

Anastomotic breakdown: can it be avoided?

Anastomotic leak = Significant risk of
mortality or major morbidity



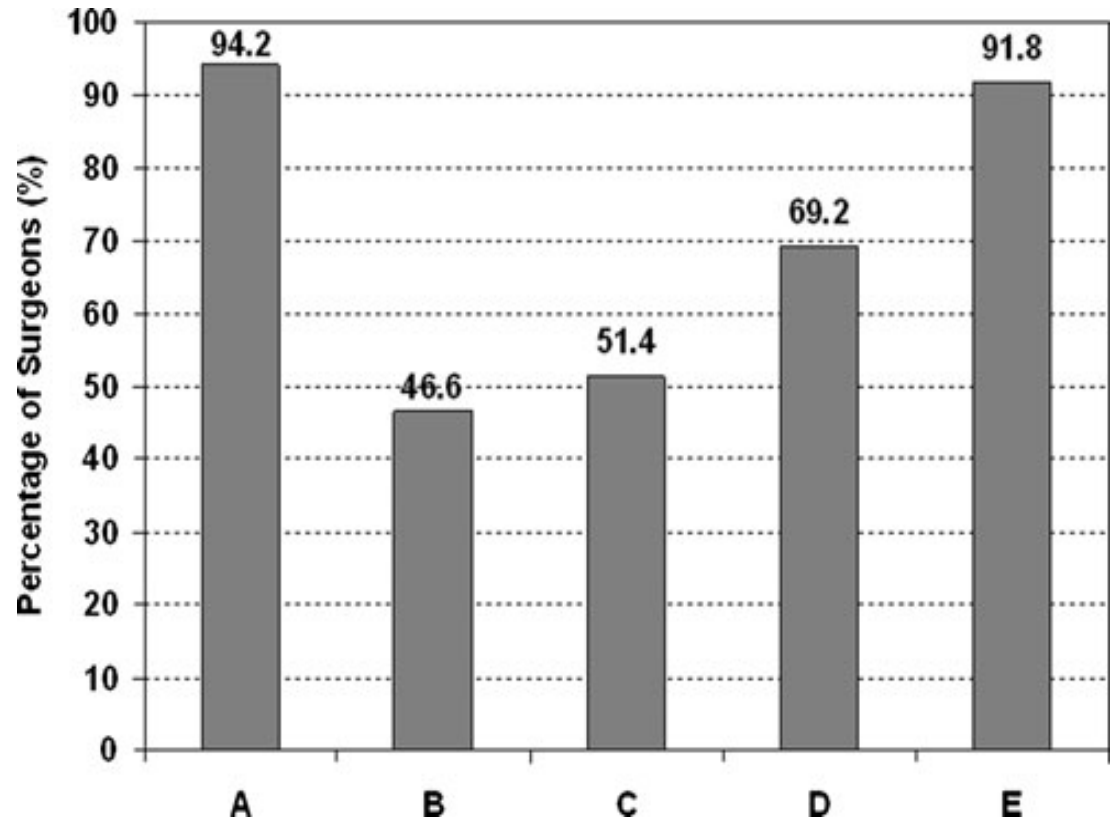
- Yes
- Do not do an anastomosis
- What causes anastomotic failure?
 - The surgeon
- How does the surgeon cause anastomotic failure
 - Error of technique
 - Error of judgement

Errors

- The only anastomoses that leak are those done by a surgeon
- Patients suffer the consequences
- Technique
 - Should never happen
- Judgement
 - Striking the balance

What is an anastomotic leak

- More than 20 published definitions



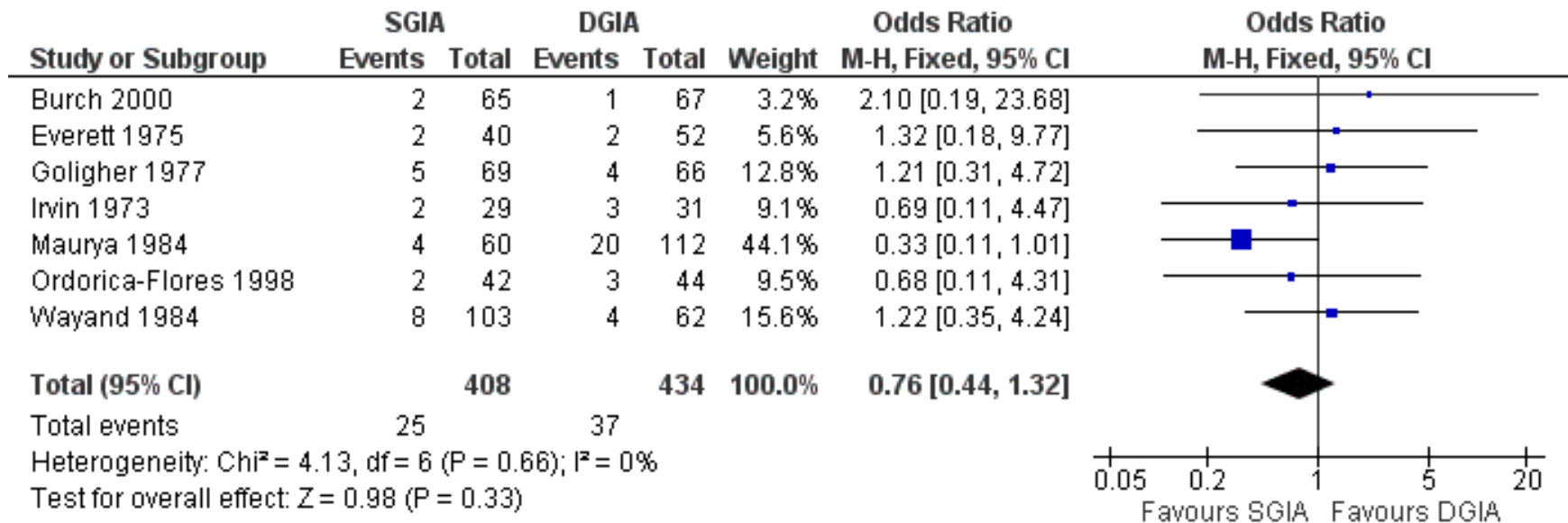
Adams & Papagrigoriadis
Int J Colorectal dis 2013

Contributors to leaks

- Tension
 - Poor blood supply
 - Sepsis
 - Contamination
 - Anastomotic technique
 - Hypotension
 - Too much fluid
 - Blood loss
 - Transfusions
 - Obesity
 - Drugs
 - Steroids
 - NSAIDS
 - Immunosuppression
 - Systemic disease
 - Diabetes
 - Vascular disease
 - Tumours
 - Dementia
 - Liver and renal disease
 - Emergency surgery
 - Etc
- Happiness is:
 - Mid rectal tumour
 - Nice long sigmoid colon
 - Or is it?
 - Where has that sigmoid been during the pre-operative radiotherapy?

Can we prevent leaks?

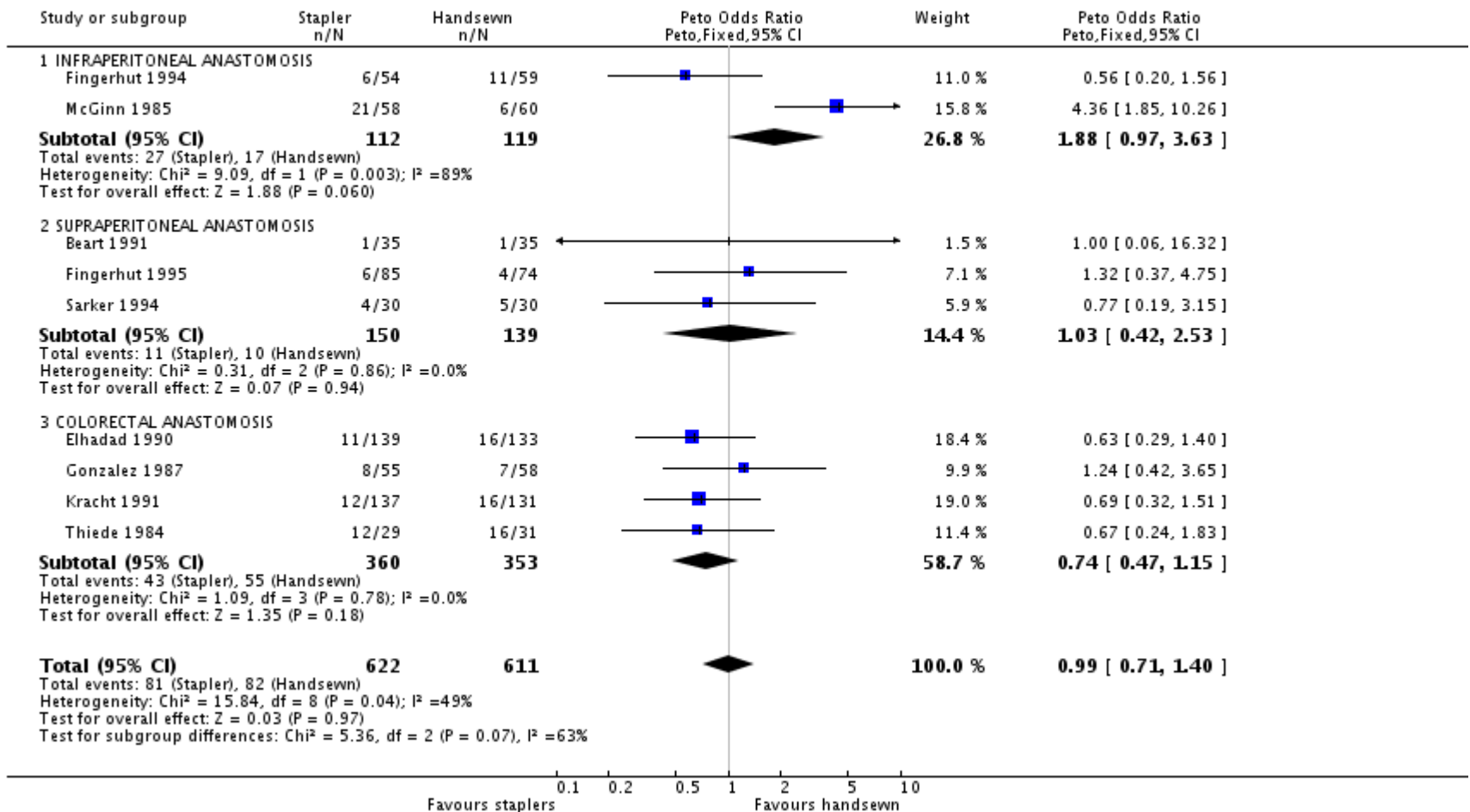
Single vs double layer



Can we prevent leaks

Stapled vs sutured

Review: Stapled versus handsewn methods for colorectal anastomosis surgery
 Comparison: 1 All studies
 Outcome: 2 overall dehiscence



Leak Testing

Anastomotic Leak Testing After Colorectal Resection

What Are the Data?

*Rocco Ricciardi, MD, MPH; Patricia L. Roberts, MD; Peter W. Marcello, MD;
Jason F. Hall, MD; Thomas E. Read, MD; David J. Schoetz, MD*

- 998 left sided colonic anastomosis
- Surgeon preference re leak testing
- 7.9% positive leak test 4.8% clinical leak

	Clinical Leak
Leak test-	3.8%
Leak test+	7.9%
No Leak test	8.1%
+ leak test repaired	12.2%

IV Fluid

Meta-analysis

Meta-analysis of standard, restrictive and supplemental fluid administration in colorectal surgery

N. N. Rahbari¹, J. B. Zimmermann², T. Schmidt¹, M. Koch¹, M. A. Weigand² and J. Weitz¹

Departments of ¹Surgery and ²Anaesthesiology, University of Heidelberg, Heidelberg, Germany

Correspondence to: J. Weitz, Department of Surgery, University of Heidelberg, Im Neuenheimer Feld 110, 69120 Heidelberg, Germany
(e-mail: nuh.rahbari@med.uni-heidelberg.de)

- Decreased overall morbidity
- No difference in mortality
- No difference in anastomotic leak rate

IV Fluids

Randomized clinical trial

Randomized clinical trial of fluid restriction in colorectal surgery

M. Abraham-Nordling¹, F. Hjern¹, J. Pollack¹, M. Prytz², T. Borg³ and U. Kressner¹

- 79 pts restricted fluids vs 81 normal fluids
- Overall complications significantly decreased
- More cardiac and renal dysfunction

	Restricted fluid	Standard fluid	P*
No. of patients with major surgical complication	4 (5)	12 (15)	0.063
No. of major surgical complications	5	15	
Anastomotic leakage ± reoperation	1	6	0.117
Peritonitis without leakage ± reoperation	1	1	1.000
Bleeding ± reoperation	0	2	0.497
Sepsis/shock	1	4	0.368
No. of patients with minor surgical complication	19 (24)	31 (38)	0.064
No. of minor surgical complications	22	37	0.061†
Periop. or postop. blood transfusion without reoperation	6	16	0.038
Wound infection, haematoma, dehiscence	10	11	1.000
No. of patients with organ-specific complications	17 (22)	24 (29)	0.282
No. of organ-specific complications	23	29	
Cognitive disorder	2	6	0.277
Cardiac complication	5	0	0.027
Pneumonia	0	1	1.000
Renal dysfunction	2	0	0.239
Urinary tract infection	3	8	0.211
Total no. of postoperative complications	50	81	
Total no. of patients with complications	31 (39)	47 (57)	0.027

British Journal of Surgery 2012; **99**: 186–191

NSAIDS

Original article

Risk of anastomotic leakage with non-steroidal anti-inflammatory drugs in colorectal surgery

K. J. Gorissen¹, D. Benning², T. Berghmans², M. G. Snoeijs³, M. N. Sosef¹, K. W. E. Hulsewe² and M. D. P. Luyer⁴

- Retrospective analysis of 795 pts
- NSAIDS group 13.2 vs non NSAIDS 7.6% leak rate

British Journal of Surgery 2012; **99**: 721 – 727

NSAIDS

- Nonsteroidal anti-inflammatory drugs and anastomotic dehiscence in bowel surgery : systematic review and meta-analysis of randomized, controlled trials
- 480 pts
- CONCLUSIONS: A statistically significant difference in incidence of anastomotic dehiscence was not demonstrated
- Felt studies may be underpowered and that further work was needed.

Perioperative Oxygen

Randomized clinical trial

BJS Research Bursary Winner

Randomized clinical trial to evaluate the effects of perioperative supplemental oxygen administration on the colorectal anastomosis

S. A. García-Botello¹, E. García-Granero¹, R. Lillo², F. López-Mozos¹, M. Millán¹ and S. Lledó¹

- **Conclusion: Perioperative administration of 80 per cent O² both during surgery and for 6 hours afterwards is associated with an improvement in relative anastomotic hypoperfusion as assessed by the measurement of pHi and *PCO2* gap.**

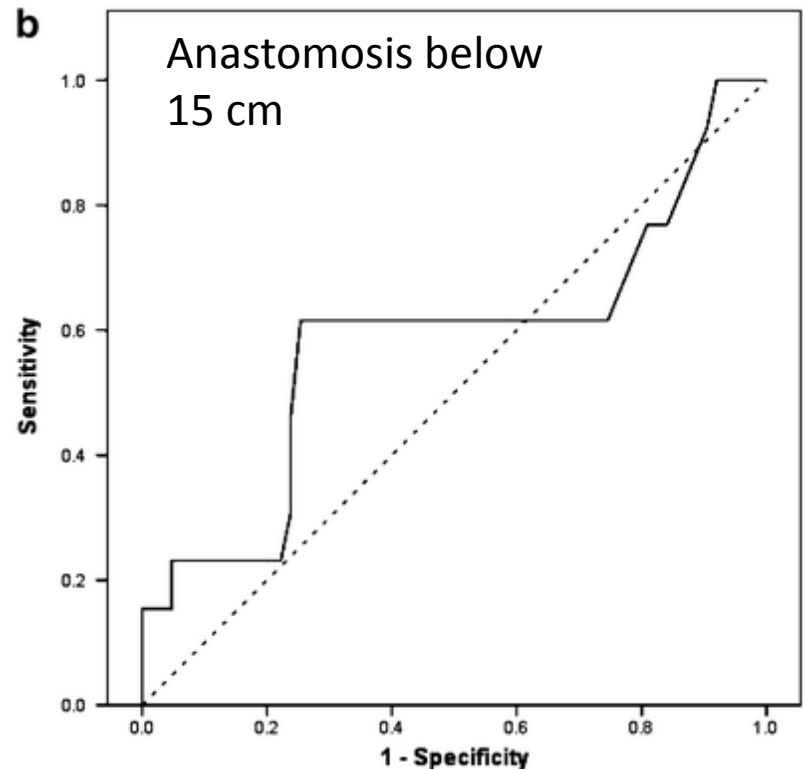
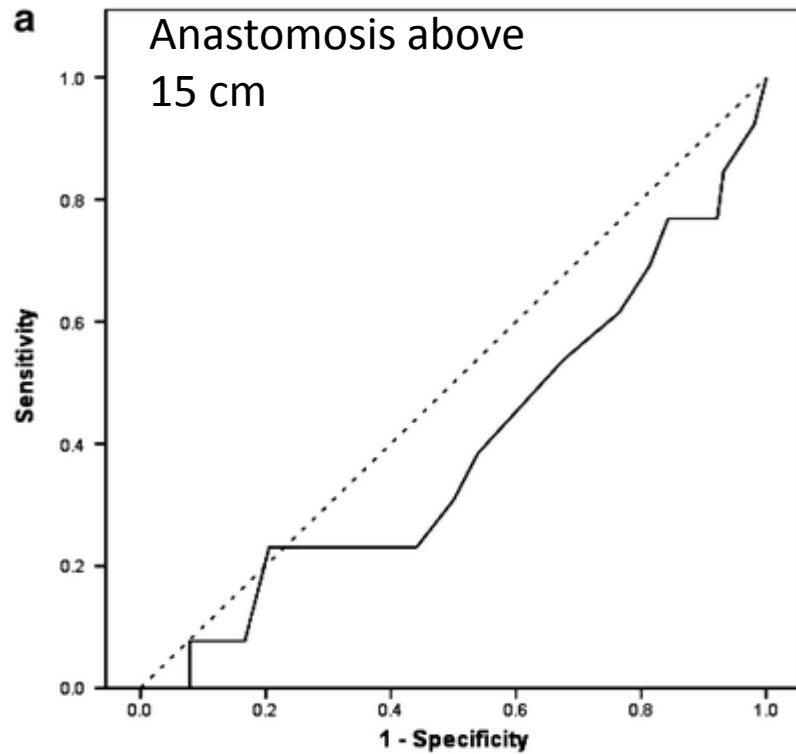
Role of a stoma

- Does not alter the leak rate
- Changes a life threatening complication into one that is far easier to manage
- Stomas complications are common
 - Before closure
 - From the closure event

Selection for defunctioning stoma

- Leak rate rises:
 - The closer anastomosis is to the anus
 - The greater the co-morbidity
 - In the presence of sepsis
- Can you predict who is likely to leak?

Can we predict leaks



Probability estimation of leak by surgeon

Surgeons ability to predict leaks

	High anastomosis	Low anastomosis
Sensitivity	38%	62%
Specificity	46%	52%



Policy at UCT Colorectal unit

- Diverting ileostomy for all coloanal and ileoanal anastomoses
- Selective diversion for anastomoses higher up the GI tract
- No anastomosis in sick patients
 - Concern about patient able to withstand a leak
 - Generalised sepsis
 - On inotropes

Typical problem case

- 75 year old
 - Mid rectal resectable tumour
 - Pre-operative chemoradiotherapy
 - Overweight, Diabetic, Hypertensive
 - Borderline renal impairment
-
- Potential high leak rate
 - Limited reserve
 - Surely needs to be defunctioned?

- Problem:
- No leak
 - Cannot concentrate urine adequately
 - Constant dehydration post-operatively
- Leak
 - It may be months before stoma can be closed if ever
- So permanent end colostomy?
 - APR
 - Very low Hartmann's
 - Problem of disruption of rectal stump

Conclusion

- We cannot prevent leaks
- We can reduce the chance of a leak
- We can mitigate the effect of a leak
- Be aware that leaks are caused by surgeons and suffered by patients