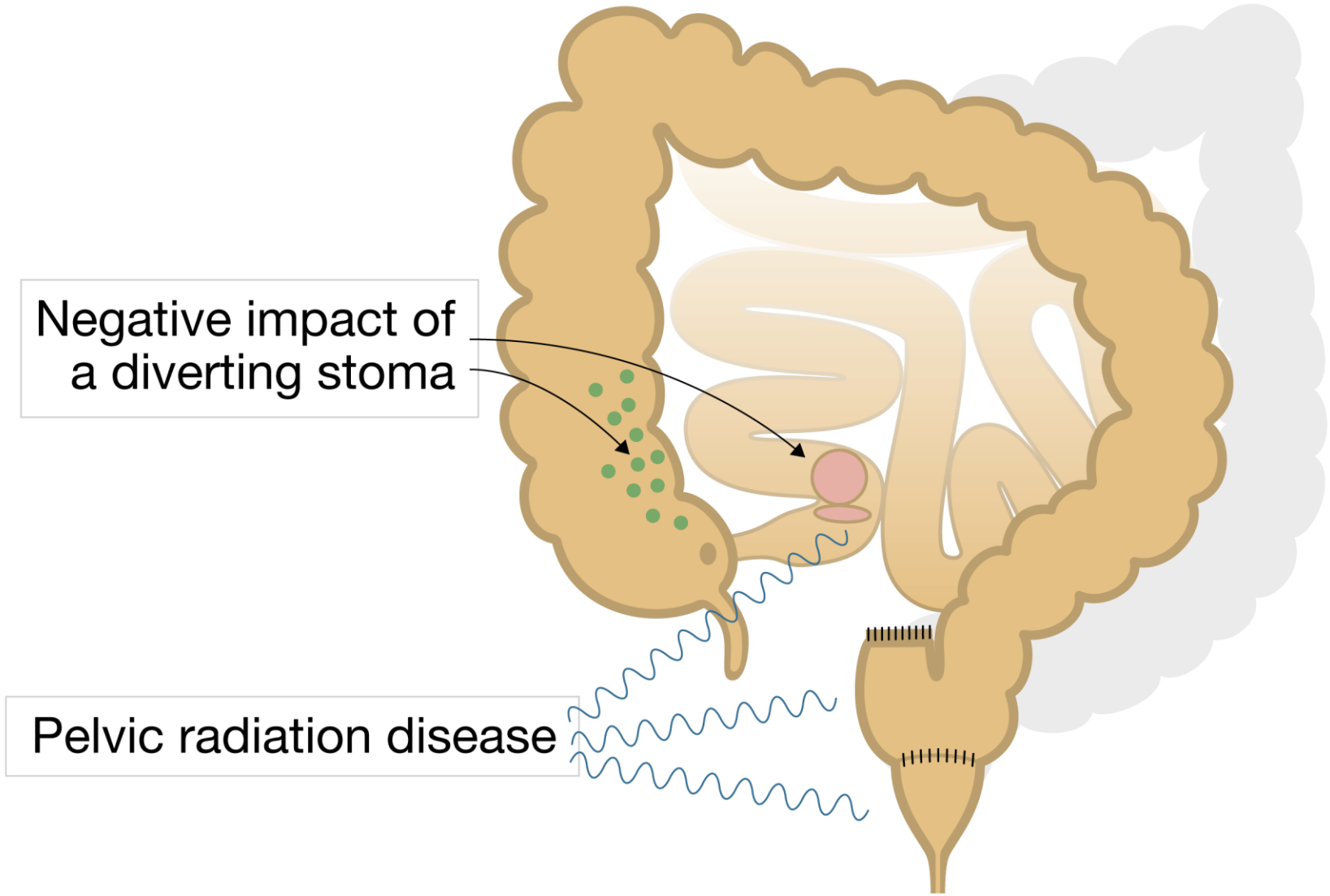




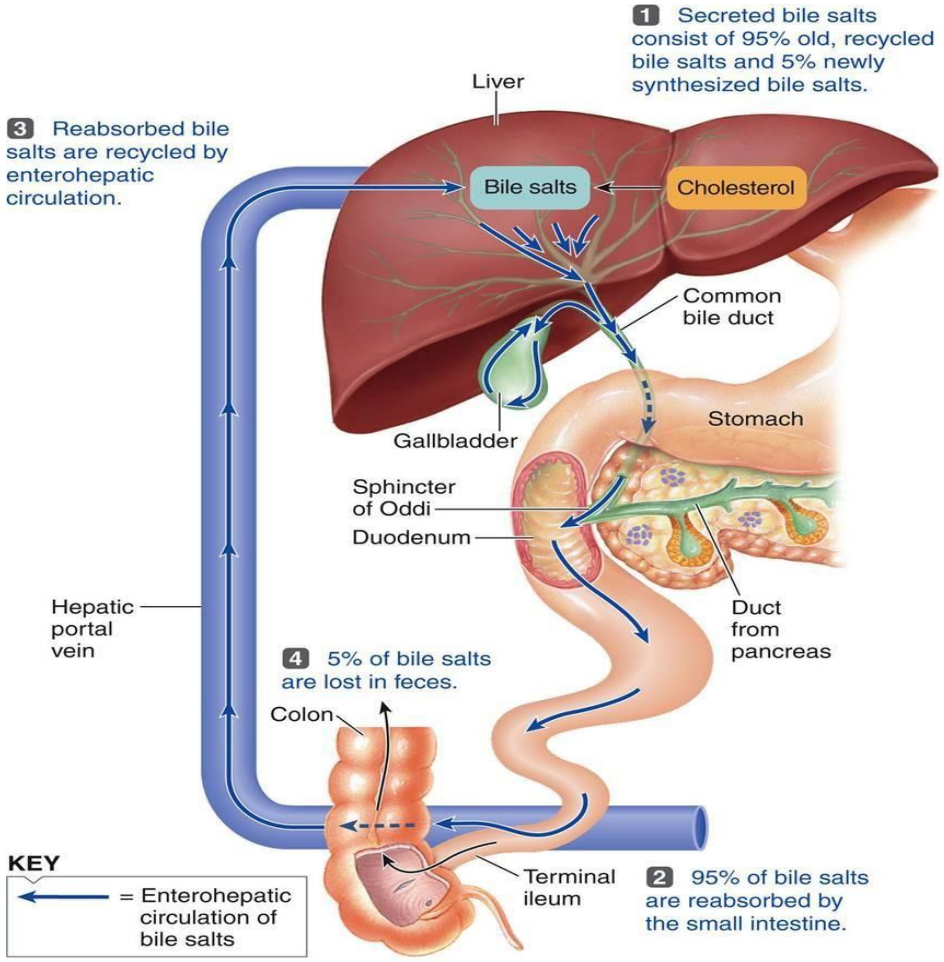
Better results for SNM in 46 crossover patients

- At 1y FU Lower LARS and Vaizey scores
- Fewer urgency episodes
- Better sensation of emptying
- Slight reduction in fragmentation
- Improvement in QoL

DISEASES OF THE COLON & RECTUM VOLUME 67: 3 (2024)


Negative impact of
a diverting stoma
Pelvic radiation disease

Bile Acid Malabsorption



Under recognized

- ileal dysfunction impairing the ability to absorb bile acid

Excess bile acid in the colon

- diarrhoea, physical discomfort, faecal urgency, and risk of incontinence

- Organ preservation using chemotherapy and radiotherapy
- Less use of radiotherapy
- No use or early closure of the protective stoma
- Abdominoperineal excision + end-colostomy

Clinical guidelines

Received: 30 September 2020 | Revised: 22 December 2020 | Accepted: 29 December 2020
DOI: 10.1111/codi.15517

CONSENSUS STATEMENT

Management guidelines for low anterior the MANUEL project

Peter Christensen[1] | Coen IM Baeten[2] | Eloy Espí
Jacopo Martellucci[4] | Karen P Nugent[5] | Frank Zerbi
Harald Rosen[8] | MANUEL Project Working Group*

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[7]Department of Advanced Medical and Surgical Sciences, Università degli Studi della Campania 'Luigi Vanvitelli', Naples, Italy
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Email: petchris@rm.dk

Funding information
None.

Abstract

Aim: Little is known about the pathoph
(LARS), and evidence concerning the mana
tion is scarce. The aim of the LARS Expert
ance for healthcare professionals dealing v
Method: The 'Management guidelines for
project was promoted by a team of eight
of patients with LARS. After a face-to-fac
comprehensive, practical guide covering all
Eight themes were decided upon and wor
generated a draft; these were collated by a
conference call. This was circulated among
the comments received. A lay patient revis
tion containing a patient's perspective. The
A final teleconference was held at the end
Results: The guidance covers all aspects
to assessment and management. Given th
quality of the studies, most of the recomm
opinions of the experts.
Conclusions: The MANUEL project provi
available evidence concerning LARS, with
and patients suffering from this debilitating

KEYWORDS
colorectal surgery, complications, consensus, gui
rectal surgery

* MANUEL project working group participants: Peter Christensen, Coen I. M. Baeten, Eloy Espin-Basany, Jacopo Martel
Rosen.

Received: 29 April 2022 | Revised: 15 July 2022 | Accepted: 21 July 2022
DOI: 10.1111/codi.16299

GUIDELINES

Management of treatment-related sequelae colorectal cancer

Susanne Haas[1,2] | Anette Højer Mikkelsen[3] | Camilla Jenseniu
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Funding information
Kræftens Bekæmpelse; the Danish Cancer Society

Abstract

Aim: Colorectal cancer survivors are one of the m
living with and beyond cancer. In a national multi
the extent of late treatment-related sequelae in c
the scientific evidence for management of these c
the aim of facilitating identification and treatment
Method: A systematic search for existing guideline
across 16 and 4 databases, respectively, from inc
lines and 886 abstracts, of which 188 were inclu
cluded for full text review). Secondarily, bibliogr
additional articles were included.
Results: Symptoms have been divided into over
bowel-related, urinary, sexual (male and female), p
or complaints that are examined individually. Merg
recommendations and 42 management strategies
are of a more general character, whereas managem
advice suited for initiation on site before referral t
Conclusion: Treatment-related sequelae in colorec
attention needs to be focused on identifying patie
the development of evidence-based treatment algo

KEYWORDS
colo-rectal cancer, colon cancer, long-term sequalae, rect
sequelae

DOI: 10.1002/ueg2.12658
ueg journal WILEY

GUIDELINE

Guideline for the assessment and management of gastrointestinal symptoms following colorectal surgery—A UEG/ESCP/EAES/ESPCG/ESPEN/ESNM/ESSO collaboration. Part I—Sequelae to oncological diseases

INTRODUCTION

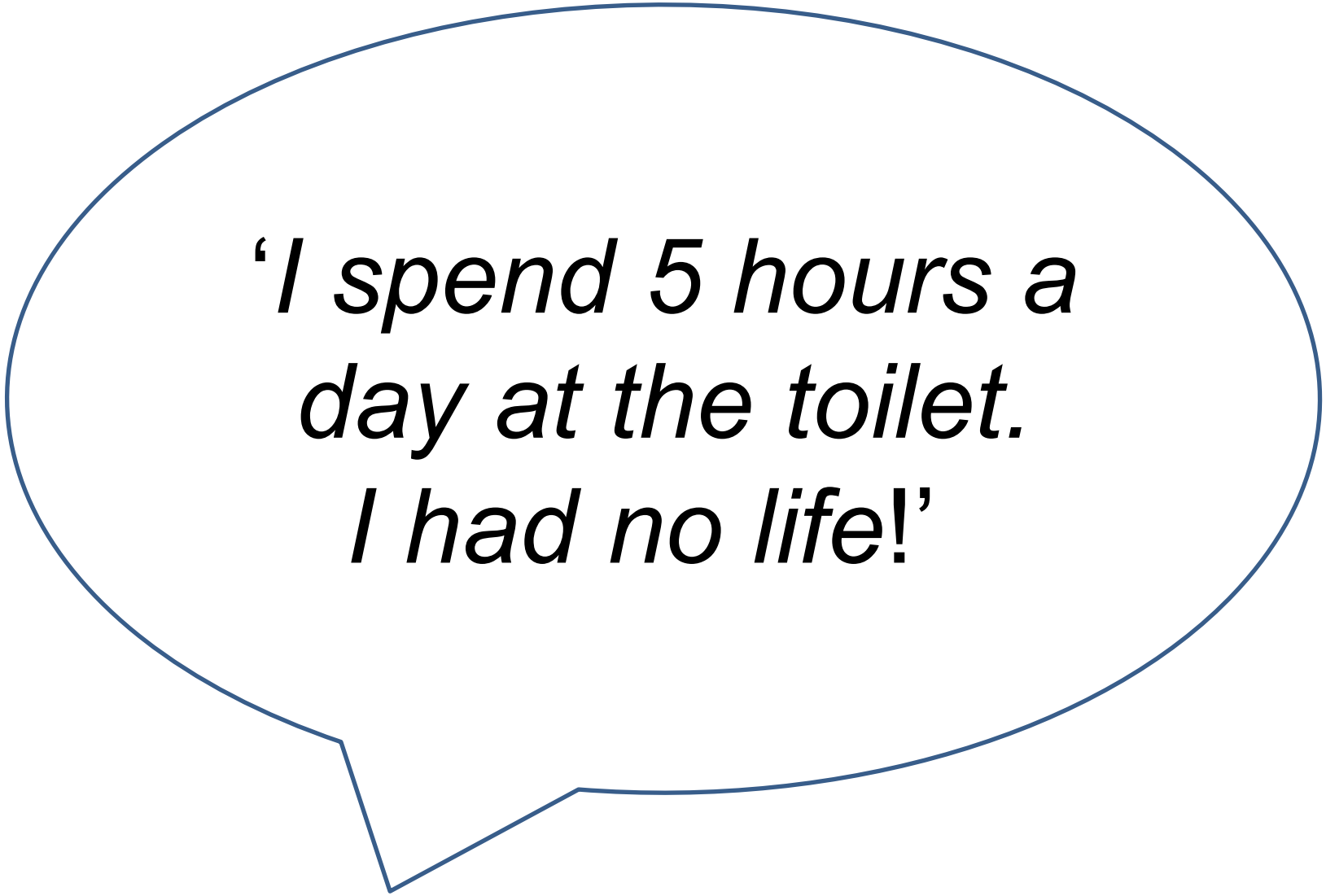
Background

The global incidence of colorectal cancer (CRC) continues to increase, accompanied by improvements in overall and disease-specific survival.[1] Consequently, there are about 5 million survivors of CRC worldwide, with a range of unmet needs affecting physical, psychological, and social functioning.[2] Gastrointestinal dysfunction is a common problem following surgical treatment for CRC, with a reported incidence of up to 50% at 10 years post-operatively.[3] It presents with a constellation of symptoms, including abdominal pain and distension and variable bowel habits (e.g. constipation, diarrhoea, fragmentation), all of which require different management strategies.[4–6] These long-term sequelae can have a significant impact on patients' overall well-being and quality of life (QoL). Recent studies have shown that a specific cause for gastrointestinal symptoms was found in 80% of patients when examined in a clinic dedicated to late sequelae after colorectal surgery. Additionally, 70% of these patients experienced improvement after treatment.[7] Similar outcomes were observed in a nurse-led clinic,[8] highlighting the clinical and socio-economic value of recognising and addressing of these complications.

Gastrointestinal symptoms are a common long-term consequence of oncological colorectal resections. Different symptom patterns occur, depending on the specific resection type performed, due to the different underlying pathophysiological mechanisms responsible for the gastrointestinal function. A right-sided hemicolectomy involves the resection of the ileocaecal valve, which has an important role in maintaining normal gastrointestinal function. Right sided colonic resections are associated with bile salt malabsorption which can lead to symptoms of diarrhoea.[4,9,10] Small bowel bacterial overgrowth may also occur following a right hemicolectomy, which can further exacerbate bowel dysfunction.[4] It is estimated that approximately one in five patients undergoing a right-sided colectomy experience loose stool, increased bowel frequency and/or increased nocturnal defecation.[4,11] Some of these symptoms may improve or resolve spontaneously over time. However, many patients have persistent bowel dysfunction.

Left sided resections have a different symptom profile, which includes diarrhoea, stool fragmentation, a feeling of obstruction and prolonged evacuation time.[4,12] It is hypothesised that this is secondary to the reduction in absorptive capacity of water following left sided colonic resections.[9] Additionally, the resection of the rectosigmoid junction, which acts as a high-pressure barrier that prevents rapid stool transit into the rectum, could also be a contributing factor in developing faecal incontinence.[11,13] Functional outcomes after rectal resections have been investigated in several studies.[14,15] Low anterior resection syndrome (LARS), although still not clearly defined, is considered to be a condition with a multifactorial aetiology. Key contributing factors include the loss of reservoir function, decrease in anal sphincter function, afferent sensory loss, and autonomic denervation.[6,16] Additional contributing factors include the potential compromise of the sensory and motor functions of the colon due to traction and iatrogenic injury to colonic vascularisation and/or innervation during surgery during colonic mobilisation.[17,18] Surgical denervation of the left colon, leads to disruption of α-sympathetic pathways, leading to increased colon motility and loose stool.[19] Furthermore, alterations in the meal response, particularly affecting the rectosigmoid brake cyclic motor pattern, are observed after low anterior resection.[20] These complex and multifactorial pathophysiological mechanisms can lead to symptoms such as diarrhoea, increased frequency, urgency, fragmentation, incomplete evacuation and incontinence for flatus and/or faeces.[15,21]

Neoadjuvant radiotherapy in rectal cancer patients has improved oncological outcomes.[22,23] However, the long-term adverse effects of radiotherapy may lead to more pronounced bowel dysfunction in irradiated patients compared to patients who undergo surgery


‘I spend 5 hours a day at the toilet. I had no life!’

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