

# Interdisziplinäre Prävention, Diagnose und Management der Anastomoseninsuffizienz (AI) nach Rectumresektion bei TIE

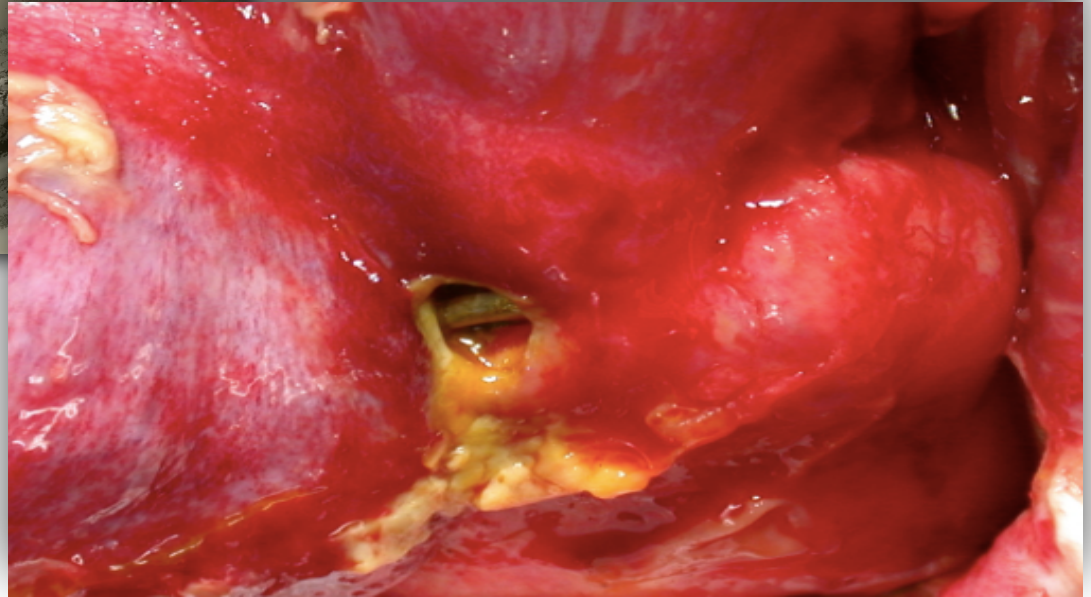
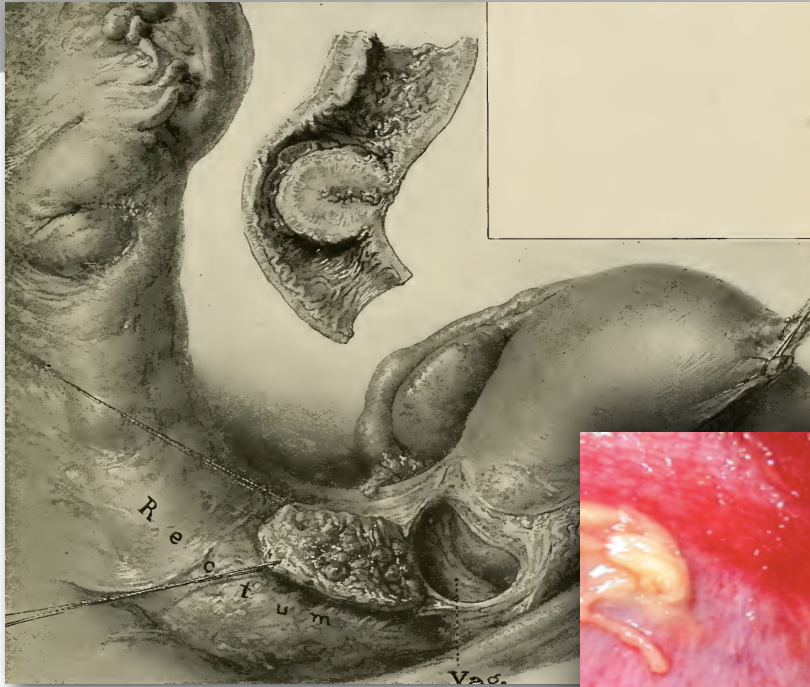
Gernot Hudelist, Bernhard Dauser

*Abt. für Gynäkologie, Abteilung für Chirurgie  
Krankenhaus der Barmherzigen Brüder Wien*



*Gutes tun und es gut tun!*

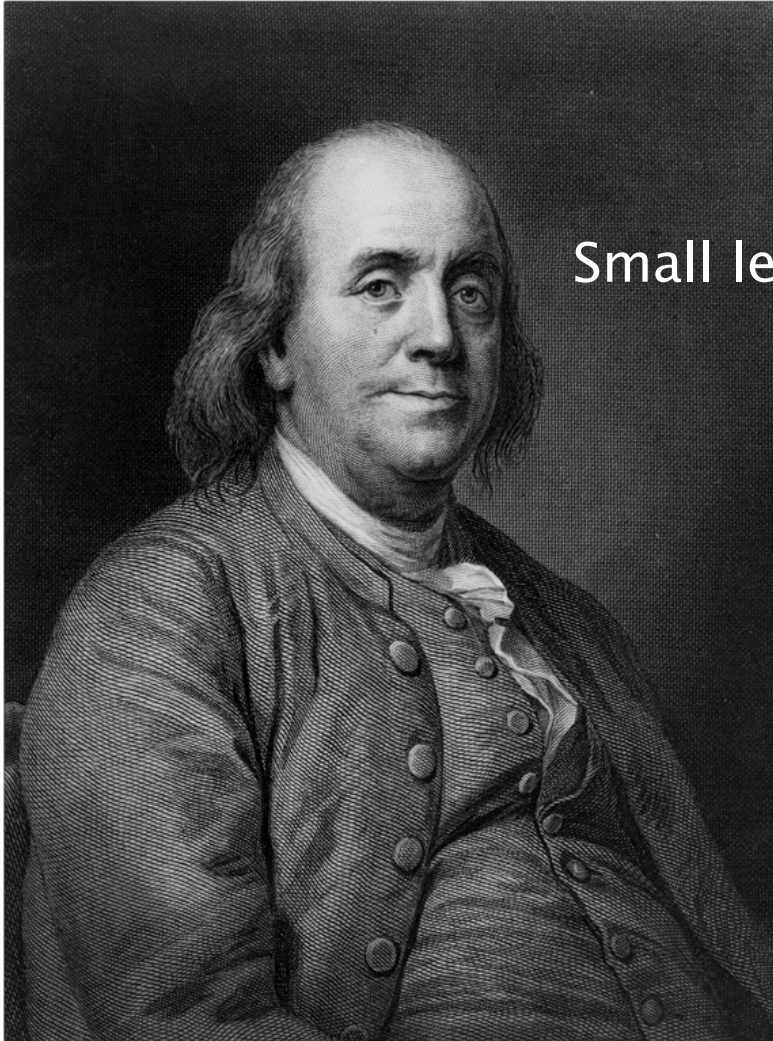
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Small leaks can sink big ships

Benjamin Franklin, 1706–1790



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**Klassifikation und Prävalenz der AI**

**Risikofaktoren bei kolorektaler TIE Chirurgie  
Prävention?**

**Diagnose und Management**





# Klassifikation von Komplikationen/AI



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# Klassifikation

**TABLE 1.** Classification of Surgical Complications

| Grade      | Definition   |
|------------|--|
| Grade I    | Any deviation from the normal postoperative course without the need for pharmacological treatment or surgical, endoscopic, and radiological interventions<br>Allowed therapeutic regimens are: drugs as antiemetics, antipyretics, analgetics, diuretics, electrolytes, and physiotherapy. This grade also includes wound infections opened at the bedside |
| Grade II   | Requiring pharmacological treatment with drugs other than such allowed for grade I complications<br>Blood transfusions and total parenteral nutrition are also included  |
| Grade III  | Requiring surgical, endoscopic or radiological intervention  |
| Grade IIIa | Intervention not under general anesthesia  |
| Grade IIIb | Intervention under general anesthesia  |
| Grade IV   | Life-threatening complication (including CNS complications)* requiring IC/ICU management   |
| Grade IVa  | Single organ dysfunction (including dialysis)  |
| Grade IVb  | Multiorgan dysfunction   |
| Grade V    | Death of a patient   |
| Suffix “d” | If the patient suffers from a complication at the time of discharge (see examples in Table 2), the suffix “d” (for “disability”) is added to the respective grade of complication. This label indicates the need for a follow-up to fully evaluate the complication.   |

\*Brain hemorrhage, ischemic stroke, subarachnoidal bleeding, but excluding transient ischemic attacks.  
CNS, central nervous system; IC, intermediate care; ICU, intensive care unit.



# Klassifikation

## Definition and grading of anastomotic leakage following anterior resection of the rectum: A proposal by the International Study Group of Rectal Cancer

Nuh N. Rahbari, MD,<sup>a</sup> Jürgen Weitz, MD,<sup>a</sup> Werner Hohenberger, MD,<sup>b</sup> Richard J. Heald, MD,<sup>c</sup> Brendan Moran, MD,<sup>c</sup> Alexis Ulrich, MD,<sup>a</sup> Torbjörn Holm, MD,<sup>d</sup> W. Douglas Wong, MD,<sup>e</sup> Emmanuel Türet, MD,<sup>f</sup> Yoshihiro Moriya, MD,<sup>g</sup> Søren Laurberg, MD,<sup>h</sup> Marcel den Dulk, MD,<sup>i</sup> Cornelis van de Velde, MD,<sup>j</sup> and Markus W. Büchler, MD,<sup>a</sup> *Heidelberg and Erlangen, Germany, Basingstoke, United Kingdom, Stockholm, Sweden, New York, NY, Paris, France, Tokyo, Japan, Aarhus, Denmark, and Leiden, The Netherlands*

**ISREC**

**Table III.** Proposal for the definition and severity grading of anastomotic leakage after anterior resection of the rectum

|            |   |
|------------|---|
| Definition | Defect of the intestinal wall integrity at the colorectal or colo-anal anastomotic site (including suture and staple lines of neorectal reservoirs) leading to a communication between the intra- and extraluminal compartments. A pelvic abscess close to the anastomosis is also considered as anastomotic leakage. |
| Grade      | A Anastomotic leakage requiring no active therapeutic intervention  |
|            | B Anastomotic leakage requiring active therapeutic intervention but manageable without re-laparotomy  |
|            | C Anastomotic leakage requiring re-laparotomy   |



# Intestinal complications

| Anastomosis type                            | Leak rate (%) |
|---|---------------|
| Enteroenteric <sup>5,6</sup>                | 1–2           |
| Ileocolic <sup>6–10</sup>                   | 1–4           |
| Colocolic <sup>7,9–11</sup>                 | 2–3           |
| Ileorectal <sup>6,9</sup>                   | 3–7           |
| Colorectal/coloanal <sup>6,7,10,12,13</sup> | 5–19          |
| Ileoanal pouch <sup>14,15</sup>             | 4–7           |

Mc Dermott et al. BJS 2015



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## Outcomes after rectosigmoid resection for endometriosis: a systematic literature review

Andrea Balla<sup>1</sup>  • Silvia Quaresima<sup>1</sup> • José D. Subiela<sup>2</sup> • Mostafa Shalaby<sup>3</sup> • Giuseppe Petrella<sup>3</sup> • Pierpaolo Sileri<sup>3</sup>

Balla et al. Int J Colorect Dis 2018

- **3079 patients** undergoing **bowel surgery** for DE (90.8% laparoscopy, 7.9% laparotomy, 1.7% robotic), bowel diversion rate 15.3%
- intraoperative complications 1%, postoperative complications 18.5%
  - rectovaginal fistula 2.4%
  - anastomotic leakage 2.2%**
  - bleeding 1.1%
  - mortality 0.03% (pulmonary embolism)

# Choosing the right surgical technique for deep endometriosis: shaving, disc excision, or bowel resection?

Olivier Donnez, M.D., Ph.D.<sup>a</sup> and Horace Roman, M.D., Ph.D.<sup>b</sup>

Donnez et al. Fertil Steril 2017

## Shaving Technique

n=4470

i.o. bowel perforation: **1.7%**  
late bowel perforation: **0.13%**  
(0,003%-2,2%)  
rectovaginal fistula: **0.24%**  
(0%-2,6%)  
intraoperative bleeding: **0%**  
delayed bleeding: **0.08%**  
(0.09%-1.6%)  
l.t. voiding dysfunction: **0.19%**  
(0%-6.6%)  
ureteral damage/ fistula: **0.3% / 0%**





# Choosing the right surgical technique for deep endometriosis: shaving, disc excision, or bowel resection?

Olivier Donnez, M.D., Ph.D.<sup>a</sup> and Horace Roman, M.D., Ph.D.<sup>b</sup>

Donnez et al. Fertil Steril 2017

## Disc Resection

n=371

i.o. bowel perforation: **0%**

anastomotic leak : **0%**

rectovaginal fistula: **3.6%**

(0%-11.9%)

intraoperative bleeding: **0.6%**

delayed bleeding: **3.3%**

bowel stenosis: **0%**

l.t. voiding dysfunction: **9%**

ureteral damage/ fistula: **0.3% / 0%**



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# Choosing the right surgical technique for deep endometriosis: shaving, disc excision, or bowel resection?

Olivier Donnez, M.D., Ph.D.<sup>a</sup> and Horace Roman, M.D., Ph.D.<sup>b</sup>

Donnez et al. Fertil Steril 2017

## Segmental Resection

n=3982

anastomotic leak : **3.7%** (0%-4.7%)  
rectovaginal fistula: **4.3%** (0%-18%)

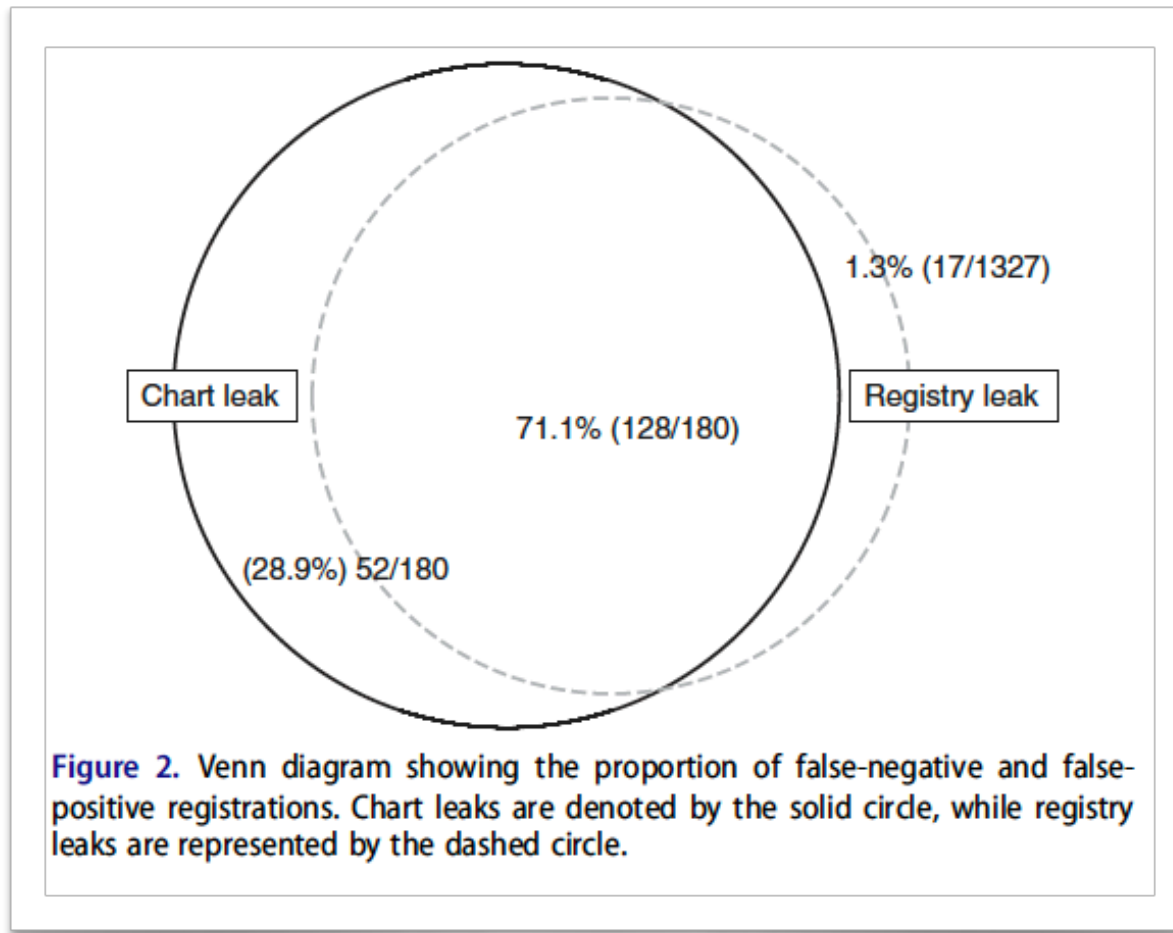
intraoperative bleeding: **0.6%**  
delayed bleeding: **4.8%**  
bowel stenosis: **0%**  
l.t. voiding dysfunction: **5.4%**  
ureteral damage/ fistula: **0.04% / 0.3%**  
bowel stenosis: **?**



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# Substantial underreporting of anastomotic leakage after anterior resection for rectal cancer in the Swedish Colorectal Cancer Registry





**Risk factors - kann die AI vermieden werden ?**



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# Risikofaktoren AI

...Alter, Ko-Morbidität, Rauchen

...Eröffnung der Vagina

**...Technik - Disc oder Segmentresektion  
Ileostoma (protektiv)**



# Conservative surgery versus colorectal resection in deep endometriosis infiltrating the rectum: a randomized trial

Horace Roman<sup>1,2,\*</sup>, Michael Bubenheim<sup>3</sup>, Emmanuel Huet<sup>4</sup>,  
Valérie Bridoux<sup>4</sup>, Chrysoula Zacharopoulou<sup>5</sup>, Emile Darai<sup>5,6,7</sup>,  
Pierre Collinet<sup>8</sup>, and Jean-Jacques Tuech<sup>4</sup>

Roman et al. Hum Reprod 2018

**Table III** Postoperative complications.

| Complications  | Conservative surgery (n=27) | Segmental resection (n=33) | P    |
|--|-----------------------------|----------------------------|------|
| Clavien Dindo 1  | 9 (33%)                     | 7 (21.2%)                  | 0.38 |
| Clavien Dindo 2  | 12 (44%)                    | 9 (27.3%)                  | 0.19 |
| Bladder atony requiring self-catheterization after Day 7                       | 6 <sup>a</sup> (22%)        | 3 (9.1%)                   | 0.28 |
| Clavien Dindo 3  | 6 <sup>a</sup> (22%)        | 10 (3.3%)                  | 0.57 |
| Rectovaginal fistula   | 2 <sup>a</sup> (7.4%)       | 0                          | 0.20 |
| Stenosis of rectal lumen requiring additional procedure                        | 0                           | 5 (15.2%)                  | 0.05 |
| Pelvic abscess   | 0                           | 1 (3%)                     | 1    |
| Complications related to stoma repair (leakage, abdominal haemorrhage, hernia) | 2 (7.4%)                    | 1 (3%)                     | 0.58 |
| Rectorrhage requiring endoscopy in emergency                                   | 0                           | 1 (3%)                     | 1    |

Data are n(%) or median (Q1–Q3).

<sup>a</sup>One patient was managed by colorectal resection (conversion).





# Pain and fertility outcomes of nerve-sparing, full-thickness disk or segmental bowel resection for deep infiltrating endometriosis—A prospective cohort study

Gernot Hudelist<sup>1</sup> | Mee Kristine Aas-Eng<sup>2</sup> | Tudor Birsan<sup>3</sup> | Franz Berger<sup>4</sup> | Ursula Sevelda<sup>1</sup> | Lisa Kirchner<sup>1</sup> | Mohamad Salama<sup>5</sup> | Bernhard Dauser<sup>3</sup>

Hudelist et al. AOGS 2018

**TABLE 2** Intraoperative findings and perioperative morbidity data of women undergoing segmental and discoid resection for deep infiltrating endometriosis (DIE)

|  | Segmental resection (n = 102) | Disk resection (n = 32) |          |
|--|-------------------------------|-------------------------|----------|
| Duration of surgery (min; median, range)                     | 210.5 (120-480)               | 199 (75-388)            |          |
| Laparoscopy, n (%)   | 101 (99)                      | 32 (100)                |          |
| Laparotomy, n (%)  | 1 (0.98)                      | 0 (0)                   |          |
| Conversion to laparotomy, n (%)                              | 2 (2)                         | 0 (0)                   |          |
| Protective stoma, n (%)                                      | 12 (11.8)                     | 0 (0)                   |          |
| AFSr stage I, n (%)  | 4 (3.9)                       | 2 (6.3)                 |          |
| AFSr stage II, n (%)   | 15 (14.7)                     | 9 (28.1)                |          |
| AFSr stage III, n (%)  | 21 (20.6)                     | 7 (21.9)                |          |
| AFSr stage IV, n (%)   | 63 (61.8)                     | 14 (43.8)               | 0.08     |
| ENZIAN A (Vagina/RVS), n (%)                                 | 85 (83.3)                     | 28 (87.5)               | 0.55     |
| ENZIAN B (USL, Parametrium), n (%)                           | 84 (82.4)                     | 31 (96.9)               | 0.004    |
| ENZIAN C (Rectum/Sigmoid), n (%)                             | 102 (100)                     | 32 (100)                | 1        |
| C1 (< 1 cm)  | 2/102 (1.9)                   | 24/32 (75)              | < 0.0001 |
| C2 (1-3 cm)  | 19/102 (18.7)                 | 8/32 (25)               | 0.46     |
| C3 (> 3 cm)  | 81/102 (79.4)                 | 0/32 (0)                | < 0.0001 |
| Height of stapler anastomosis                                |                               |                         |          |
| < 7 cm   | 28/102 (27.4)                 | 14/32 (43.8)            | 0.11     |
| 7-25 cm  | 63/102 (61.8)                 | 18/32 (56.3)            | 0.25     |
| > 25 cm  | 11/102 (10.8)                 | 0/32 (0)                | < 0.0007 |
| FA, n (%)  | 52 (51)                       | 11 (34.3)               | 0.10     |
| FB, n (%)  | 9 (8.8)                       | 3 (9.3)                 | 0.92     |
| FU, n (%)  | 6 (5.9)                       | 3 (9)                   | 0.66     |
| Ureterolysis, n (%)  | 41 (40.2)                     | 14 (43.8)               | 0.73     |
| Ureteral reimplantation, n (%)                               | 2 (2)                         | 1 (3)                   | 0.74     |
| Partial cystectomy, n (%)                                    | 9 (8.8)                       | 3 (9.4)                 | 0.92     |
| Endometrioma surgery > 3 cm, n (%)                           | 38 (37.3)                     | 9 (28.1)                | 0.34     |
| Vaginal opening & resection                                  | 28 (27.5)                     | 15 (46.9)               | 0.057    |
| Hospital stay (days, mean ± SD)                              | 7.6 ± 3.0                     | 6.8 ± 3.0               | 0.16     |
| Hemoglobin level g/dL difference (mean ± SD)                 | 1.76 ± 1.06                   | 1.87 ± 1.84             | 0.75     |
| Postoperative complications (Clavien-Dindo Grade I-IV; n, %) |                               |                         |          |
| Grade I  |                               |                         |          |
| Hematoma (subcutaneous)                                      | 1 (0.98)                      | 0 (0)                   | 0.32     |
| Urinary retention  | 6 (5.9)                       | 3 (9.4)                 | 0.54     |
| Grade II   |                               |                         |          |
| Colpectomy infection   | 1 (0.98)                      | 1 (3.1)                 | 0.52     |
| Compartment syndrome   | 1 (0.98)                      | 0 (0)                   | 0.32     |
| Grade III  |                               |                         |          |
| Hematoma (subcutaneous)                                      | 1 (0.98)                      | 0 (0)                   | 0.32     |
| Anastomotic leakage  | 2 (1.9)                       | 0 (0)                   | 0.16     |
| Hemoperitoneum   | 3 (2.9)                       | 1 (3.1)                 | 0.953    |
| Rectovaginal fistula   | 1 (0.98)                      | 0 (0)                   | 0.32     |
| Grade IV   |                               |                         |          |
|  | 0 (0)                         | 0 (0)                   | 1        |

| Mean duration of postoperative follow-up in months (mean ± SD) | Segmental resection (n = 81) |              |         | Disk resection (n = 31) |              |          |
|--|------------------------------|--------------|---------|-------------------------|--------------|----------|
|  | Presurgical                  | Postsurgical | P-value | Presurgical             | Postsurgical | P-value  |
| 36.5 ± 21.9  |                              |              |         | 34.3 ± 24.3             |              |          |
| Symptom score (NAS)  |                              |              |         |                         |              |          |
| Dysmenorrhea (mean ± SD)                                       | 8.3 ± 1.7                    | 2.1 ± 2.1    | <0.0001 | 7.8 ± 1.7               | 2.5 ± 2.2    | < 0.0001 |
| Dyspareunia (mean ± SD)  | 3.5 ± 3.0                    | 0.7 ± 1.5    | <0.0001 | 4.9 ± 2.5               | 1.2 ± 1.5    | < 0.0001 |
| Dyschezia (mean ± SD)  | 4.2 ± 3.5                    | 0.7 ± 1.5    | <0.0001 | 3.0 ± 3.5               | 0.6 ± 1.4    | 0.0001   |
| Dysuria (mean ± SD)  | 0.7 ± 1.9                    | 0.09 ± 0.5   | 0.009   | 0.6 ± 1.7               | 0.1 ± 0.3    | 0.18     |
| Quality of life score (mean ± SD)                              | 2.8 ± 1.5                    | 8.5 ± 1.5    | <0.0001 | 4.2 ± 2.2               | 8.3 ± 1.2    | < 0.0001 |
| Would patient repeat surgery? (yes/no)                         |                              | 76 (93.8)    |         |                         | 28 (90.3)    |          |
| LARS   |                              |              |         |                         |              | 0.68     |
| No LARS (0-20)   |                              | 75 (92.6)    |         |                         | 28 (90.3)    | 0.71     |
| Minor LARS (21-29)   |                              | 5 (6.2)      |         |                         | 1 (3.2)      | 0.48     |
| Major LARS (30-42)   |                              | 1 (1.2)      |         |                         | 2 (6.4)      | 0.66     |
| Bowel stenosis (symptomatic)                                   |                              | 1 (1.2)      |         |                         | 0 (0.0)      | 0.32     |





Association of Surgeons  
of Great Britain and Ireland



The Association of Coloproctology  
of Great Britain and Ireland

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## ISSUES IN PROFESSIONAL PRACTICE

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# PREVENTION, DIAGNOSIS AND MANAGEMENT OF COLORECTAL ANASTOMOTIC LEAKAGE

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McDermott et al. 2016

**„...use of a defunctioning stoma and/or an omentoplasty to isolate the anastomosis may reduce the adverse consequences of AL, but does not appear to reduce the likelihood of AL per se“**



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# Risikofaktoren AI

...Alter, Ko-Morbidität, Rauchen

...Eröffnung der Vagina

...Operationstechnik, protektives Ileostoma

**...Höhe der Anastomose**

**über 8 cm** 😊, **unter 8 cm ab ano** 😞

**below 5 cm** 😓



# Risikofaktoren AI

## ORIGINAL CONTRIBUTION

### Management of Low Colorectal Anastomotic Leakage in the Laparoscopic Era: More Than a Decade of Experience

Stephen Alexander Boyce, B.A., M.B.B.S., Ph.D., F.R.C.S.(Ed.), M.Ed<sup>1</sup>  
Craig Harris, B.Sc., M.B.B.S., F.R.A.C.S., F.C.S.S.A.N.Z.<sup>2</sup>  
Andrew Stevenson, M.B.B.S., F.R.A.C.S., F.C.S.S.A.N.Z.<sup>2</sup>  
John Lumley, M.B.B.S., F.R.A.C.S., F.C.S.S.A.N.Z.<sup>3</sup>  
David Clark, M.B.B.S., F.R.A.C.S., F.C.S.S.A.N.Z.<sup>2</sup>

Boyce et al. Dis Colon Rectum 2017

...(n=555) anastomosis below 5 cm ab ano **12.9%** versus **2.3%**



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# Risikofaktoren AI - Prävention

...Alter, Ko-Morbidität, Rauchen

...Eröffnung der Vagina

...Operationstechnik, protektives Ileostoma

...Höhe der Anastomose

**...Anzahl der verwendeten Magazine (Stapler)**



# Risikofaktoren - Prävention

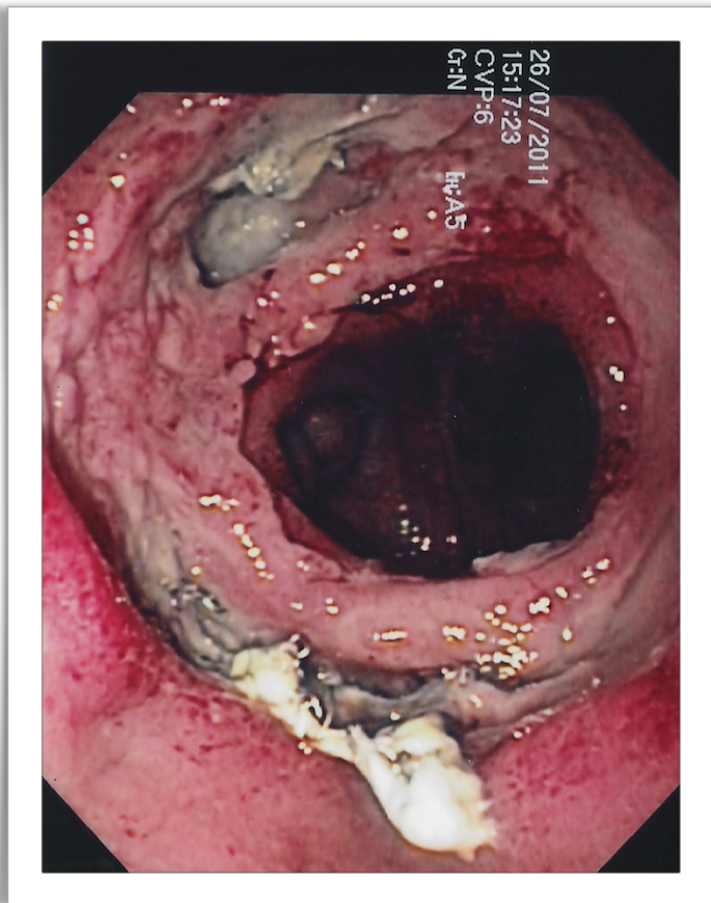
## Influence of multiple stapler firings used for rectal division on colorectal anastomotic leak rate

| Variable               | Patients with anastomotic leak | Leakage (%) | <i>p</i> value |
|------------------------|--------------------------------|-------------|----------------|
| Anterior resection     | 2/57                           | 3.5         |                |
| Low anterior resection | 8/85                           | 9.4         |                |
| Number of cartridges   |                                |             |                |
| 1                      | 6/223                          | 2.7         | <b>0.002</b>   |
| 2                      | 6/128                          | 4.7         |                |
| ≥3                     | 6/31                           | 19.4        |                |
| Anastomotic device     |                                |             |                |
| Stapler                | 7/212                          | 3.3         | 0.226          |
| Compression            | 11/170                         | 6.5         |                |
| Anastomotic height     |                                |             |                |
| Low (≤6 cm)            | 7/83                           | 8.4         | 0.204          |
| Middle (>6–12 cm)      | 2/74                           | 2.7         |                |
| High (>12–16 cm)       | 9/225                          | 4.0         |                |
| Duration of operation  |                                |             |                |





# Influence of multiple stapler firings used for rectal division on colorectal anastomotic leak rate



# Risikofaktoren - Prävention

...Alter, Ko-Morbidität, Rauchen

...Eröffnung der Vagina

...Operationstechnik, protektives Ileostoma

...Höhe der Anastomose

...Anzahl der verwendeten Magazine (Stapler)

...SDD (selective decontamination digestive tract)  
(leak rate **5.7%** auf **2.8%**)

**30 000 Patienten** - **weniger SSI`s**  
- **weniger Leckagen**  
- **weniger Wunddehiszenzen**

**Humantin Kps. | 4:00/20:00/6:00 p.o.**

**The role of bowel preparation in colorectal surgery: results of the 2012-2015 ACS-NSQIP data**

*Linger et al. Ann Surg 2017*



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# Risikofaktoren - Prävention

...Alter, Ko-Morbidität, Rauchen

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...Anzahl der verwendeten Magazine (Stapler)

...SDD (selective decontamination digestive tract)  
(leak rate 5.7% auf 2.8%)

**An updated meta-analysis of transanal drainage tube for prevention of anastomotic leak in anterior resection for rectal cancer**

*Chen H, et al. Surg Oncol 2018;27:33-340.*

**...transanale Drainage**

**1170 pts. mit TAD**

**1267 pts. ohne TAD**



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# Risikofaktoren - Prävention

...Alter, Ko-Morbidität, Rauchen

...Eröffnung der Vagina

...Operationstechnik, protektives Ileostoma

...Höhe der Anastomose

...Anzahl der verwendeten Magazine (Stapler)

...SDD (selective decontamination digestive tract)  
(leak rate 5.7% auf 2.8%)

...transanale Drainage TAD

**...Fallzahl des Zentrums und  
Erfahrung des Operateurs**



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# Impact of hospital and surgeon case volume on morbidity in colorectal endometriosis management: a plea to define criteria for expert centers

Sofiane Bendifallah<sup>1,2,3</sup> · Horace Roman<sup>4,5</sup> · Chrystel Rubod<sup>6,7</sup> · Pierre Leguevaque<sup>8</sup> · Antoine Watrelot<sup>9</sup> · Nicolas Bourdel<sup>10,11</sup> · Marcos Ballester<sup>1,2,3</sup> · Emile Darai<sup>1,2,3</sup>

*Bendifallah et al. Surg Endosc 2017*

**Table 3** Complication rates according to the volume activity per center/per year

| Complication rates   | Volume of activity (number of procedures per center and per year) |                  |                  |                  |                |
|----------------------|---|------------------|------------------|------------------|----------------|
|                      | Less than 10  | Between 10 et 19 | Between 20 et 29 | Between 30 et 39 | Over 40        |
|                      | 26 centers  | 9 centers        | 8 centers        | 5 centers        | 8 centers      |
| Overall              | 11.88% (12/101)   | 8.40% (10/119)   | 5.15% (10/194)   | 7.73% (14/181)   | 6.66% (36/540) |
| Rectovaginal fistula | 4.95% (5/101)   | 1.68% (2/119)    | 2.06% (4/194)    | 2.76% (5/181)    | 2.77% (15/540) |
| Anastomotic leakage  | 1.98% (2/101)   | 0% (0/119)       | 0.51% (1/194)    | 0.55% (1/181)    | 0.92% (5/540)  |
| Pelvic abscess       | 1.98% (2/101)   | 3.36% (4/119)    | 2.57% (5/194)    | 4.97% (9/181)    | 3.51% (19/540) |
| Fistula of ureter    | 0% (0/101)  | 0.84% (1/119)    | 1.03% (2/194)    | 2.20% (4/181)    | 0.18% (1/540)  |

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*Bendifallah et al. Surg Endosc 2017*

.....considering **volume activity per year** and per center, a **threshold of 20** was associated with the lowest morbidity ( $p < 0.001$ ).

.....hospital volume, the **number of cases per surgeon** appeared as a **determinant factor of morbidity**, with the optimal threshold value defined as being between, over or equal to 7–13 procedures per year and per surgeon





# Diagnose und Management der AI



*Gutes tun und es gut tun!*

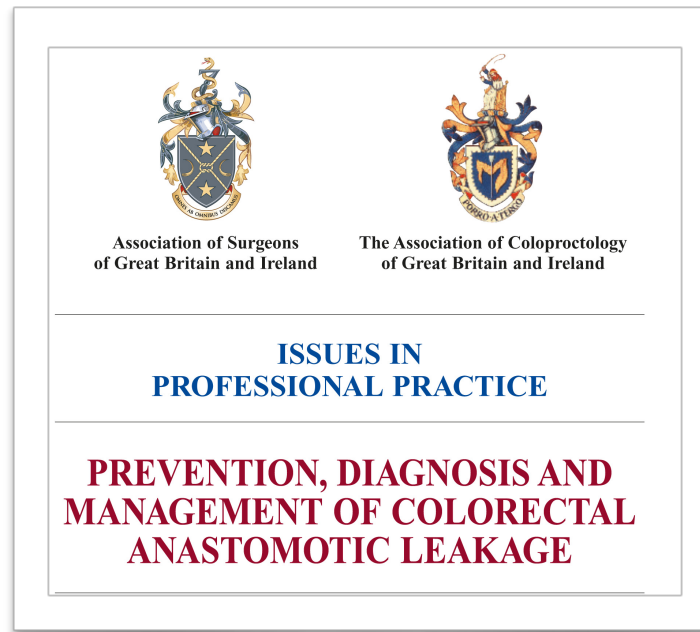
**BARMHERZIGE BRÜDER  
KRANKENHAUS WIEN**

# Management

- **frühe** klinische Erkennung
- **frühe** klinische Erkennung and **frühe** Diagnostik
- **frühe** Erkennung, **frühe** Diagnostik, **frühe** Re-Intervention



# Management



McDermott et al. 2016

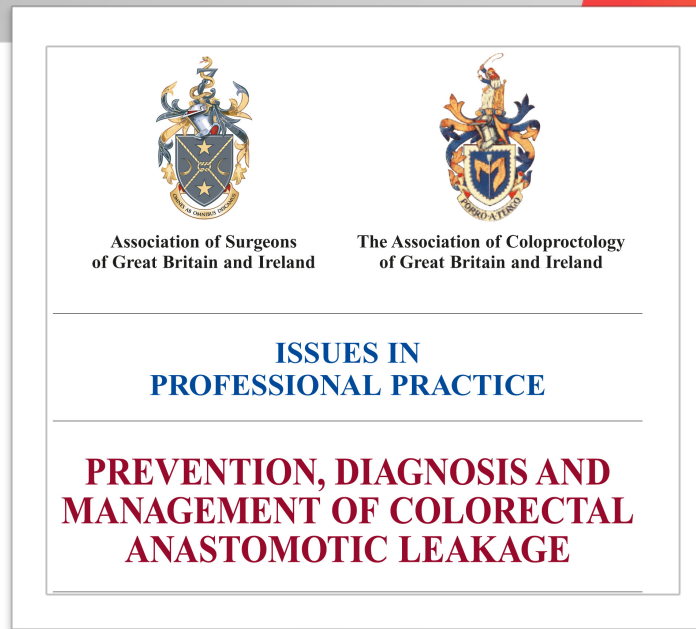
... **delay of source control in excess of 12 hours** after the development of hypotension, **compared with less than 3 hours** has been previously shown to **increase mortality from 25% to 60%...**



*Gutes tun und es gut tun!*

BARMHERZIGE BRÜDER  
KRANKENHAUS WIEN

# Management



McDermott et al. 2016

...“**sepsis six**“ is a set of 6 criteria, which, when implemented, have been shown to result in a 46.6% reduction in the relative risk of mortality from sepsis in AL (**high flow oxygen, taking blood cultures, measuring lactate and full blood count, urine output, administration of broad-spectrum antibiotics and intravenous fluid challenge**)



*Gutes tun und es gut tun!*

BARMHERZIGE BRÜDER  
KRANKENHAUS WIEN

# Management

## C-reactive protein as a predictor of anastomotic leak in the first week after anterior resection for rectal cancer

Reynolds IS, et al. *Colorectal Dis* 2017;19:812-818.

211 Patienten

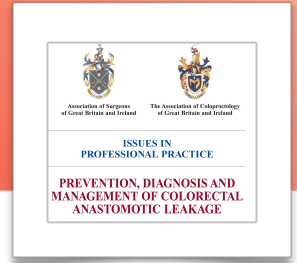
CRP 132 mg/l am 5. postop. Tag

< negative predictive value **NPV 97.5%**

> positive predictive value **PPV 16.3%**



# Management



- **conservative** (broad spectrum antibiotics) - *CT: no signs of anastomotic discontinuity*
- **radiological interventions** (drainage via TVS or CT) - *CT: perianastomotic fluid collection*
- **reoperation**
  - Endo-VAC; Stent, OTSC Clip
  - diversion with loop ileostomy, washout
  - primary repair\*, washout

\* *not indicated in cases of pelvic abscess, severe sepsis - exteriorise affected segments*





# Conclusio

- Anastomoseninsuffizienz selten aber **major complication**
- AI bzw. Komplikationen sind individuell, haben **Risikofaktoren**, scheinen **unabhängig von der Technik** aber **abhängig von Erfahrung bzw. Case load**
- **präventive** Massnahmen möglich
- Managment „**je früher, desto besser**“



**When the ship goes down, you'll better be ready...**