



Internal hernia

Diagnose and treatment

IFSO Melbourne 2024

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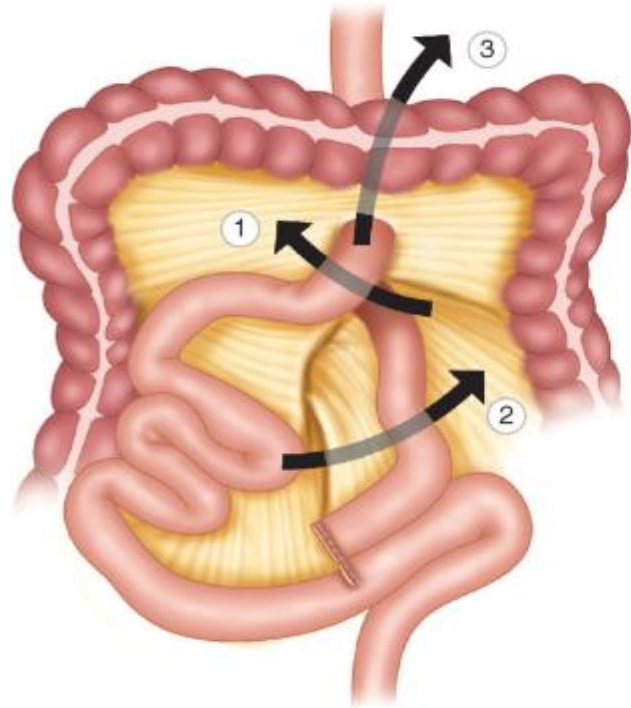
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No potential conflict of interest to report

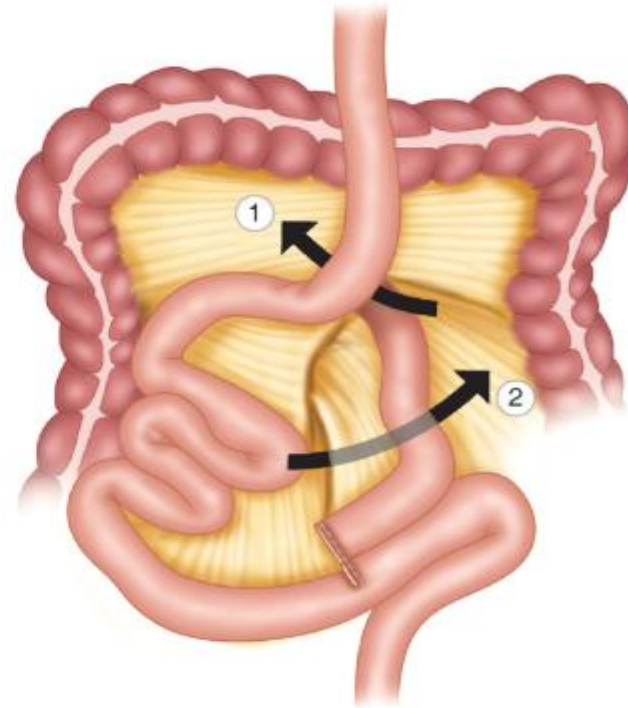
Retrocolic RYGB – Three mesenteric defects

Antecolic RYGB – Two mesenteric defects

OAGB – One mesenteric defect



Retrocolic



Antecolic

Background

- Internal hernia in mesenteric defects has been known for years
- Relatively uncommon after open gastric bypass
- Laparoscopic technique resulted in less postoperative adhesions and a massive increase of bowel obstruction due to internal hernias

Incidence

Data from SOReg

Surgical technique	Bowel obstruction <30 days			Bowel obstruction 30 days – 5 years		
	Internal hernia	Kinking	other	JJ-anasomosis	Petersen	Other
Laparotomy (open surgery)	0.14%	0.14%	0.29%	0.24%	0.24%	0.98%
Laparoscopy (mesenteric defects not closed)	0.18%	0.12%	0.28%	6.0%	2.4%	2.1%

Scandinavian Obesity Surgery Registry (SOReg)
98% of all bariatric surgery in Sweden since 2007
>50,000 bypass operations

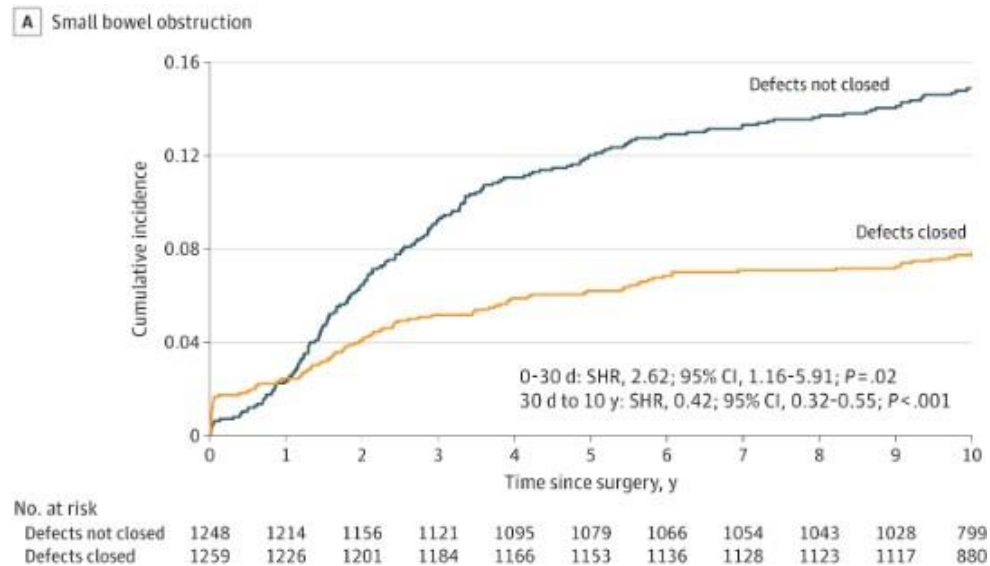
Herniated small bowel – clinical appearance

Herniation can be constant or intermittent

- No symptoms
- Abdominal discomfort
- Postprandial pain
- Pain constant or intermittent
- Bowel obstruction – reduction of bowel repair of mesenteric defect
- Ischemic small bowel – bowel resection repair of mesenteric defect
- Short bowel syndrom – after bowel resection
- Death

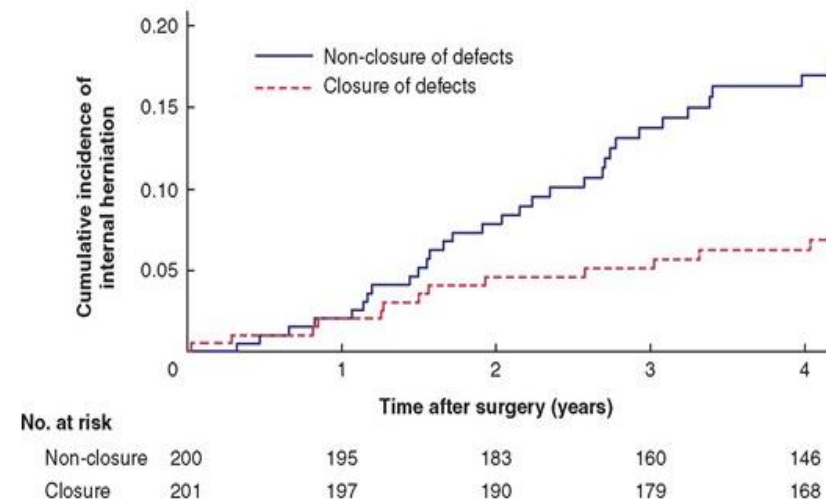
Treatment of internal herniation – prevention

- RCT 10 year follow-up
- Closing technique: suture



Stenberg, Ottosson, Magnusson et al. *JAMA Surg* 2023;158(7):709-717

- RCT 5 year follow-up
- Closing technique: clips



Kristensen, Gormsem, Naver et al. *Br J Surg*. 2021;108(2):145-151

Did closing of mesenteric defects help?

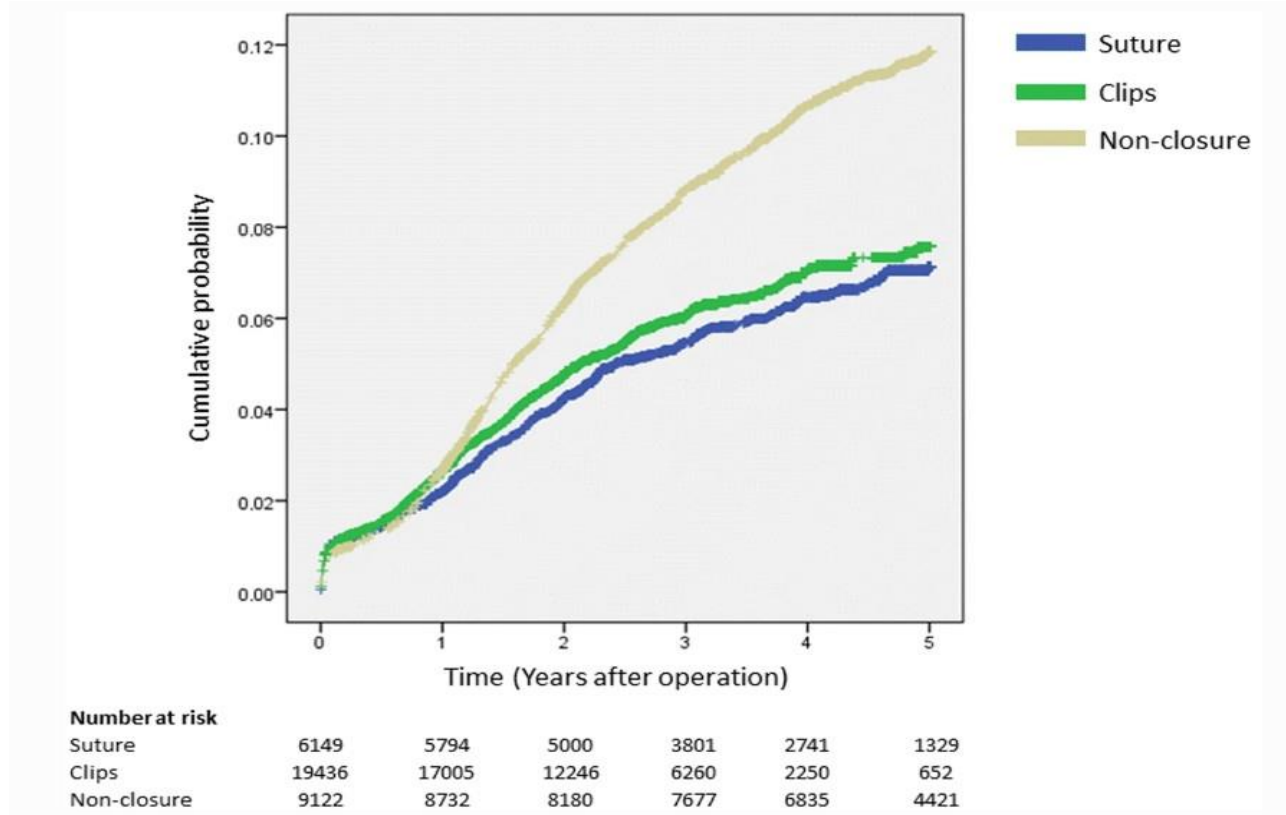
Data from SOReg

Surgical technique	Bowel obstruction <30 days		
	Internal hernia	Kinking	other
Mesenteric defects NOT closed (N=5267)	0.18%	0.12%	0.28%
Mesenteric defects closed (N=17539)	0.22%	0.57%	0.32%

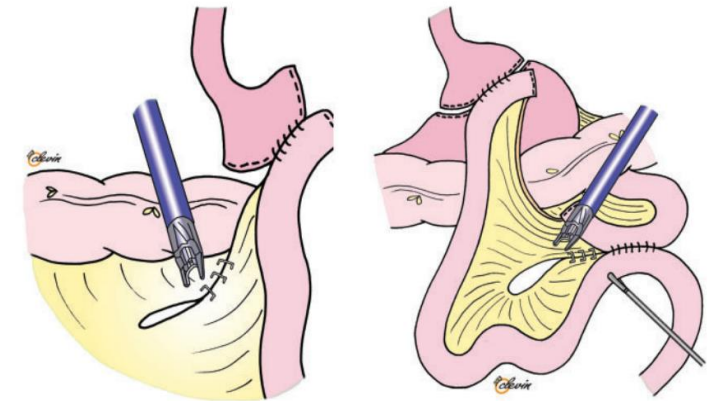
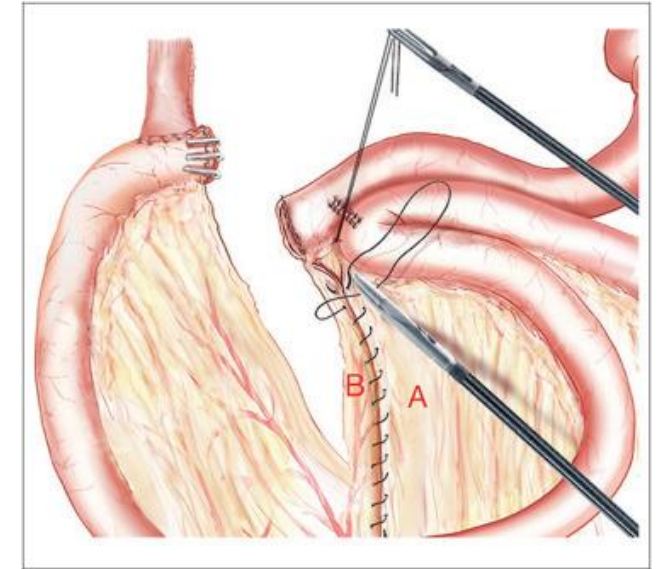


Closing technique

Suture or clips?

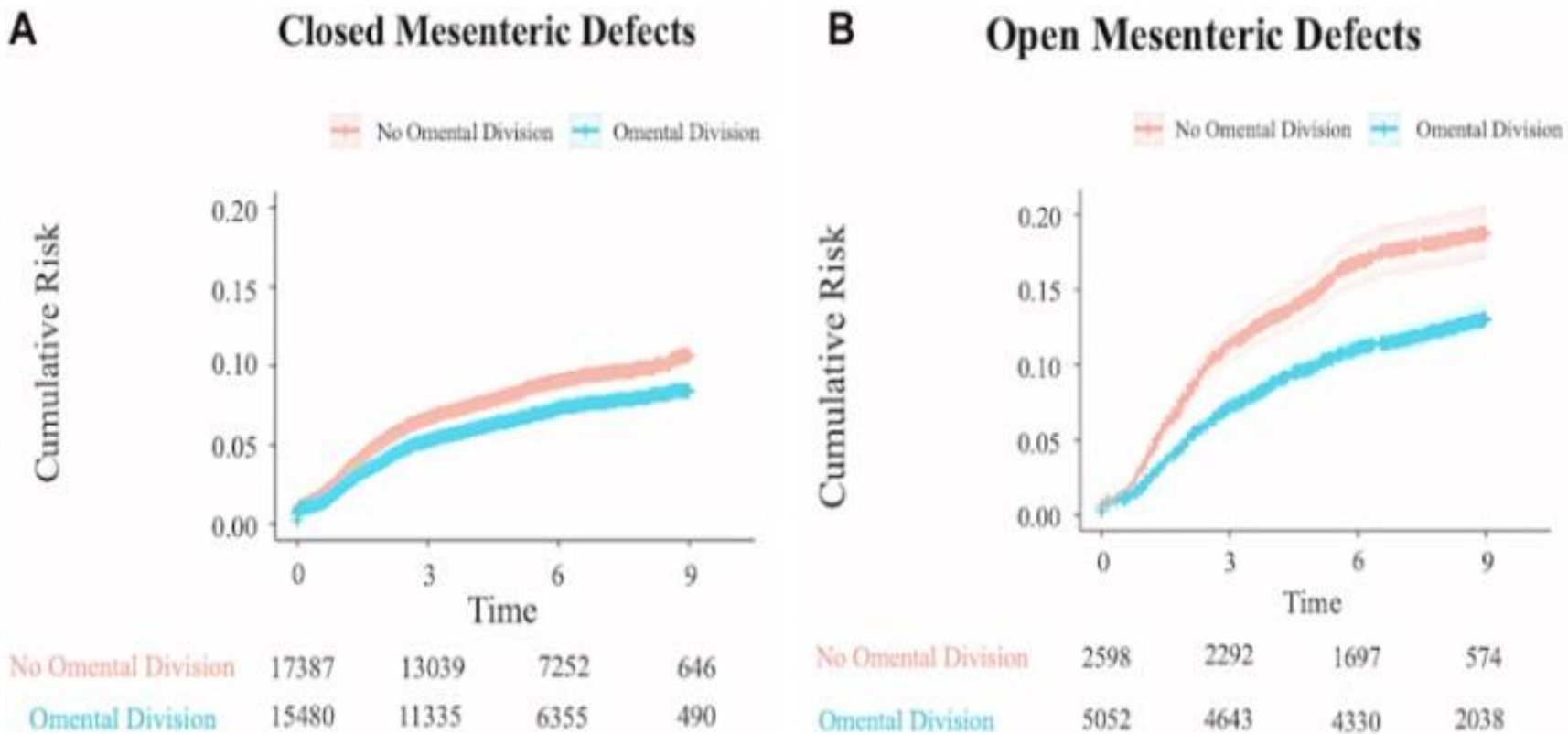


Stenberg, Ottosson, Szabo, Näslund. Obes Surg. 2019;29(4):1229-1235



Omental devision

Worth caring about?



Josefsson, Ottosson, Näslund et al. Surg Obes Rel Dis. 2023;19(3):178-183

Treatment –

Bowel obstruction

Pain

Asymptomatic

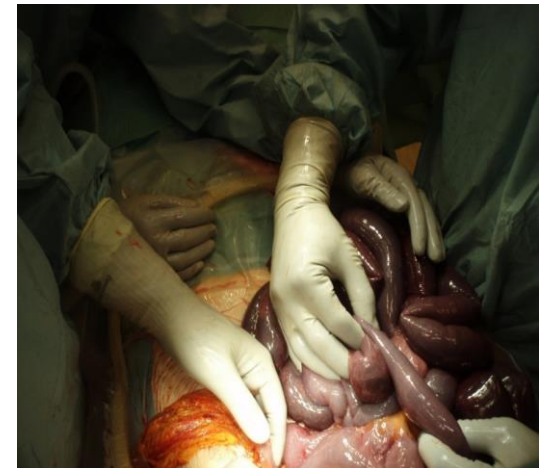
- Bowel obstruction – surgery reposition and closure of mesenteric defect bowel resection as needed
- Open mesenteric defects and abdominal pain – closure of mesenteric defects – sounds reasonable
- Open mesenteric defects no symptoms – ?

Severe morbidity

Bowel resection and short bowel

- Study population: 57255 Gastric bypass
- 6.3% (3659/57255) had an operation for bowel obstruction
- 0.32% (188/57255) had bowel resection
- 0.012% (7/57255) had short bowel (<1.5 m small bowel)

Edholm, Olsson, Andersson et al. SOARD 362-366 Vol 20:4 2024



Mortality (data from SOReg)

All cause mortality 100% follow-up

	Bowel obstruction	Numbers	% mortality
30-day mortality	Yes	7/781	0.90%
30-day mortality	No	15/70945	0.021%

	Bowel obstruction	Numbers	% mortality
5-year mortality	Yes	170/3467	4.9%
5-year mortality	No	2765/54148	5.1%

Conclusion

- Internal herniation is a significant problem in bypass surgery
- Internal herniation cause abdominal pain and bowel obstruction
- Does not increase long term mortality
- 50% can be prevented by closing defects at primary surgery
- There is a need for better technique of closing the mesenteric defects