Die beste “evidence based” Dickdarmanastomose

Stefan Benz

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Metanalyse - Risikofaktoren

Rochas-Machado
Int J Colorect Dis 2016

ORIGINAL ARTICLE

Prediction of anastomotic leak in colorectal cancer surgery based on a new prognostic index PROCOLE (prognostic colorectal leakage) developed from the meta-analysis of observational studies of risk factors

S. A. Rojas-Machado[1,2] · M. Romero-Simó[1,2] · A. Arroyo[2,3] · A. Rojas-Machado[1,2] · J. López[2] · R. Calpena[2,3]

Respiratory diseases	0,6	1,9
Hepatic pathology	0,6	1,8
Classification ASA >2	0,6	1,8
Additional surgery	0,6	1,7
Obesity (IMC>30 kg/m	0,5	1,7
Neoadjuvant treatment	0,5	1,6
Diabetes mellitus	0,5	1,6
Preoperative serum haemoglobin levels <11.0 g/dl	0,9	1,6
Renal pathology	0,5	1,6
Male sex	0,4	1,5
Drugs consumption (alcohol and/or tobacco)	0,4	1,5
Cardiovascular diseases	0,3	1,3
Mechanical anastomosis	0,2	1,1

Score:

Addition RFs
+Prozedur
+OP-Zeit
+Chirurg

Häufigkeit - Dänemark

	OR (95% CI)	*P*
Age (per year)	0.99 (0.98–0.99)	0.01
Gender		
Female	1.00	0.02
Male	1.41 (1.12–1.75)	
Surgical procedure		
Right hemicolectomy	1.00	0.01
Transverse colectomy	1.15 (0.55–2.37)	
Left hemicolectomy	2.02 (1.50–2.72)	
Sigmoid colectomy	1.69 (1.32–2.17)	
Surgical approach		
Laparotomy	1.00	0.03
Laparoscopy	1.34 (1.05–1.70)	
Operative blood loss (per 100 ml)	1.04 (1.01–1.07)	0.03
Perioperative blood transfusion		
No	1.00	< 0.001
Yes	10.27 (6.82–15.45)	

N = 9333

Insuffizienzrate 6,4%

Karup PM
Colorectal Dis 2012

Durchblutung
- ICG -

Single centre Serie ohne Vergleich

Indocyanine green-enhanced fluorescence to assess bowel perfusion during laparoscopic colorectal resection

Luigi Boni[1] · Giulia David[1] · Gianlorenzo Dionigi[1] · Stefano Rausei[1] · Elisa Cassinotti[1] · Abe Fingerhut[2,3]

Insuffizienzrate	0,9%

Boni Surg Endosc 2016

Nahttechnik

Single layer versus double layer suture anastomosis of the gastrointestinal tract (Review)

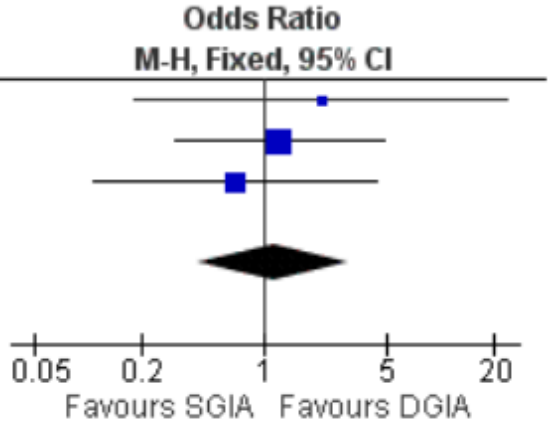
Sajid MS, Siddiqui MRS, Baig MK 2012

Cochrane Library
Cochrane Database of Systematic Reviews

Figure 10. Forest plot of comparison: 1 Anastomosis, outcome: 1.6 Anatomotic leak in high quality trials.

Study or Subgroup	SGIA Events	SGIA Total	DGIA Events	DGIA Total	Weight	Odds Ratio M-H, Fixed, 95% CI
Burch 2000	2	65	1	67	12.7%	2.10 [0.19, 23.68]
Goligher 1977	5	69	4	66	50.3%	1.21 [0.31, 4.72]
Ordorica-Flores 1998	2	42	3	44	37.0%	0.68 [0.11, 4.31]
Total (95% CI)		**176**		**177**	**100.0%**	**1.13 [0.42, 3.01]**
Total events	9		8			

Heterogeneity: Chi² = 0.55, df = 2 (P = 0.76); I² = 0%
Test for overall effect: Z = 0.24 (P = 0.81)



Chirurgische Technik

N=457	Ileocolonic anastomosis				
	EEI	EEC	ESI	ESC	GIA
Number of patients	84	77	82	91	106
Wound abscess	12	9	3	7	10
Anastomotic leakage (clinical and/or radiological)	9	7	4	8	
– clinical					2
– radiological			2	5	1
	2	6	1	5	2
Extra-abdominal infection[a]	5	7	8	12	13
Mortality	3	3	3	3	2
Died with intra-abdominal infection	1	2	0	1	0

Seit-Seit nicht getestet

Kracht M Int J colorect Dis 1993

Handnaht vs. Stapler für Ileostransversostomie

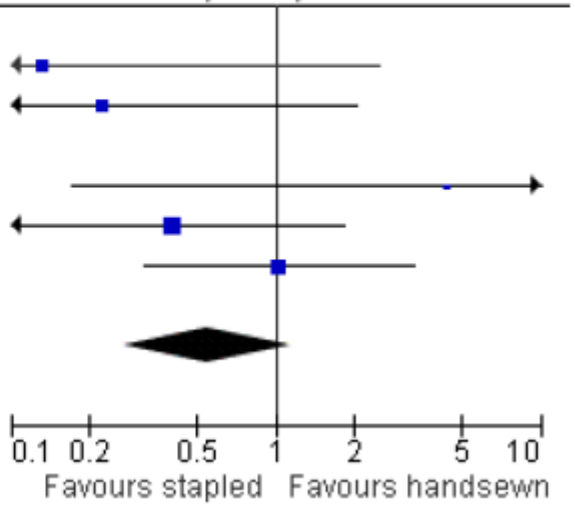
Klinisch relevante Insuffizienz

Figure 2. Forest plot of comparison: 1 All studies, outcome: 1.2 Clinical anastomotic leak.

Study or Subgroup	Stapled Events	Stapled Total	Handsewn Events	Handsewn Total	Weight	Odds Ratio M-H, Fixed, 95% CI
Didolkar 1986	0	22	0	16		Not estimable
Docherty 1991	0	70	4	87	18.9%	0.13 [0.01, 2.49]
Docherty 1995	1	133	4	122	19.6%	0.22 [0.02, 2.03]
Ikeuchi 2000	0	11	0	18		Not estimable
Izbicki 1998	1	15	0	21	1.8%	4.45 [0.17, 116.94]
Kracht 1993	2	106	15	334	33.6%	0.41 [0.09, 1.82]
McLeod 2009	6	84	6	86	26.1%	1.03 [0.32, 3.32]
Total (95% CI)		**441**		**684**	**100.0%**	**0.55 [0.27, 1.15]**
Total events	10		29			

Heterogeneity: Chi² = 4.35, df = 4 (P = 0.36); I² = 8%

Test for overall effect: Z = 1.59 (P = 0.11)



Choy Cochrane review 2011

Handnaht vs. Stapler für Kolo-rektale Anastomose

Cochrane Library

Cochrane Database of Systematic Reviews

Stapled versus handsewn methods for colorectal anastomosis surgery (Review)

Neutzling CB, Lustosa SAS, Proenca IM, da Silva EMK, Matos D

Kein ausreichenden Daten für Schlussfolgerung

Neutzling Cochrane review 2012

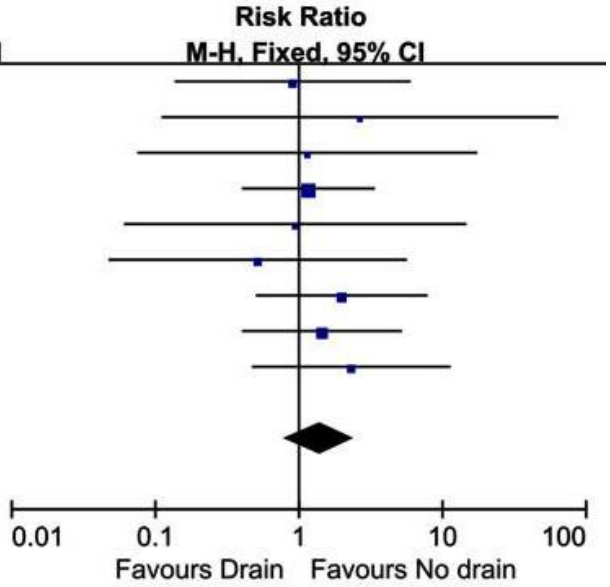
Drainage?

a

Study or Subgroup	Drain Events	Drain Total	No drain Events	No drain Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Brown 2001	2	31	2	28	10.0%	0.90 [0.14, 5.99]
Hagmuller 1990	1	60	0	53	2.5%	2.66 [0.11, 63.84]
Hoffmann 1987	1	28	1	32	4.4%	1.14 [0.07, 17.44]
Johnson 1989	6	49	6	57	26.3%	1.16 [0.40, 3.38]
Mennigen 1989	1	51	1	48	4.9%	0.94 [0.06, 14.63]
Merad 1998	1	156	2	161	9.3%	0.52 [0.05, 5.63]
Merad 1999	6	248	3	246	14.3%	1.98 [0.50, 7.84]
Sagar 1993	8	94	3	51	18.4%	1.45 [0.40, 5.22]
Sagar 1995	5	52	2	48	9.9%	2.31 [0.47, 11.34]
Total (95% CI)		**769**		**724**	**100.0%**	**1.39 [0.80, 2.39]**
Total events	31		20			

Heterogeneity: Chi² = 1.87, df = 8 (P = 0.98); I² = 0%

Test for overall effect: Z = 1.17 (P = 0.24)



Zhang Int J Colorect Dis 2016

Keine Drainage notwendig

Staplerhersteller

Registerstudie

Table 5 Multivariate analysis of factors in SRCR related to anastomotic leakage.

Effect	Odds ratio	95% confidence interval	*P*-value	value*
Gender (F/M)	0.699	(0.517–0.945)	0.02	
Age	0.998	(0.985–1.012)	0.80	
Radiotherapy	2.029	(1.492–2.759)	< 0.0001	)039
TNM stage II	0.842	(0.575–1.233)	0.38	
TNM stage III	0.708	(0.475–1.055)	0.09	
TNM stage IV	1.250	(0.751–2.081)	0.39	
Tumour height > 5 cm	1.004	(0.596–1.692)	0.99	
Diverting stoma	0.912	(0.667–1.245)	0.56	
Stapler	1.603	(1.188–2.161)	0.002	

Folkesson Colorectal Dis 2004

Ilecolische Stapleranastomose mit Übernähung

Fallserie

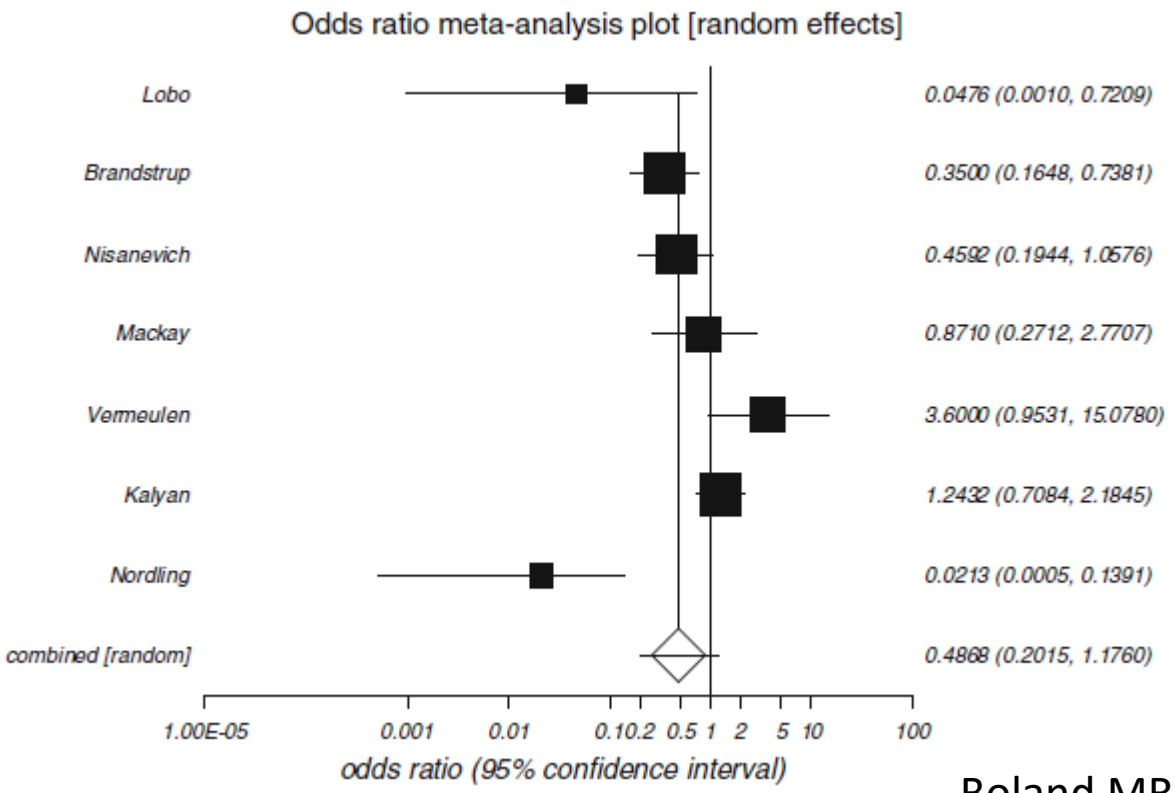
Table 3 Univariate analysis of outcomes by oversewing status: all complications, readmissions, and length of stay

	Not oversewing $n=149$	Oversewing $n=120$	p value
MAC	26 (18)	7 (6)	<0.01
Anastomotic leak	7 (5)	0 (0)	0.02
Intra-abdominal abscess[a]	6 (4)	4 (3)	>0.99
Anastomotic bleed[a]	0 (0)	1 (1)	0.45
Small bowel obstruction	13 (9)	2 (2)	0.01
Overall complications	44 (30)	29 (24)	0.33
Enterotomy[a]	4 (3)	0 (0)	0.13
Portal vein thrombosis[a]	0 (0)	1 (1)	0.45
Surgical site infection[a]	5 (3)	9 (8)	0.13
Ureteral injury[a]	0 (0)	3 (3)	0.09
Dehydration[a]	1 (1)	1 (1)	>0.99
Readmission[a]	4 (3)	2 (2)	0.70
LOS, median (IQR)[b]	5 (3)	6 (3)	0.08

Offene technische Fragen

- Mesopräparation mit Strom/UC
- Entfernen des Mesos
- Nahtabstände
- Nahtspannung
- Double Stapling – Tabaksbeutel
- Wartezeit vor Staplerauslöung
- Zurückziehen des Staplers vor dem Schließen
- Partielle Übernähung
-
-

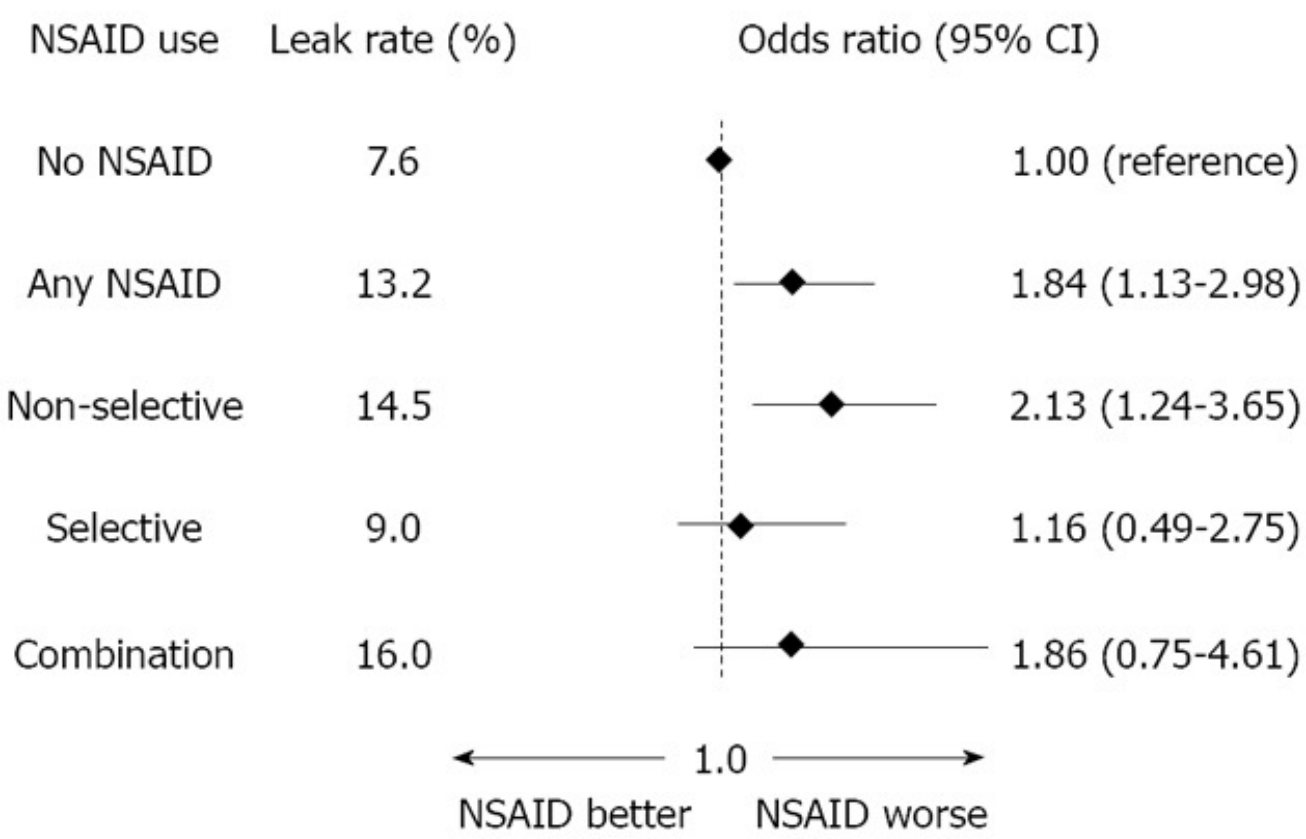
Flüssigkeitsrestriktion ?



Boland MR World J Surg 2013

Kein signifikanter Effekt

Einfluss von NSAIDs

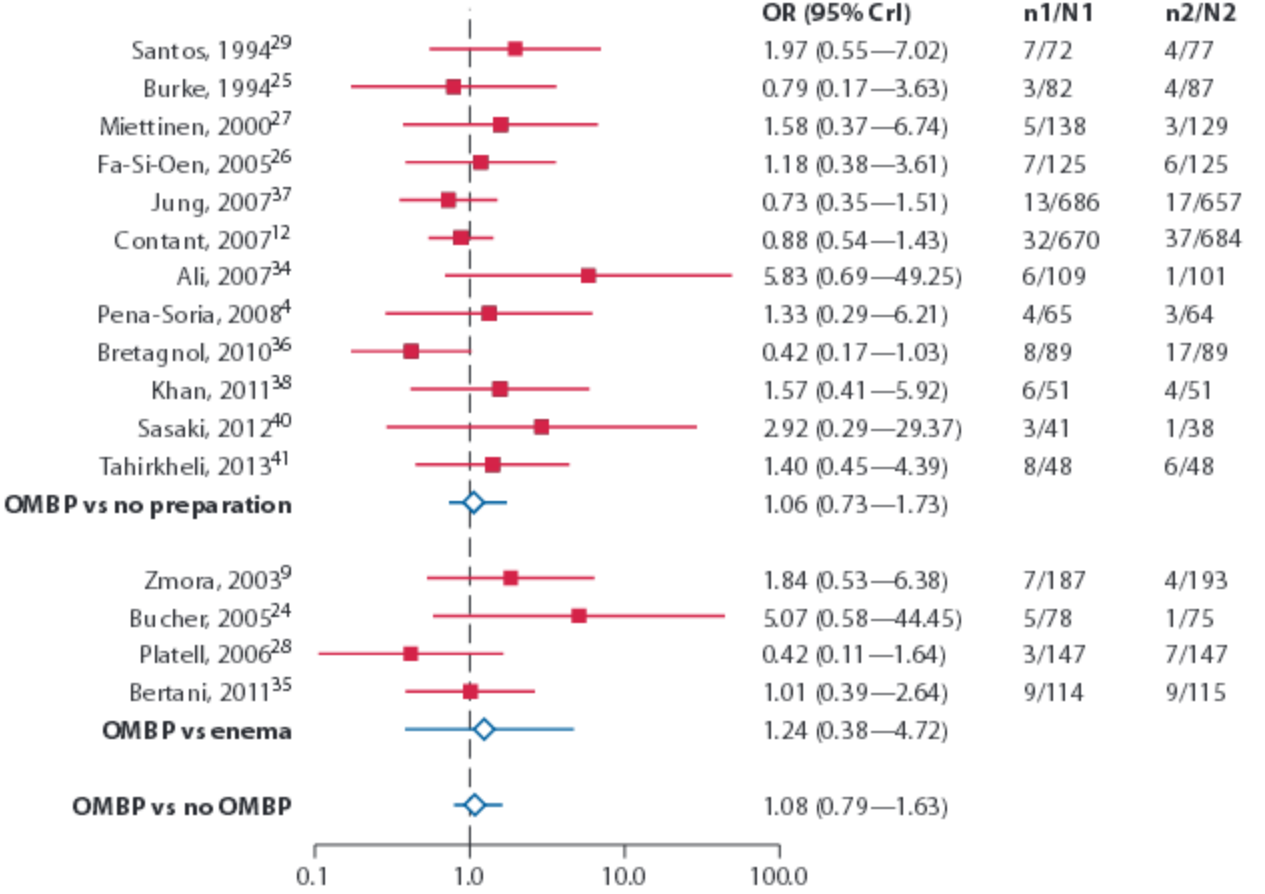


Gorrison KJ Br J Surg 2010

Darmvorbereitung

Metaanalyse

DISEASES OF THE COLON & RECTUM VOLUME 58: 7 (2015)



Dahabreh Dis Col Rect 2015

Darmvorbereitung

Rektum

Rectal Cancer Surgery With or Without Bowel Preparation

The French Greccar III Multicenter Single-Blinded Randomized Trial

Frederic Bretagnol, MD, PhD, Yves Panis, MD, PhD*, Eric Rullier, MD†, Philippe Rouanet, MD, PhD‡, Stephane Berdah, MD§, Bertrand Dousset, MD¶, Guillaume Portier, MD**, Stephane Benoist, MD, PhD††, Jacques Chipponi, MD‡‡, Eric Vicaut, MD, PhD§§, and, the French Research Group of Rectal Cancer Surgery (GRECCAR).*

Asymptomatic leakage rate	2 (2)	3 (3)	–
Clinical anastomotic leakage rate	6 (7)	14 (16)	0.06
Peritonitis	2 (2)	6 (7)	0.15

Values in parentheses are percentages.
MBP indicates mechanical bowel preparation.

Bretagnol Ann Surg 2010

Darmvorbereitung

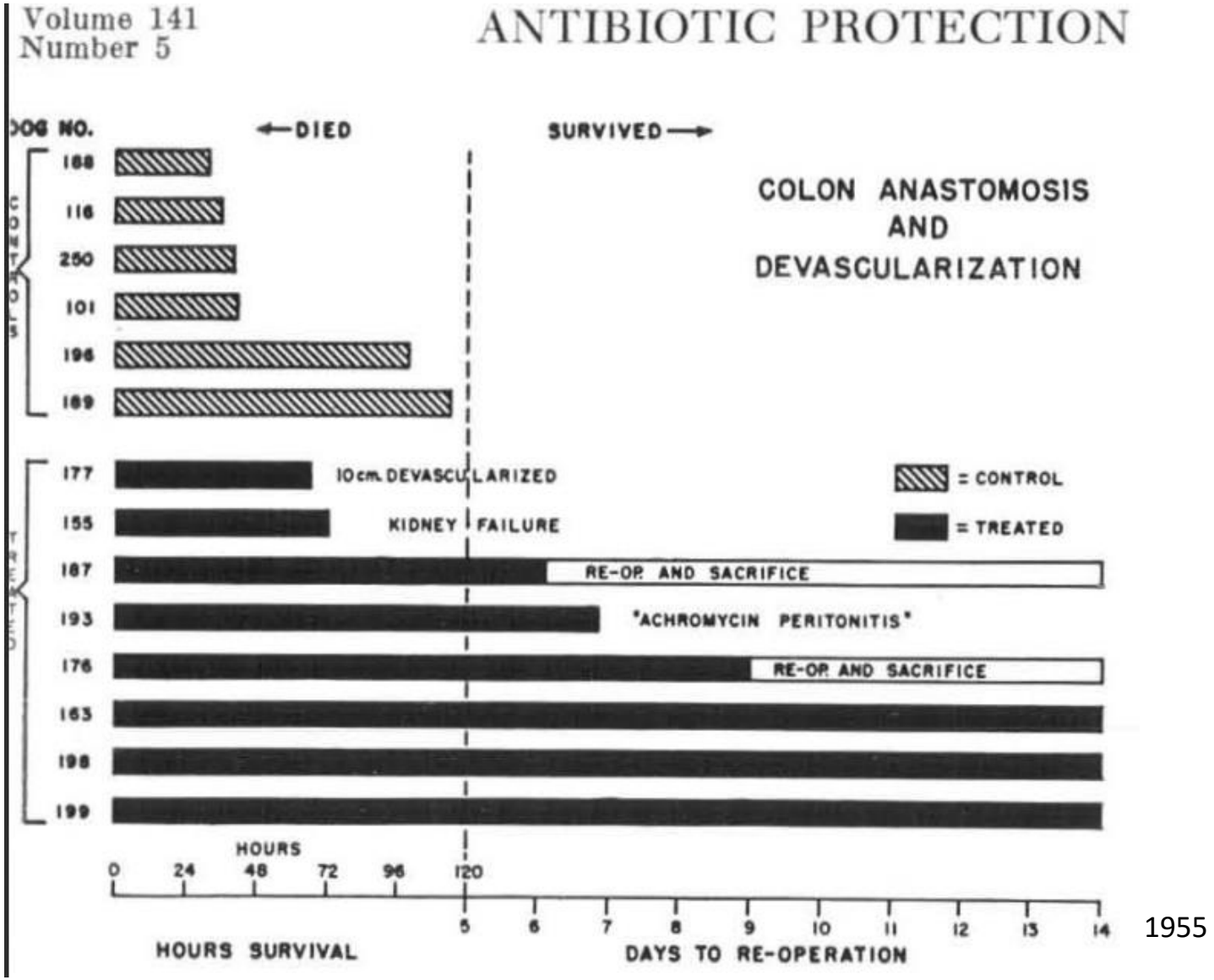
Rektum

TABLE 2. Postoperative Course After Rectal Cancer Surgery With and Without Preoperative Mechanical Bowel Preparation

	MBP (n = 89)	no-MBP (n = 89)	*P*
30-day overall morbidity	24 (27)	39 (44)	0.018
Mortality	1 (1)	0	
Infectious morbidity	14 (16)	30 (34)	0.005
Non infectious morbidity	11 (11)	14 (16)	0.42
Major morbidity (Dindo III or more)	10 (11)	16 (18)	0.69
Hospital stay (median range), d	11 (9–15)	12 (10–17)	0.15
6-month stoma closure, d	59 (97)	56 (92)	0.43

Bretagnol Ann Surg 2010

Darmdekontamination



1955

The prevention of anastomotic leakage after total gastrectomy with local decontamination. A prospective, randomized, double-blind, placebo-controlled multicenter trial.

Parameter	Study Group: Placebo (N = 103)	Study Group: Decontamination (N = 102)	p Value
Complications		3 (2.9%)	
Esophagointestinal insufficiency	11 (10.6%)		0.0492
Pulmonary infection	23 (22.3%)	9 (8.8%)	0.0115
Urinary tract infection	8 (7.7%)	7 (6.8%)	1.0000
Duodenal insufficiency	1 (0.9%)	1 (0.9%)	1.0000
Abscess	4 (3.8%)	5 (4.9%)	1.0000
Pancreatic fistula	5 (4.8%)	5 (4.9%)	1.0000
Miscellaneous	9 (87.3%)	9 (88.2%)	1.0000
Total	46 (44.7%)	31 (30.4%)	0.0494
Mortality	11 (10.6%)	5 (4.9%)	0.1000
Condition		75 ± 19*	
Karnofsky score on day 42	68 ± 25*		0.0600
Therapeutic interventions		14 (13.7%)	
Intensive care therapy†	26 (25.2%)		0.0518
Antibiotic therapy	41 (39.8%)	26 (25.4%)	0.0289
Surgical reintervention	10 (9.7%)‡	5 (4.9%)§	0.2833

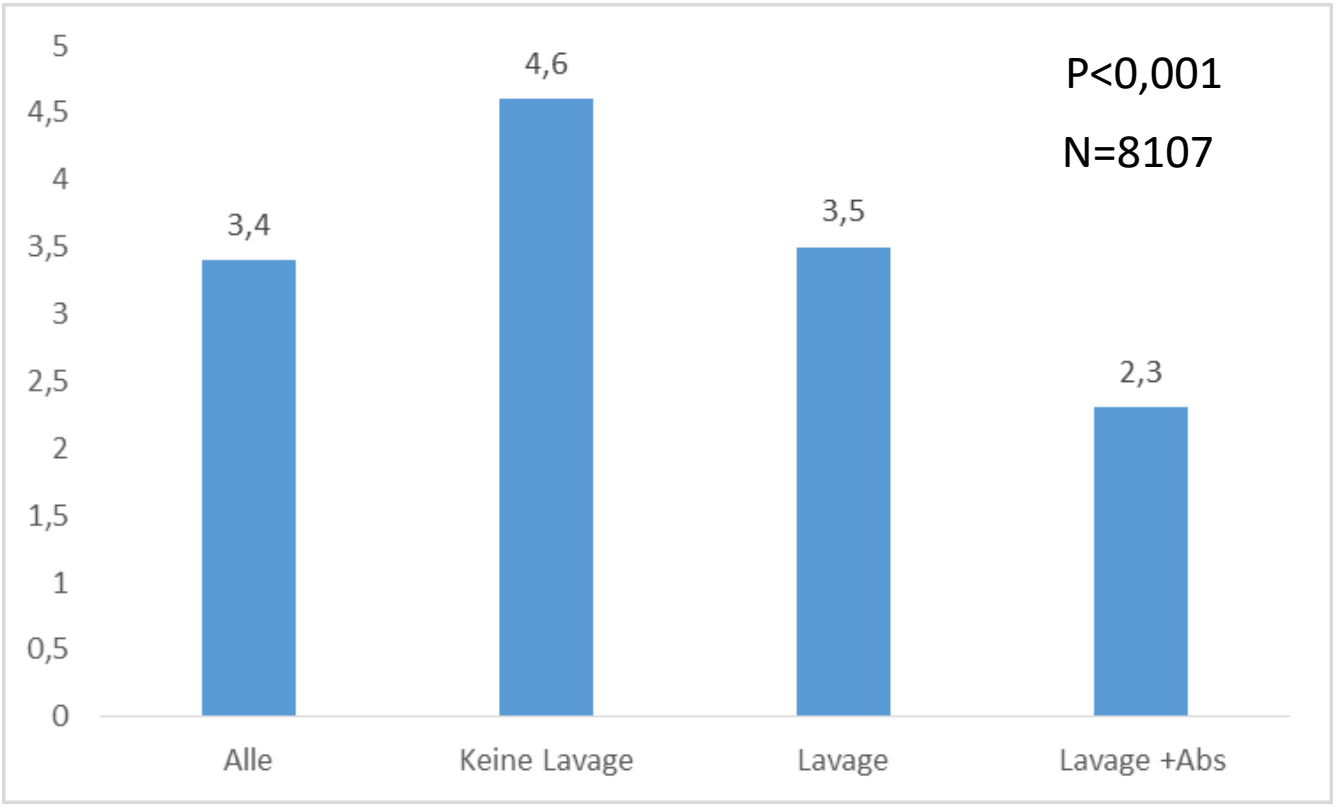
* Values are ± standard deviation.
† Patients with a postoperative intensive care unit stay of more than 4 days or emergency admission to the intensive care unit were included.
‡ 35 interventions.
§ 13 interventions.

Scharday Ann Surg 1997

Darmdekontamination

Oral Antibiotic Bowel Preparation Significantly Reduces Surgical Site Infection Rates and Readmission Rates in Elective Colorectal Surgery

Melanie S. Morris, MD, Laura A. Graham, MPH, Daniel I. Chu, MD, Jamie A. Cannon, MD, and Mary T. Hawn, MD, MPH



Ann Surg 2015

Darmdekontamination

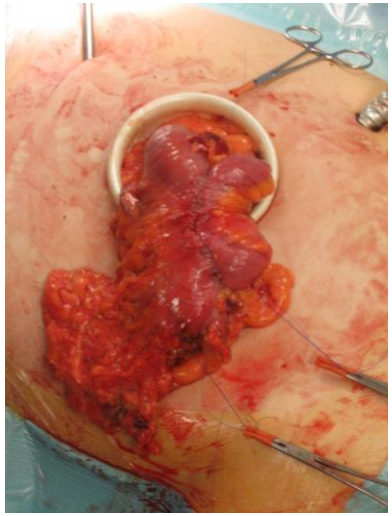
Comparison between oral antibiotics and probiotics as bowel preparation for elective colon cancer surgery to prevent infection: Prospective randomized trial

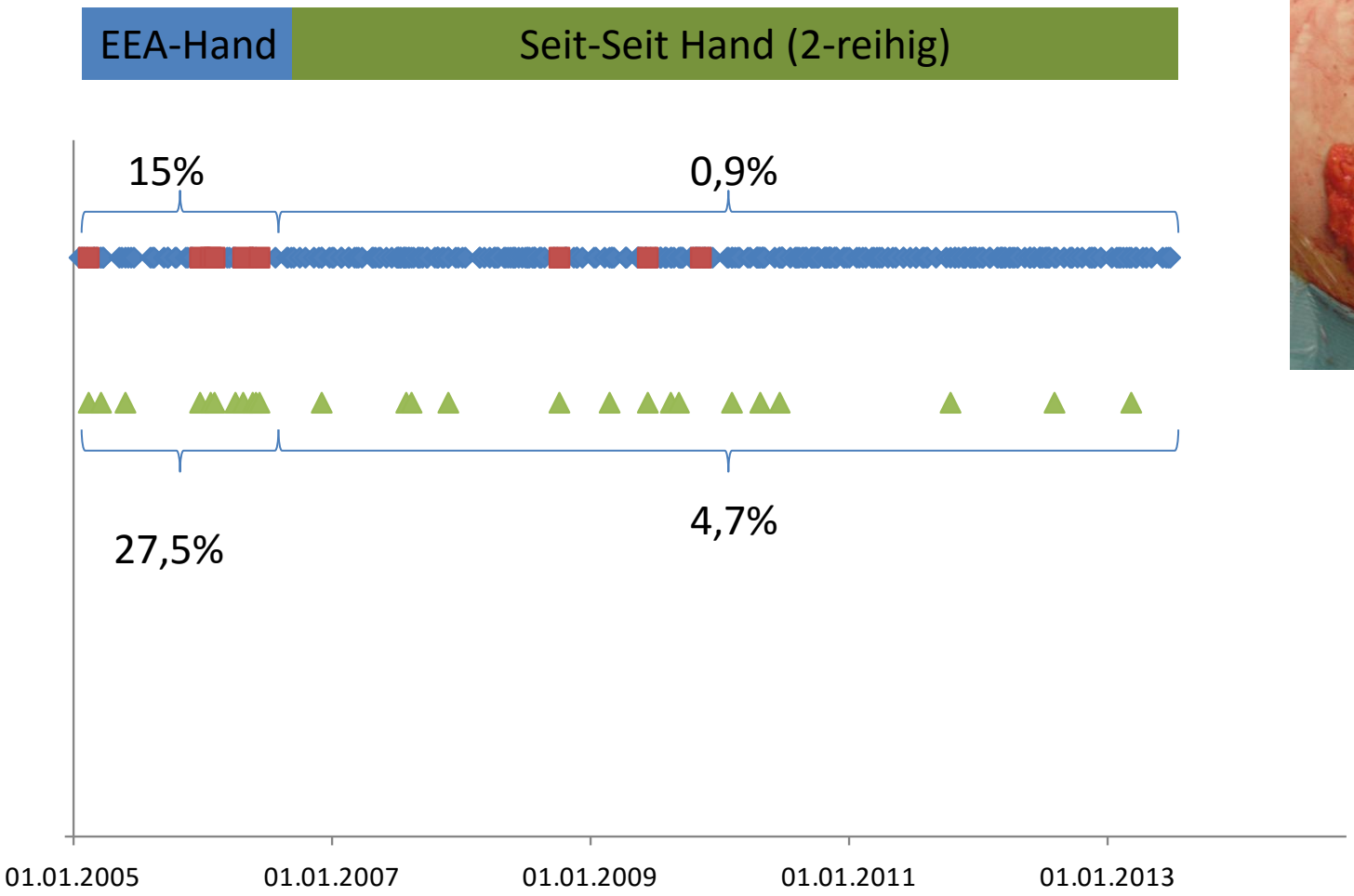
Sotaro Sadahiro, MD,[a] Toshiyuki Suzuki, MD,[a] Akira Tanaka, MD,[a] Kazutake Okada, MD,[a] Hiroko Kamata, MD,[a] Toru Ozaki, BS,[b] *and* Yasuhiro Koga, MD,[c] *Isehara and Kobe, Japan*

Alle mit MBP

Sadahiro Surgery 2014

Persönliche Erfahrung Ileotransversostomie



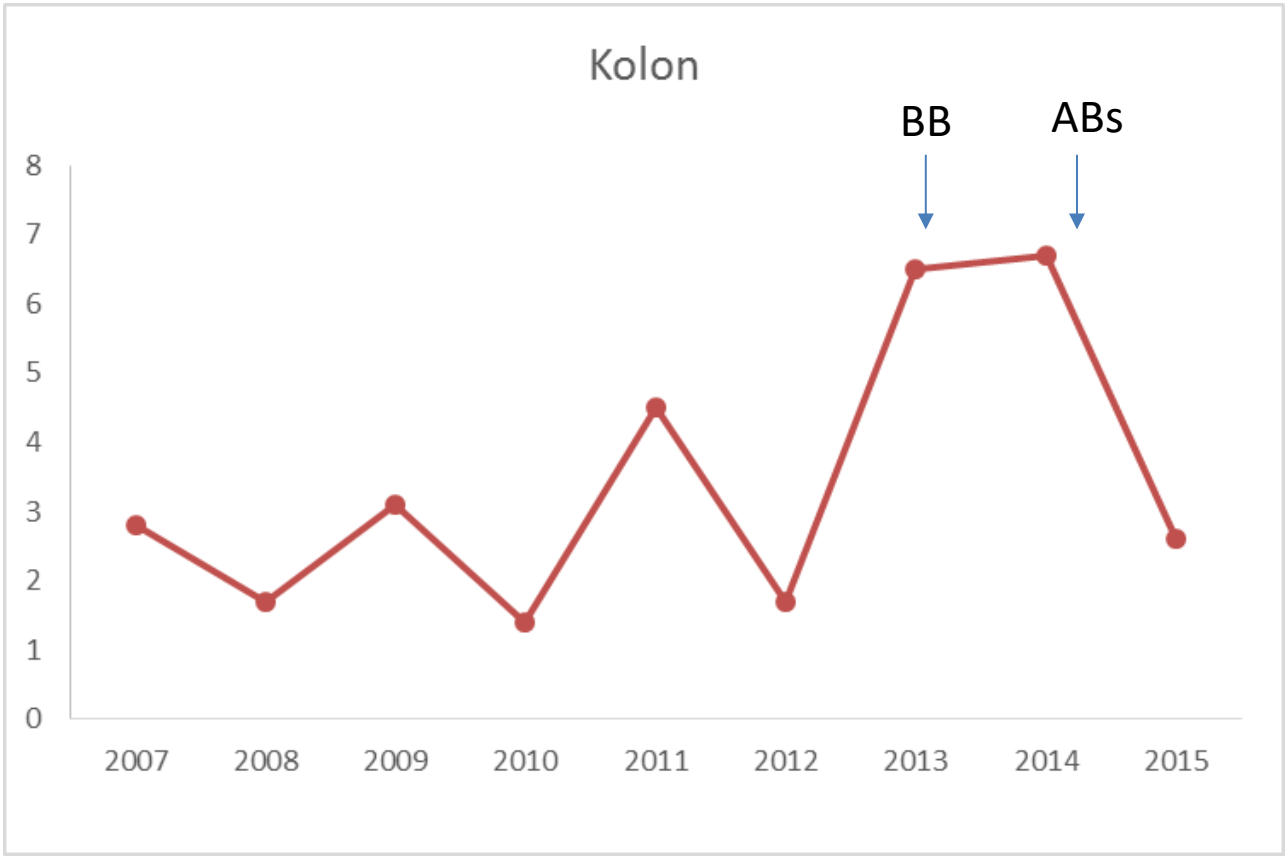


Darmdekontamination

Eigenes Vorgehen

Bei linksseitigen Resektionen
Spülung mit 3 Liter + 8g Humatin am Ende der Spülung

Eigene Ergebnisse
Insuffizienz bei Primärfällen

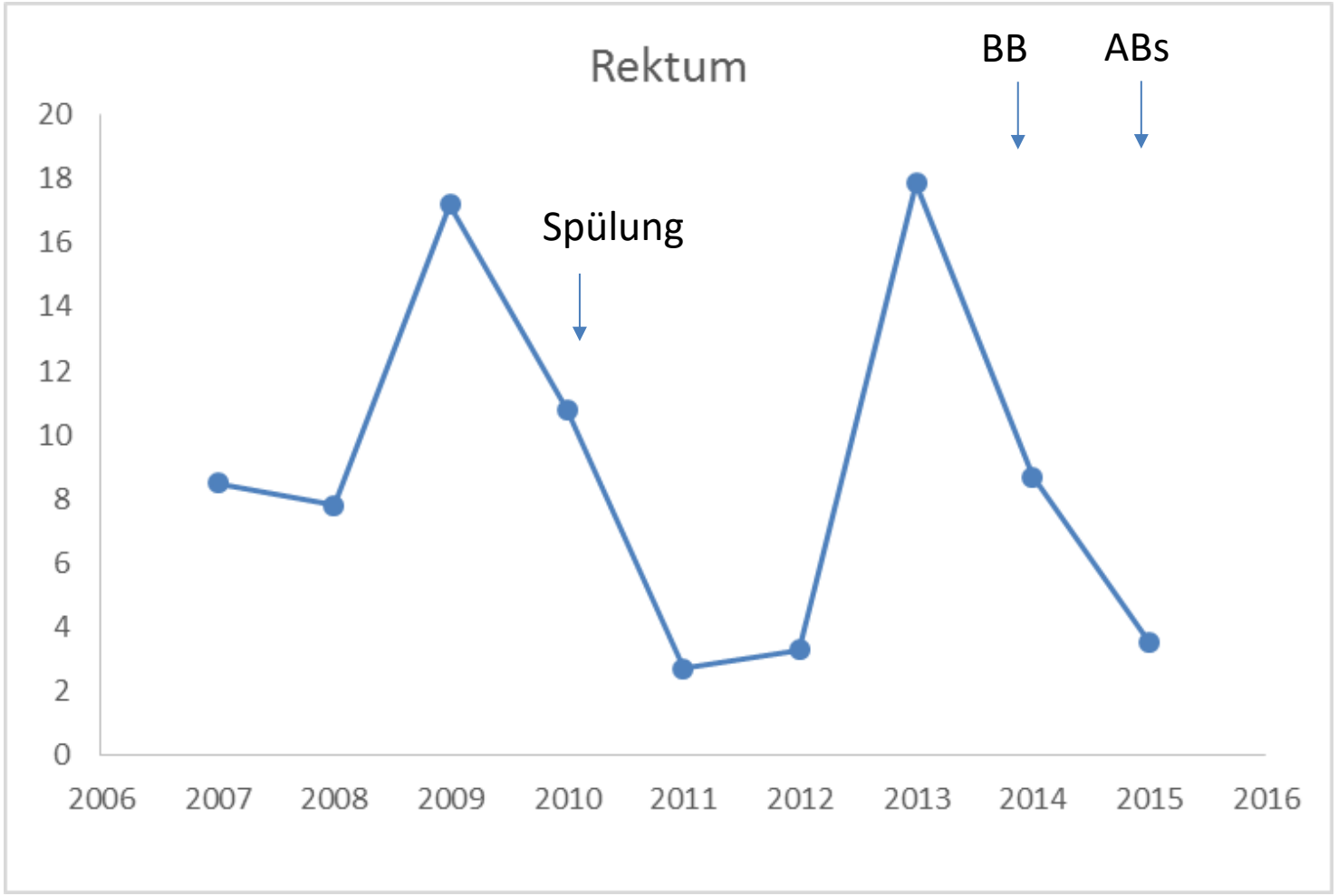


Gesamt: 3,44% (20/581)

Zusammenfassung

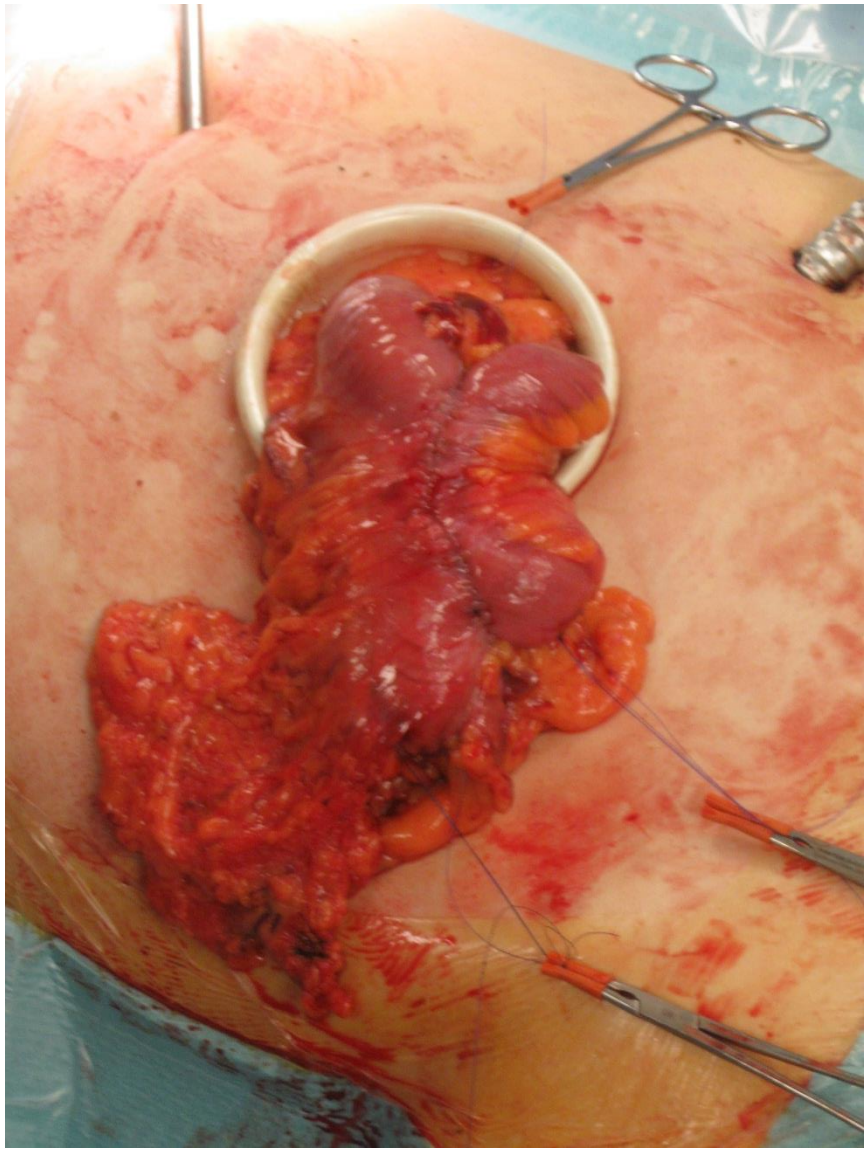
- Don´t change a winning horse
- Blutsparende OP-Technik
- Durchblutung sichern
- Klammernaht ggf. übernähen
- Ggf. Staplerhersteller wechseln
- Darmvorbereitung mit Spülung und lokaler Antibiose

Eigene Ergebnisse
Insuffizienz bei Primärfällen



Gesamt: 8,74% (25/286)

Persönliche Erfahrung Ileotransversostomie



Seit-Seit
Fortlaufend zweireihig
PDS 4-0

Risikoscore

Sensitivität/Spezifität =78%

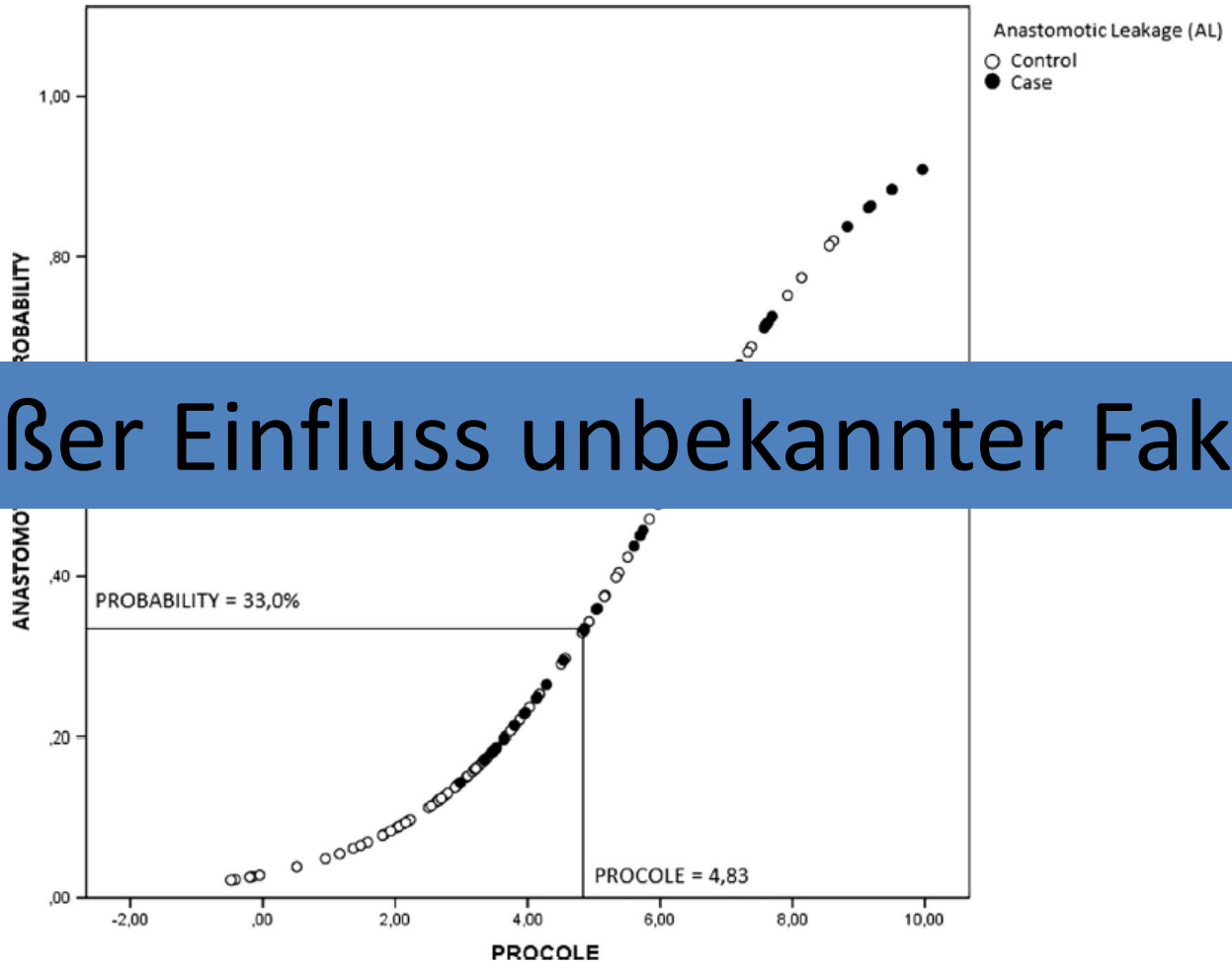


Fig. 6 Estimated probability of anastomotic leak rate based on PROCOLE

Großer Einfluss unbekannter Faktoren

Rochas-Machado
Int J Colorect Dis 2016

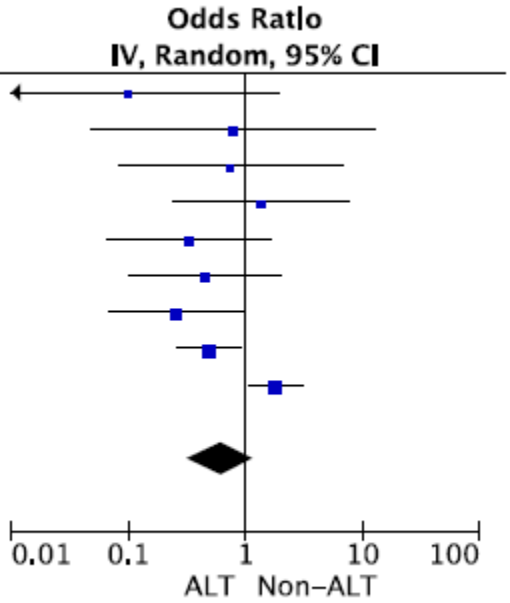
Dichtigkeitsprüfung

Testung kolorektaler Anastomosen mit Luft

Study or Subgroup	ALT Events	ALT Total	Non-ALT Events	Non-ALT Total	Weight	Odds Ratio IV, Random, 95% CI
Sakanoue et al. 1993	0	35	4	35	4.1%	0.10 [0.01, 1.90]
Li et al. 2009	1	137	1	107	4.6%	0.78 [0.05, 12.61]
Shamlyeh et al. 2011	1	85	4	253	6.6%	0.74 [0.08, 6.72]
Lanthaler et al. 2008	4	73	2	49	9.2%	1.36 [0.24, 7.74]
Lleto et al. 2011	2	56	7	68	10.1%	0.32 [0.06, 1.62]
Ivanov et al. 2011	3	30	6	30	11.0%	0.44 [0.10, 1.97]
Beard et al. 1990	3	73	10	70	12.4%	0.26 [0.07, 0.98]
Ricciardi et al. 2009	34	825	14	173	20.4%	0.49 [0.26, 0.93]
Schmidt et al. 2003	27	260	32	528	21.7%	1.80 [1.05, 3.07]
Total (95% CI)		**1574**		**1313**	**100.0%**	**0.61 [0.32, 1.18]**
Total events	75		80			

Heterogeneity: $Tau^2 = 0.45$; $Chi^2 = 17.85$, df = 8 (P = 0.02); $I^2 = 55\%$

Test for overall effect: Z = 1.46 (P = 0.15)



Signifikant wenn auf Evidenzlevel 1b beschränkt

Zhouqiao Wu Int J Colorectal Dis 2016

Nahttechnik

Single-Layer Continuous Versus Two-Layer Interrupted Intestinal Anastomosis

A Prospective Randomized Trial

Jon M. Burch, MD, Reginald J. Franciose, MD, Ernest E. Moore, MD, Walter L. Biffl, MD, and Patrick J. Offner, MD

From the Department of Surgery, Denver Health Medical Center and University of Colorado Health Sciences Center, Denver, Colorado

	One-Layer	Two-Layer	*P*
Number of anastomoses	65	67	
Leaks	2 (3.1%)	1 (1.5%)	.62*
Abscesses	2 (3.1%)	2 (3.0%)	.0*
Time (min)	20.8	30.7	.000†
Length of stay (days)	7.9	9.9	.084†
Cost	$4.51	$35.38	

Burch Ann Surg 2000

Mikrobiom und Anastomoseninsuffizienz

ORIGINAL SCIENTIFIC REPORT

A Four-Probiotics Regimen Reduces Postoperative Complications After Colorectal Surgery: A Randomized, Double-Blind, Placebo-Controlled Study

Katerina Kotzampassi[1] · George Stavrou[1] · Georgia Damoraki[2] · Marianna Georgitsi[2] · George Basdanis[1] · Georgia Tsaousi[1] · Evangelos J. Giamarellos-Bourboulis[2]

Published online: 17 April 2015

N= 164
MBP ± Probiotische Bakterien
Vorzeitiger Abbruch wegen Effektivität der Intervention

Durchblutung
- ICG -

Table 4 Postoperative complications ($n = 107$)

Postoperative morbidity	*N*	%
Ileus	6	5.6
Postoperative anemia requiring transfusions	4	3.7
Fever	3	2.8
Pulmonary complications	3	2.8
Wound infections	3	2.8
Urinary tract infections	2	1.8
Incisional hernia	2	1.8
Urinary retention	2	1.8
Rectal bleeding	2	1.8
Postoperative leak	1	0.9
Others	5	4.6
Severity of complication [21]		
Mild (Clavien Dindo 1)	23	21.4
Moderate (Clavien Dindo 2)	9	8.4
Severe (Clavien Dindo 3–5)	1	0.9
Re-operation	1	0.9
Mortality	0	0

Boni Surg Endosc 2016

Darmdekontamination

RESEARCH ARTICLE

WOUND HEALING

Collagen degradation and MMP9 activation by *Enterococcus faecalis* contribute to intestinal anastomotic leak

Benjamin D. Shogan,[1] Natalia Belogortseva,[1] Preston M. Luong,[1] Alexander Zaborin,[1] Simon Lax,[1] Cindy Bethel,[1] Marc Ward,[1] Joseph P. Muldoon,[2] Mark Singer,[2] Gary An,[1] Konstantin Umanskiy,[1] Vani Konda,[1] Baddr Shakhsheer,[1] James Luo,[1] Robin Klabbers,[1,3] Lynn E. Hancock,[4] Jack Gilbert,[1,5] Olga Zaborina,[1]* John C. Alverdy[1]*†

Science Translational Medicine 2015

Mikrobiom und Anastomoseninsuffizienz

Table 1 Primary study outcomes

	Controls ($n = 80$)	Probiotics ($n = 84$)	OR (95 % CIs)	p
Any major complication (n, %)	39 (48.8)	24 (28.6)	0.42 (0.22–0.80)	0.010
Any infectious complication (n, %)	23 (28.7)	10 (11.9)	0.33 (0.15–0.76)	0.009
Pneumonia	9 (11.3)	2 (2.4)	0.19 (0.04–0.92)	0.029
Surgical site infections	16 (20.0)	6 (7.1)	0.31 (0.11–0.83)	0.020
Urinary tract infection	6 (7.5)	4 (4.8)	0.62 (0.17–2.27)	0.528
Bacteremia	8 (10.0)	6 (7.1)	0.69 (0.22–2.09)	0.583
Severe sepsis	4 (5.0)	1 (1.2)	0.23 (0.02–2.09)	0.192
Anastomosis leakage (n, %)	7 (8.8)	1 (1.2)	0.13 (0.01–0.99)	0.031
Need for mechanical ventilation (n, %)	28 (35.0)	17 (20.2)	0.47 (0.23–0.96)	0.037

Kotzampasi World J Surg 2015

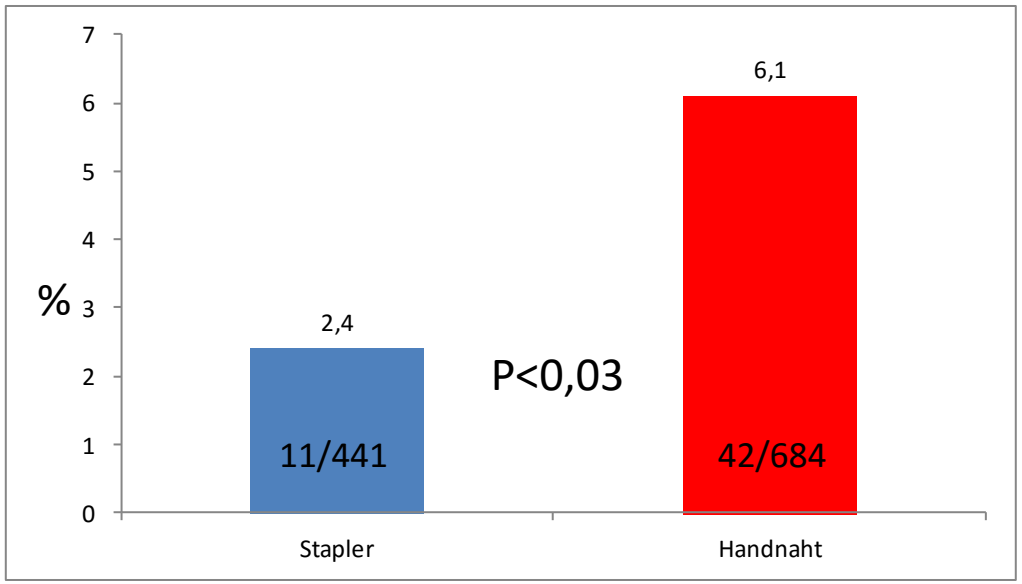
Surg Today. 2016 Apr;46(4):479-90. doi: 10.1007/s00595-015-1178-3. Epub 2015 May 2.

Efficacy of perioperative synbiotics treatment for the prevention of surgical site infection after laparoscopic colorectal surgery: a randomized controlled trial.

Komatsu S[1], Sakamoto E[2], Norimizu S[2], Shinqu Y[2], Asahara T[3], Nomoto K[3], Nagino M[4].

Nicht bestätigt

Anastomoseninsuffizienz: Prävention



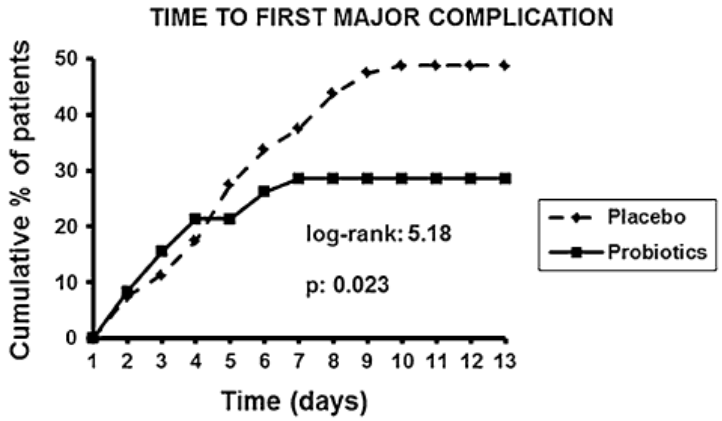
Cochrane Database Rev Choy PY 2007

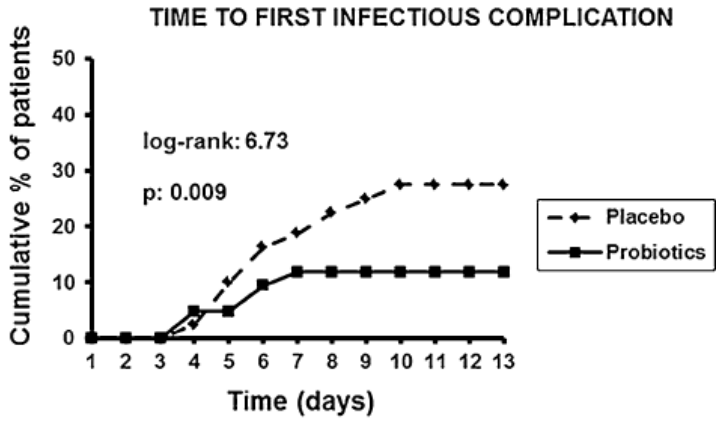
Keine Unterscheide

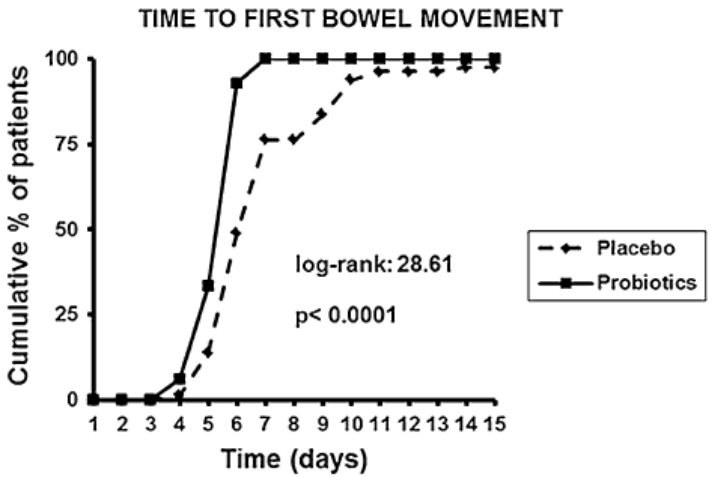
Drainage (6 RCTs) Cochrane Database Rev Jesus EC 2004

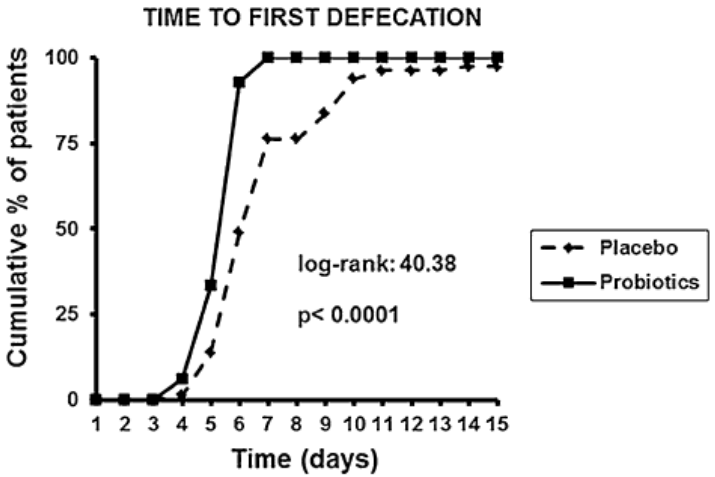
Darmvorbereitung (13 RCTs) Cochrane Database Rev Guenaga KK 2009

Mikrobiom und Anastomoseninsuffizienz









Kotzampasi World J Surg 2015

Mikrobiom und Anastomoseninsuffizienz

Randomized clinical trial

Randomized clinical trial of effect of synbiotics, neomycin and mechanical bowel preparation on intestinal barrier function in patients undergoing colectomy

B. S. Reddy[1], J. MacFie[1], M. Gatt[1], C. N. Larsen[2], S. S. Jensen[2] and T. D. Leser[2]

[1]Combined Gastroenterology Research Unit, Scarborough Hospital, Scarborough, UK and [2]Department of Human Health, Nutrition and Health Functionality, Chr. Hansen A/S, Hørsholm, Denmark

Correspondence to: Professor J. MacFie, Postgraduate Medical Institute, University of Hull, Scarborough Hospital, Woodlands Drive, Scarborough YO12 6QL, UK (e-mail: johnmacfie@aol.com)

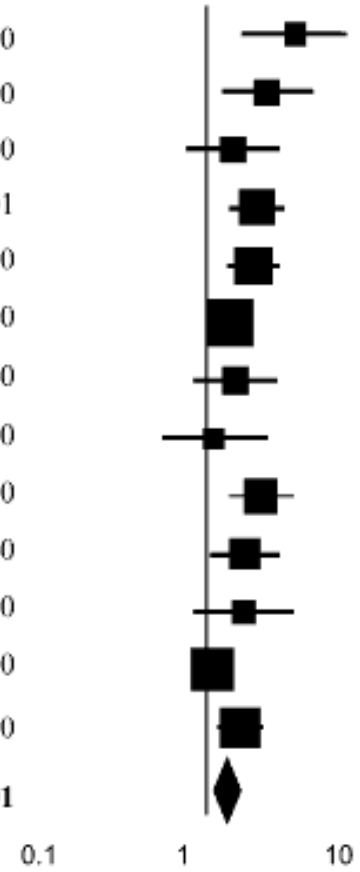
- Sehr geringe Gesamtmorbidität ohne Unterschied
- Kein Enterobacteriaceae in Gruppe 3
- Entzündungsreaktion nicht unterschiedlich
- Stomarate?

Reddy Br J Surg 2007

Tumorspezifisches Überleben nach Anastomoseninsuffizienz

-ohne periopertative Letalität-

Study	Events / n AL	Events / n No AL	Weight	OR	95% CI	*P*
Akyol et al [27] (C+R)	12/32	17/135	3.53	4.17	1.73–10.02	0.0010
Docherty et al [19] (C+R)	20/38	41/139	4.75	2.67	1.28–5.53	0.0090
Petersen et al [20] (C+R)	22/33	214/378	4.56	1.53	0.72–3.25	0.2660
Walker et al [40] (R)	49/88	561/1558	9.91	2.23	1.45–3.44	0.0001
McArdle et al [41] (C+R)	43/86	688/2149	9.93	2.12	1.38–3.27	0.0010
Eriksen et al [24] (R)	93/228	564/1730	14.89	1.42	1.07–1.90	0.1040
Branagan and Finnis [22] (R)	17/36	210/581	5.40	1.58	0.80–3.11	0.1840
Branagan and Finnis [22] (C)	9/22	430/1120	3.67	1.11	0.47–2.62	0.8100
Law et al [43] (C+R)	26/60	366/1520	7.80	2.41	1.48–4.10	0.0010
Eberhadt et al [25] (R)	28/97	35/194	6.92	1.84	1.41–3.30	0.0360
Eberhardt et al [25] (C)	13/59	16/118	4.04	1.80	0.80–4.10	0.1550
den Dulk et al [26] (R)	46/220	427/2199	12.70	1.10	0.78–1.54	0.5950
Bertelsen et al [27] (R)	50/357	95/1077	11.90	1.68	1.17–2.43	0.0050
Overall effect (REM)	**428/1356**	**3664/12898**	**(100)**	**1.75**	**1.47–2.10**	**0.0001**

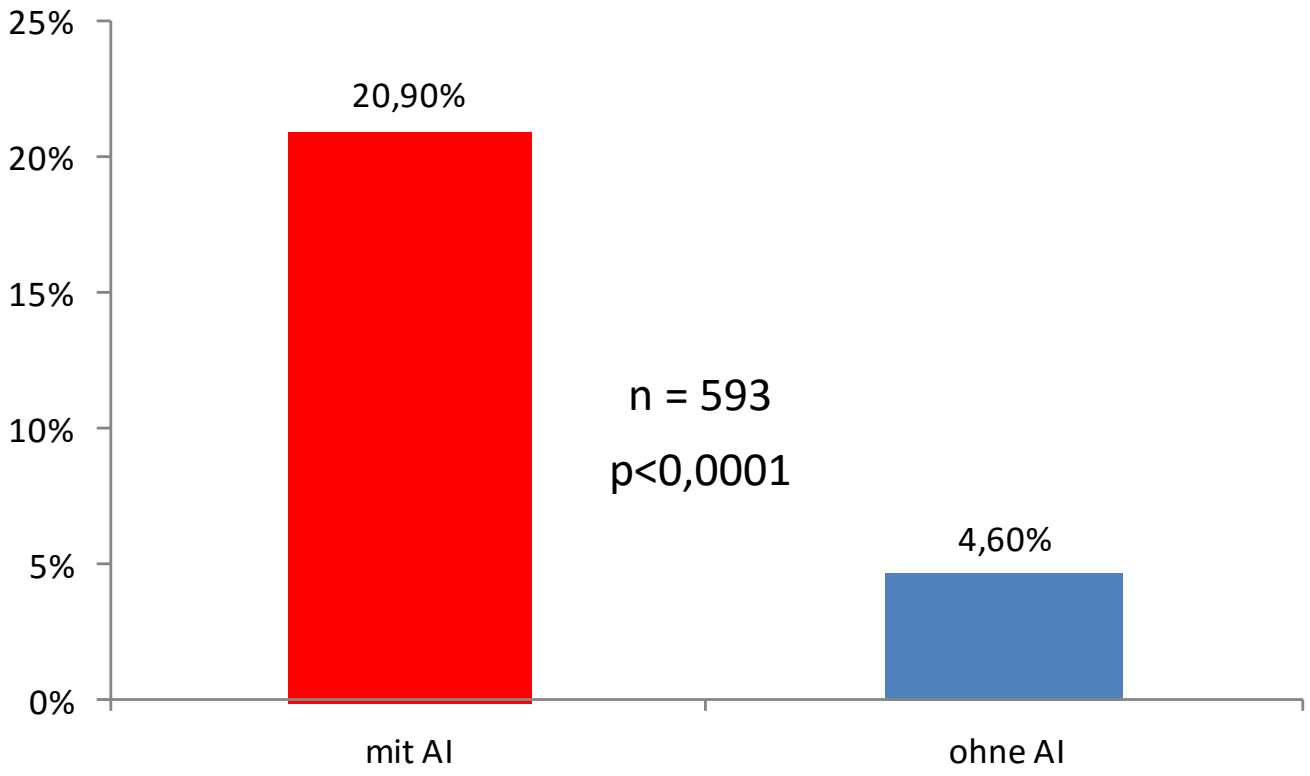


Mirnezami A Ann Surg 2011

Diagnose: Soft factors

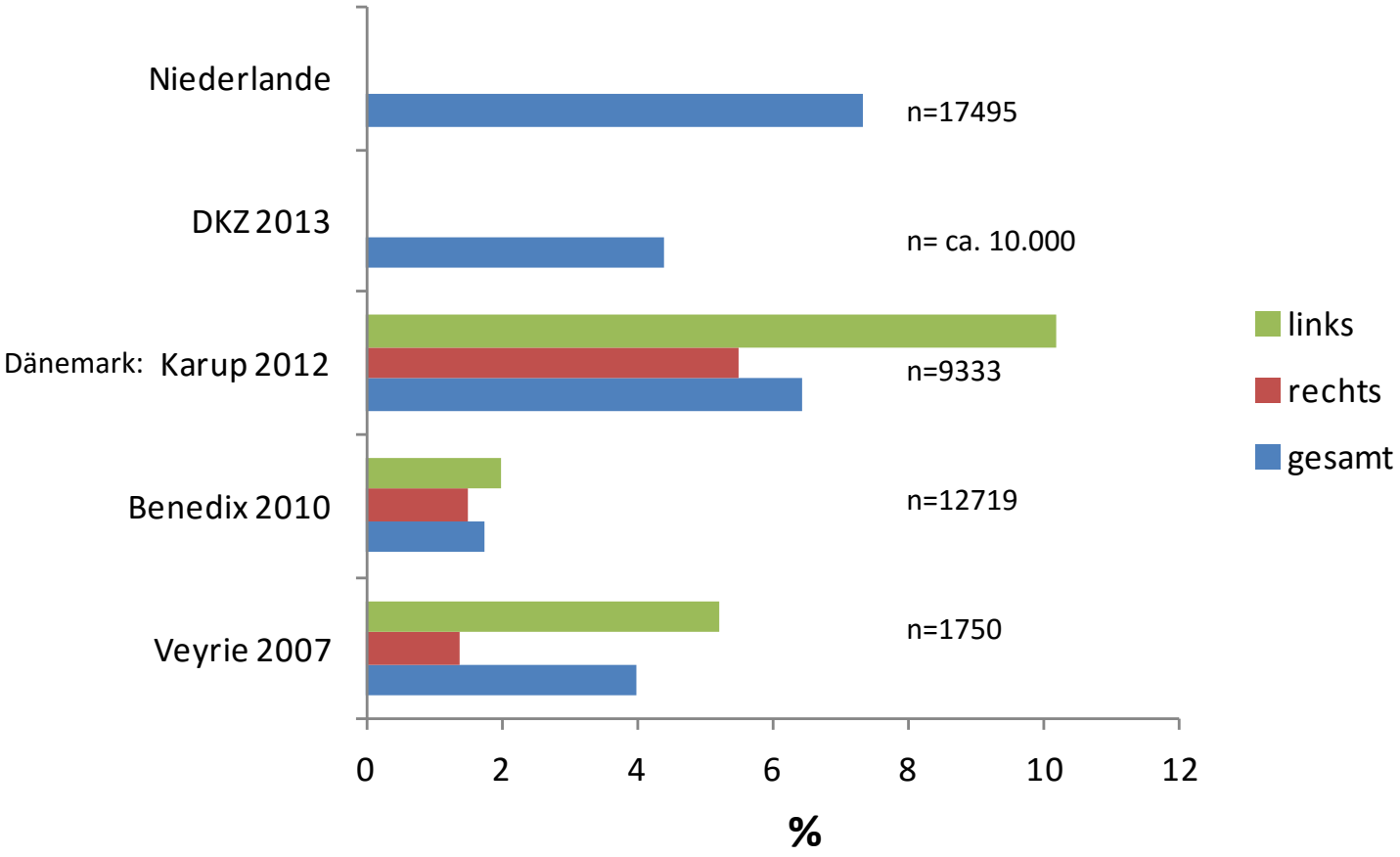
- immobil
- unrasiert
- depressiv , verwirrt, aggressiv
- Fazies abdominalis

Letalität der Anastomoseninsuffizienz am Colon



Karup PM Colorectal Dis 2012

Häufigkeit der Anastomoseninsuffizienz



Daams F World J Gastroenterol 2013

Benchmarkingbericht der Darmkrebszentren 2013

Karup PM Colorectal Dis 2012

Bendix F Dis Col Rect 2010

Veyrie N J Am Coll Surg 2007

Postoperativer Diagnosescore

Item	Abnormal value	Score (points)
General		
Fever	>38.0 °C	1
Heart rate	>100/min	1
Respiratory rate	>30/min	1
Urinary production	<30 ml/h or 700 ml/day	1
Mental status	Agitation or lethargic	2
Clinical condition	Deterioration	2
Local physical examination		
Signs of ileus	Ileus	2
Gastric retention	Gastric retention	2
Fascial dehiscence	Fascial dehiscence	2
Abdominal pain, other than wound pain	Pain other than wound pain	2
Laboratory investigation		
Signs of infection	Increase of ≥5% in leukocyte number or CRP	1
Kidney function	Increase of ≥5% in urea or creatinine	1
Diet		
Nutritional status	Tube feeding/TPN	1/2

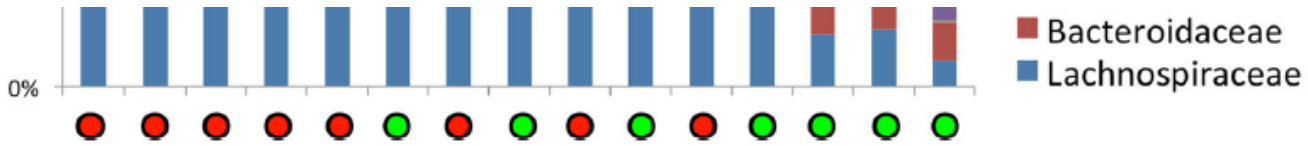
M. den Dulk EJSO 2009

Mikrobiom und Anastomoseninsuffizienz

Surg Endosc (2016) 30:2259–2265
DOI 10.1007/s00464-015-4508-z

Intestinal microbiota and anastomotic leakage of stapled colorectal anastomoses: a pilot study

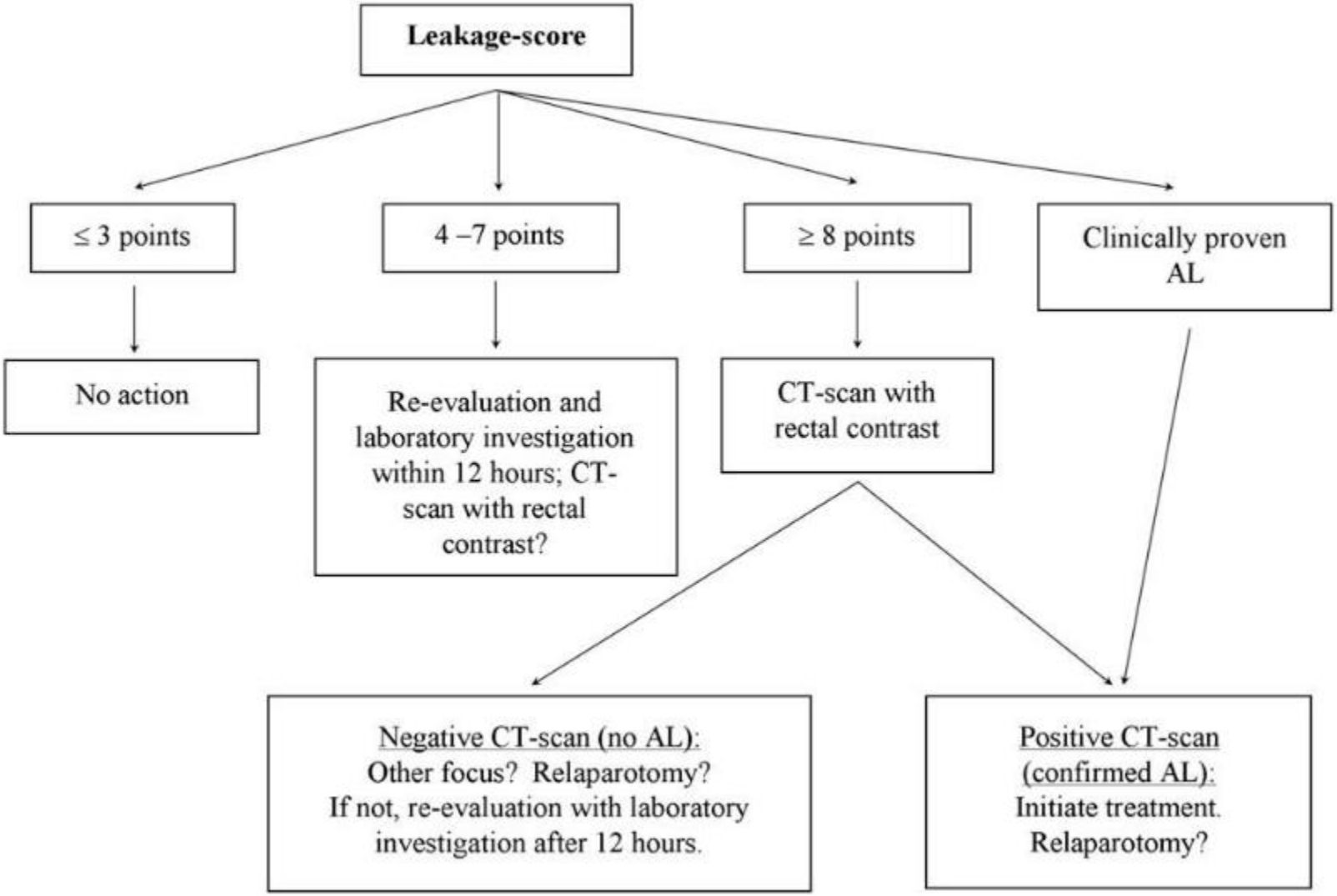
Jasper B. van Praagh[1] · Marcus C. de Goffau[2] · Ilsalien S. Bakker[1] · Hermie J. M. Harmsen[2] · Peter Olinga[3] · Klaas Havenga[1]



Keine Insuffizienz
Insuffizienz

n=16
p<0,002

Postoperativer Diagnosescore - Algorithmus



M. den Dulk EJSO 2009

Postoperativer Diagnosescore - Algorithmus

	Historical controls	Standardised surveillance	*p*-value
Time to diagnosis since surgery (days)			0.22
Median	8.0	6.0	
Range	1–58	4–47	
Delay in the diagnosis of AL (days)			0.01
Median	4.0	1.5	
Range	0–21	0–21	
Mortality rate of AL diagnosed patients	29/75	5/21	0.21

M. den Dulk EJSO 2009

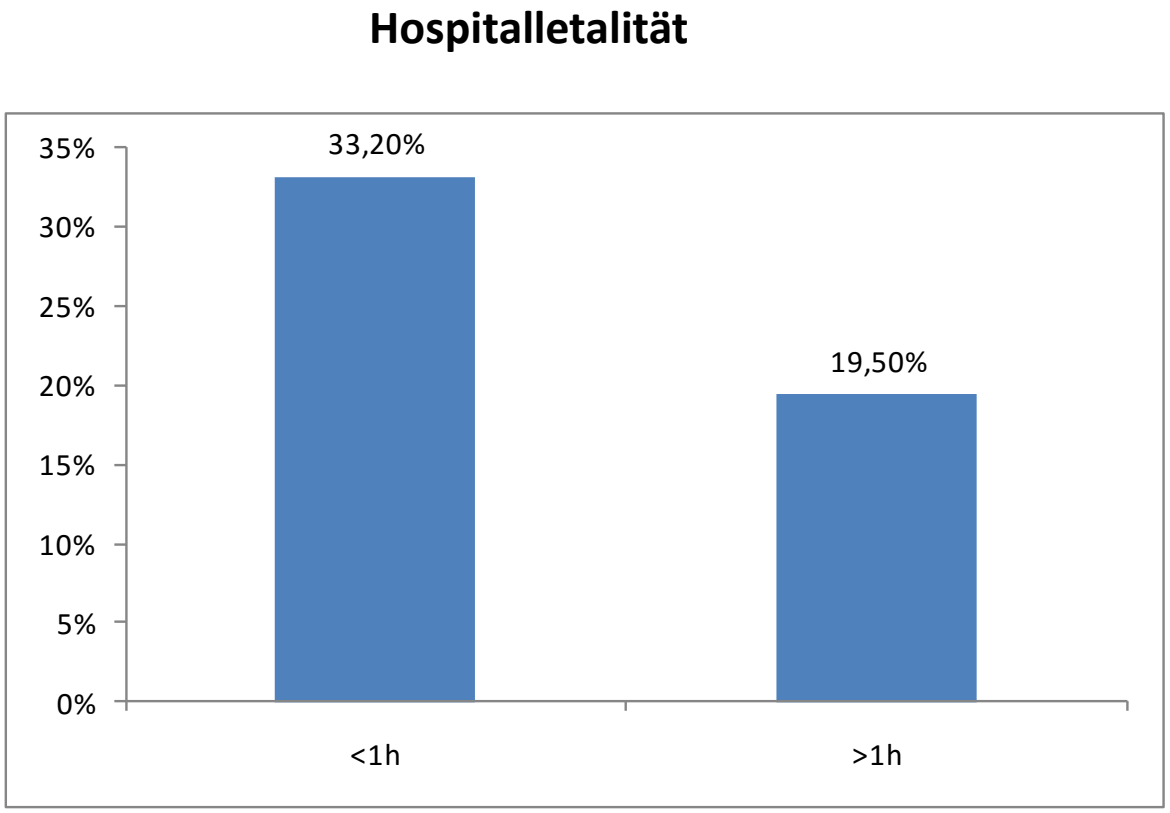
Computertomographie vs. Kontrasteinlauf

	Sensitivität		neg. Vorhersagewert	
CT	54	(34 - 74)	66	(49 - 82)
CKE	68	(51 - 84)	76	(62 - 89)

Doeksen A Int J Colorect Dis 2008

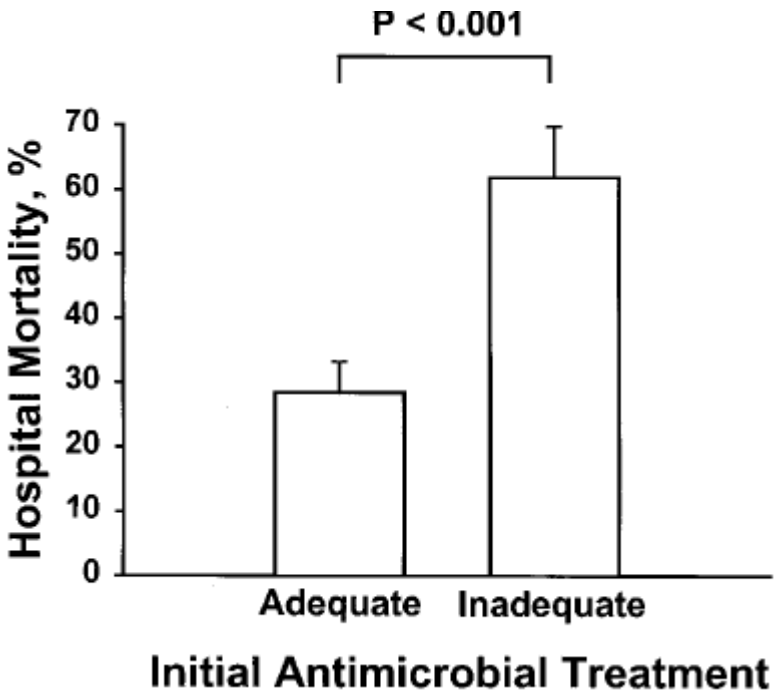
Therapie der Anastomoseninsuffizienz

Zeit bis zur 1. Antibiotikagabe



Gaieski Crit Care Med 2010

Antibiotikatherapie der Anastomoseninsuffizienz



Ibrahim E Chest, 2000

PEG-Empfehlung

Carbapeneme
Tigecyclin,
Piperacillin/Tazobactam
Moxifloxacin

Cave
MRGN

Operative Behandlung

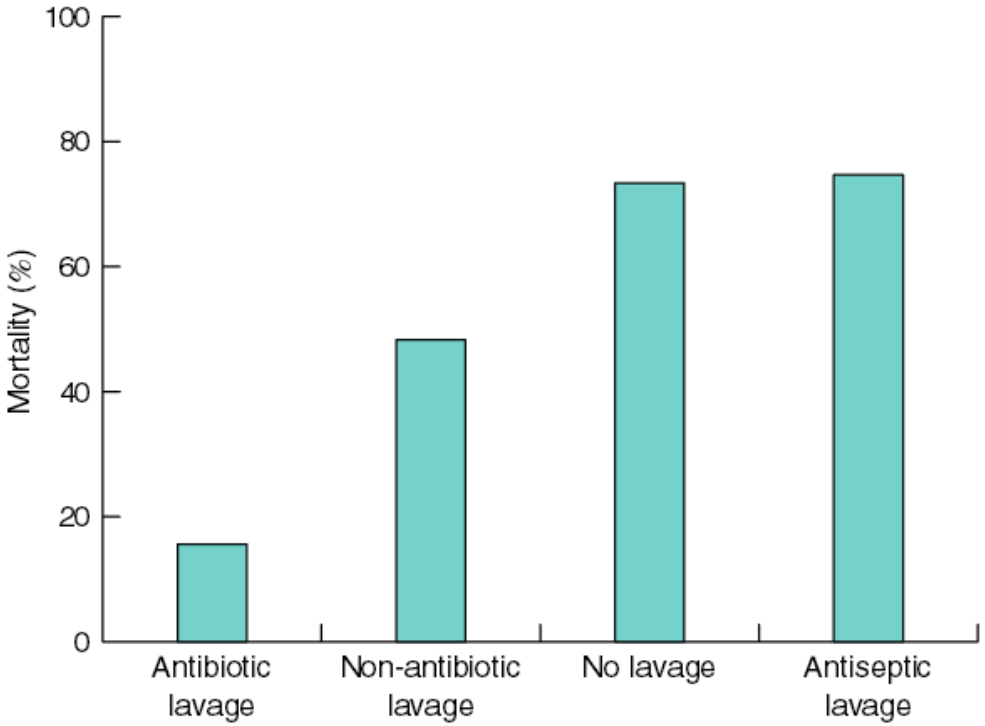
Fokussanierung

Standard:

- Aufhebung der Anastomose, terminales Ileostoma,
- Spülung (höchstens 37 C)
- Zurückhaltende Entfernung der Fibrinbeläge (Polk Ann Surg 1980)
- Drainage
- Vakumversiegelung der Subcutis
- Relaparotomie on-demand (Strobel Chirurg 2011)

Operative Behandlung

Meta-analysis of the effect of peritoneal lavage on survival in experimental peritonitis
M. Qadan, D. Dajani, A.Dickinson H. C. Polk Jr
Br J Surg 2010



Operative Behandlung

Ausnahmen:

- Übernähung der Anastomose mit prot. Loopileostoma
  (keine eindeutige/punktförmige Leckage)

- Neuanlage der Anastomose
  (Frühinsuffizienz bei technischem Problem)

- Interventionelle Drainage
  (Abgegrenzter Abszess, lokale Symptomatik)

Zusammenfassung

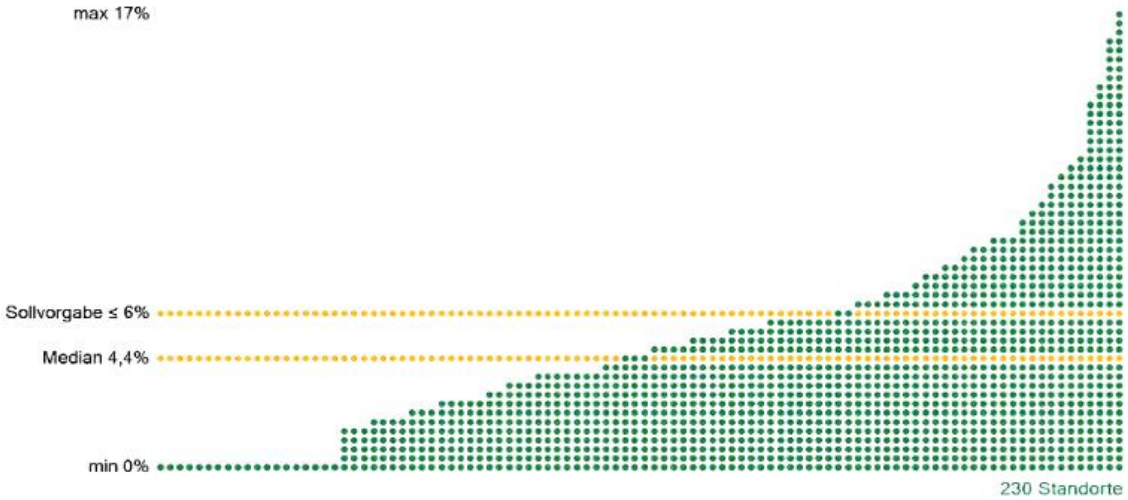
J Surg Res. 2011 Mar;166(1):e27-34. doi: 10.1016/j.jss.2010.11.004. Epub 2010 Dec 1.
Predicting the risk of anastomotic leakage in left-sided colorectal surgery using a colon leakage score.
Dekker JW, Liefers GJ, de Mol van Otterloo JC, Putter H, Tollenaar RA.

Cochrane Database Syst Rev. 2011 Sep 7;(9):CD004320. doi: 10.1002/14651858.CD004320.pub3.
Stapled versus handsewn methods for ileocolic anastomoses.
Choy PY, Bissett IP, Docherty JG, Parry BR, Merrie A, Fitzgerald A.
Source
Surgery, University of Auckland, Auckland, New Zealand.

Häufigkeit

Benchmarking Darm 2013 (Auditjahr 2012 / Kennzahlenjahr 2011)

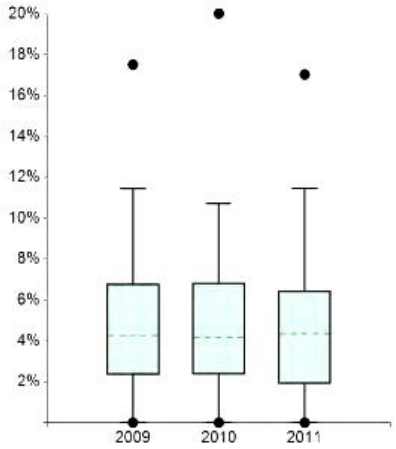
18. Anastomoseninsuffizienzen Kolon



Anmerkungen:

Standorte mit auswertbaren Daten		Standorte mit Sollvorgabe erfüllt	
Anzahl	%	Anzahl	%
230	100%	163	70,9%

	Kennzahlendefinition	AlleStandorte 2011	
		Median	Range
Zähler	Re-Interventionsbedürftige Anastomoseninsuffizienzen Kolon nach elektiven Eingriffen	2*	0 - 10
Nenner	Anzahl aller elektiven Kolon-OP´s, bei denen eine Anastomose durchgeführt wurde	45*	17 - 161
Quote	Sollvorgabe ≤ 6%	4,4%	0,0% - 17,0%



	2009	2010	2011
Max	17,5%	20,0%	17,0%
95. Perzentil	11,4%	10,7%	11,5%
75. Perzentil	6,8%	6,8%	6,4%
Median	4,3%	4,2%	4,4%
25. Perzentil	2,3%	2,4%	1,9%
5. Perzentil	0,0%	0,0%	0,0%
Min	0,0%	0,0%	0,0%

Vergleich Rechts vs. Linkshemicolektomie

Type of complication	*RCC n (%)*	*LCC n (%)*	*P value*
Surgery-related complications			
Overall	974 (15.8)	1050 (16.0)	*.827*
Hemorrhage requiring surgery	46 (0.7)	78 (1.2)	*.015*
Sepsis	50 (0.8)	41 (0.6)	*.209*
Anastomotic leak requiring surgery	94 (1.5)	127 (2.0)	*.067*
Obstructive ileus	65 (1.1)	52 (0.8)	*.137*
Paralytic ileus	293 (4.8)	280 (4.3)	*.185*

n = 12719

Kube Dis Col Rect 2010

Schlagwortsuche Pubmed