Closure of mesenteric defects in two layers reduces chance of reopening after laparoscopic Roux-en-Y gastric bypass surgery

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Rationale

- Internal herniation (IH) is a common problem after laparoscopic Roux-en-Y gastric bypass surgery (RYGB).
- Routine closure of the mesenteric defects (MDs) reduces the risk of IH.
- A previous study showed that closure with staples reduced chance of IH at 5 years from 11.7% → 2.5% [1]
- A description of optimal technique for closure with staples is lacking

Objective

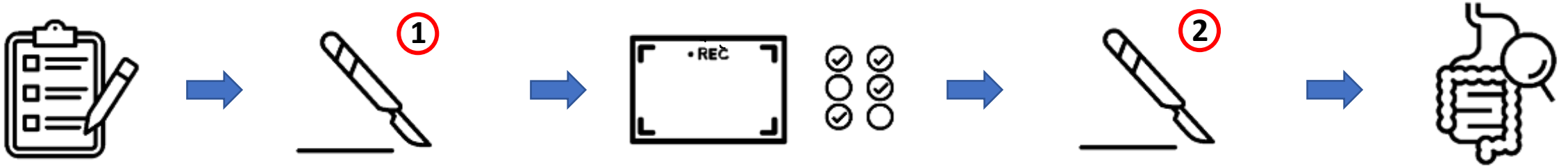
- To determine optimal stapling method for closure of MDs after RYGB.

1: Aghajani E, Nergaard BJ, Leifson BG, Hedenbro J, Gislason H. The mesenteric defects in laparoscopic Roux-en-Y gastric bypass: 5 years follow-up of non-closure versus closure using the stapler technique. Surg Endosc. 2017 Sep 1;31(9):3743–8.

Methods

- **Inclusion criteria**
  - Age ≥ 18
  - RYGB between April 2019 – January 2022
  - Recorded surgery
  - Closure of Petersen's space (PS) and/or defect at the jejuno-jejunostomy (JJS) with staples
- **Exclusion criteria**
  - MD closure with other materials than staples
  - Laparotomy or conversion to laparotomy

Methods



Determine criteria for scoring the quality of closure

Identify all patients with recorded RYGB

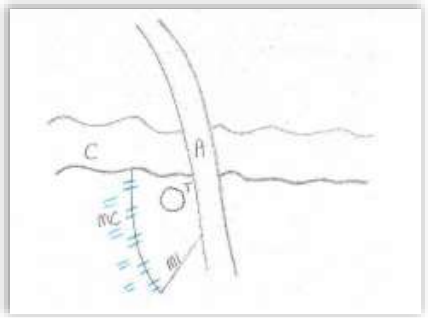
Score quality of MD closure for both PS and JJS

Identify patients that underwent a reoperation

Check status of the MDs

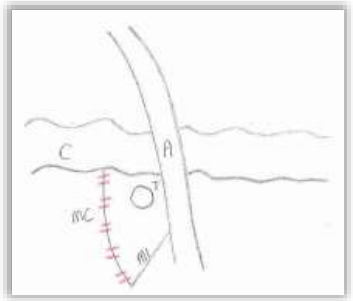
Criteria for closure of Petersen's space (PS)

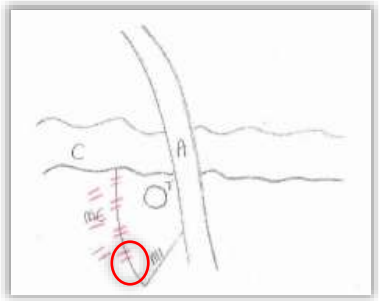
- **Optimal:**
  - two complete rows of staples ***AND*** good identification of transverse mesocolon, meso-ileum and retroperitoneum ***AND*** closure is along Treitz's ligament.



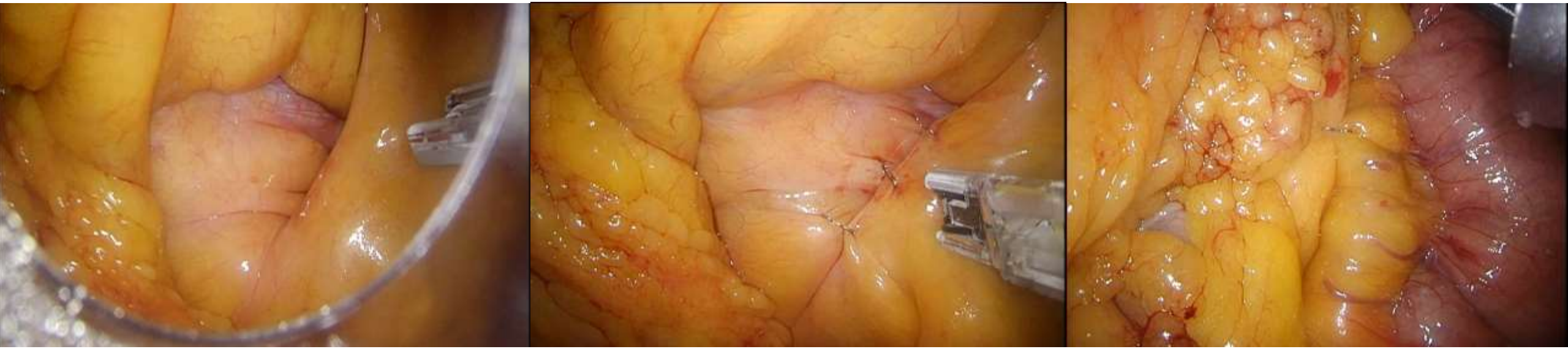
- **Sub-optimal**
  - two rows of staples ***AND*** a small space or cavity is left behind ***OR*** no good identification of transverse mesocolon, meso-ileum and retroperitoneum ***OR*** closure not along Treitz's ligament ***OR*** an incomplete second row of staples.

- **Poor**
  - One row of staples ***OR*** a grand space or cavity is left behind (this can be because the deepest point is not included, or because closure started too far from Treitz).





Optimal closure of Petersen’s space (PS)



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Results

- **Eligibility**
- 665 PS's and 654 JJS's were eligible for analysis
- **Baseline**
- 38 patients (5.7%) underwent a form of reoperation during follow-up

Table 1: Types of reoperation

	N=38
Cholecystectomy (n, %)	21 (55.3)
DLS due to suspicion of IH (n, %)	13 (34.2)
Revision of gastro-enterostomy (n, %)	3 (7.9)
Laparoscopically assisted ERCP (n, %)	1 (2.6)

Results

Table 2: Univariable and multivariable regression analyses for the influence of the quality of mesenteric defect closure and BMI on not having an open ***Petersen's space*** during reoperation

	Univariable analysis					Multivariable analysis			
Characteristic	**N**	**OR**	**95%CI**		***p***	**OR**	**95%CI**		***p***
Score	38								
I	11	Ref							
II	13	3.857	0.588	25.292	*0.159*				
III	14	8.100	1.233	53.200	***0.029***				
Score	38								
Poor (I)	11	Ref				Ref			
Not poor (II-III)	25	5.625	1.017	31.097	***0.048***	5.798	0.897	37.470	*0.065*
Score	38								
Not optimal (I-II)	24	Ref							
Optimal (III)	14	3.600	0.902	14.367	*0.070*				
BMI at screening	38	1.190	0.986	1.438	*0.070*	1.220	0.968	1.537	*0.092*

Abbreviations: N=number, OR= odds ratio, CI= confidence interval, BMI= Body mass index

Table 3: Univariable regression analysis for the influence of the quality of mesenteric defect closure on not having an open ***JJ-space*** during reoperation

	Univariable analysis				
Characteristic	**N**	**OR**	**95%CI**		***p***
Score	37				
I	14	Ref			
II	23	3.562	0.786	16.142	*0.099*

Conclusion

- A significant beneficial effect of optimal closure of PS versus poor closure was found.
- Optimal closure of JJS appears to be beneficial, but the difference was not statistically significant (yet)
- Our recommendation for all bariatric surgeons who use a stapling device for the closure of MDs would be to close the MDs in two complete layers. For PS specifically, identify the lowest part of both mesenteric planes in relation to the retroperitoneum and Treitz ligament.

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