

Cursorisch Onderwijs MDL

ACUTE DIVERTICULITIS

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Disclosure

Geen (potentiële) conflict of interest.

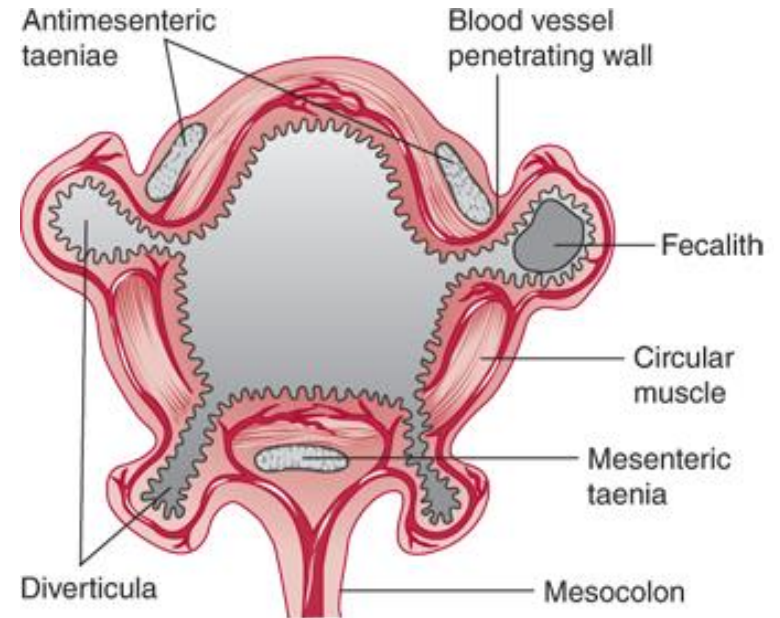


Inhoud

1. Diverticulose/diverticulitis
2. Gecompliceerde diverticulitis
3. Stadia en beleid
4. Follow-up

Diverticulose

- Aanwezigheid van divertikels in het colon
- Tussen taenia mesenterica en antimesenterica



Bron: www.accessmedicine.com

Diverticulose



Bron: www.sciencesource.com



Bron: www.pathologyoutlines.com

Diverticulose

- 'Grijze haren van het colon'
- 5% rond 40^e → 60% rond 70^e levensjaar¹

- Westerse landen linkszijdig + betrokkenheid sigmoïd²
- Aziatische landen vaker rechtszijdig³

Diverticulitis

- Diverticulose → diverticulitis in 4-7%¹
- 22.000 patiënten/jaar naar tweede lijn in NL²

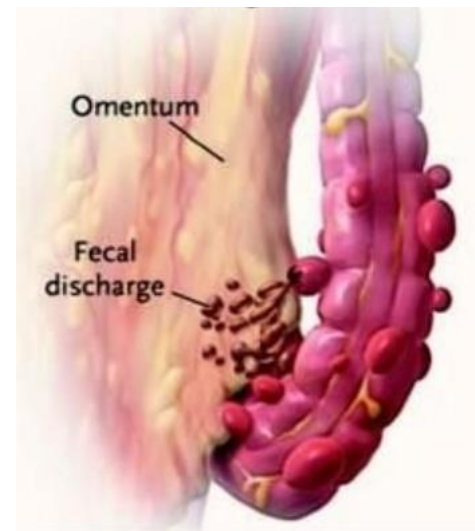
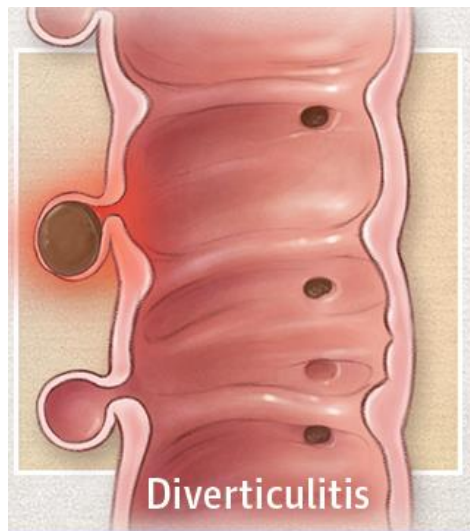
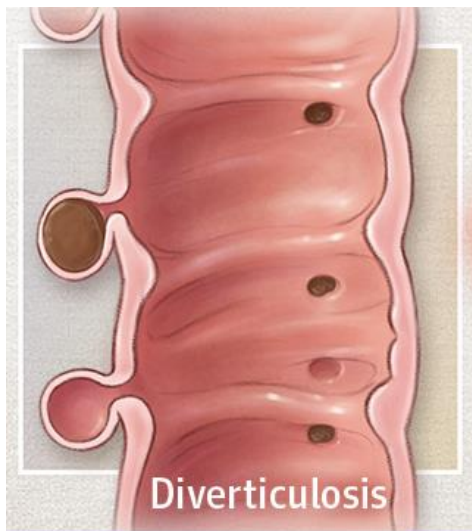


Gecompliceerde diverticulitis

Diverticulose

Diverticulitis^{1,2}
~4-7%

Gecompliceerd^{3,4}
~10-20%



Classificatie

Veelvoud aan classificaties^{1,2}

- Klinisch
- CT

Table 1. Overview of classifications for diverticular disease

Clinical findings					CT findings		
Hinchey et al. [7]	Sher et al. [12]	Wasvary et al. [13]	Hansen et al. [8]	Kohler et al. [9]	Kaiser et al. [10]	Ambrosetti et al. [11]	Sartelli et al. [15]
<i>Uncomplicated disease</i>							
-	-	- 0. Mild clinical diverticulitis	0. Diverticulosis I. Acute uncomplicated diverticulitis	Symptomatic uncomplicated	-	-	Diverticula, thickening of the wall, increased density of the pericolic fat
<i>Complicated disease</i>							
I. Pericolic abscess or phlegmon	I. Pericolic abscess	Ia. Confined pericolic inflammation or phlegmon Ib. Pericolic or mesocolic abscess	II. Acute complicated diverticulitis IIa. Phlegmon, peridiverticulitis IIb. Abscess, sealed perforation IIc. Free perforation	Complicated disease: - Hemorrhage - Abscess - Phlegmon - Fistula - Stricture - Perforation - Purulent and fecal peritonitis - Small bowel obstruction due to postinflammatory adhesions	0. Diverticuli +/- colonic wall thickening	Moderate diverticulitis: - Localized sigmoid wall thickening (<5 mm) - Pericolic fat stranding	Ia. Pericolic air bubbles or little pericolic fluid without abscess Ib. Abscess ≤4 cm
	IIa. Distant abscess amenable to percutaneous drainage IIb. Complex abscess associated with fistula		II. Pelvic, distant intra-abdominal or retroperitoneal abscess		Colonic wall thickening with pericolic soft tissue changes: Ia. Changes + pericolic or mesocolic abscess Ib. Changes + distant abscess (generally deep in the pelvis or interloop regions)		IIa. Abscess >4 cm IIb. Distant air (>5 cm from inflamed bowel segment)
II. Pelvic, intra-abdominal or retroperitoneal abscess						Severe diverticulitis: - Abscess - Extraluminal air - Extraluminal contrast	III. Diffuse fluid without distant free air (no hole in colon)
III. Generalized purulent peritonitis	III. Generalized purulent peritonitis	III. Generalized purulent peritonitis			III. Free gas associated with localized or generalized ascites and possible peritoneal wall thickening		IV. Diffuse fluid with distant free air (persistent hole in colon)
IV. Generalized fecal peritonitis	IV. Fecal peritonitis	IV. Generalized fecal peritonitis			IV. Same findings as III		
<i>Recurrent disease</i>							
-		-	III. Chronic recurrent diverticulitis	Recurrent symptomatic disease	-	-	

Classificatie

(Gemodificeerde) Hinchey classificatie¹

0	Klinisch milde diverticulitis
Ia	Pericolische/flegmoneuze ontsteking
Ib	Abces (<5 cm) in nabijheid primaire ontstekingsproces
II	Abces op afstand (retroperitoneaal, intra-abdominaal, pelvisch)
III	Purulente peritonitis
IV	Fecale peritonitis

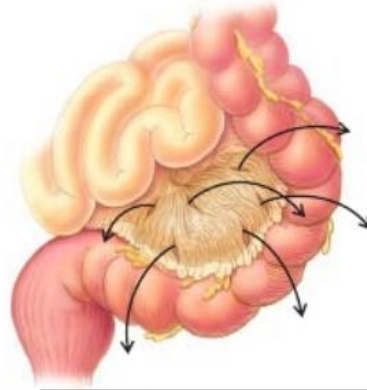
Classificatie



Hinchey I



Hinchey II

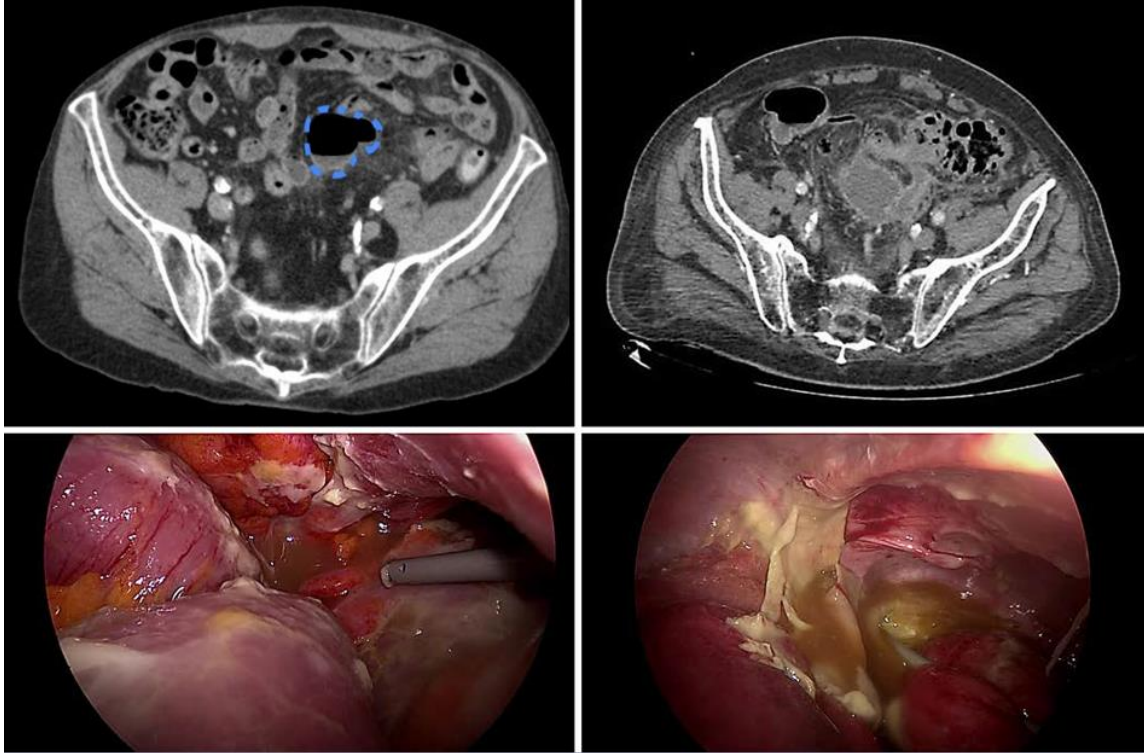


Hinchey III
Purulent



Hinchey IV
Fecaal

Classificatie



Hinchey Ib/II

1. Percutane drainage en/of antibiotica?
2. Rol van operatieve behandeling in follow-up?



Hinchey Ib/II

Richtlijn Nederlandse Vereniging voor Heelkunde:

Aanbeveling

Overweeg antibiotische behandeling en percutane drainage bij patiënten met een peridiverticulair abces >3 cm.

Herhaal de beeldvorming bij klinische verslechtering.

Internationale richtlijnen¹:

- | | |
|-------------------|--------------------|
| - Kleine abcessen | Antibiotica |
| - Grote abcessen | Percutane drainage |
| - Grenswaarde | 3-5 cm |

Hinchey Ib/II

- Retrospectieve studie in 10 Nederlandse centra

Inclusiecriteria

18 jaar of ouder

CT-diagnose

1^e episode van abces

1 jan 2008 – 31 dec 2015

Antibiotica of PCD

- Uitkomsten op korte en lange termijn:
 - (Spoed)operaties, complicaties, recidieven, mortaliteit
 - Risicofactoren voor chirurgie, recidieven, falen van behandeling



Hinchey Ib/II

- 447 patiënten
- Hinchey Ib: 215 Hinchey II: 232
- PCD: 115 Geen PCD: 332
- Mediane follow-up: 72 (IQR 55-93) maanden

Hinchey Ib/II

Effect van drainage:

Uitkomst	Invloed PCD (odds ratio)
Korte termijn behandelfalen	1.47 (0.81-2.86)
Korte termijn spoedchirurgie	1.29 (0.56-2.99)
Lange termijn chirurgie	1.08 (0.69-1.69)

Invloed van abcesgrootte:

- Abces \geq 3 cm → OR 2.05 (1.09-3.86) korte termijn behandelfalen
- Abces \geq 5 cm → OR 2.96 (1.08-8.13) korte termijn spoedchirurgie

Hinchey Ib/II

Concluderend:

- PCD geen duidelijke invloed op uitkomsten
 - Abcesgrootte wel van invloed
 - Terughoudendheid PCD lijkt gerechtvaardigd; zeker bij kleinere abscessen
-
- Recidieven?
 - Electieve resectie in follow-up?

Hinchey Ib/II

Percentage recidieven:

- Eigen studie → overall recurrence 28% (56% uncomplicated)
- Reviews¹⁻³ → overall recurrence 25-28%
- Verschillen in operatief en non-operatief beleid?

Hinchey Ib/II

Observationeel cohort Aquina *et al.*¹

Behandeling na initieel non-operatief behandeld abces:

	Electieve chirurgie	Non-operatief
N	1660	5412
<i>“Observation <u>without</u> elective colectomy is a reasonable option”</i>		
Diverticulitis-related costs (€)	70.107	24.490

Hinchey Ib/II

Nederlandse richtlijn:

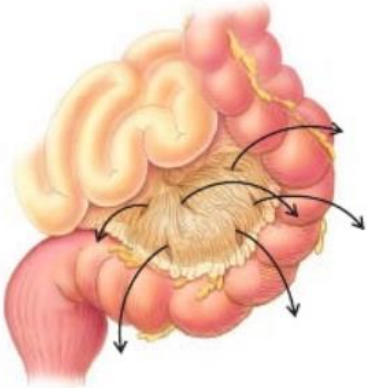
Electieve sigmoïdrectomie overwegen bij

- Recidiverende diverticulitis of langdurig persisterende klachten
- Symptomatische stenosing of fistel(s)

Aantal recidieven niet bepalend voor indicatie → patiëntkarakteristieken en -voorkeuren



Hinchey III/IV



Hinchey III
Purulent

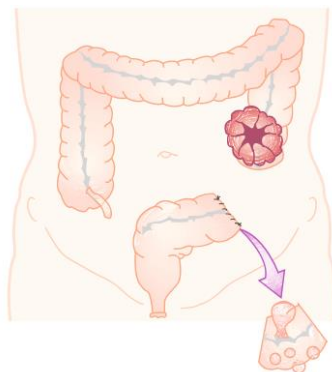


Hinchey IV
Fecaal

Beste chirurgische behandeling?

Hinchey III/IV

Hartmann procedure	Primaire anastomose
Eindstandig colostoma	(Meestal) deviërend ileostoma
Opheffen: moeilijker en minder vaak	Opheffen: minder complex en vaker
	Risico op naadlekkage



Hinchey III/IV

- Retro- en prospectieve cohortstudies → primaire anastomose > Hartmann procedure → 4 RCT's

A Multicenter Randomized Clinical Trial of Primary Anastomosis or Hartmann's Procedure for Perforated Left Colonic Diverticulitis With Purulent or Fecal Peritonitis

Christian Eugen Oberkofler, MD,* Andreas Rickenbacher, MD,* Dimitri Aristotle Raptis, MD, MSc,* Kuno Lehmann, MD,* Peter Villiger, MD,† Christian Buchli, MD,‡ Felix Griedler, MD,‡ Hans Gelpke, MD,‡ Marco Decurtins, MD,‡ Adrien A. Tempia-Caliera, MD,§ Nicolas Demartines, MD,§ Dieter Hahnloser, MD,¶ Pierre-Alain Clavien, MD, PhD,* and Stefan Breitenstein, MD*



Original article

doi:10.1111/j.1463-1318.2012.03117.x

Primary anastomosis vs nonrestorative resection for perforated diverticulitis with peritonitis: a prematurely terminated randomized controlled trial

G. A. Binda*, J. R. Karas†, A. Serventi*, S. Sokmen‡, A. Amato§, L. Hydo† and R. Bergamaschi†¶ for the Study Group on Diverticulitis

*Division of General Surgery, Galliera Hospital, Genoa, Italy, †Division of Colon and Rectal Surgery, State University of New York, Stony Brook, USA, ‡Department of Surgery, Dokuz Eylul University, Izmir, Turkey, §Department of Surgery, San Remo Hospital, San Remo, Italy and ¶Research and Development, Forde Health System, University of Bergen, Forde, Norway

Hartmann's procedure versus sigmoidectomy with primary anastomosis for perforated diverticulitis with purulent or faecal peritonitis (LADIES): a multicentre, parallel-group, randomised, open-label, superiority trial

Daniel PV Lambrichts, Sandra Vennix, Gijsbert D Musters, Irene M Mulder, Hilko A Swank, Anton GM Hoofwijk, Eric HJ Belgers, Hein BA C Stockmann, Quirijn AJ Eijbouts, Michael F Gerhards, Bart A van Wagenveld, Anna AW van Geloven, Rogier M PH Crolla, Simon W Nienhuijs, Marc J M Govaert, Salomone di Saverio, André J L D'Hoore, Esther C J Consten, Wilhelmina M U van Greven, Robert E G J M Pierik, Philip M Kruyt, Joost A B van der Hoeven, Willem H Steup, Fausto Catena, Joop L M Konsten, Jeffrey Vermeulen, Susan van Dieren, Willem A Bemelman, Johan F Lange, on behalf of the LADIES trial collaborators*

Hartmann's Procedure or Primary Anastomosis for Generalized Peritonitis due to Perforated Diverticulitis: A Prospective Multicenter Randomized Trial (DIVERTI)



Valerie Bridoux, PhD, Jean Marc Regimbeau, PhD, Mehdi Ouassii, PhD, Muriel Mathonnet, PhD, Francois Mauvais, MD, Estelle Houivet, PhD, Lilian Schwarz, PhD, Diane Mege, PhD, Igor Siedler, PhD, Charles Sabbagh, PhD, Jean-Jacques Tuech, MD, PhD

Hinchey III/IV

Ladies Trial:

- Multicenter studie in België, Nederland, Italië
- Peroperatieve randomisatie
- 12 maanden follow-up

Primaire anastomose met/zonder ileostoma

n = 64 (Hinchey IV: 18)

versus

Hartmann procedure

n = 66 (Hinchey IV: 20)



Hinchey III/IV

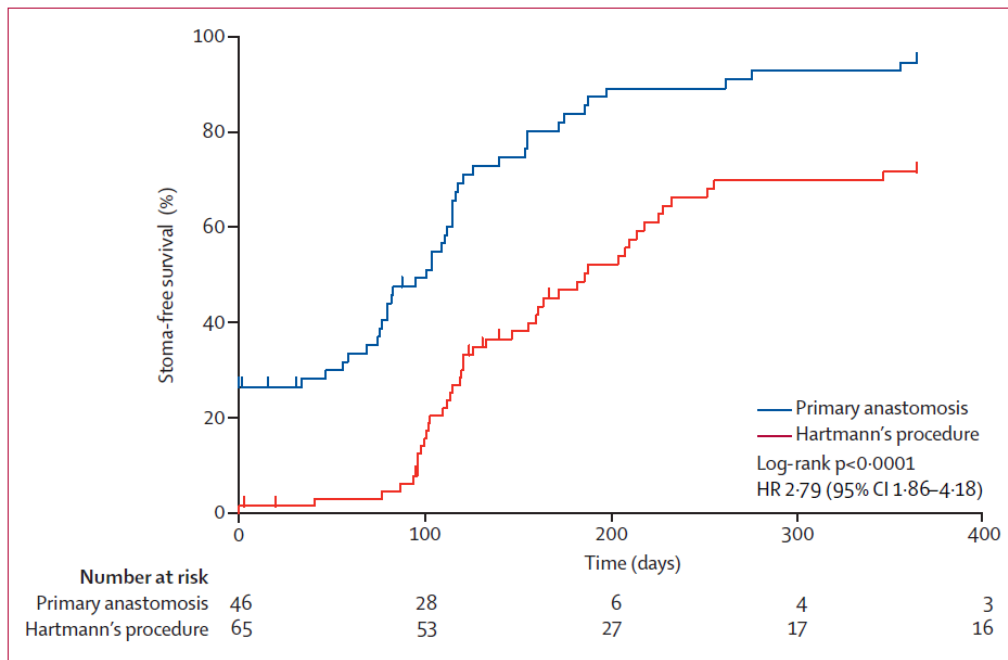


Figure 2: Kaplan-Meier graph of 12-month stoma-free survival
HR=hazard ratio.

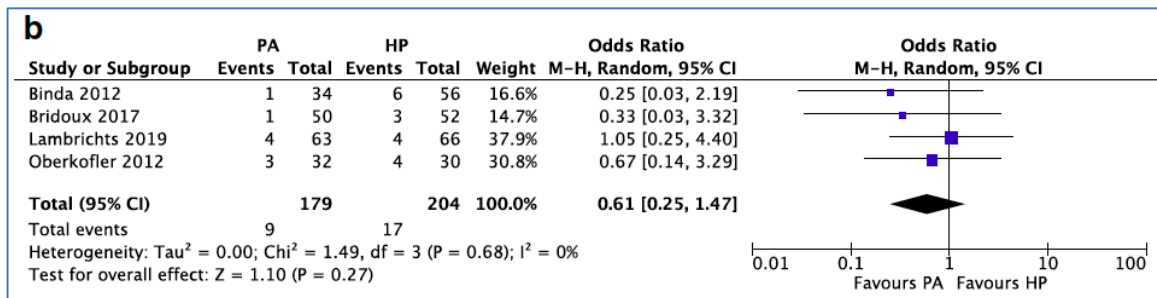
Hinchey III/IV

Andere uitkomsten: mortaliteit, morbiditeit, etc.?

Meta-analyse¹ → 4 RCT's (n = 384, PA: 180, HP: 204)

Mortaliteit

- Geen significant verschil
- PA: 5%
- HP: 8.3%



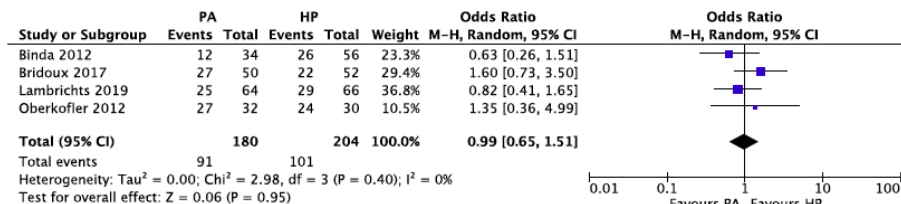
Hinchey III/IV

Morbiditeit:

- Na index procedure

PA: 91/180 (50.6%) vs. HP 101/204 (49.5%)

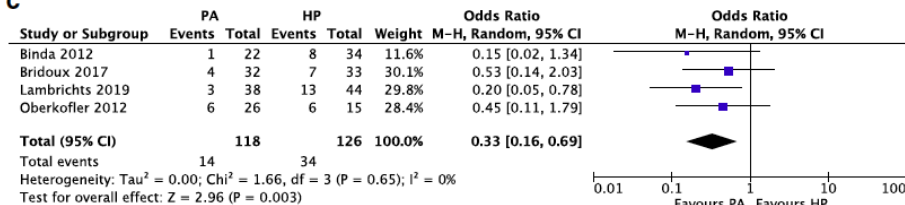
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- Na continuïteitsherstel

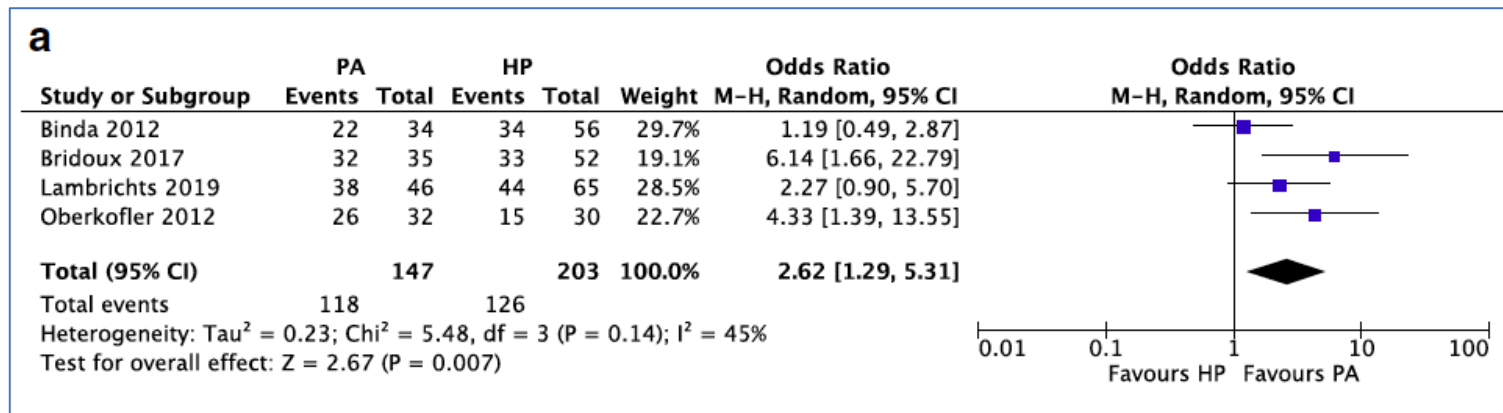
PA: 14/118 (11.9%) vs. HP 34/126 (27%)

c



Hinchey III/IV

- Stoma percentages:
 - Minder stoma's op lange termijn
 - PA: 118/147 (80.3%)
 - HP: 126/203 (62.1%)



Hinchey III/IV

- Aanbeveling Richtlijn NVvH:

Overweeg een primaire anastomose, al dan niet met stoma, aan te leggen bij patiënten die een resectie ondergaan wegens geperforeerde acute diverticulitis en weeg hierbij de klinische conditie van de patiënt en expertise van de operator mee. Overweeg bij overige patiënten de Hartmann procedure.

- Cave: niet bij hemodynamisch instabiele of immuungecomprommiteerde patiënten!

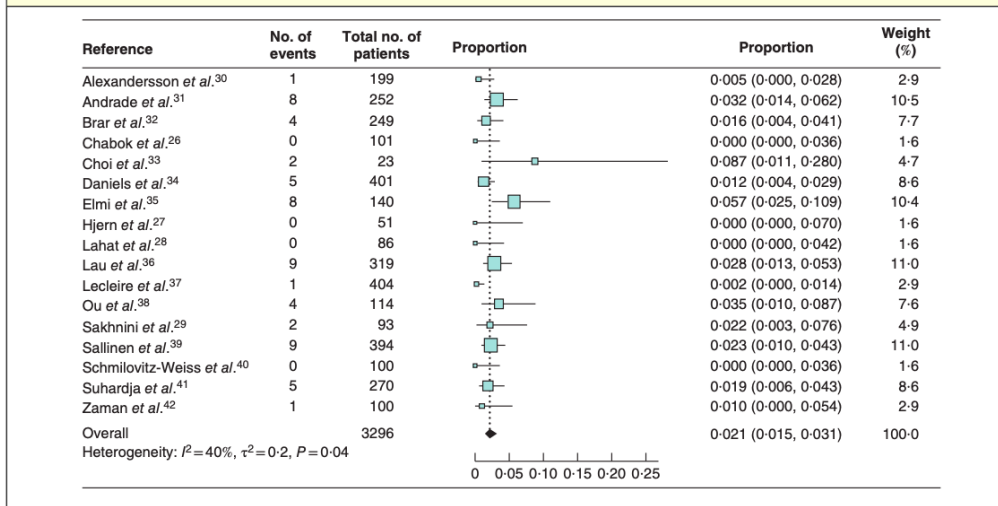
Follow-up



- Rol voor colonoscopie in de follow-up na gecompliceerde diverticulitis?
- Meta-analyse 17 studies¹ (n=3296)
- Patiënten met CT-bewezen acute (linkszijdige) diverticulitis (scopie <1 jaar na episode)
- Pooled prevalence van:
 - Advanced colorectal neoplasia (advanced adenoma, or carcinoma)
 - Colorectal carcinoma

Follow-up

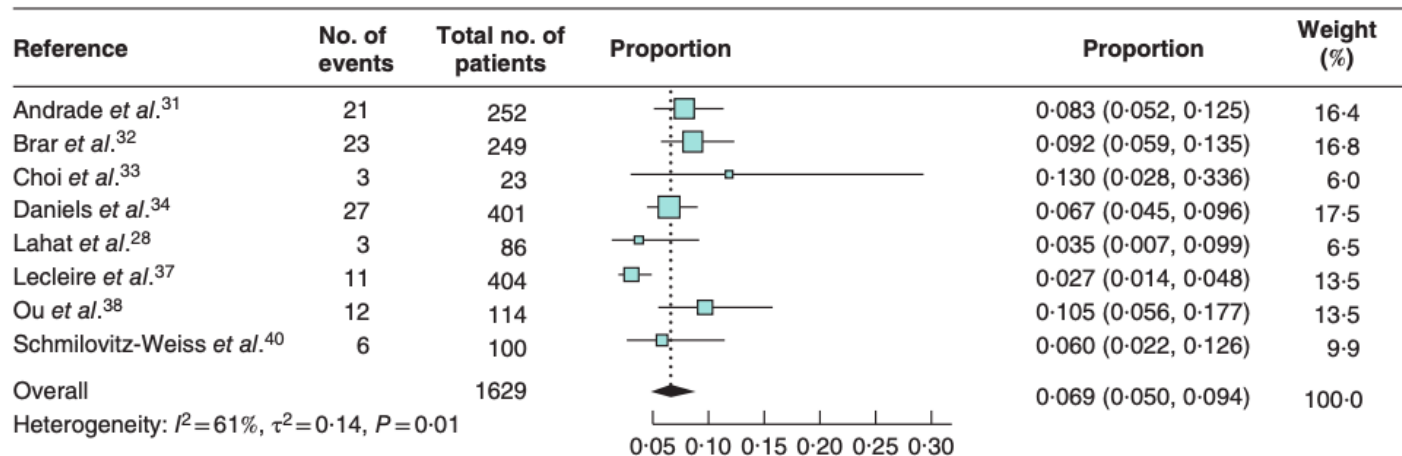
Fig. 2 Forest plot of colorectal cancer prevalence in patients with acute diverticulitis



Pooled colorectal carcinoma prevalence:
2.1% (95% CI 1.5-3.1)

Follow-up

Fig. 3 Forest plot of advanced colorectal neoplasia prevalence in patients with acute diverticulitis



Pooled ACN prevalence:
6.9% (95%CI 5.0 to 9.4) per cent

Follow-up

- Subgroep analyse ongecompliceerde diverticulitis (6 studies)
 - Prevalentie colorectaal carcinoom: 0.5% (95% 0.2-1.2)
- Causaal verband diverticulitis/carcinoom niet eenduidig
- Meest waarschijnlijk: misdiagnose o.b.v. moeilijker radiologisch onderscheid

Patiënten met gecompliceerde diverticulitis of
persisterende klachten → colonoscopie

Follow-up

Aanbeveling Richtlijn NVvH:

- Overweeg een colonoscopie te verrichten:
 - Na een echo- of CT-bewezen, conservatief behandelde gecompliceerde diverticulitis
 - Bij patiënten met persisterende klachten
 - of anderszins een verdenking op maligniteit (e.g. gewichtsverlies, microcytaire anemie of langduriger wisselend defaecatiepatroon).

“Diverticulitis is a common yet challenging topic that demands clinicians to provide an individualised yet evidence-based approach.” *Nally et al., Dig Surg*



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Hinchey Ib/II

Table 2 Short- and long-term outcomes

	Total cohort (n = 447)				Hinchey Ib (n = 215)			Hinchey II* (n = 232)		
	Total (n = 447)	No PCD (n = 332)	PCD (n = 115)	P‡	No PCD (n = 197)	PCD (n = 18)	P	No PCD (n = 135)	PCD (n = 97)	P‡
Short-term outcomes										
Treatment failure	120 (26.8)	79 (23.8)	41 (35.7)	0.013	44 (22.3)	6 (33)	0.359§	35 (25.9)	35 (36)	0.149
Complications†	25 (5.6)	13 (3.9)	12 (10.4)	0.009	8 (4.2)	0 (0)	0.908§	5 (3.7)	12 (12)	0.032§
Clinical deterioration/ disease progression	95 (21.3)	59 (17.8)	36 (31.3)	0.002	30 (15.2)	6 (33)	0.091§	29 (21.5)	30 (31)	0.147
Readmission	71 (15.9)	49 (14.8)	22 (19.1)	0.253	27 (13.7)	5 (28)	0.178§	22 (16.3)	17 (18)	0.714
Persistent diverticulitis	63 (14.1)	42 (12.7)	21 (18.3)	0.130	23 (11.7)	5 (28)	0.100§	19 (14.1)	16 (16)	0.583
Emergency surgery (sigmoid resection)	40 (8.9)	24 (7.2)	16 (13.9)	0.030	10 (5.1)	1 (6)	0.693§	14 (10.4)	15 (15)	0.117
Death	5 (1.1)	3 (0.9)	2 (1.7)	0.607§	3 (1.5)	0 (0)	1.000§	0 (0)	2 (2)	0.332§
Long-term outcomes										
Complications†	74 (16.6)	46 (13.9)	28 (24.3)	0.009§	25 (12.7)	7 (39)	0.016§	21 (15.6)	21 (22)	0.245
Overall recurrence	122 (27.3)	93 (28.0)	29 (25.2)	0.474¶	54 (27.4)	7 (39)	0.623¶	39 (28.9)	22 (23)	0.349¶
Sigmoid resection	124 (27.7)	87 (26.2)	37 (32.2)	0.07¶	57 (28.9)	6 (33)	0.474¶	30 (22.2)	31 (32)	0.046¶
Death	28 (6.3)	16 (4.8)	12 (10.4)	0.048¶	8 (4.1)	2 (11)	0.263¶	8 (5.9)	10 (10)	0.270¶

Values in parentheses are percentages. *Abscess 5 cm or larger in diameter and/or distant abscess. †Colonic obstruction/ileus, fistula or perforation. PCD, percutaneous drainage. ‡Pearson χ^2 test, except §Fisher's exact test and ¶Mantel–Cox log rank test.

Hinchey III/IV

	Hartmann's procedure group (n=66)		Primary anastomosis group (n=64)		p value
	Patients	Events	Patients	Events	
Major morbidity	8 (12%)	16	9 (14%)	12	0.80
Surgical reintervention	4 (6%)	4	4 (6%)	5	--
Abscess with drainage	2 (3%)	5	2 (3%)	2	--
Fascial dehiscence	0	0	3 (5%)	3	--
Myocardial infarction	1 (2%)	1	0	0	--
Respiratory failure	4 (6%)	4	1 (2%)	1	--
Renal failure	3 (5%)	3	1 (2%)	1	--
Minor morbidity	26 (39%)	36	19 (30%)	21	0.27
Surgical site infection	8 (12%)	8	7 (11%)	7	--
Postoperative ileus	6 (9%)	6	7 (11%)	7	--
Pneumonia	5 (8%)	5	0	0	--
Delirium	5 (8%)	5	3 (5%)	3	--
Urinary tract infection or urine retention	2 (3%)	2	2 (3%)	2	--
Abscess without drainage	5 (8%)	5	0	0	--
Thrombosis	1 (2%)	1	0	0	--
Cardiac complications	4 (6%)	4	2 (3%)	2	--
Overall morbidity	29 (44%)	52	25 (39%)	33	0.60

Data are n (%). P values are for numbers of patients, not event numbers. Overall morbidity is major morbidity plus minor morbidity.

Table 2: Morbidity outcomes after the index procedure

Hinchey III/IV

	Hartmann's procedure group (n=44)		Primary anastomosis group (n=38)		p value
	Patients	Events	Patients	Events	
Major morbidity	7 (16%)	9	1 (3%)	1	0.063
Surgical reintervention	4 (9%)	4	1 (3%)	1	--
Abscess with drainage	3 (7%)	3	0	0	--
Fascial dehiscence	1 (2%)	1	0	0	--
Myocardial infarction	1 (2%)	1	0	0	--
Respiratory failure	0	0	0	0	--
Renal failure	0	0	0	0	--
Minor morbidity	6 (14%)	6	2 (5%)	2	0.28
Surgical site infection	5 (11%)	5	1 (3%)	1	--
Postoperative ileus	0	0	1 (3%)	1	--
Pneumonia	0	0	0	0	--
Delirium	0	0	0	0	--
Urinary tract infection or urine retention	1 (2%)	1	0	0	--
Abscess without drainage	0	0	0	0	--
Thrombosis	0	0	0	0	--
Cardiac complications	0	0	0	0	--
Overall morbidity	13 (30%)	15	3 (8%)	3	0.023

Data are n (%). Morbidity was scored in the first 30 days after reversal, or during admission for stoma reversal if still in hospital after 30 days.

Table 5: Morbidity outcomes of the stoma reversal procedure

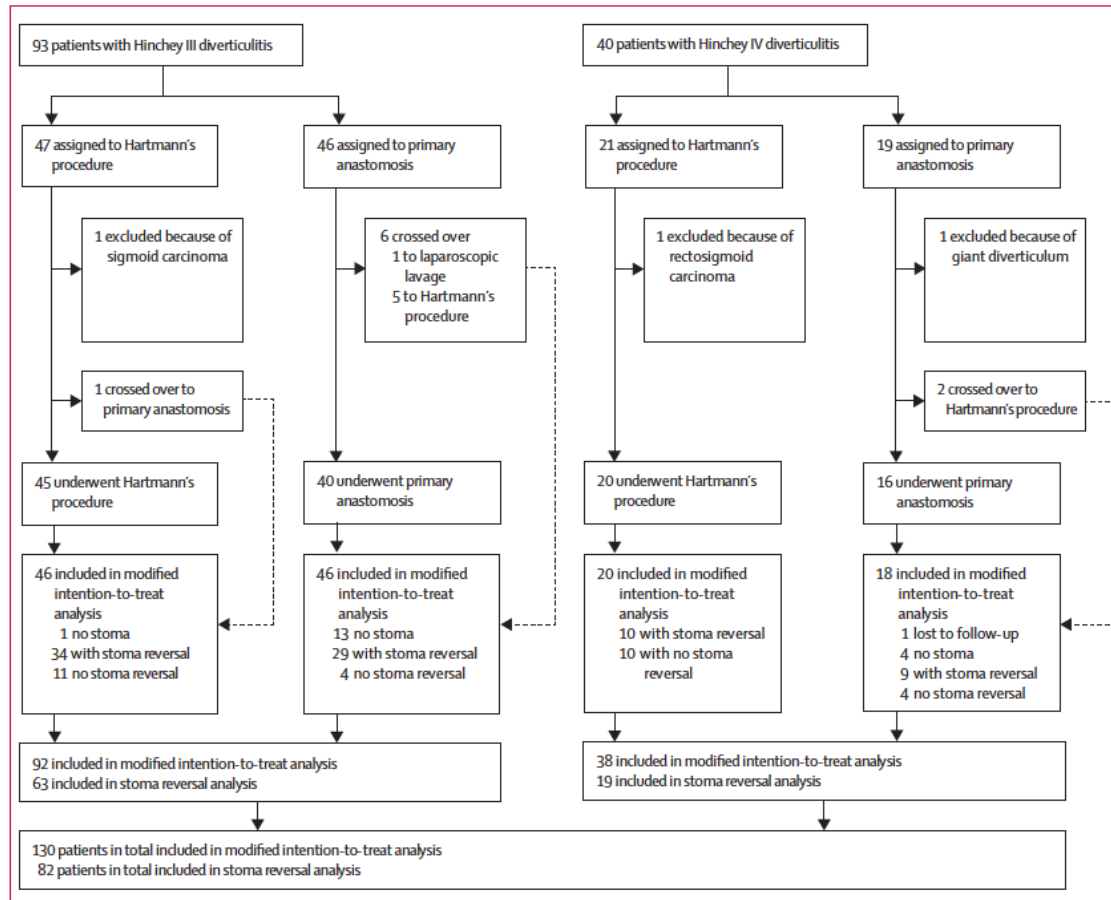


Figure 1: Trial profile