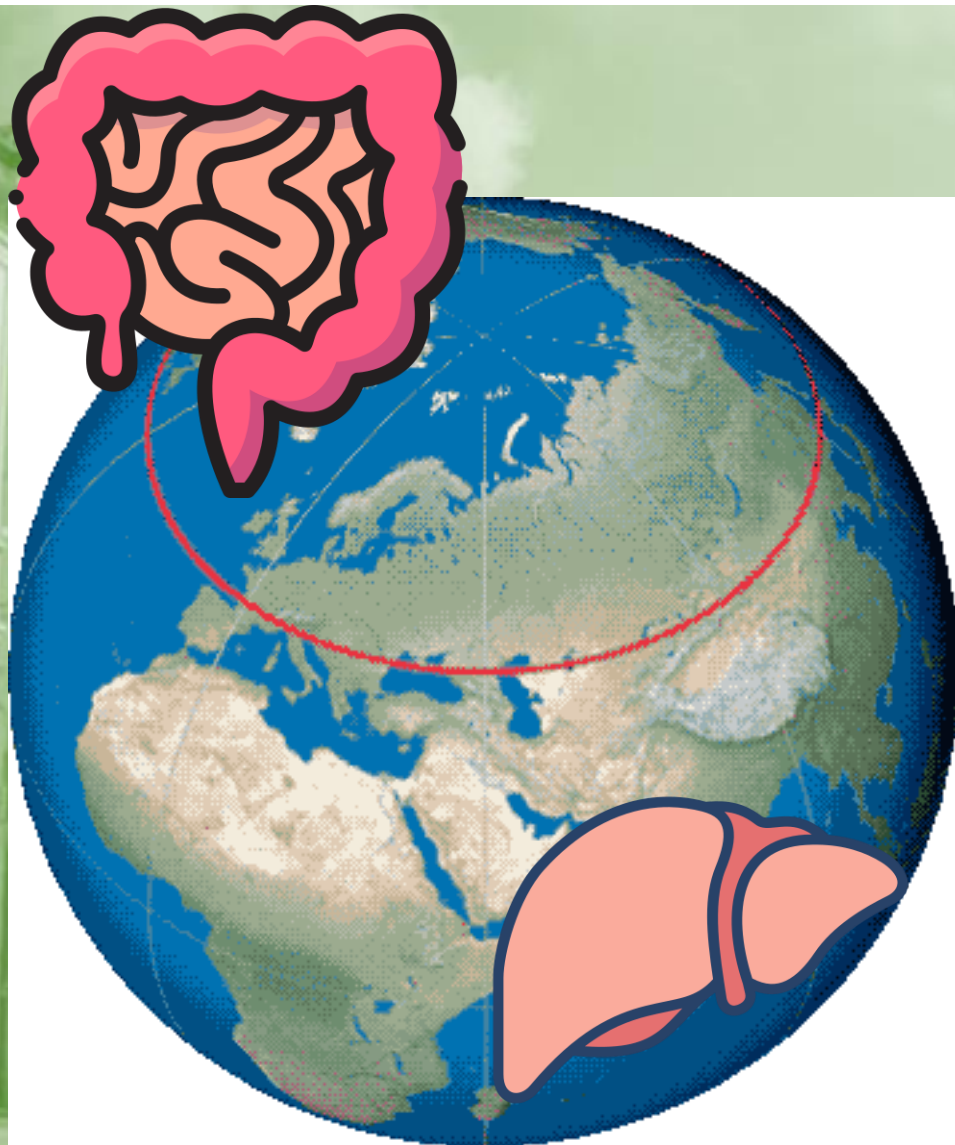


# Meeting del 45° parallelo IBD and liver hemisphere

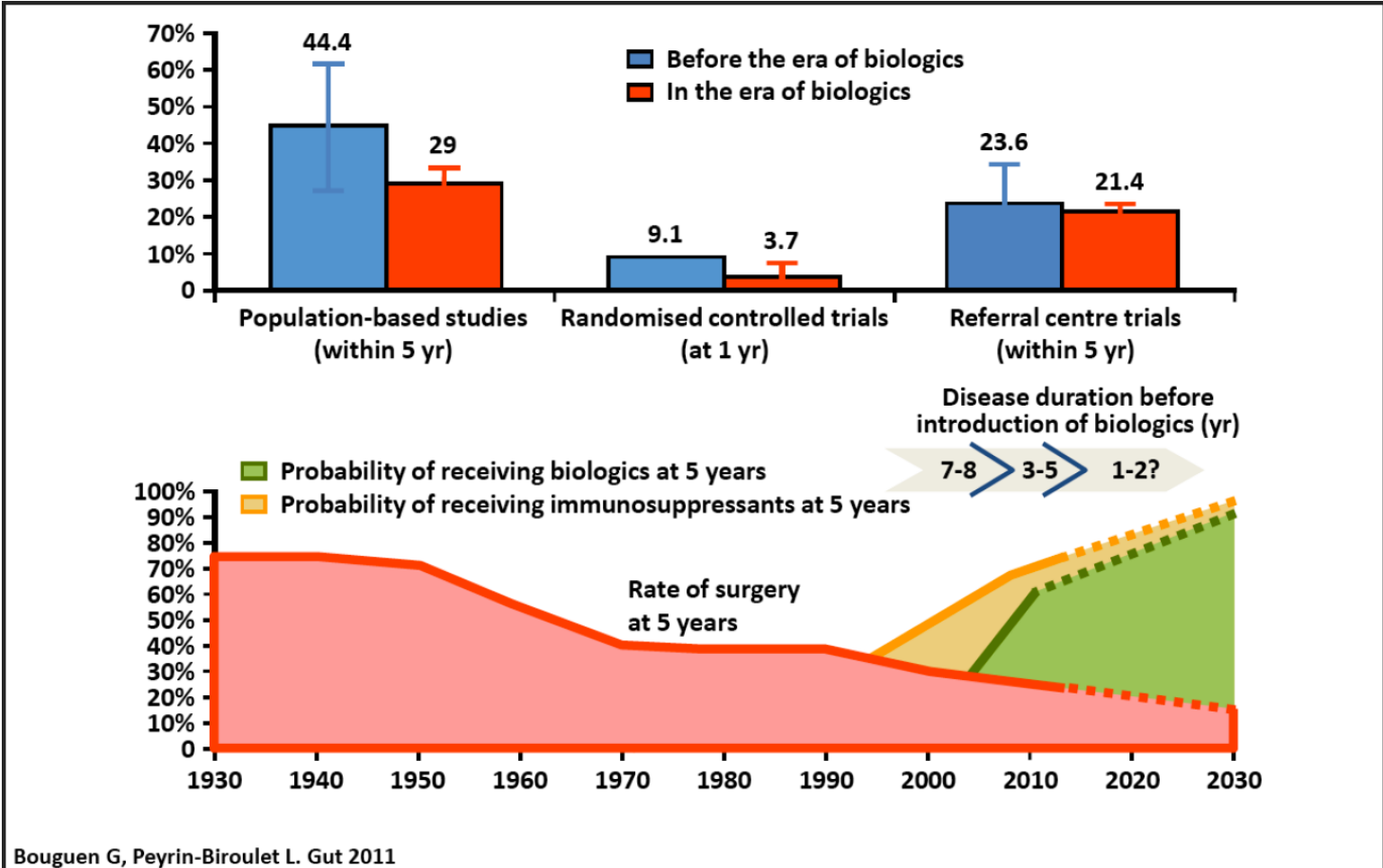


## Surgery in Crohn's patient: How and when?

**Prof. Imerio Angriman**  
Azienda Ospedaliera Università di Padova DiSGOG  
UOC Chirurgia Generale 3  
Dir. S. Pucciarelli

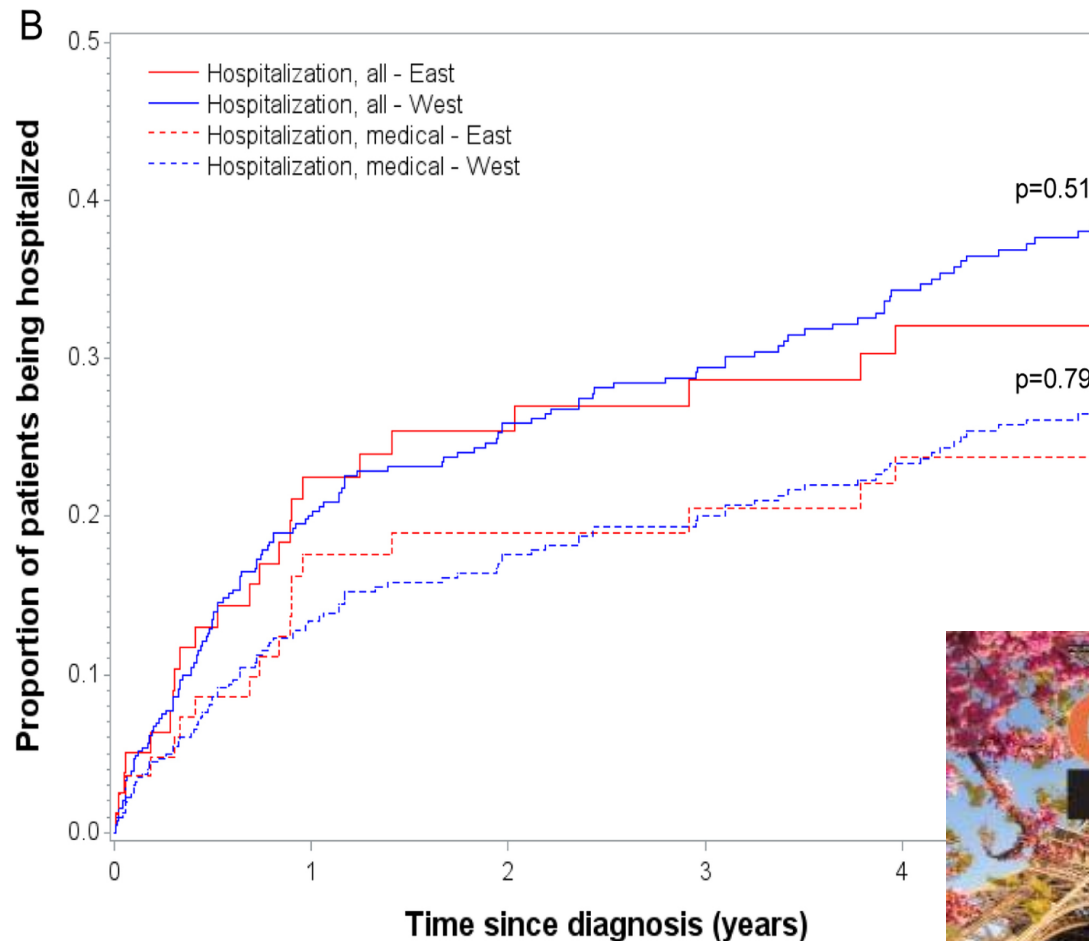
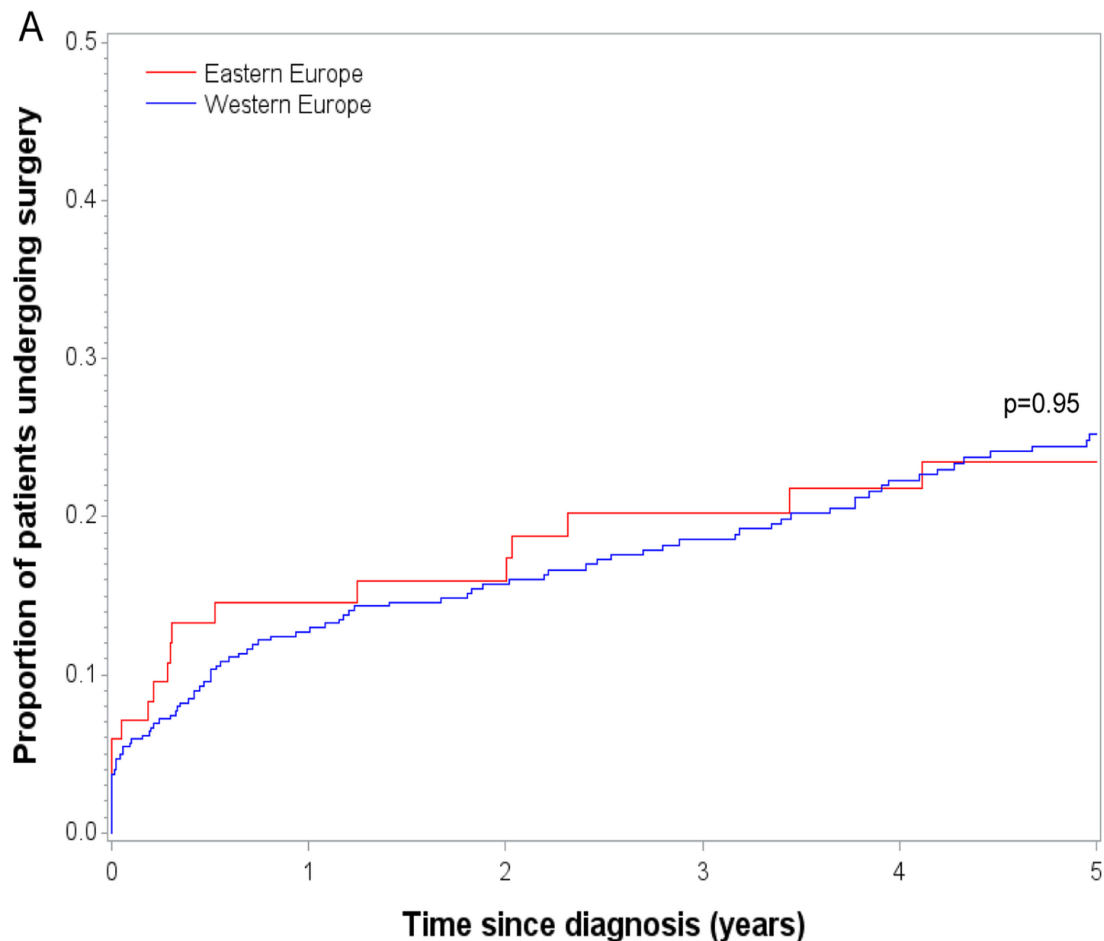


# Surgery for Crohn's disease in the era of biologics



# Natural disease course of Crohn's disease during the first 5 years after diagnosis in a European population based inception cohort: an Epi-IBD study

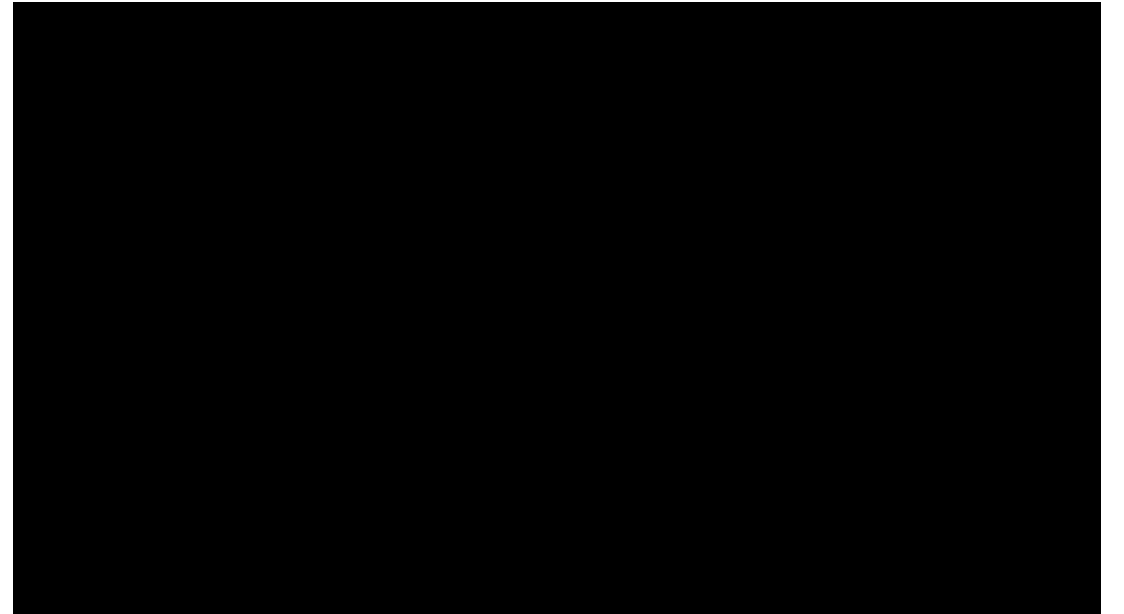
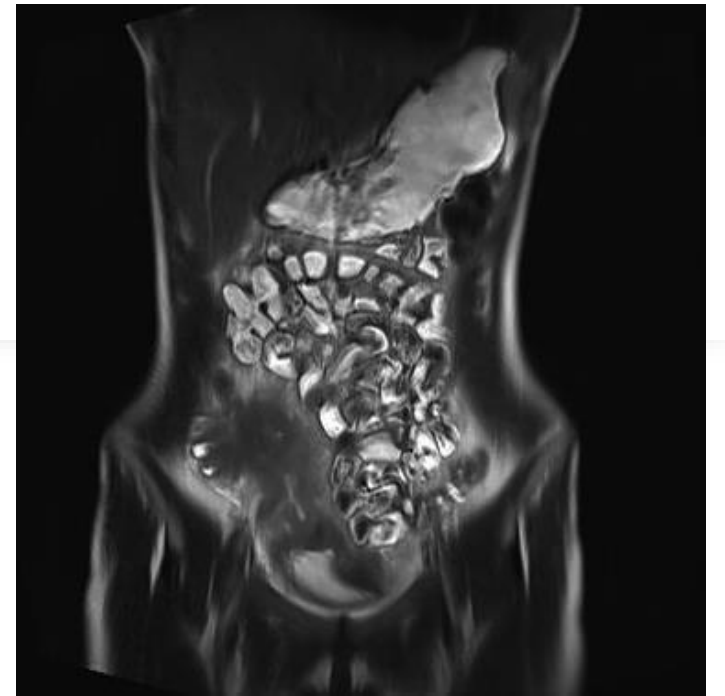
Johan Burisch et al Gut 2018



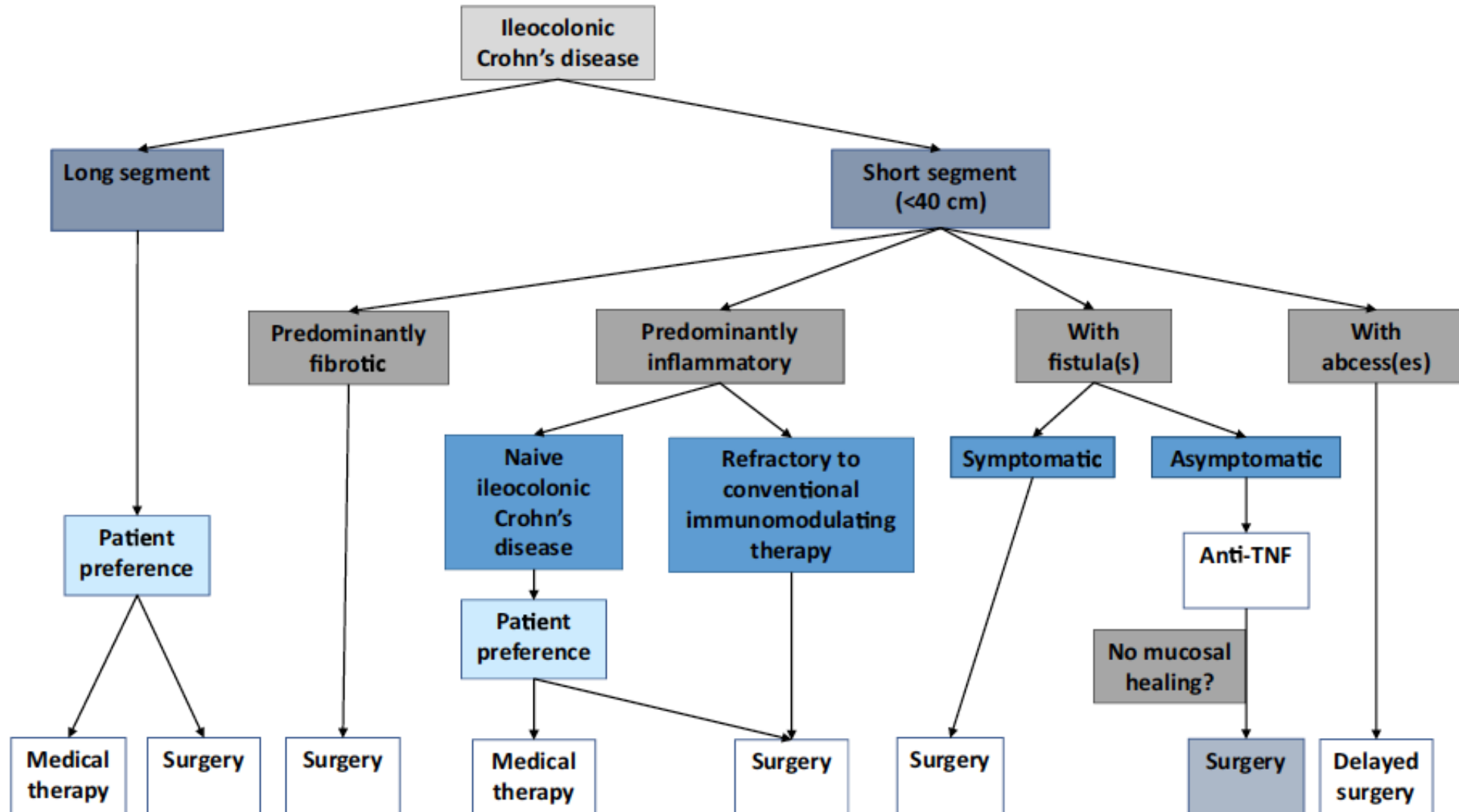
Surgical role: resolving complications,  
disease remission & recurrence  
prevention

## Topics

- Surgical indications
- Timing for surgery
- Extension of resection
- Gut sparing techniques
- Anastomosis model
- Preventing surgical complications



Elise Maria Meima - van Praag<sup>1</sup>  • Christianne Johanna Buskens<sup>1</sup>  • Roel Hompes<sup>1</sup>  •  
 Wilhelmus Adrianus Bemelman<sup>1</sup> 



# Surgical therapy in Crohn's disease

- Predominantly

- Predominantly

Naïve

Resistant

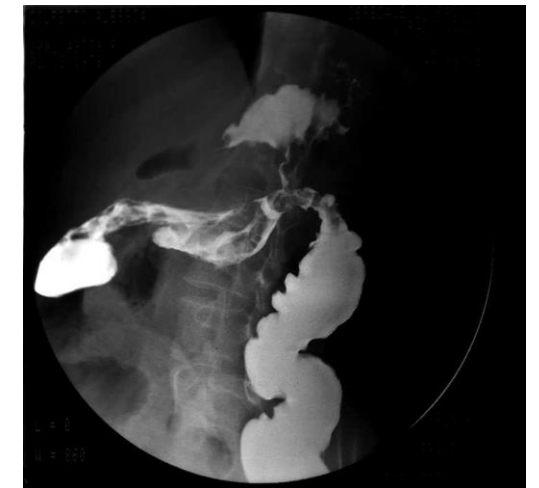
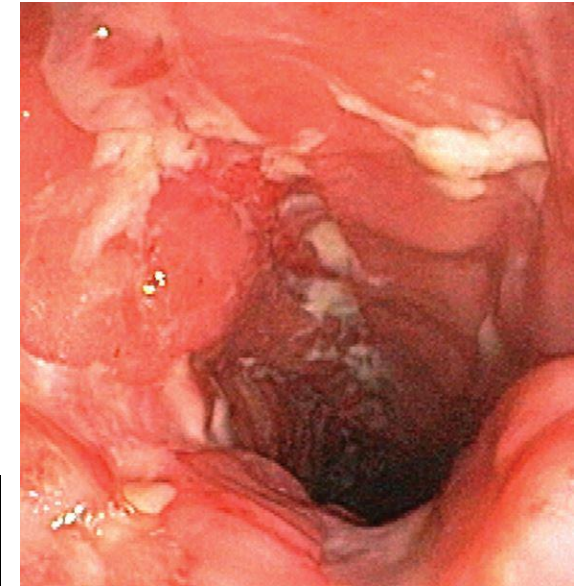
- **Perforating dis**

- Perforating dis

surgery

# Large bowel Crohn's disease surgical indications

- Refractory disease
- Obstructive disease
- Fistulizing disease
- Perineal
- Suspicion of Cancer



# Colonic stricture in Crohn's disease

- Colonic stricture in any setting should be considered malignant until proven otherwise
- Dysplasia and carcinoma
  - Difficult to detect
  - Traversable, examinable
  - Sample errors
- Segmental management if rest of the colon has been assessed fully

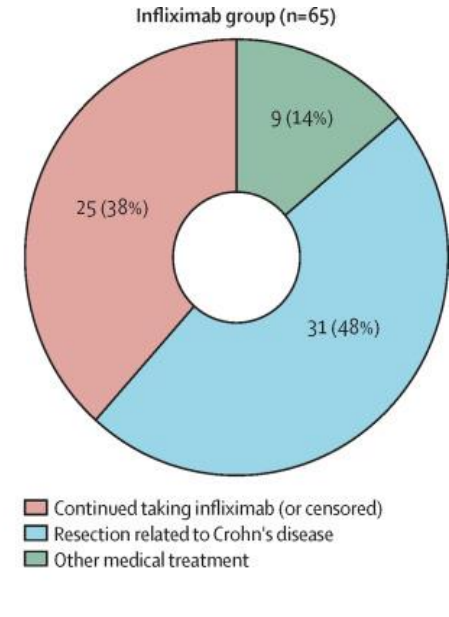
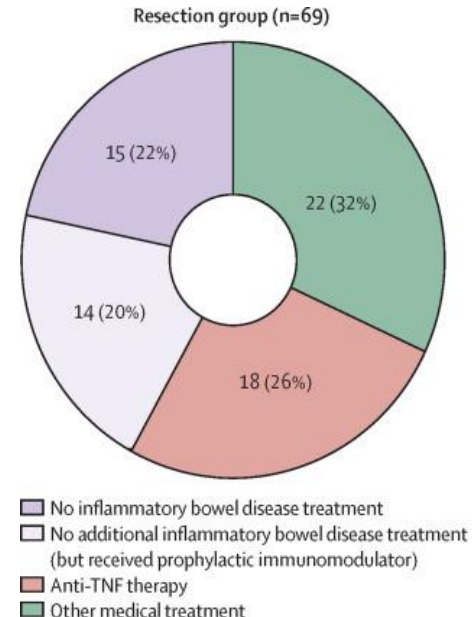
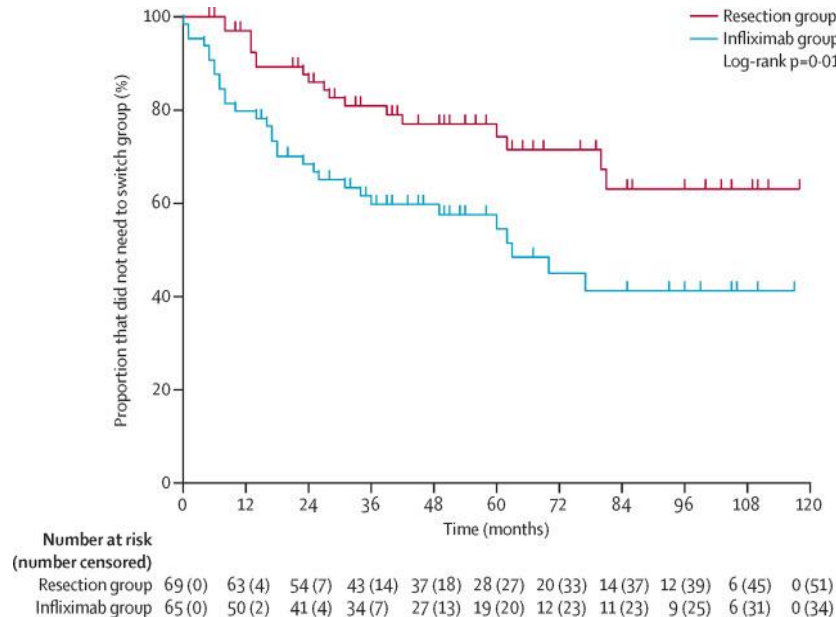


# LIR!C TRIAL

## Laparoscopic ileocaecal resection vs infliximab (RCT)

### Terminal ileitis in Crohn's disease

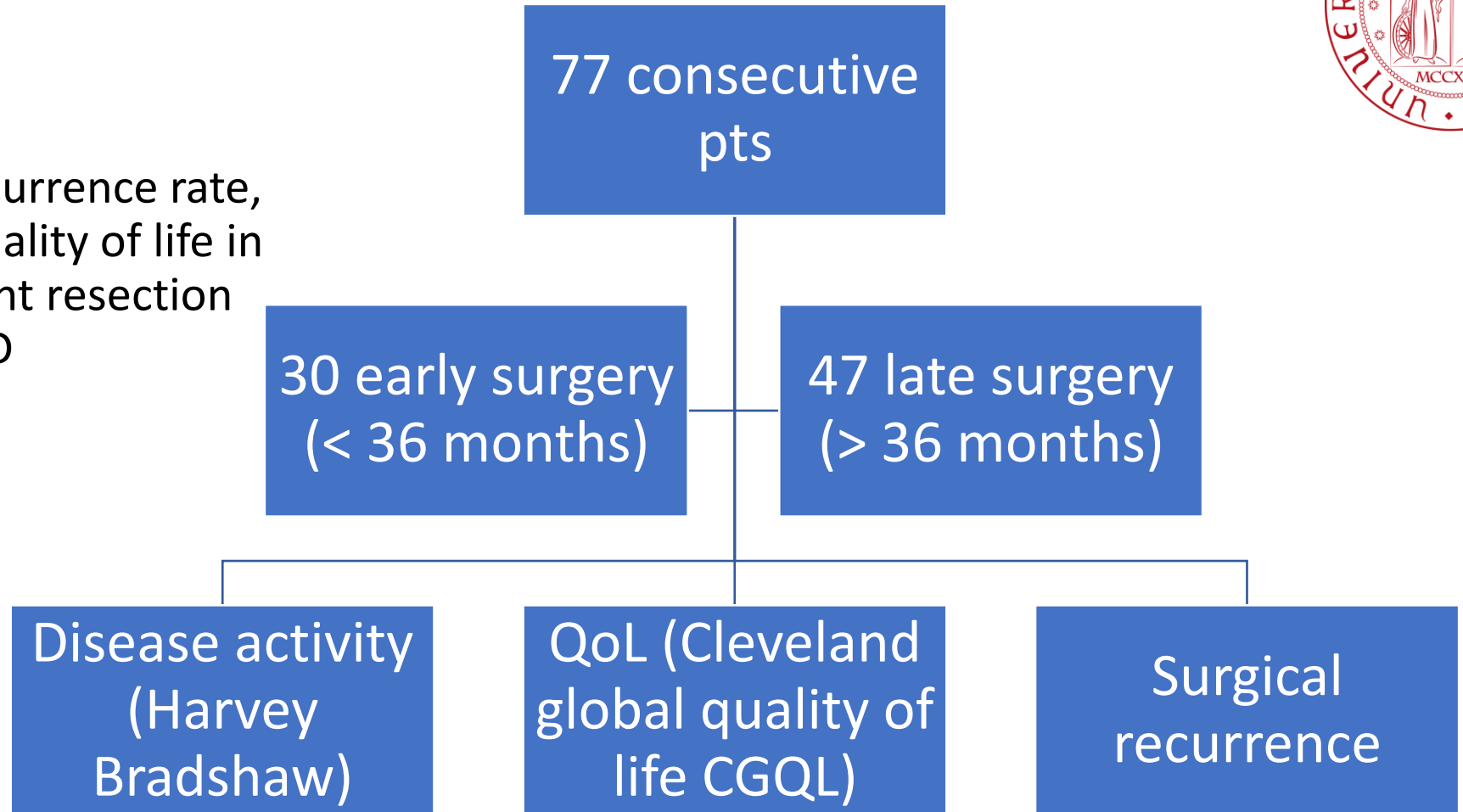
- Better quality of life at one year  
 Ponsioen C.Y. et al., *Lancet Gastroenterol Hepatol.* (2017)
- Reduced cost  
 de Groof E.J. et al., *Gut* (2019)
- Reduced need of postoperative medications at 5 yy  
 Stevens T.W. et al. *Lancet Gastroenterol Hepatol.* (2020)



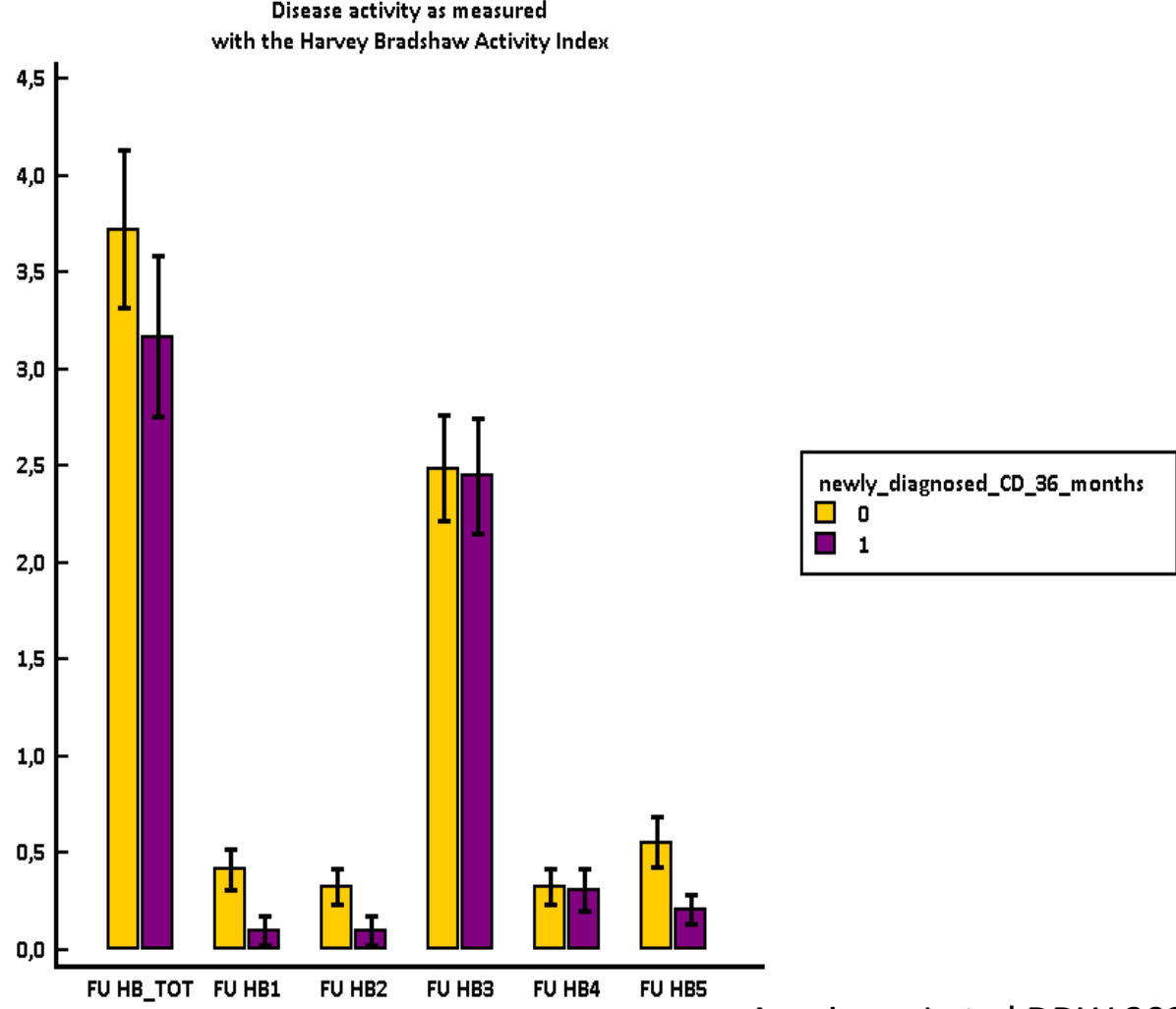
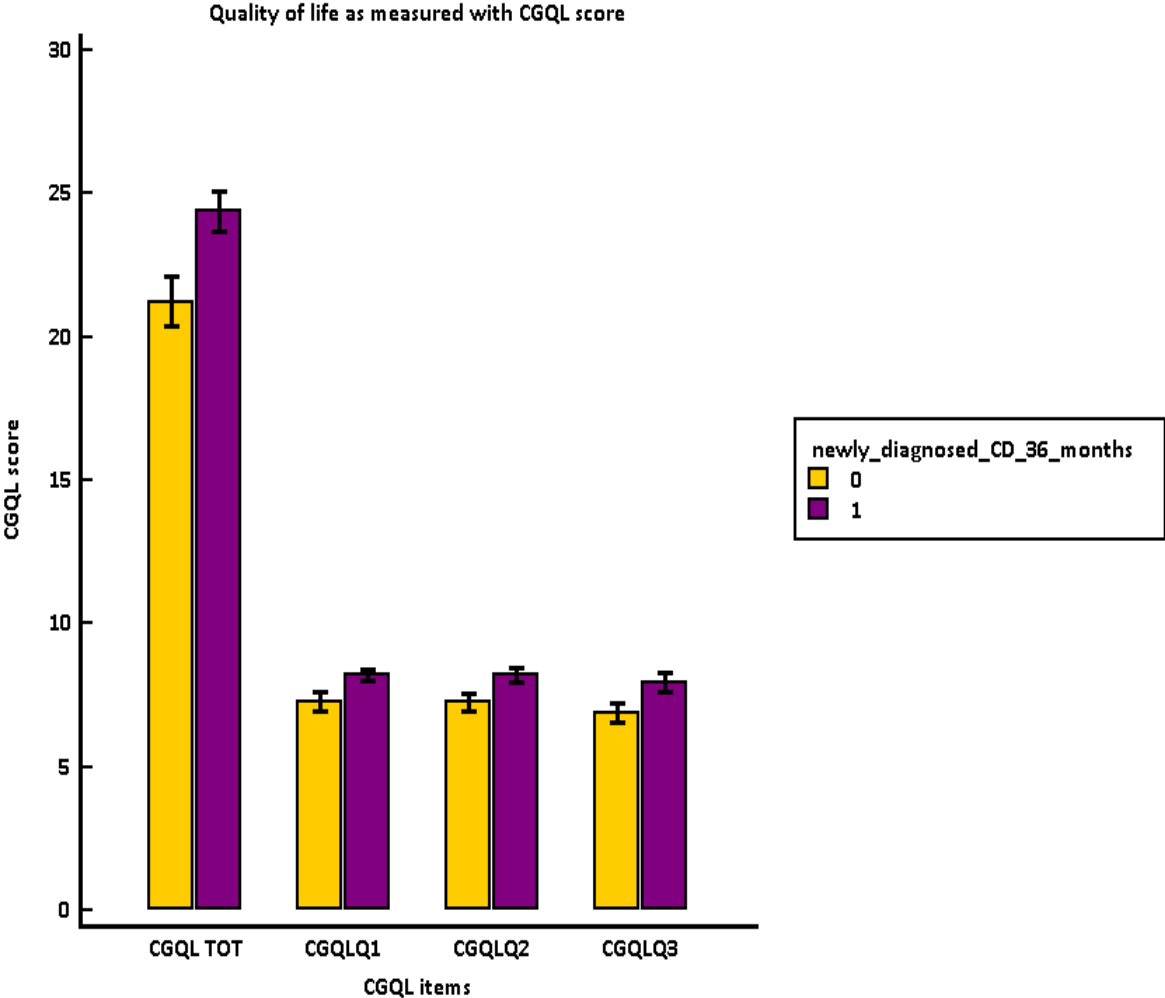
# Early surgery in newly diagnosed ileocolonic Crohn's disease: long term disease activity and quality of life



**Aim:** to analyze the recurrence rate, disease activity, and quality of life in patients who underwent resection for newly diagnosed CD

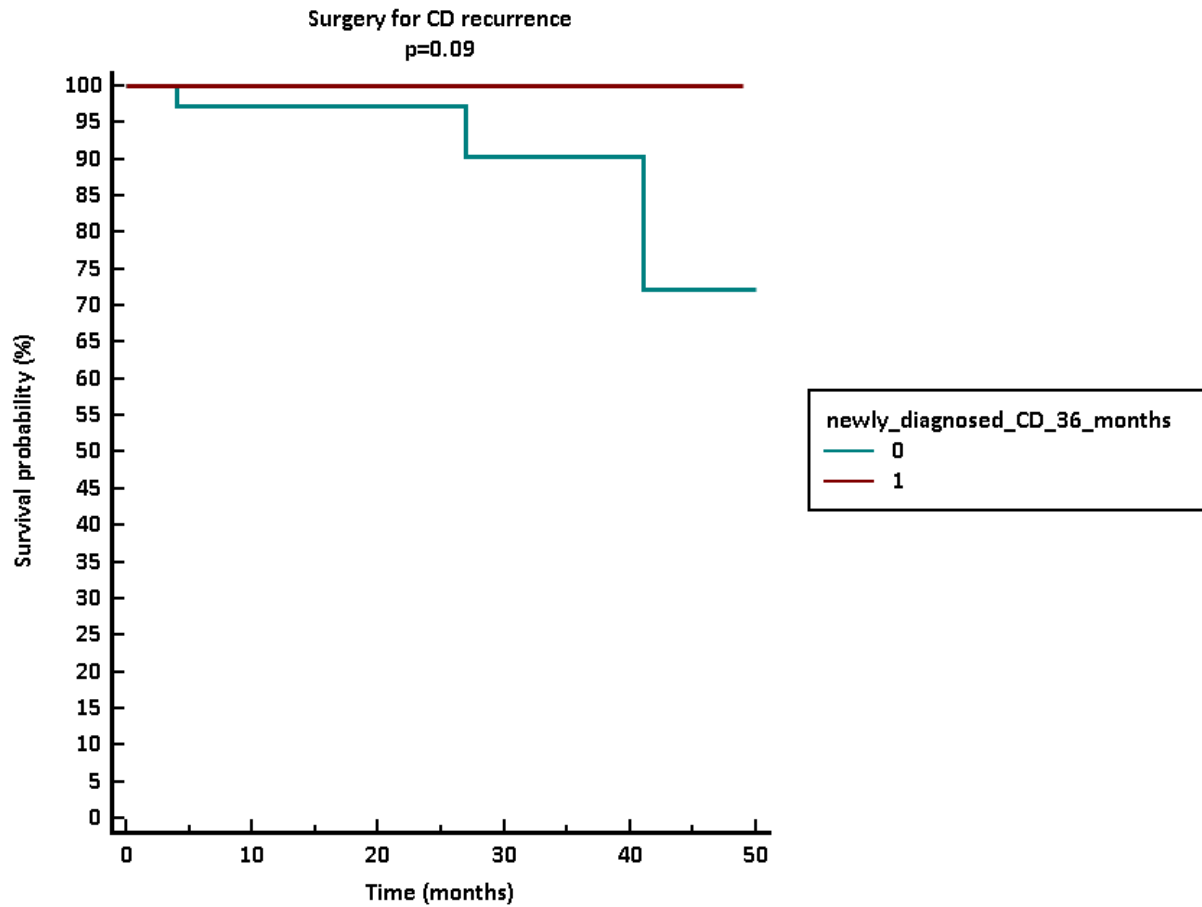


# Results: QoL and disease clinical activity at follow-up





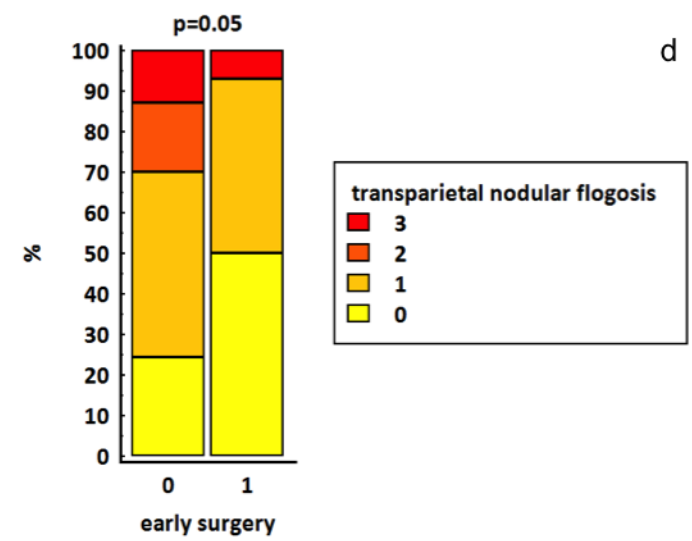
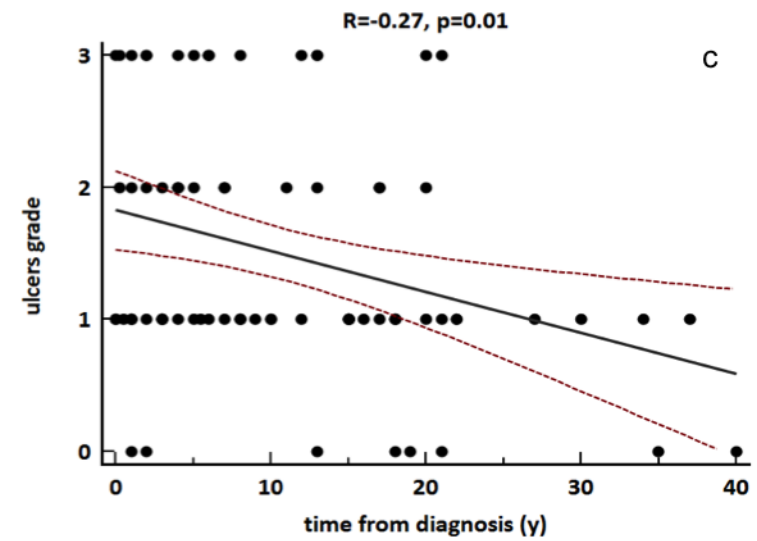
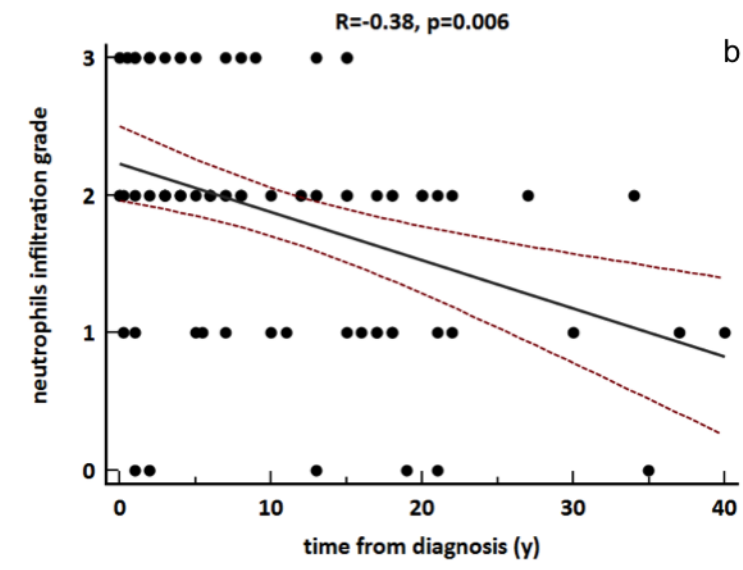
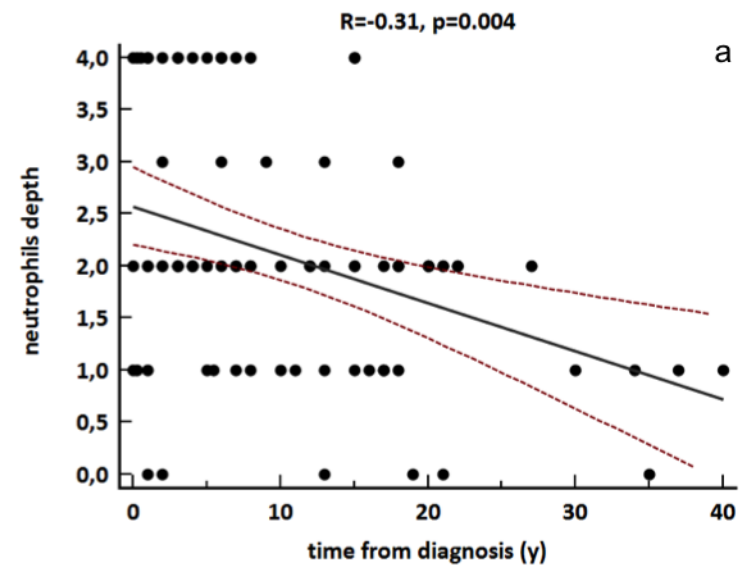
# Results: Surgical Recurrence





# Pathological analysis

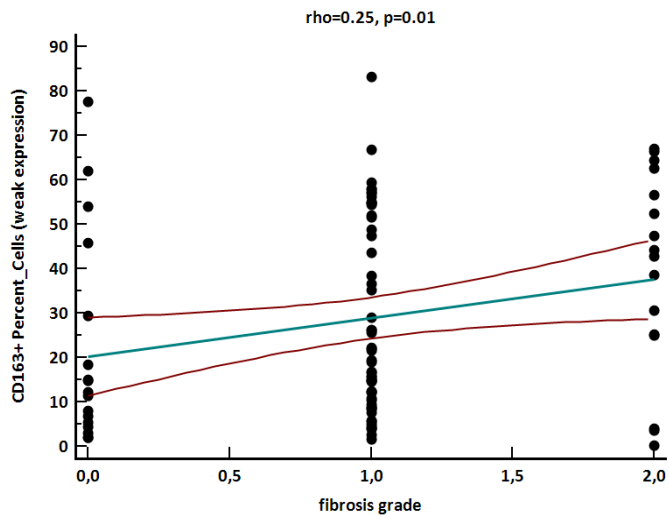
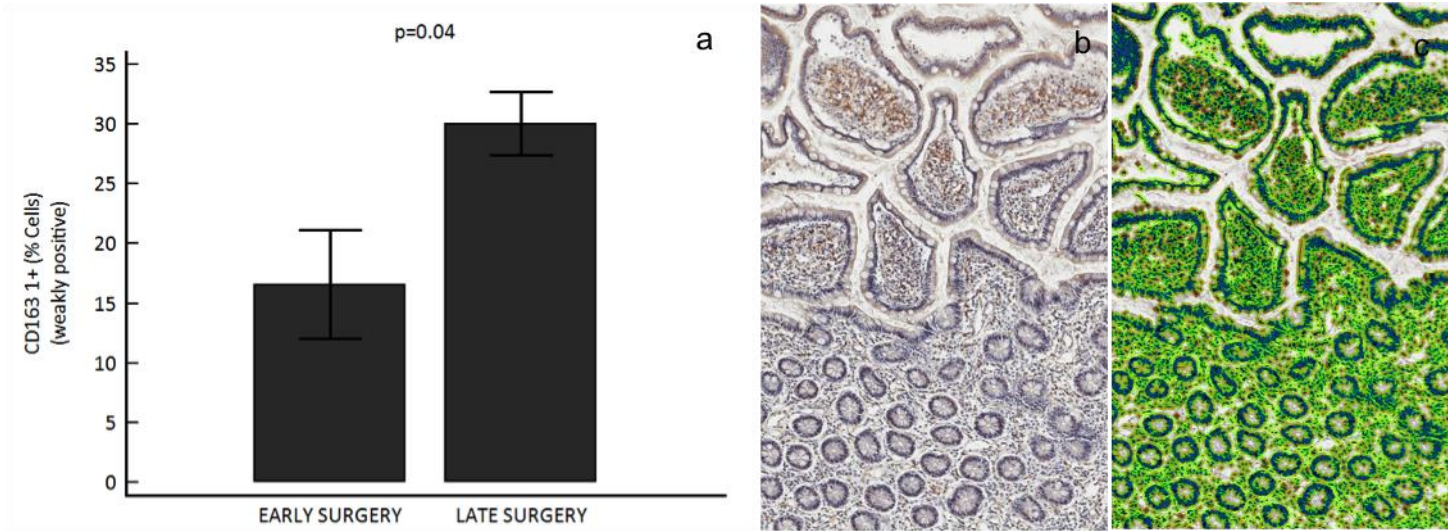
I Angriman et al 2024



# Results – IHC & digital microscopy image analysis



I Angriman et al 2024

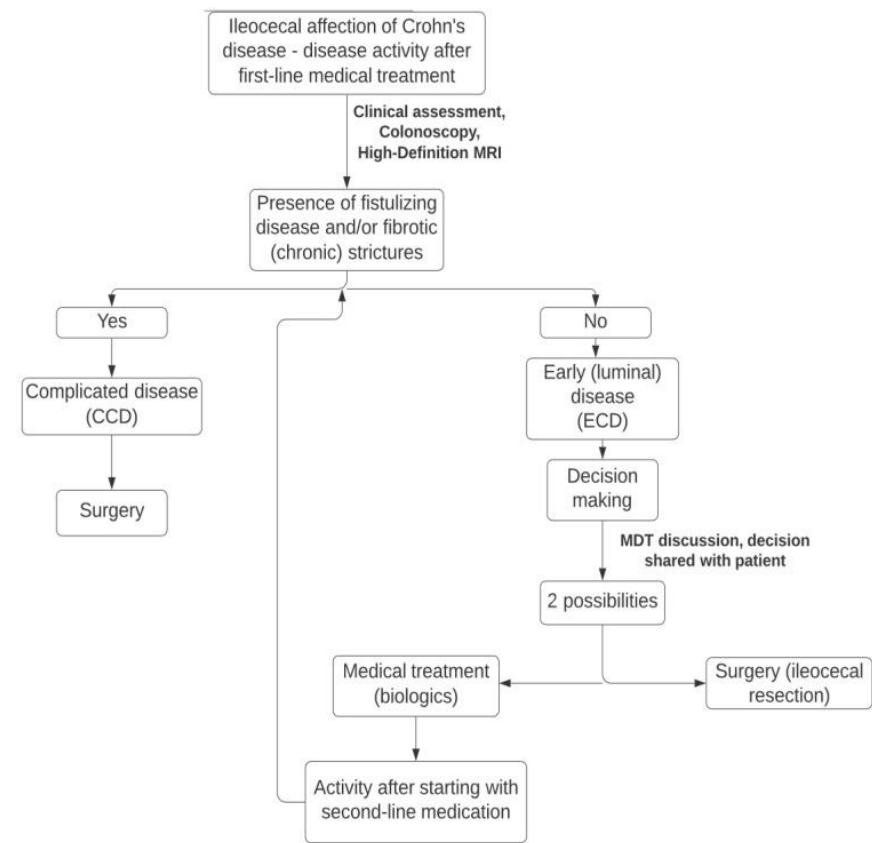
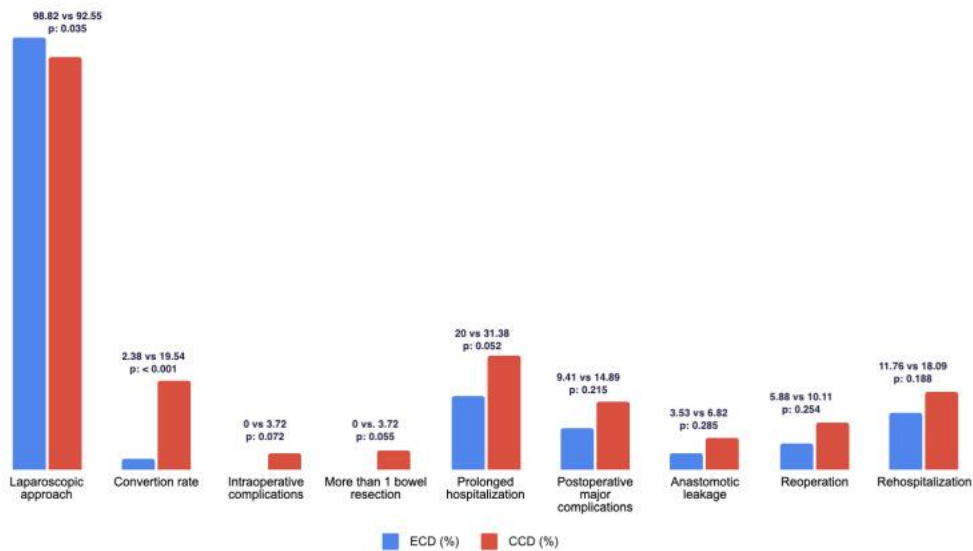
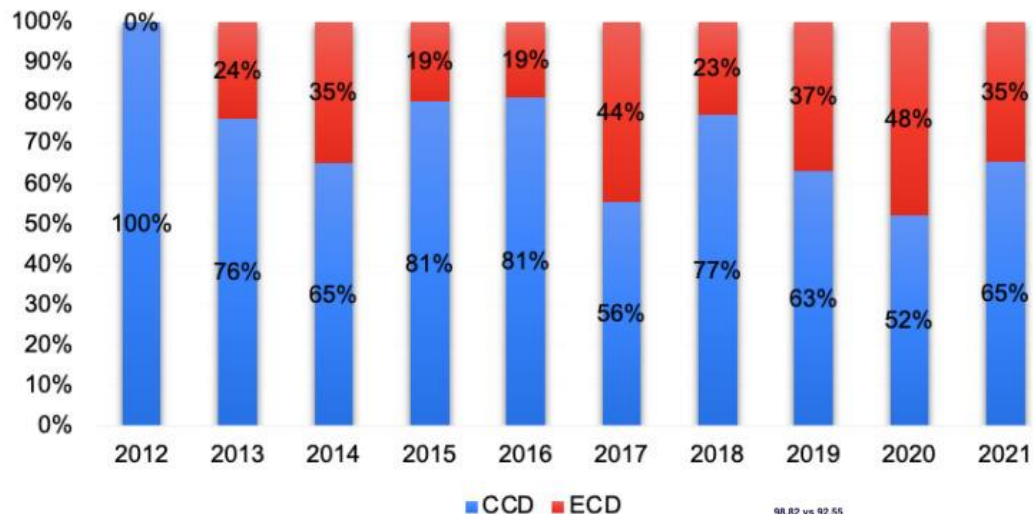


Caratteristiche anatomo-patologiche	Grado di fibrosi	Score
<ul style="list-style-type: none"> <li>Fibrosi assente o minima e limitata alla sottomucosa (&lt;25% dello spessore parietale)</li> </ul>	Negativo	0
<ul style="list-style-type: none"> <li>Stenosi lieve (&gt;15 mm) senza dilatazione a monte; fibrosi sottomucosa e iperplasia muscolare &gt;25% con strati preservati</li> </ul>	Lieve/moderato	1
<ul style="list-style-type: none"> <li>Fibrosi trasmurale massiva; scomparsa dei normali strati; stenosi severa</li> </ul>	Severo	2

Chiorean M.V. et al., *Am J Gastroenterol.* (2007)

# Short-Term Results of Operative Treatment of Primary Ileocecal Crohn's Disease: Retrospective, Comparative Analysis between Early (Luminal) and Complicated Disease

Nicolas Avellaneda <sup>1,\*</sup>, Tora Haug <sup>2</sup>, Mai-Britt Worm Ørntoft <sup>1</sup>, Sanne Harsløf <sup>1</sup>, Lars Peter Skovgaard Larsen <sup>3</sup> and Anders Tøttrup <sup>1</sup>



# Extension of the resection



## **Statement 2.10.**

Minimal length rather than radical extended resection is currently recommended for excision of small bowel disease.

Level of evidence: I

Grade of recommendation: A

Consensus: 93.8% (SA 46.9%, A 46.9%)

Surgical resections for CD should be as conservative as possible (EL2)

The role of inclusion of the mesentery in resections for ileocolic CD has to be evaluated, and extended mesenteric resection cannot be currently recommended (EL5).

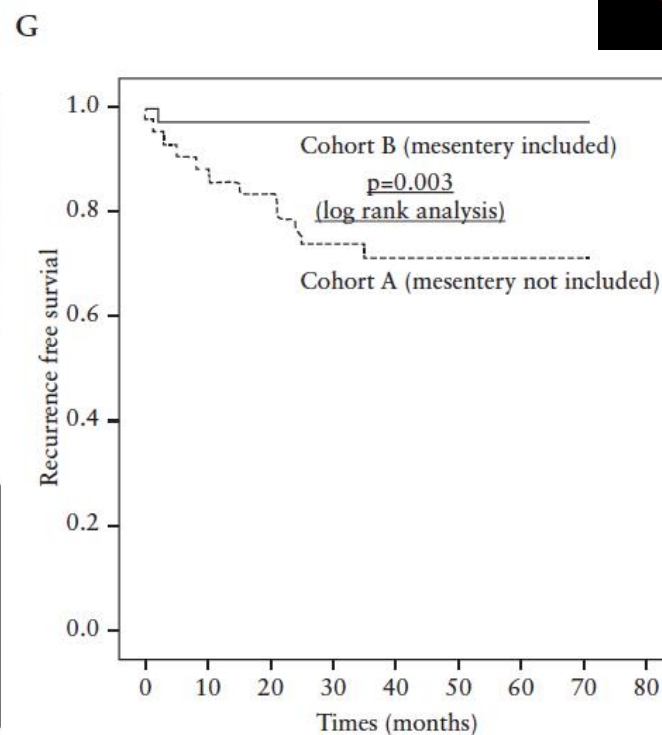
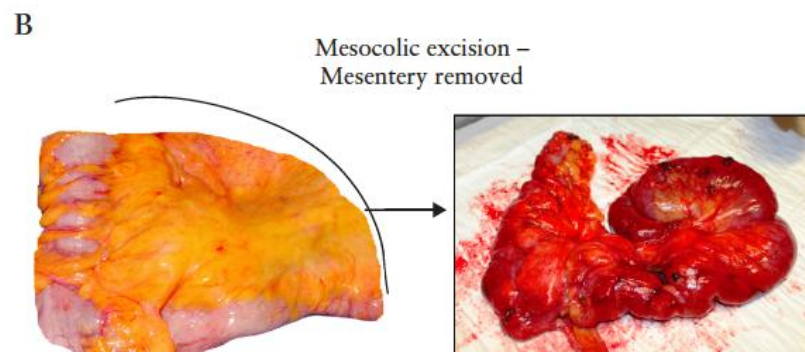
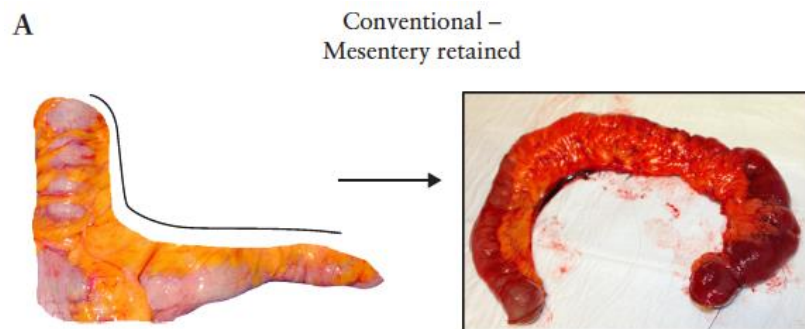
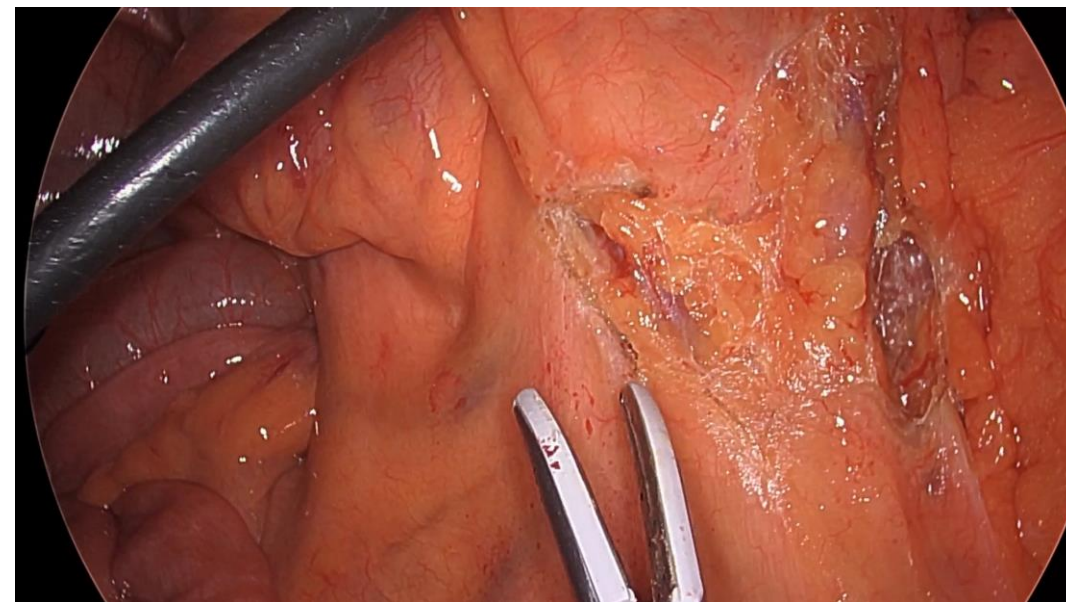




# Inclusion of the Mesentery in Ileocolic Resection for Crohn's Disease is Associated With Reduced Surgical Recurrence

Calvin J. Coffey,<sup>a,b,c\*</sup> Miranda G. Kiernan,<sup>b,c\*</sup> Shaheel M. Sahebally,<sup>a,b,c\*</sup>

*Journal of Crohn's and Colitis*, 2018,



**Table 3.** Multivariable analysis of association between known factors of surgical recurrence and development of recurrence requiring surgical intervention.

Variable	Univariable analysis [ <i>p</i> -value]	Multivariable analysis [ <i>p</i> -value]
Gender	1.000	
Smoking at time of surgery	0.015	0.010
Age at diagnosis	0.934	
Disease phenotype	0.029	0.048
Disease location	0.469	
Age at surgery	0.788	
Non-mesenteric resection	0.004	0.007
Duration of disease	0.584	
Duration of follow-up	0.363	

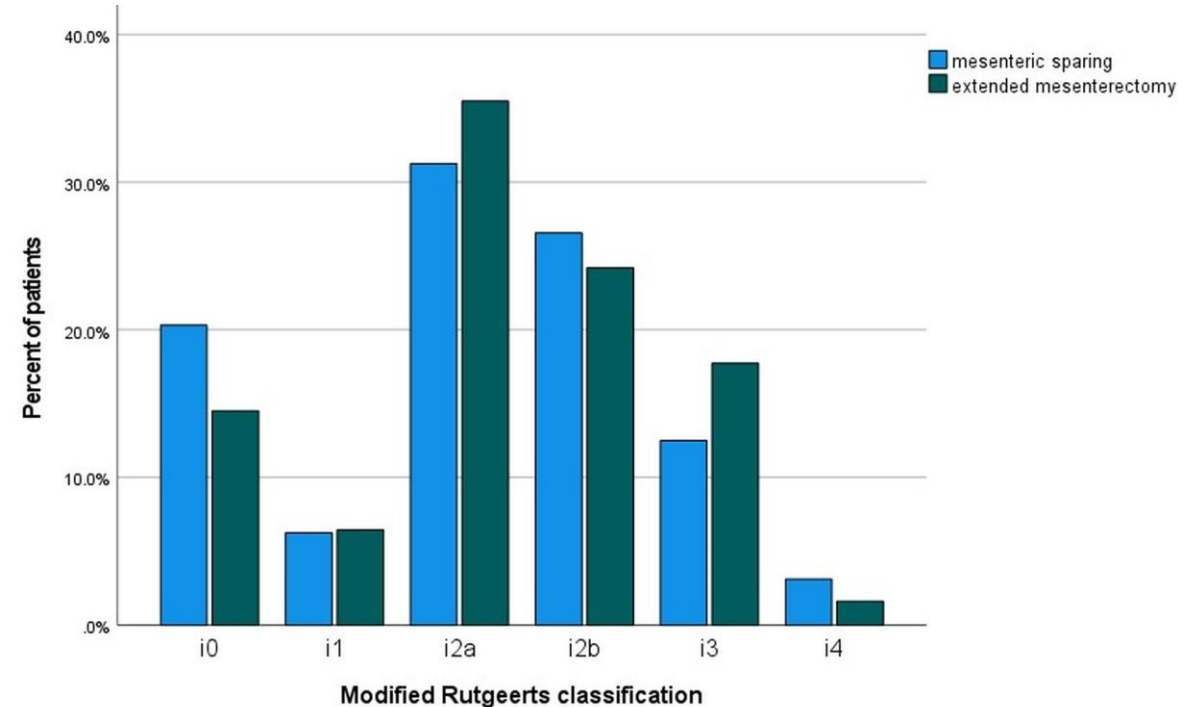
# Extended mesenterectomy is not superior to mesenteric sparing resection in primary ileocolic resection for Crohn's Disease in terms of postoperative endoscopic recurrence – results of an international randomised controlled trial

E. Van Der Does De Willebois

19TH CONGRESS OF ECCO, FEBRUARY 21-24, 2024, STOCKHOLM/SWEDEN

## Results

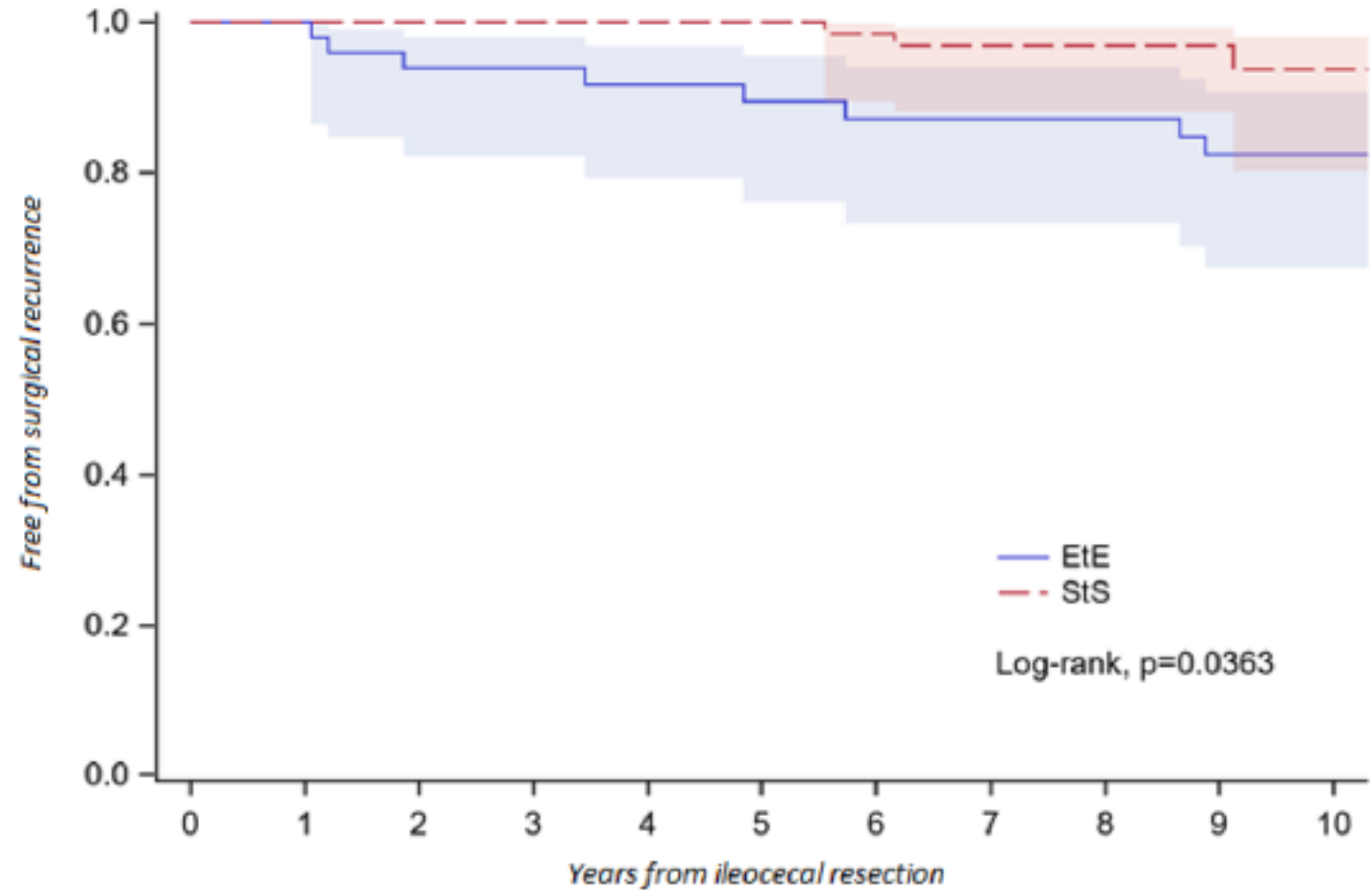
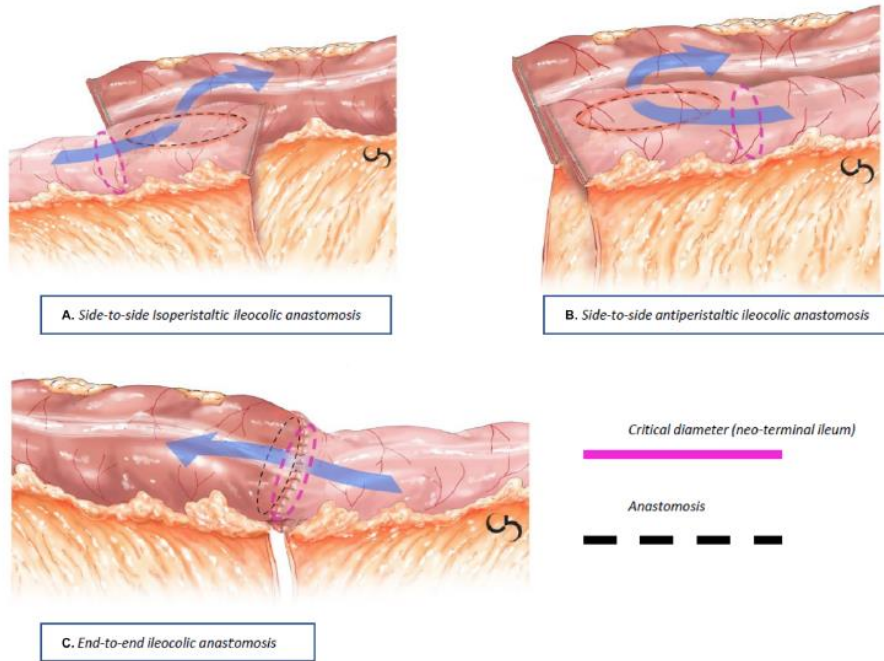
- No difference in endoscopic recurrence rates
  - 27/62 (43.5%) in the intervention group
  - 27/64 (42.2%) in the control group, (p=1.0)
- Crohn's medication after six months,
  - 48% in the intervention group
  - 41% in the control group.
- No significant difference in
  - length of resection specimen (median length colon 7cm; ileum 22.5cm),
  - blood-loss or operative time.



# Effect of anastomotic configuration on Crohn's disease recurrence after primary ileocolic resection: a comparative monocentric study of end-to-end versus side-to-side anastomosis

Updates In Surgery (2023)

Gabriele Bisleri<sup>1</sup> · Peter-Jan Vancollie<sup>1</sup> · Steffen Fleuws<sup>2</sup> · Bram Verstockt<sup>3,4</sup> · Joao Sabino<sup>3,4</sup> · Albert Wolthuis<sup>1</sup> · André D'Hoore<sup>1</sup>



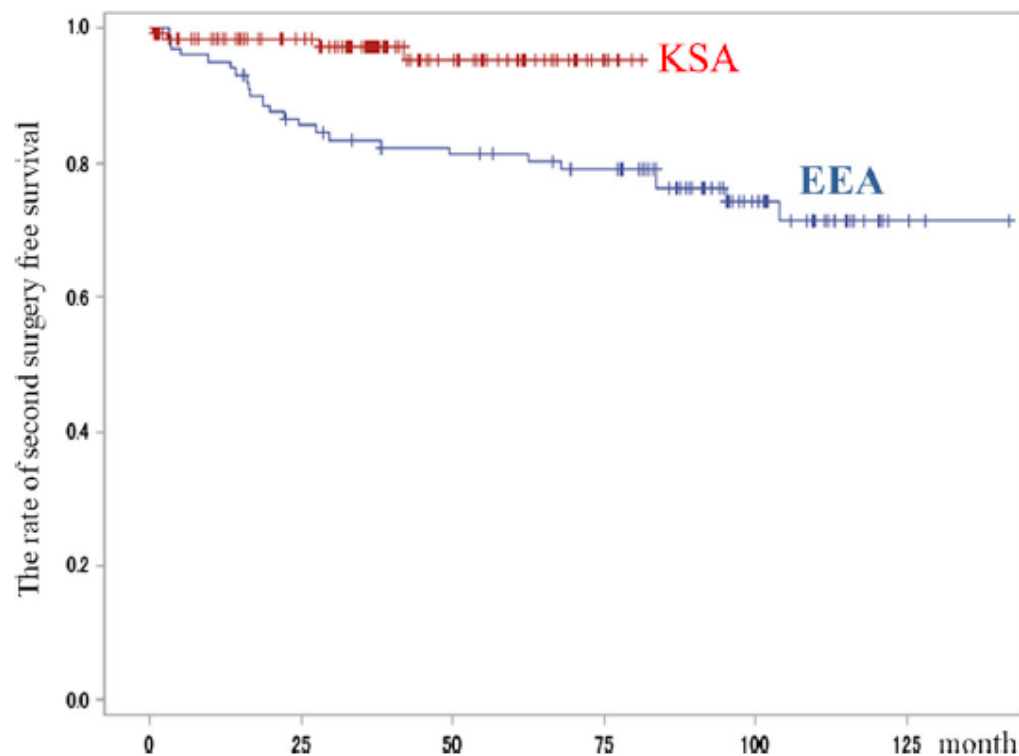
EtE	51	49	45	43	42	39	38	38	36	33	31
StS	76	74	70	70	67	64	63	56	52	32	23

# Surgical Recurrence at Anastomotic Site After Bowel Resection in Crohn's Disease: Comparison of Kono-S and End-to-end Anastomosis

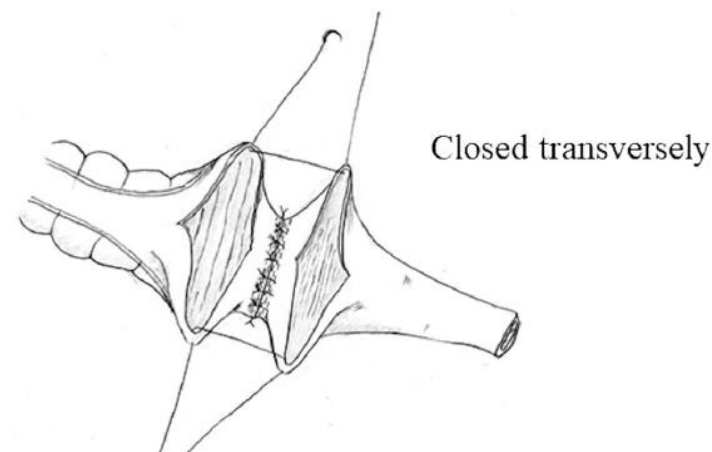


Norimitsu Shimada<sup>1</sup> • Hiroki Ohge<sup>1</sup> • Toru Kono<sup>2</sup> • Ayumu Sugitani<sup>2</sup> • Raita Yano<sup>1</sup> • Yusuke Watadani<sup>1</sup> • Kenichiro Uemura<sup>1</sup> • Yoshiaki Murakami<sup>1</sup> • Taijiro Sueda<sup>1</sup>

Journal of Gastrointestinal Surgery (2019)



C



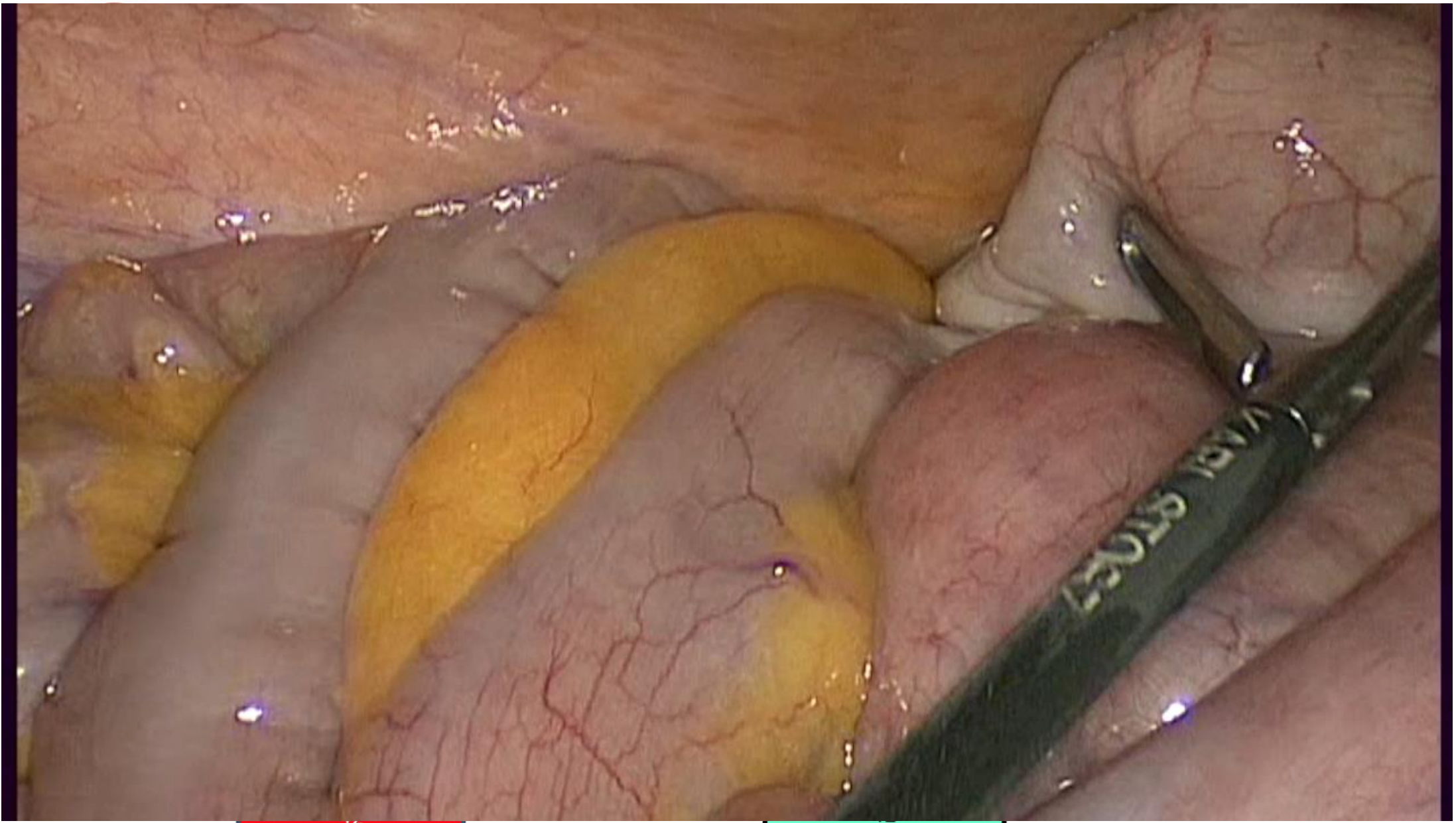
# Postoperative endoscopic recurrence after resection of Crohn's terminal ileitis with Kono-S or side-to-side functional end anastomosis: results of a Multicenter Prospective Randomized Trial

K. Trencheva et al

19TH CONGRESS OF ECCO, FEBRUARY 21-24, 2024, STOCKHOLM/SWEDEN

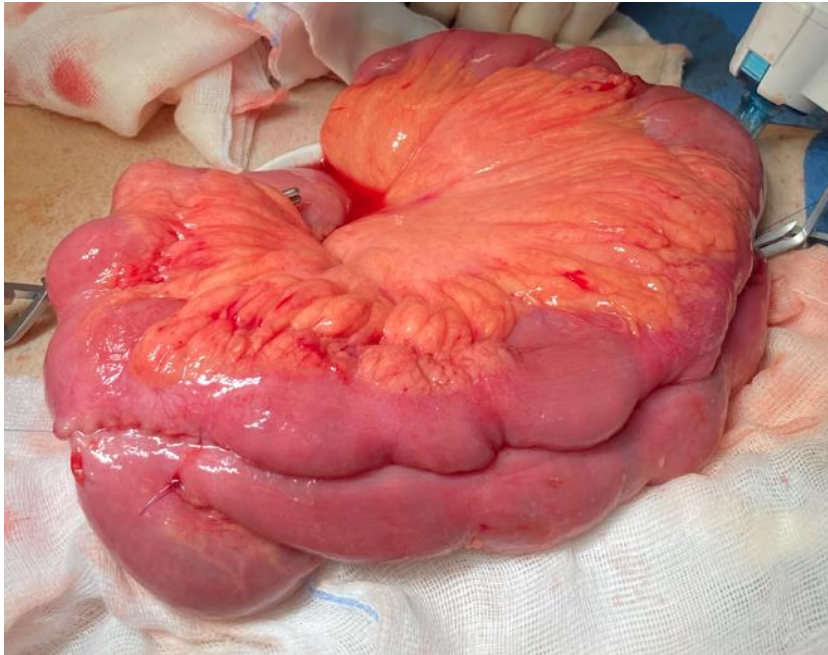
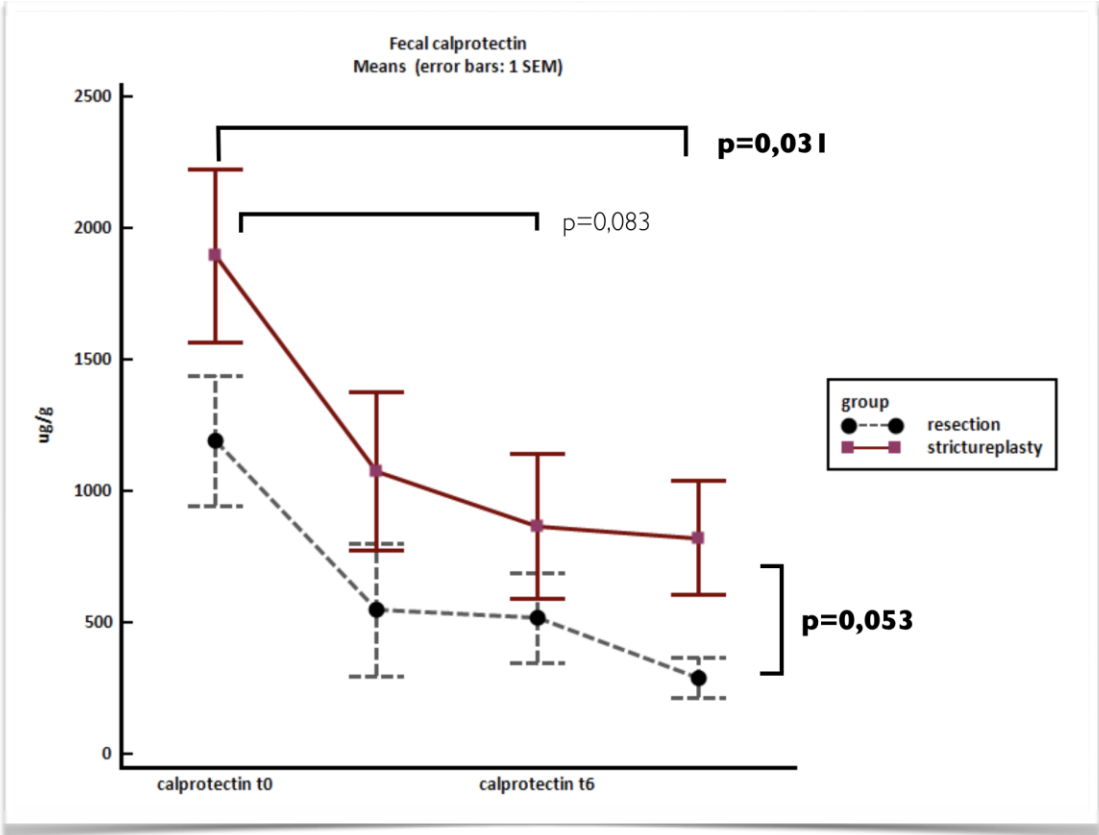
**Results:** No significant difference between the two groups in terms of

- endoscopic recurrence ( $p = 0.883$ )
- clinical recurrence HBI ( $p = 0.109$ )
- recurrence-free survival (Log Rank Mantel-Cox test  $p = 0.256$ )
- Multivariable analysis: **current smokers** had significantly higher odds for endoscopic recurrence at 3-6 months (OR= 2.80, [95% CI =1.10 - 6.92],  $p = 0.029$ ).



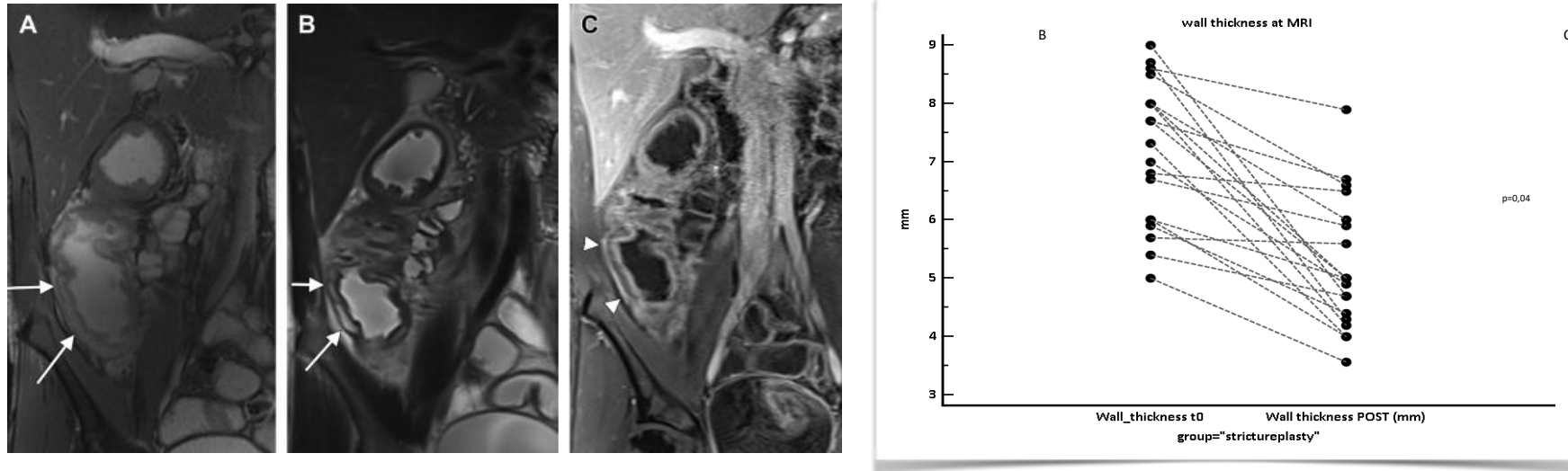


# LOCAL disease Activity Fecal Calprotectin





# LOCAL disease Activity



Postoperative MRI was performed in 19 patients in our Hospital at a median time of 16 (14-23,5) months after surgery

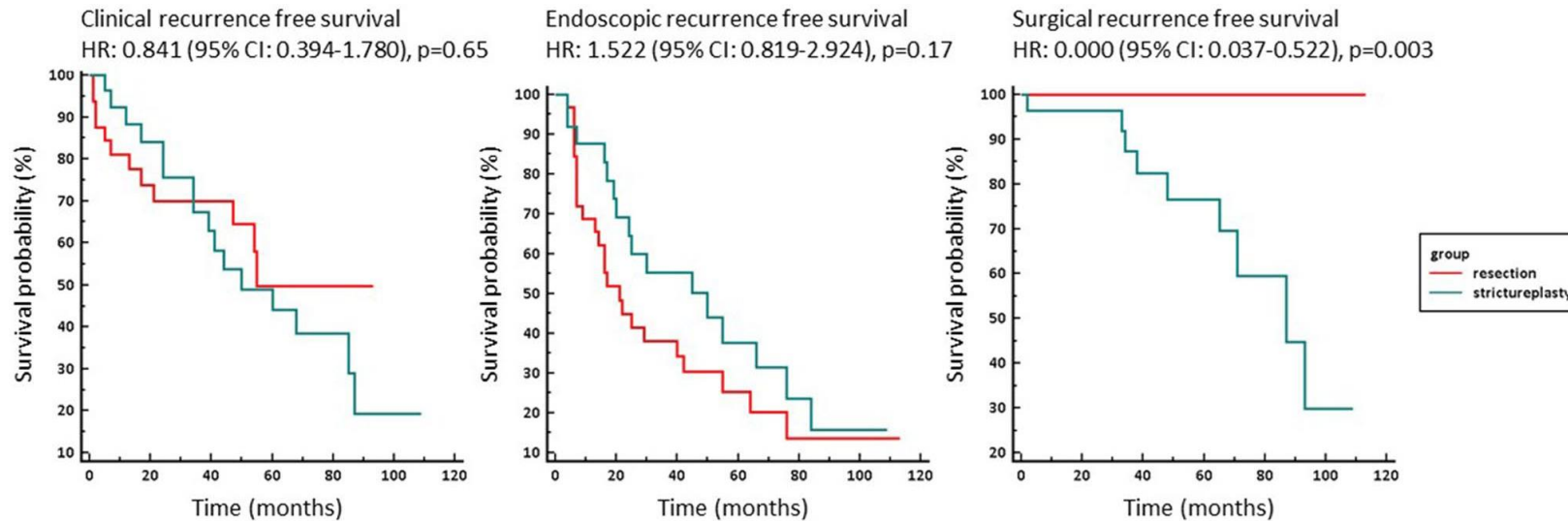
	Preoperative Mean (SD)	Postoperative Mean (SD)	P value Wilcoxon
<b>RCE</b>	111,93(66,13)	123,79 (60,95)	0,563
<b>ADC</b>	0,861 (0,12)	0,995 (0,21)	<b>0,046</b>
<b>Wall-thickness</b>	7,15 (1,22)	5,21 (1,13)	<b>0,000</b>
<b>MaRIA</b>	19,03 (6,76)	12,65 (3,43)	<b>0,001</b>
<b>Clermont</b>	24,16 (4,79)	18,38 (2,05)	<b>0,000</b>
<b>Edema</b>	0,68 (0,47)	0,47 (0,51)	0,289
<b>Fissures</b>	0,26 (0,45)	0 (0)	0,063





# Resection vs strictureplasty

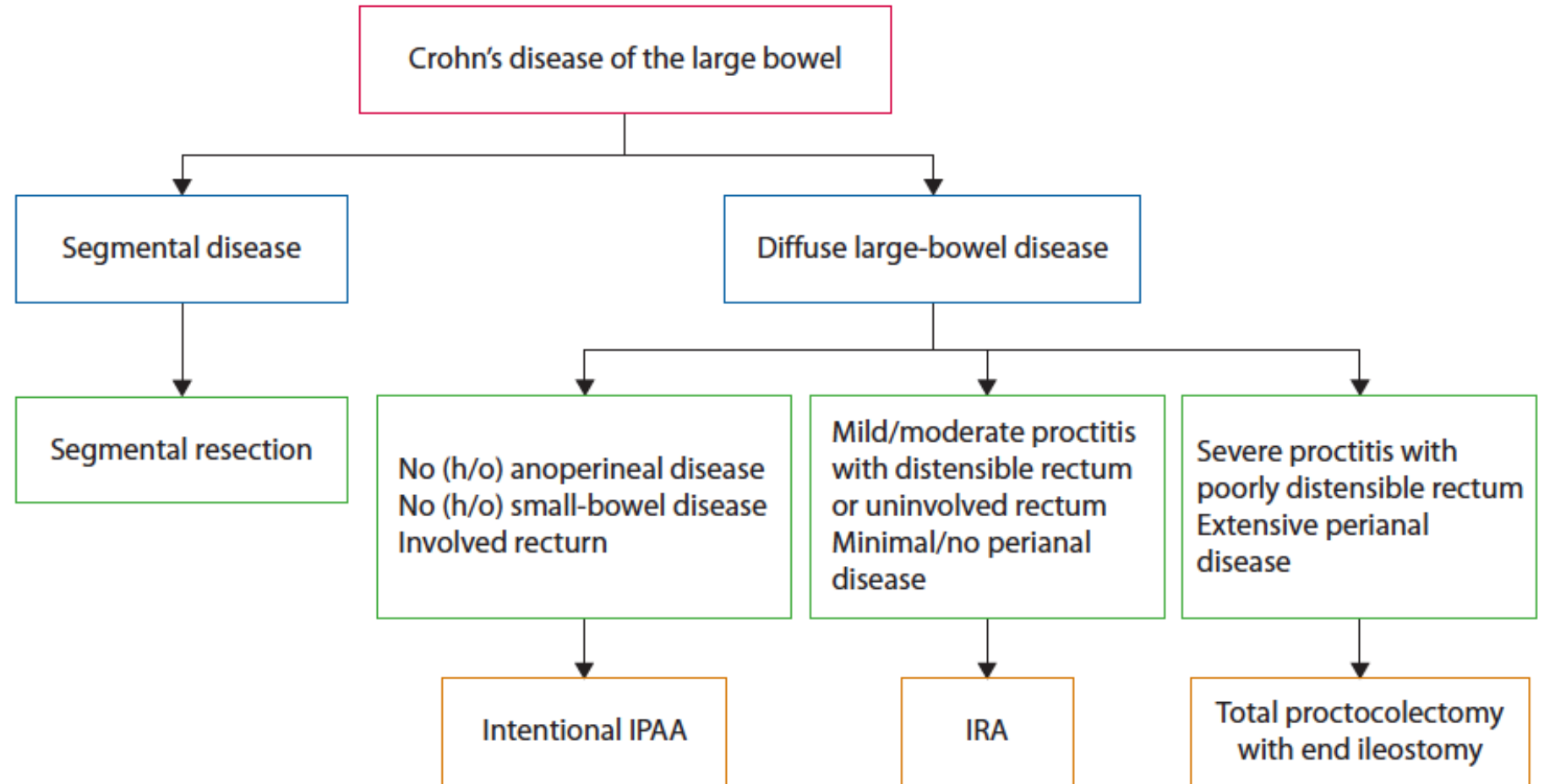
## Clinical, endoscopic and surgical recurrence



- Fibrotic nature of the stenosis
- Multifocal jejunal ileal diseases

# Crohn's colitis

## the phenotype drive type of resection

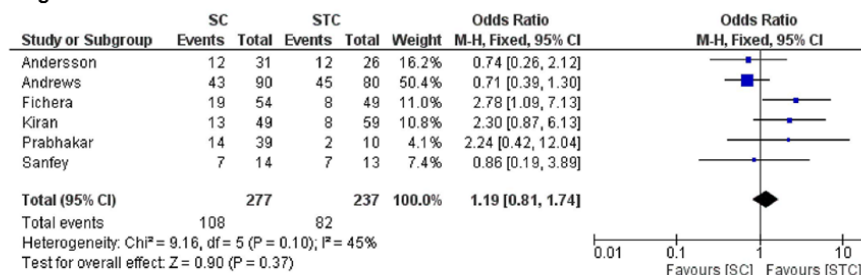


# Segmental colectomy vs total colectomy

## Systematic review

Figure 3

### Surgical recurrence SC vs STC



### Surgical recurrence STC vs TPC

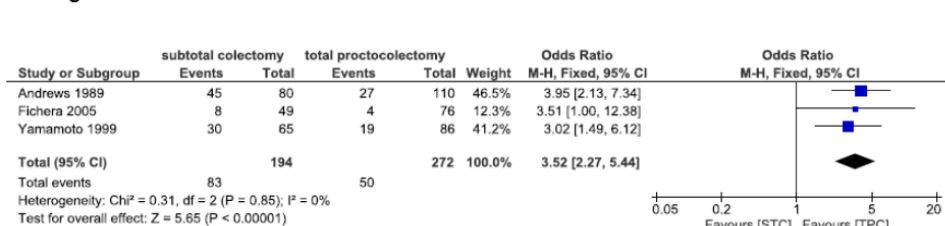
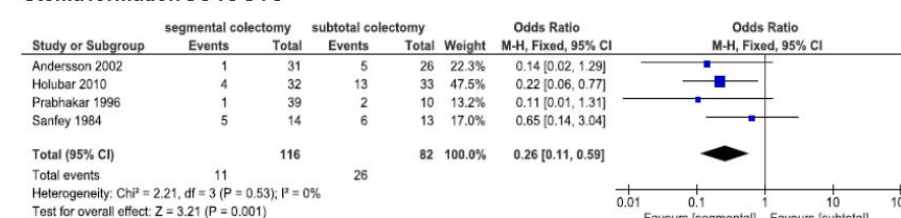
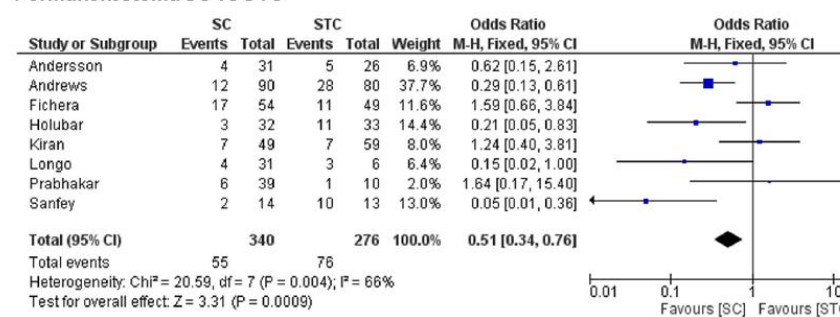


Figure 5

### Stoma formation SC vs STC



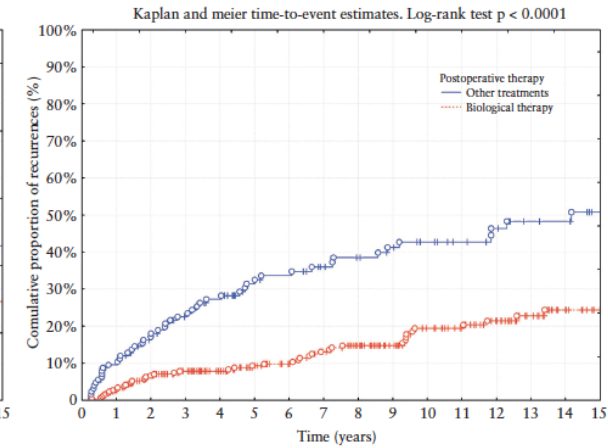
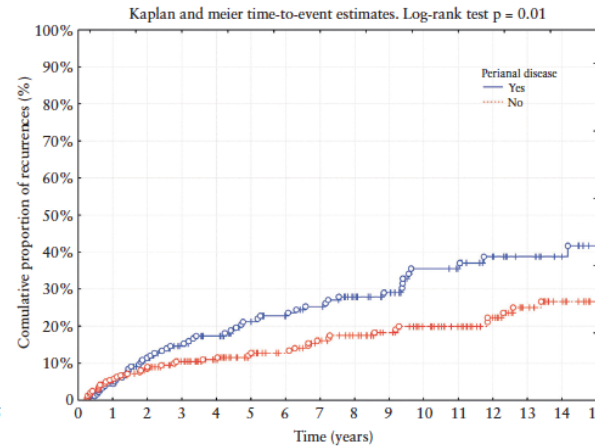
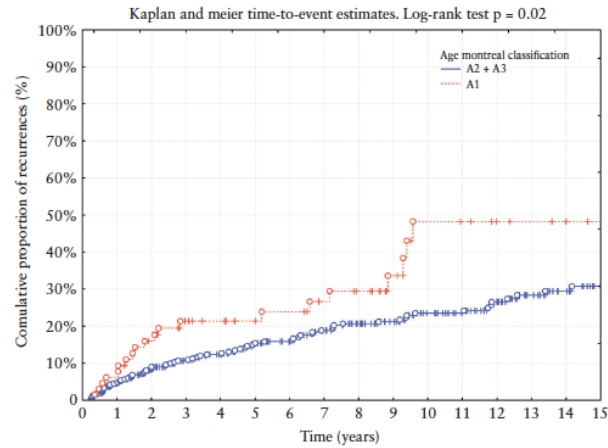
### Permanent stoma SC vs STC



# Segmental Versus Total Colectomy for Crohn's Disease in the Biologic Era: Results From The SCOTCH International, Multicentric Study

Gianluca Pellino

*Journal of Crohn's and Colitis*, 2022, 16,



**Table 3.** Multivariate analysis using Cox's proportional hazard model of patients presenting with one to three colonic locations

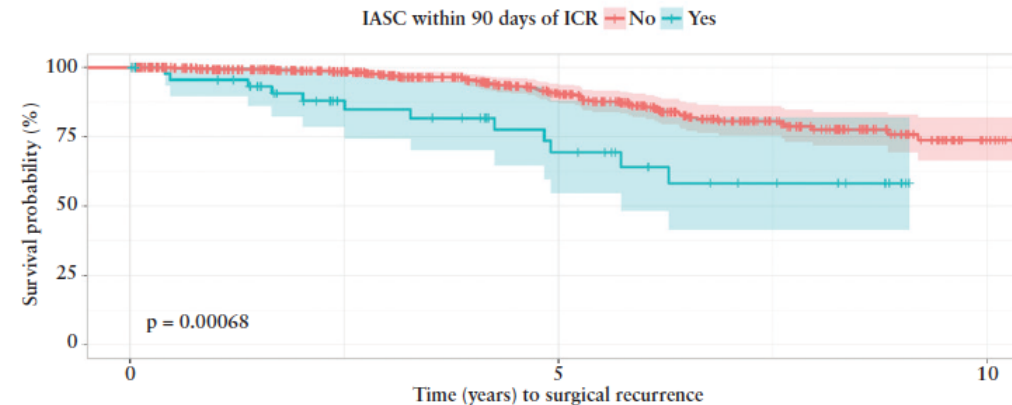
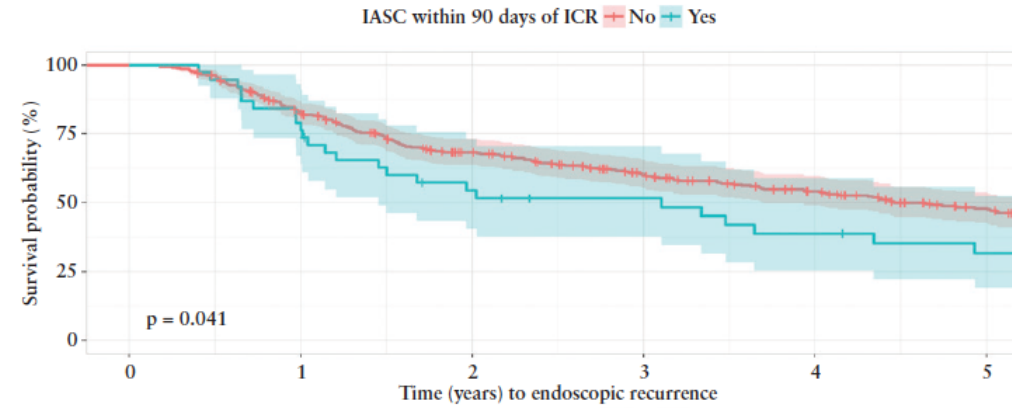
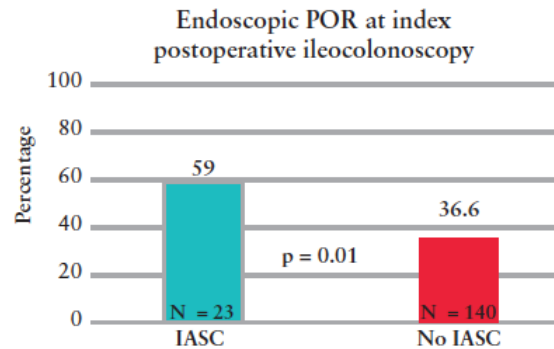
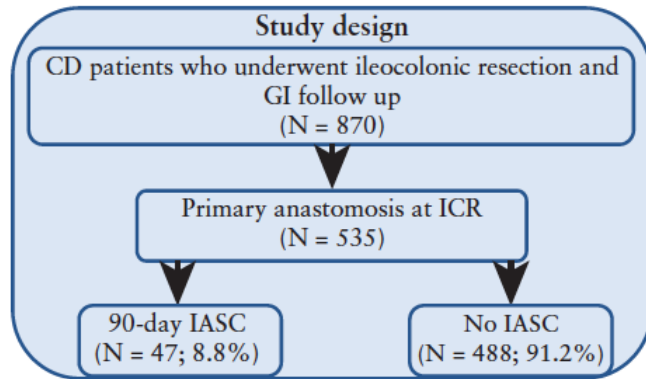
	Hazard ratio	95% CI	Wald's statistics	<i>p</i>
Age <sup>¶</sup> [A1 vs A2 and A3]	2.8	2.3–3.0	7.9	0.004
Behaviour <sup>¶</sup> [B1 vs B2 and B3]	0.9	0.8–1.1	1.1	0.2
Perianal disease	1.9	1.5–2.5	3.6	0.04
Number of colonic locations [1–2 vs 3]	2.5	2.2–3.8	6.2	0.01
Smoking habit	0.2	0.1–0.7	0.1	0.7
IBD family history	0.6	0.4–0.9	0.2	0.5
Extraintestinal manifestations	0.2	0.1–0.3	0.05	0.8
Small bowel resection	0.9	0.7–1.3	0.9	0.3
Definitive stoma	0.4	0.2–0.6	1.3	0.7
No biological therapy <sup>§</sup>	5.6	5.2–6.1	30.2	<0.0001

# Intra-abdominal septic complications after ileocolic resection increases risk for endoscopic and surgical postoperative Crohn's disease recurrence

Salam P. Bachour<sup>1</sup>

*Journal of Crohn's and Colitis*, 2022, 16,

Intraabdominal septic complications after ileocolic resection increases risk for endoscopic and surgical postoperative Crohn's disease recurrence



# Risk factors for post-operative complications

- Older age
- Emergent or urgent surgery
- Experience of the surgeon

Non-modifiable factors

- Preoperative immunosopressive medications
- Malnutrition
- Anemia
- Smoking
- Intra-abdominal sepsis

MDT

# Do biologics increase perioperative complications in patients with CD?

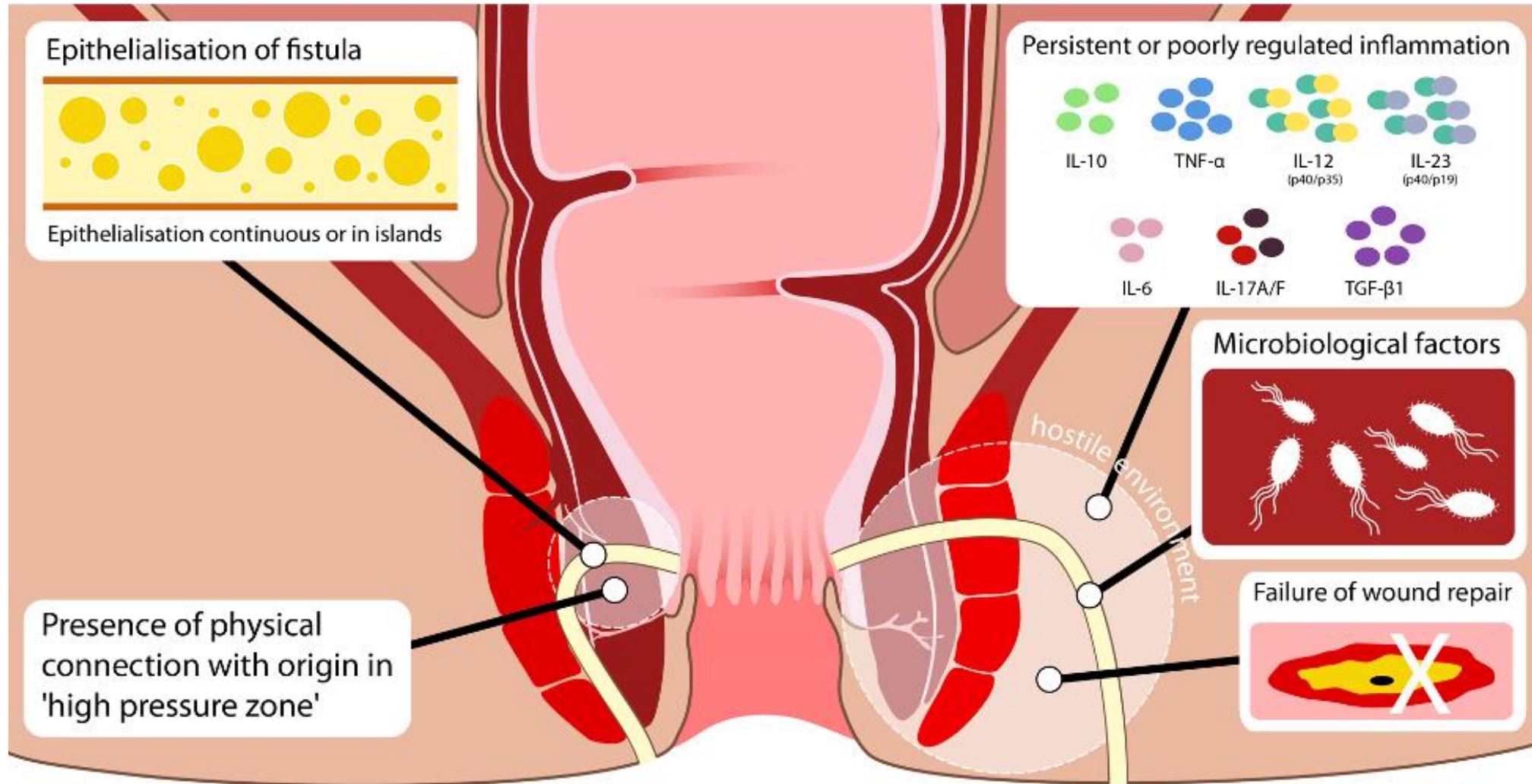
- Known risk factors associated with perioperative complications in CD: low serum albumin levels, pre-operative steroid use and pre-operative abscess.
- And biologics...????

Table 2. Summary of meta-analyses of perioperative complications in patients with Crohn's disease on biologic therapy

Literature	Significant increase in anastomotic complications?	Significant increase in total infectious complications?
Narula <i>et al.</i> (2013) [75]	Not separately examined	Yes, RR = 1.93 (95% CI: 1.28–2.89)
El-Hussuna <i>et al.</i> (2013) [76]	Yes (low bias studies), RR = 1.63 (95% CI: 1.03–2.60) No (medium bias studies), RR = 0.17 (95% CI: 0.05–0.60)	No, RR = 1.15 (95% CI: 0.86–1.53)
Kopylov <i>et al.</i> (2012) [77]	No, OR = 1.18 (95% CI: 0.61–2.30)	No, OR = 1.62 (95% CI: 0.92–2.86)
Billioud <i>et al.</i> (2013) [78]	Not separately examined	Yes, OR = 1.45 (95% CI: 1.03–2.05)
Waterland <i>et al.</i> (2016) [79]	No, OR = 1.19 (95% CI: 0.82–1.71)	Yes, OR = 1.52 (95% CI: 1.14–2.03)
Yang <i>et al.</i> (2014) [80]	Not separately examined	Yes, OR = 1.47 (95% CI: 1.08–1.99)

OR, odds ratio; RR, relative risk; CI, confidence interval.

# Perianal disease





# Perineal CD: current treatment strategies

- Antibiotics
- Immunomodulators
- Biologic drugs
- Surgical options
  - Drainage - seton
  - Definitive repair
  - Temporary defunctioning stoma (31 – 49%, restoration 17%)
  - Proctectomy (refractory rectal disease, ano-rectal stenosis)
  - Perineal wound problems following proctectomy (23 – 79%)

Samuel O Adegbola *Frontline Gastroenterology* 2021

Julian Panes et al *W.J.G.* 2018

Yassin NA et al *Aliment Pharmacol Ther* 2014

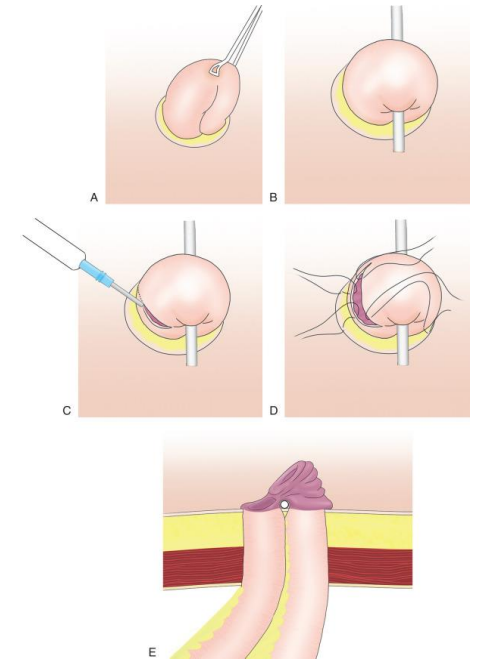
Singh S, *Aliment Pharmacol Ther* 2015

# Temporary Faecal Diversion for Refractory Perianal and/or Distal Colonic Crohn's Disease in the Biologic Era: An Updated Systematic Review with Meta-analysis

Michael Jew,<sup>a</sup> Joseph Meserve,<sup>b</sup> Samuel Eisenstein,<sup>c, ID</sup> Vipul Jairath,<sup>d,e, ID</sup> Jeffrey McCurdy,<sup>f,g</sup> Siddharth Singh<sup>b,h, ID</sup>



2024



	Pre-biologic era [pooled rate, 95% CI]	Overlapping period between pre-biologic and biologic era [pooled rate, 95% CI]	Biologic era [pooled rate, 95% CI]	<i>p</i> -value
Short-term clinical improvement	77% [64–86%]	81% [58–93%]	50% [42–59%]	0.001
Attempted restoration of bowel continuity	29% [18–44%]	32% [20–47%]	37% [28–47%]	0.64
Successful restoration of bowel continuity	17% [9–29%]	19% [10–35%]	24% [17–31%]	0.59
Need for completion proctectomy	38% [29–49%]	41% [29–55%]	31% [26–36%]	0.18



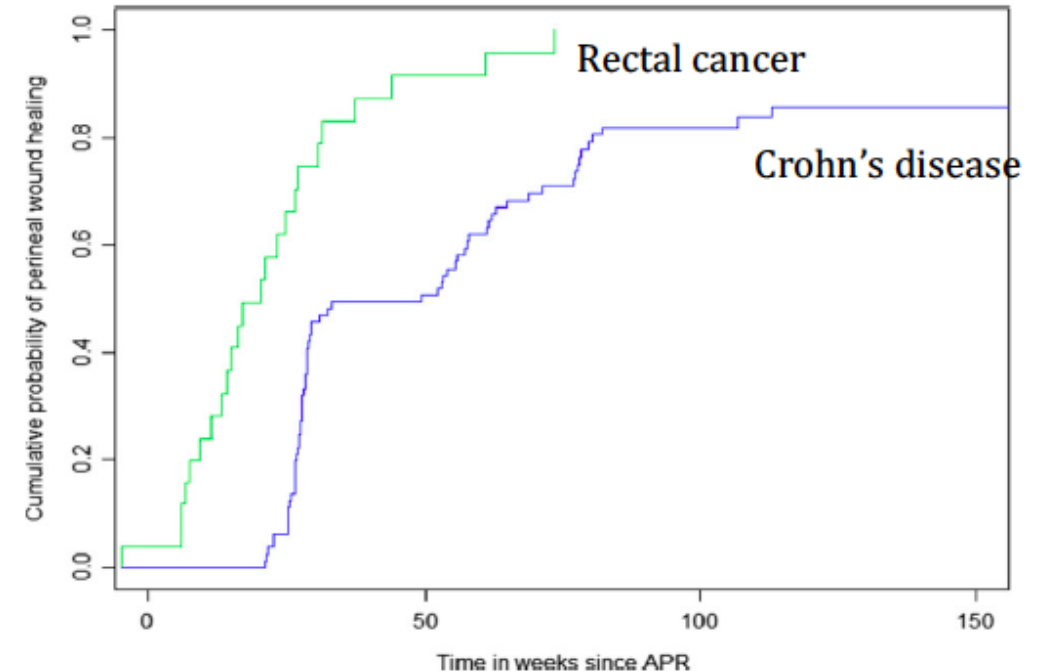
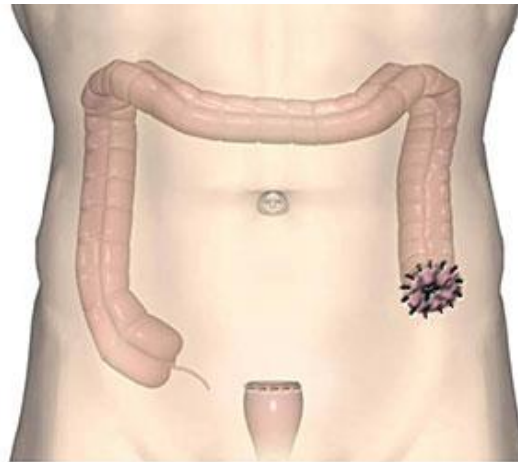
# Proctectomy for proctitis with perineal disease

- Complications up to 50% of patients
  - Persistent perineal sinus
  - Non healing perineal wound



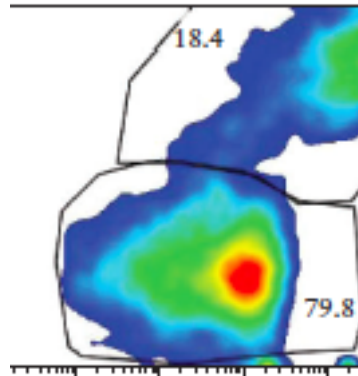
Staged operations:

- Low proctectomy
- Perineal proctectomy



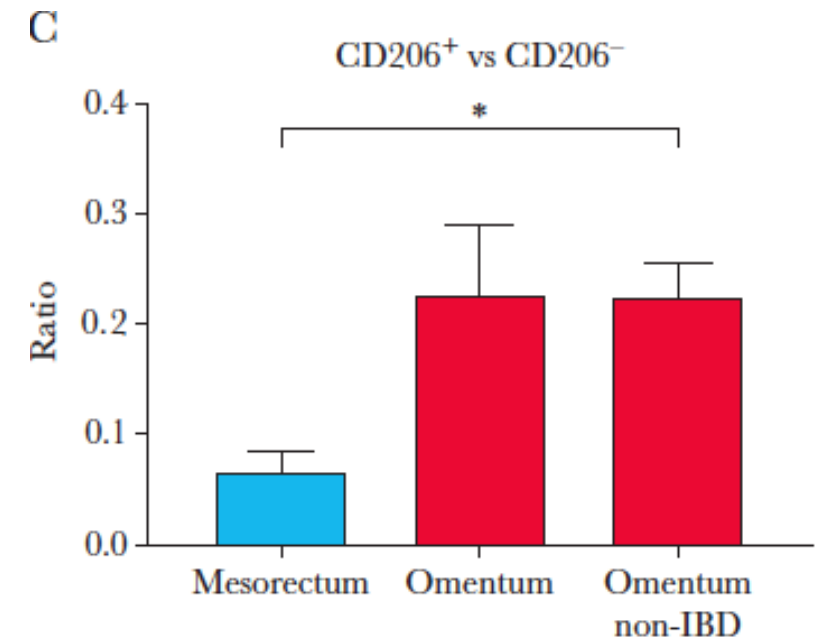
# Proctectomy in Crohn's disease

- Crohn's mesorectum contain a lot of proinflammatory macrophages.

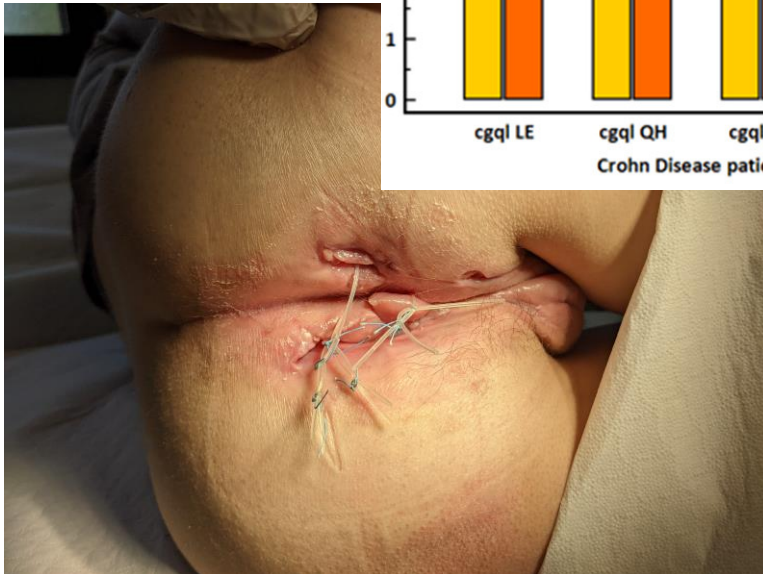
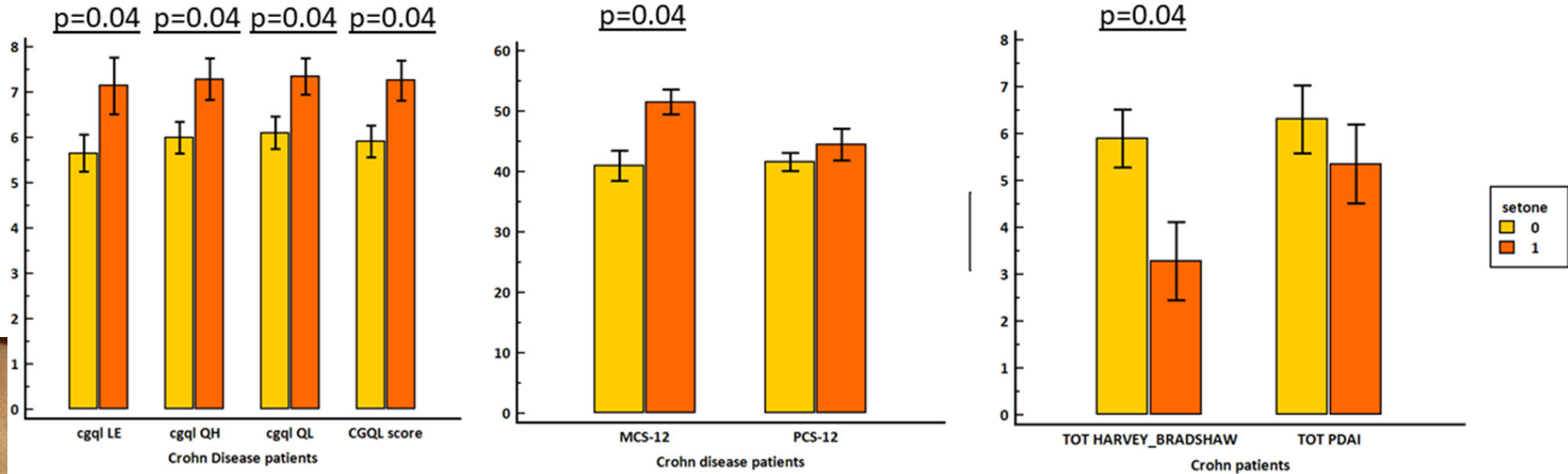


## Proctectomy in Crohn's disease

- Excision mesorectum (TEM)
- Omentoplasty
- Intersphincteric excision



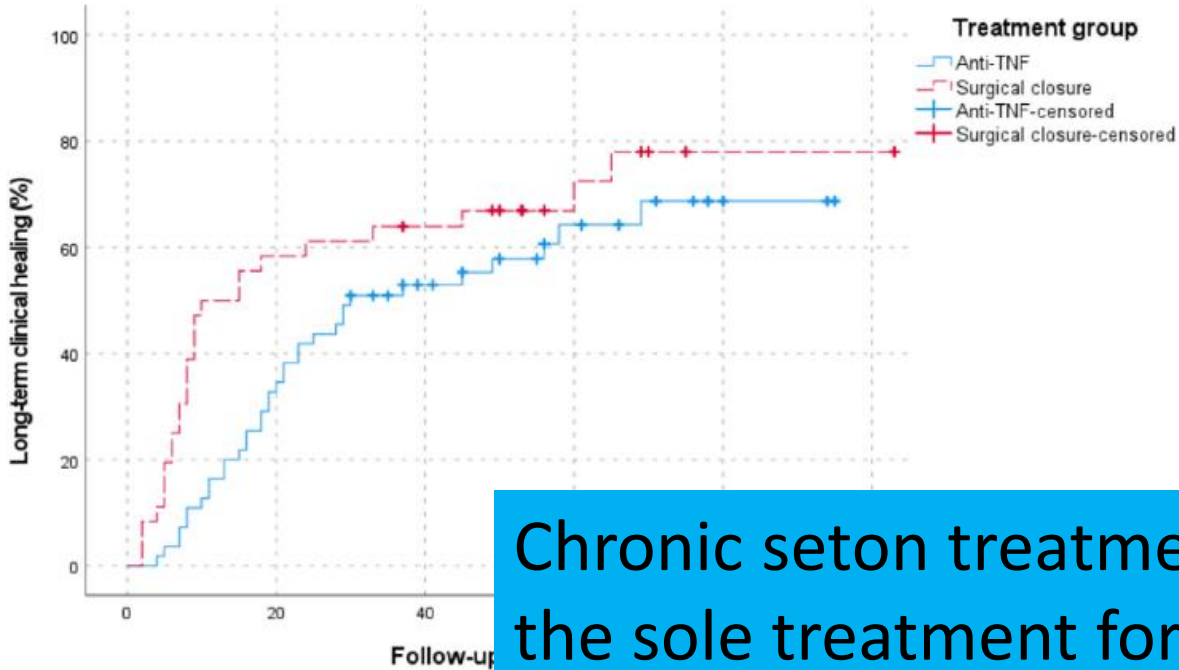
# Perineal Crohn's disease treatment, drainage seton



# Short-term anti-TNF therapy with surgical closure versus anti-TNF therapy alone for Crohn's perianal fistulas (PISA-II): long-term outcomes of an international, multicentre patient preference, randomised controlled trial

2023

Elise M. Meima - van Praag,<sup>a</sup> Marte A. J. Becker,<sup>b</sup> Kyra L. van Rijn,<sup>c</sup> Karin A. T. G. M. Wasmann,<sup>a</sup> Jaap Stoker,<sup>c</sup> Geert R. A. M. D'Haens,<sup>d</sup> Cyriel Y. Ponsioen,<sup>d</sup> Krisztina B. Gece,<sup>d</sup> Marcel G. W. Dijkgraaf,<sup>e</sup> Antonino Spinelli,<sup>f</sup> Silvio Danese,<sup>g</sup> Willem A. Bemelman,<sup>a,g</sup> and Christianne J. Buskens<sup>a,\*</sup>



Chronic seton treatment should not be recommended as the sole treatment for perianal Crohn's fistulas

	Short-term anti-TNF treatment + surgical closure (n = 36)	Anti-TNF (n = 55)
Follow-up, median years (IQR)	6.1 (4.8-7.4)	5.4 (4.3-6.8)
Age at inclusion, median years (IQR)	32 (26-51)	35 (26-46)
Female, n (%)	21 (58)	33 (60)
Male, n (%)	15 (42)	22 (40)
Active smoker at baseline, n (%)	12 (33)	16 (29)
BMI at baseline, median kg/m <sup>2</sup> (IQR)	24 (21-27)	23 (21-27)
Montreal disease location, n (%)		
- L1: Ileal	25 (69)	33 (60)
- L2: Colonic	6 (17)	8 (15)
- L3: Ileocolonic	5 (14)	14 (25)
- L4: Isolated upper disease	0 (0)	0 (0)
Previous anti-TNF treatment at baseline <sup>a</sup> , n (%)	15 (42)	20 (36)
Crohn's disease duration at baseline, median years (IQR)	3 (1-9)	5 (1-14)
Number of external openings at baseline, median (IQR)	1 (1-2)	1 (1-2)

IQR, interquartile range; BMI, Body Mass Index. <sup>a</sup>More than 6 months ago.

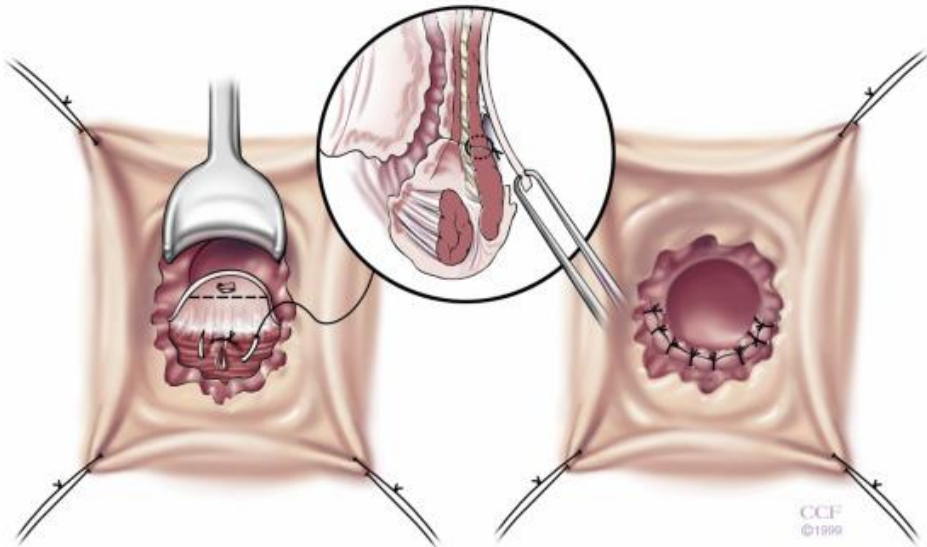
**Table 1: Baseline characteristics included patients.**

# Complex Perianal disease

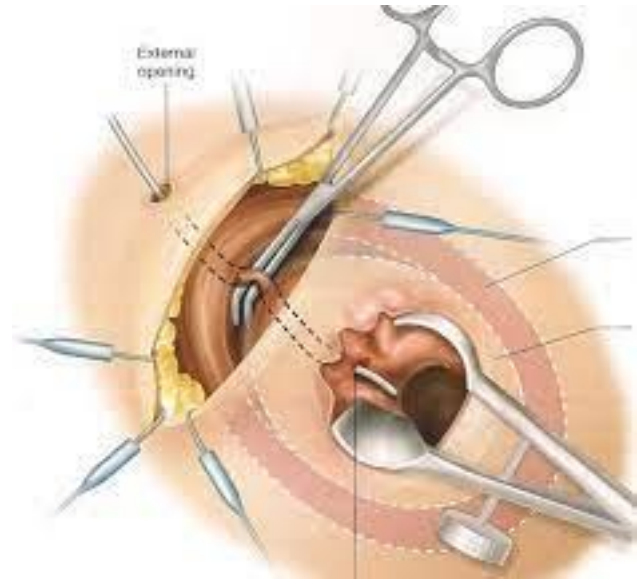
## SURGICAL REPAIR

**Rescue** → failed biosurgical therapy BUT *optimized mucosa*

Endorectal advancement FLAP

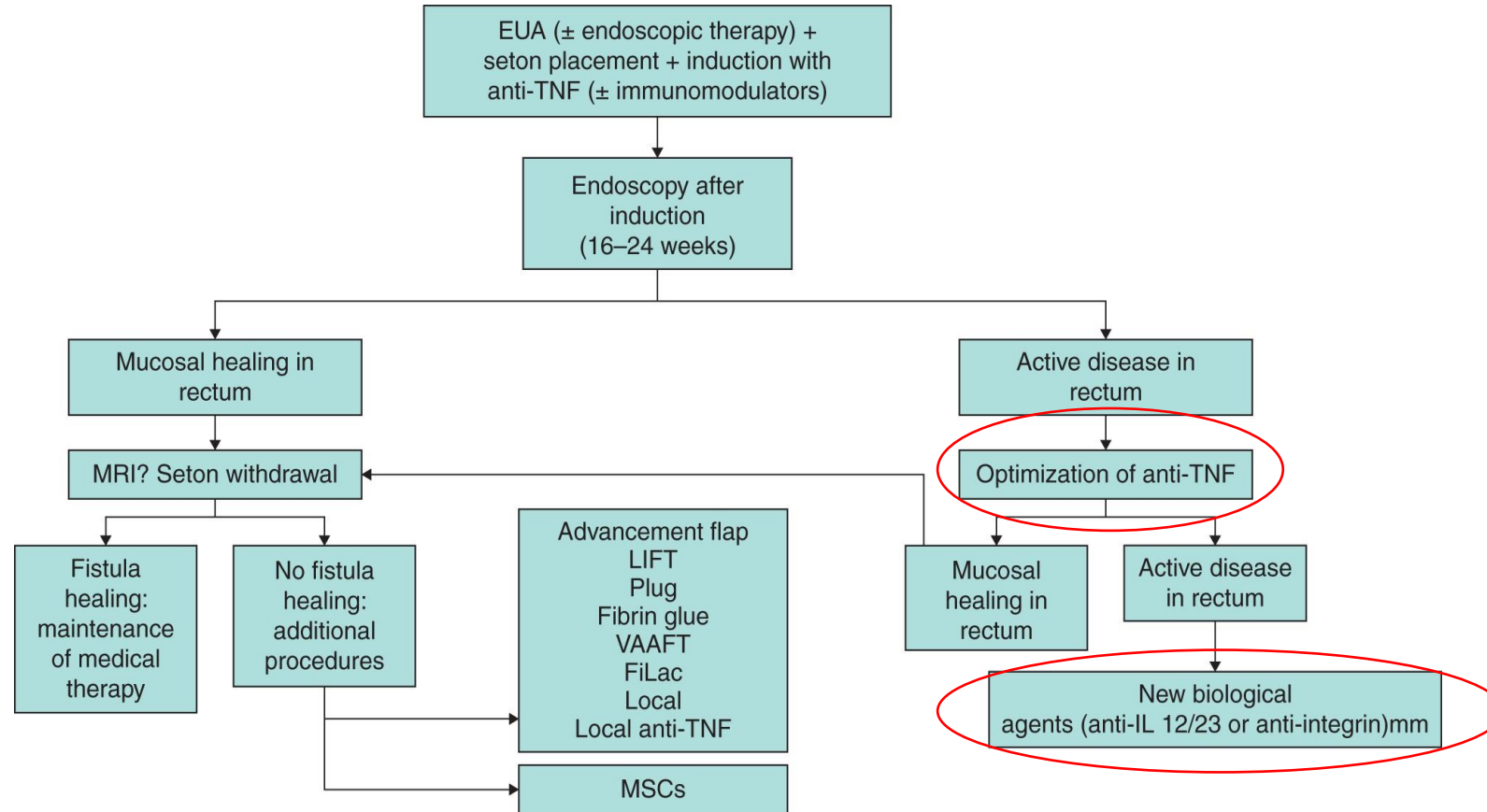


Lift technique



# Proposed algorithm for the treatment of perianal Crohn's disease

## EUA, examination under anaesthesia; TNF, ...





# Conclusions

- Surgical timing and patient optimization for surgery can make a difference
- There is no evidence that the surgical techniques can reduce recurrence rate
- Strictureplasty for multifocal jejunal-ileal diseases
- Bowel sparing in Crohn's colitis reduces the risk of permanent stoma
- Proactive surgical attitude in perianal disease can improve outcomes.

Thank you