Early Career Fundamentals: Gastric Bypass

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Disclosures

- Ethicon Endosurgery
- Director of MIS and Bariatric Surgery - Fresno Heart and Surgical Hospital
- Chair of Metabolic and Bariatric Services - CHS
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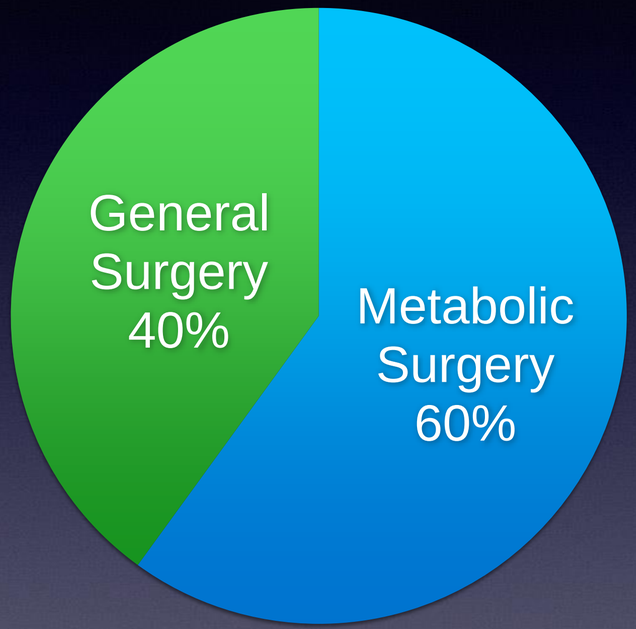
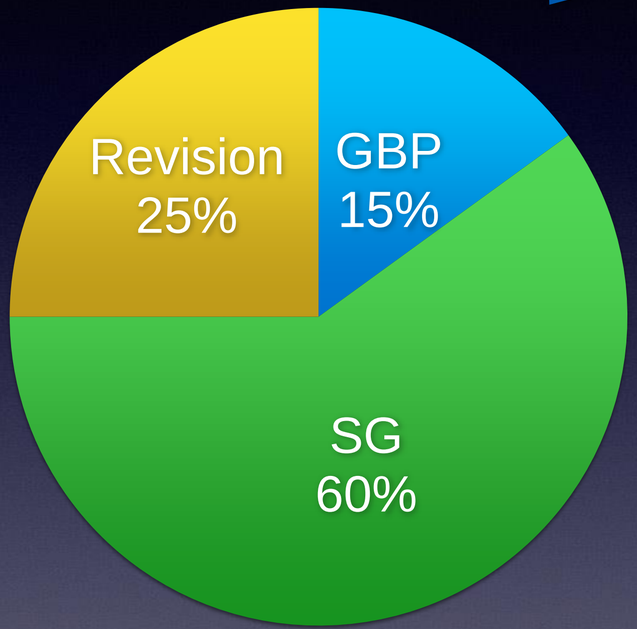
2023

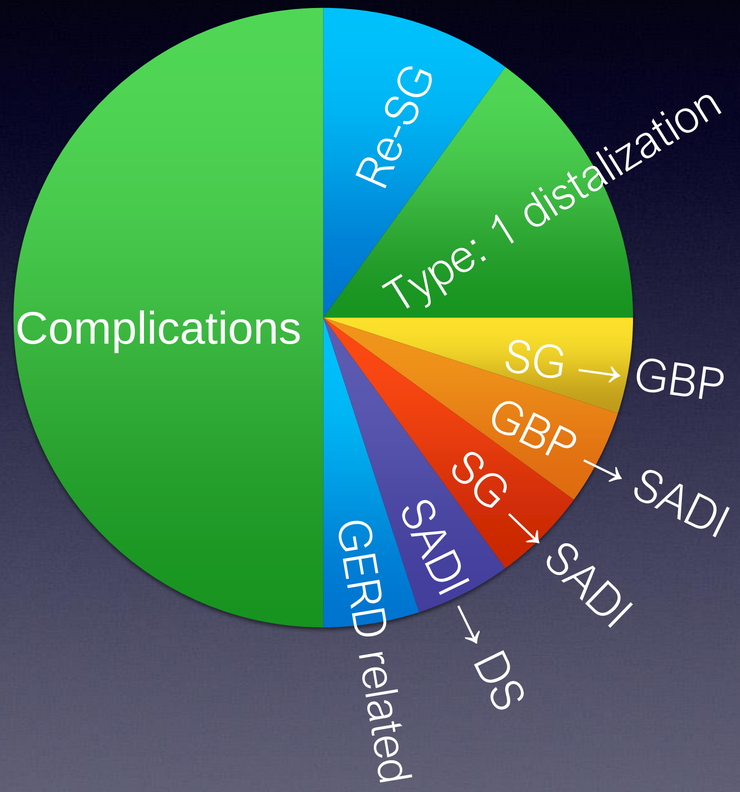
Practice



Metabolic Surgery



Revision Surgery



LOW ACC
LOW PR

CURANCY
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Nov

er Surgeon

UCSF
Fresno Medical Education Program

Unskilled and Unaware of It:
How Difficulties in Recognizing One's Own Incompetence Lead to Inflated Self-Assessments

Justin Kruger and David Dunning Cornell University

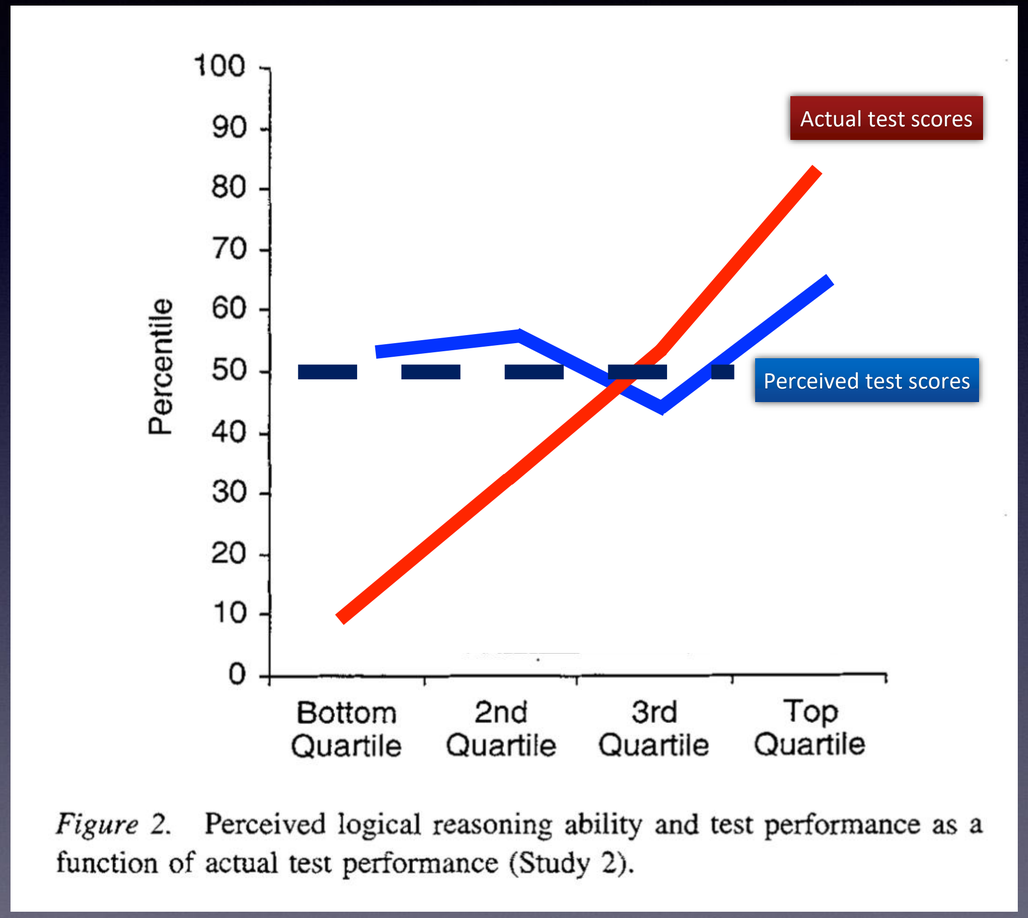
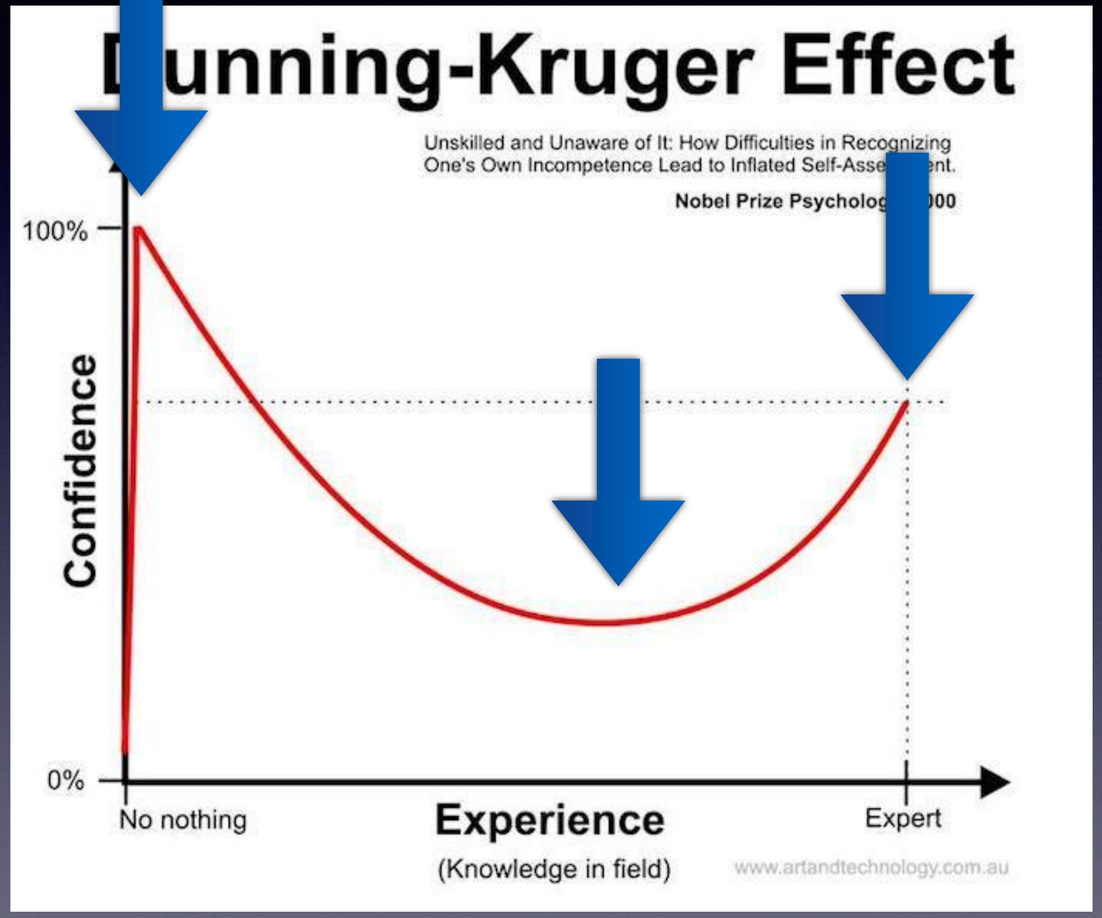


Figure 2. Perceived logical reasoning ability and test performance as a function of actual test performance (Study 2).

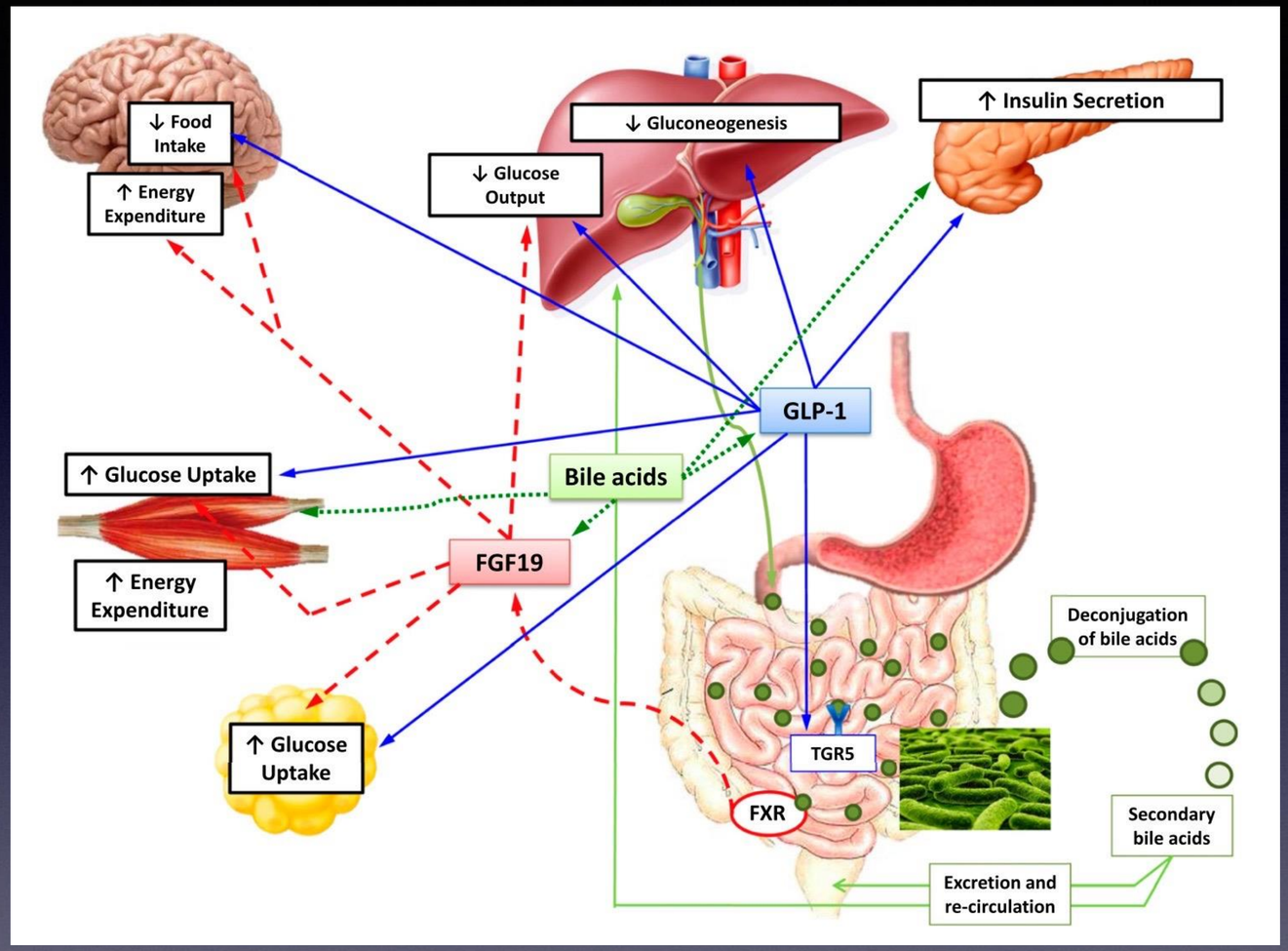


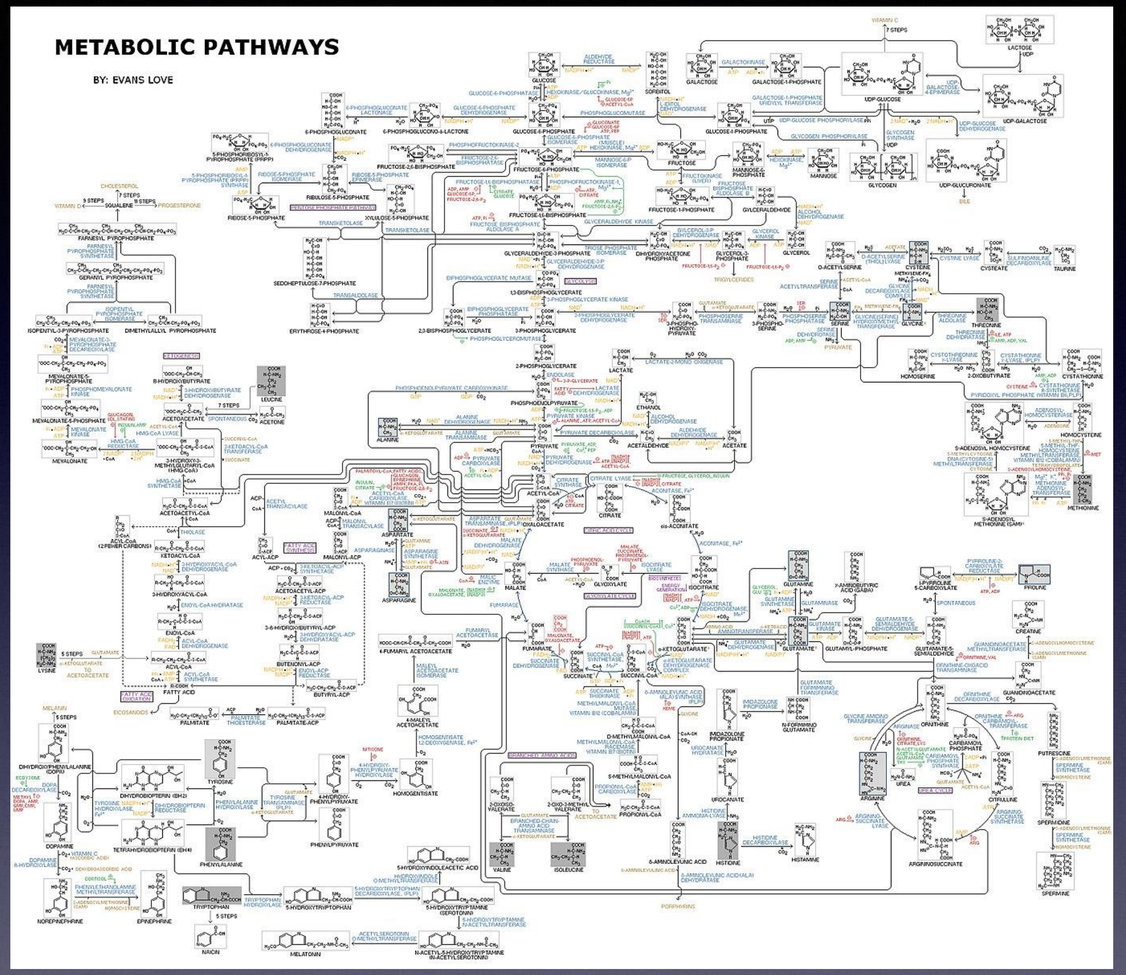
What is the optimal gastric bypass anatomy?

IDK

Restriction vs Malabsorption

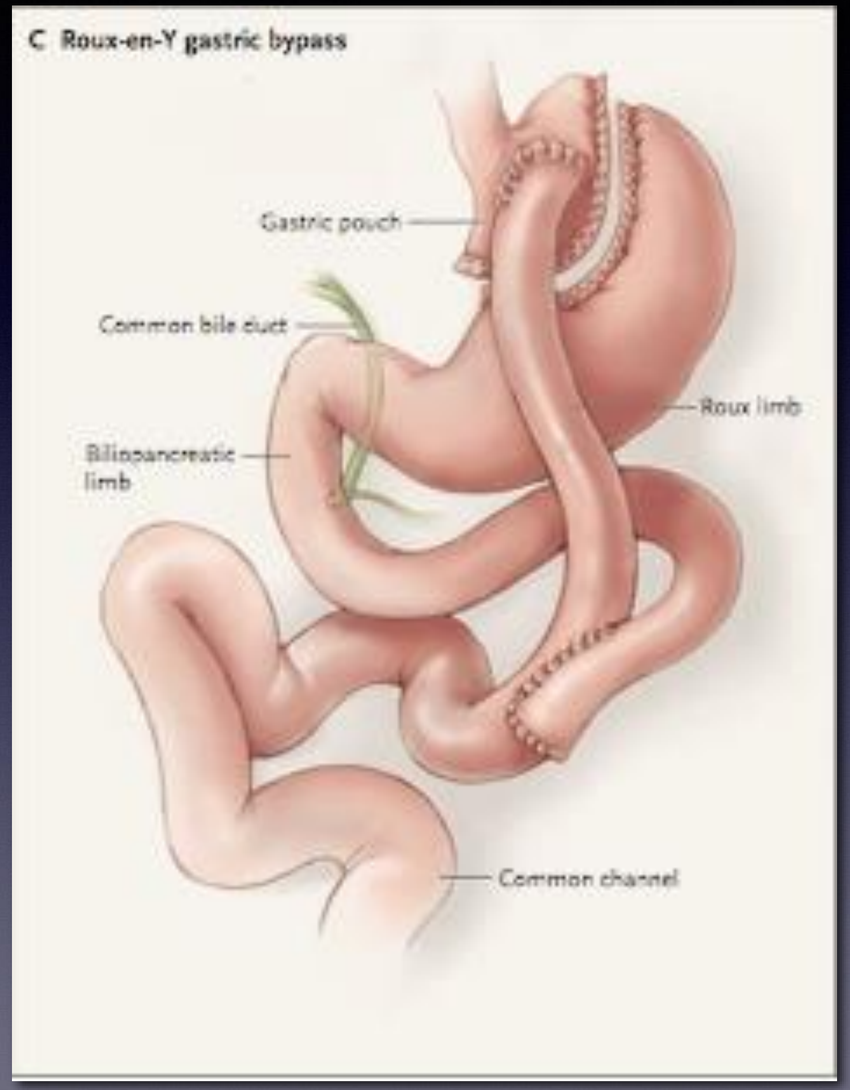
Pathophysiology





Anatomic Considerations

Pouch	Size Shape Banded
G-J anastomosis	Circular Linear Cutter Hand-sewn
Limbs	BP Roux Common Channel



Importance of pouch size in laparoscopic Roux-en-Y gastric bypass: a cohort study of 14,168 patients

Ehdolm, et al: Surg Endosc (2016) 30:2011–2015

- 14,168 LRYGB patients from the Scandinavian Obesity Surgery Registry
- Mean length of stapler used for the pouch was 145 mm.
- At 1 year, symptomatic marginal ulcers were noted in 0.9 % of the patients.
- Each extra centimeter increases the relative risk of marginal ulcers by 14 %.
- A smaller pouch reduces the risk of marginal ulcers, but does not predict better weight loss at 1 year.

Anastomotic Technique

OBES SURG (2015) 25:1796–1801
DOI 10.1007/s11695-015-1638-2

ORIGINAL CONTRIBUTIONS

Stapling Versus Hand Suture for Gastroenteric Anastomosis in Roux-en-Y Gastric Bypass: a Randomized Clinical Trial

I. Abellán · V. López · J. Lujan · J. Abrisqueta · Q. Hernández · M. D. Frutos · P. Parrilla

Published online: 28 March 2015

Abstract
Background Different anastomotic techniques have been evaluated during a laparoscopic Roux-en-Y gastric bypass (RYGB); however, no techniques have proven to be better than any other regarding complications and the percentage of weight loss (excess weight loss (%EWL)), and there are few controlled prospective studies to compare them.
Methods A randomized, prospective study was conducted in 238 patients undergoing RYGB for morbid obesity between July 2008 and September 2012 to compare the early and late postoperative complications between the two surgical techniques: gastrojejunal hand-sutured anastomosis (HSA) and circular-stapled anastomosis (CSA). Minimum follow-up was 24 months.
Results The two groups of patients were similar for demographic data and preoperative comorbidities. There were no significant differences between the surgical techniques regarding %EWL at 3, 12, and 24 months. The patients with CSA had a greater frequency of postoperative gastrointestinal bleeding (GIB) (4.2 vs. 0 %, p=0.024) and surgical wound infection (11.1 vs. 3.4 %, p=0.025) than the patients with HSA, with no significant differences in the other early complications. There were no significant differences in either group for late complications (gastrojejunal anastomosis (GJA) stricture, marginal ulcer, GJA perforation, bowel obstruction, and eventration). No significant differences were observed in operative time, rate of reoperation and postoperative length of hospital stay.
Conclusions HSA and CSA were techniques with similar safety and effectiveness in our study. HSA had a lower rate of bleeding complications and surgical wound infection, although it does require greater experience in laparoscopic hand suturing.

Keywords Roux en Y gastric bypass · Gastrojejunal anastomosis · Hand sewn anastomosis · Circular stapled anastomosis · Total weight lost

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Introduction

Laparoscopic Roux-en-Y gastric bypass is considered the gold standard surgical treatment for obesity, with percentages of excess weight loss (%EWL) of 70–80 % [1]. One of the stages of RYGB is the gastrojejunal anastomosis (GJA), which depends on the experience of the surgeon and is a source of complications, some of them serious: anastomotic leak, stricture, bleeding, and development of a marginal ulcer. Different techniques have been described for performing the GJA. The three most commonly used techniques are hand-sutured anastomosis (HSA), lineal-stapled anastomosis (LSA), and circular-stapled anastomosis (CSA) [2–4]. In 2008, a review showed that American bariatric surgeons performed 43 % CSA, 41 % LSA, and 21 % HSA [5]. There is currently no consensus on the technique of choice, as most of the series published [6, 7] conclude that all three techniques are safe for performing GJA in RYGB and there are no significant differences regarding the number of complications. However, these studies are limited by the fact that most centers specialized in bariatric surgery use just one type of GJA. Moreover, the studies comparing different GJA techniques are retrospective, with a disparate number of patients in each group and, in most cases, limited follow-up.

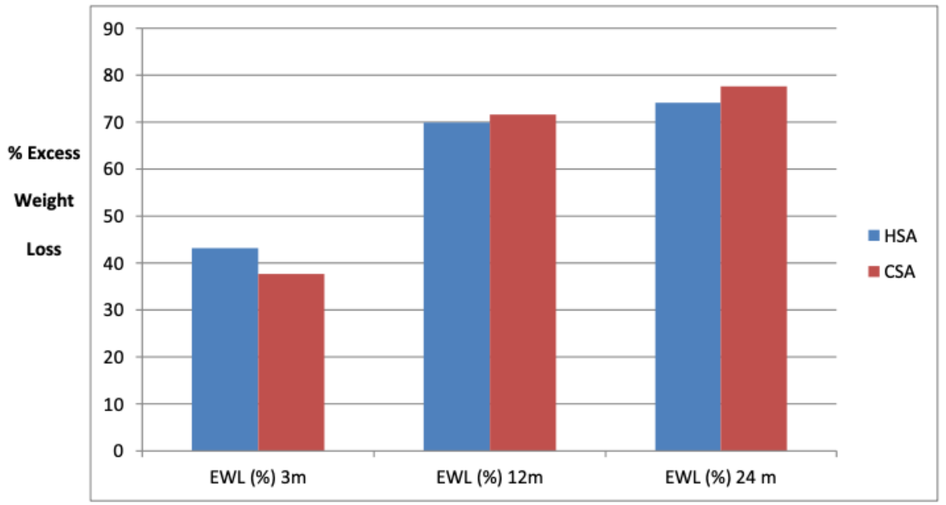

Table 2 Comparison of the early and late postoperative complications for both groups of patients (HSA and CSA)

Type of complication (*n*/%)	HSA (*n*=116)	CSA (*n*=117)	*p* value
Early complications			
Postoperative gastrointestinal bleeding	0	5 (4.2 %)	***0.024***
Intraabdominal bleeding	4 (3.4 %)	2 (1.7 %)	*0.40*
Strangulated hernia	0	1 (0.8 %)	*0.31*
Gastrojejunostomy leak	1 (0.8 %)	0	*0.31*
Acute pancreatitis	1 (0.8 %)	0	*0.31*
Surgical wound infection	4 (3.4 %)	13 (11.1 %)	***0.025***
Total	***10*** **(*8.6*%)**	***22*** **(*18.8*%)**	**0.024**
Late complications			
Gastrojejunostomy stricture	3 (2.6 %)	5 (4.3 %)	*0.47*
Marginal ulcer of anastomosis	1 (0.8 %)	0	*0.31*
Gastrojejunostomy perforation	1 (0.8 %)	3 (2.6 %)	*0.31*
Eventration	3 (2.6 %)	6 (5.1 %)	*0.30*
Bowel obstruction	2 (1.7 %)	1 (0.8 %)	*0.55*
Total	***10*** **(*8.6*%)**	***15*** **(*12.8*%)**	0.30

Bold type means it is a statistically significant value

Bleeding

Wound Infection

Smaller the anastomosis = increased risk of stenosis

OBES SURG (2014) 24:1425–1429
DOI 10.1007/s11695-014-1219-9

ORIGINAL CONTRIBUTIONS

Comparison of Gastrojejunal Anastomosis Techniques in Laparoscopic Roux-en-Y Gastric Bypass: Gastrojejunal Stricture Rate and Effect on Subsequent Weight Loss

Sangoh Lee · Andrew R. Davies · Sameer Bahal · Daniel M. Cocker · Gianluca Bonanomi · Jeremy Thompson · Evangelos Efthimiou

Published online: 5 March 2014

Abstract
Background Different gastrojejunal anastomotic (GJA) techniques have been described in laparoscopic Roux-en-Y gastric bypass (LRYGB). There is conflicting data on whether one technique is superior to the other. We aimed to compare hand-sewn (HSA), circular-stapled (CSA) and linear-stapled (LSA) anastomotic techniques in terms of stricture rates and their impact on subsequent weight loss.
Methods A prospectively collected database was used to identify patients undergoing LRYGB surgery between March 2005 and May 2012. Anastomotic technique (HSA, CSA, LSA) was performed according to individual surgeon preference. The database recorded patient demographics, relevant comorbidities and the type of GJA performed. Serial weight measurements and percentage excess weight loss (%EWL) were available at defined follow-up intervals.
Results Included in the data were 426 patients, divided between HSA (n=174, 40.8 %), CSA (n=110, 25.8 %) and LSA (n=142, 33.3 %). There was no significant difference in the stricture rates (HSA n=17, 9.72 %; CSA n=9, 8.18 %; LSA n=8, 5.63 %; p=0.4006). Weight loss was similar between the three techniques (HSA, CSA and LSA) at 3 months (40.6 %±16.2 % vs 35.92 %±21.42 % vs 48.21 %±14.79 %; p=0.0821), 6 months (61.48 %±23.94 % vs 58.16 %±27.31 % vs 60.18 %±22.26 %; p=0.2296), 12 months (72.94 %±19.93 % vs 69.72±21.42 % vs 66.05 %±17.75 %; p=0.0617) and 24 months (73.29 %±22.31 % vs 68.75 %±24.71 % vs 69.40 %±23.10 %; p=0.7242), respectively.
The stricture group lost significantly greater weight (%EWL) within the first 3 months compared to the non-stricture group (45.39 %±16.82 % vs 39.22 %±21.93 %; p=0.0340); however, this difference had resolved at 6 months (61.29 %±18.50 % vs 59.79 %±23.03 %; p=0.8802) and 12 months (71.59 %±18.67 % vs 68.69 %±22.19 %; p=0.5970).
Conclusions There was no significant difference in the rate of strictures between the three techniques, although the linear technique appears to have the lowest requirement for post-operative dilatation. The re-intervention rate will, in part, be dictated by the threshold for endoscopy, which will vary between units. Weight loss was similar between the three anastomotic techniques. Surgeons should use techniques that they are most familiar with, as stricture and weight loss rates are not significantly different.

Keywords LRYGB · Gastrojejunal anastomosis · Stricture rate · Weight loss

S. Lee (✉) · A. R. Davies · S. Bahal · D. M. Cocker · G. Bonanomi · J. Thompson · E. Efthimiou
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Introduction

Obesity is a major epidemic in western society, with huge health care and economic implications [1]. It leads to serious medical complications such as diabetes, hypertension and cardiovascular disease as well as increased mortality [2–4].

Bariatric surgery, including laparoscopic Roux-en-Y gastric bypass (LRYGB) has proven to be an effective surgical procedure in achieving effective and sustained weight loss [5]. Since the introduction of LRYGB, different gastrojejunostomy anastomosis (GJA) techniques have been described, including hand-sewn (HSA), linear-stapled (LSA) and circular-stapled (CSA) techniques. Previous studies have shown conflicting evidence as to which technique is superior, if at all, in reducing the early complications [6–8].

Table 2 Post-operative GJA strictures following LRYGB, comparing three different techniques

	Hand-sewn	Circular	Linear	p value
Patients (n)	174	110	142	-
Strictures	17 (9.72 %)	9 (8.18 %)	8 (5.63 %)	0.4006

11-12 mm
2-layer
2-0 Vicryl

25 mm OrVil

30 mm

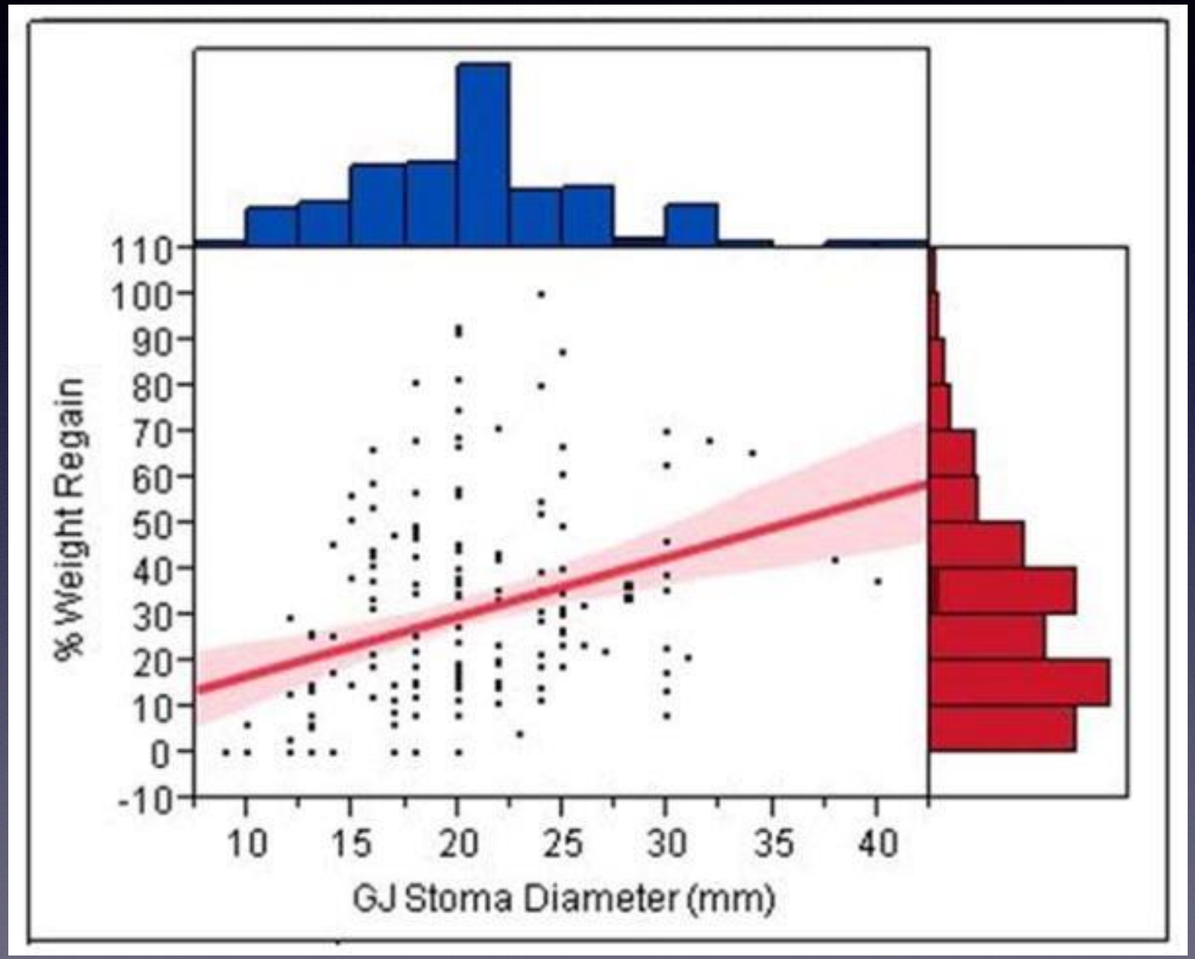
Pouch and Stoma Size

Does size of stoma make a difference?

Abu Dayyeh BK, Lautz DB, Thompson CC. Gastrojejunal stoma diameter predicts weight regain after Roux-en-Y gastric bypass. Clin Gastroenterol Hepatol. 2011 Mar;9(3):228-33.

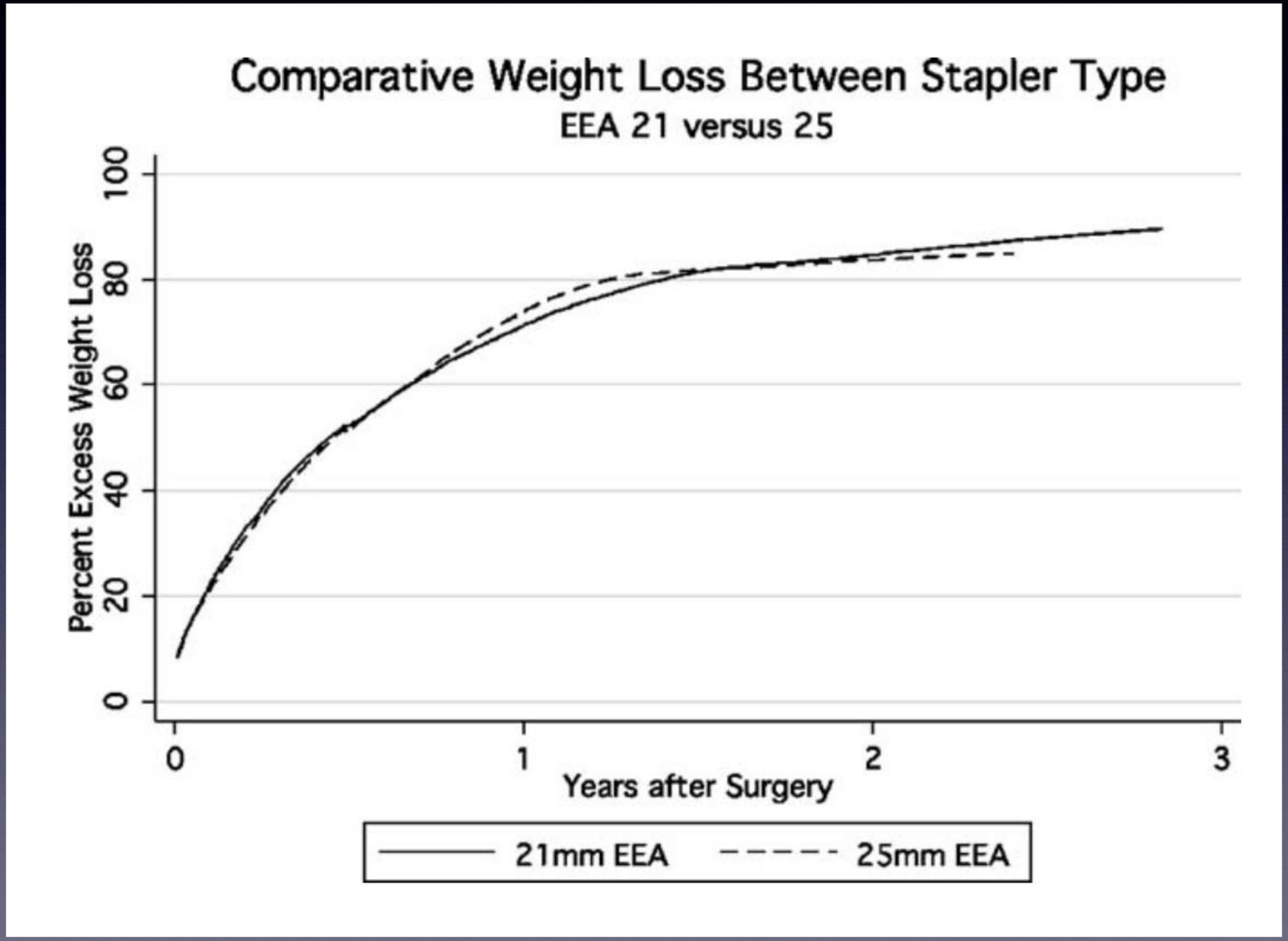
N=165

60% WR



The Effect of Stoma Size on Weight Loss After Laparoscopic Gastric Bypass Surgery: Results of a Blinded Randomized Controlled Trial

Cottam, et al: OBES SURG (2009) 19:13–17



Surgical Endoscopy (2020) 34:1048–1060
https://doi.org/10.1007/s00464-019-07277-w

REVIEW ARTICLE

A systematic review of the effect of gastric pouch and/or gastrojejunostomy (stoma) size on weight loss outcomes with Roux-en-Y gastric bypass

Kamal Mahawar[1,2] · Alistair J. Sharples[3] · Yitka Graham[1,2]

Received: 22 July 2019 / Accepted: 12 November 2019 / Published online: 19 November 2019

Abstract

Background The effect of the gastric pouch or Gastrojejunostomy (GJ or stoma) size on weight loss outcomes after Roux-en-Y gastric bypass (RYGB) is unclear with studies reporting conflicting results. The purpose of this systematic review was to determine the impact of the gastric pouch or stoma size on weight loss outcomes with RYGB.

Methods An online search of PubMed was carried out to identify all articles evaluating the effect of the gastric pouch and/or gastric stoma size at the time of surgery on outcomes associated with RYGB. Quality and heterogeneity of data precluded a meta-analysis. So a systematic review was performed without a meta-analysis.

Results This review found a total of 14 studies (two of which were randomised) evaluating the effect of pouch sizes on weight loss outcomes after RYGB. Nine of these studies did not find any significant association between pouch size and weight loss outcomes whereas five studies found larger pouches to be associated with poorer weight loss outcomes. No study found larger pouches to be associated with better weight loss outcomes. Out of the ten studies (one of which was randomised) that evaluated the effect of stoma size on weight loss outcomes after RYGB, six studies did not show any significant effect of stoma size on weight loss outcomes and four found larger stoma sizes to be associated with significantly poorer weight loss outcomes. No study found larger stoma to be associated with better weight loss outcomes.

Conclusions This review finds that a larger pouch or stoma size may be associated with adverse weight loss outcomes but the quality of data does not allow us to precisely determine optimum pouch or stoma size with RYGB. There is a need for more randomised data comparing long-term weight loss outcomes with pouches or stoma of different sizes.

Keywords Bariatric surgery · Gastric pouch size · Roux-en-Y gastric bypass · Gastrojejunostomy size · Stoma size · Weight loss

Abbreviations

RYGB	Roux-en-Y gastric bypass
GJ	Gastrojejunostomy
PRISMA	Preferred reporting items for systematic reviews and meta-analyses
AL	Alimentary limb
BPL	Bilio-pancreatic limb
EWL	Excess weight loss
EBMIL	Excess body mass index loss
TWL	Total weight loss
GJA	Gastrojejunal anastomosis
BMI	Body mass index

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Roux-en-Y gastric bypass (RYGB) is the second commonest bariatric procedure worldwide [1] as well as the longest-serving procedure [2]. It has traditionally been described as a combined restrictive and malabsorptive procedure [3]. It is only recently becoming apparent that malabsorption makes a very small contribution to the short-term weight loss outcomes after this procedure [4] and that its effect on hunger and satiety mediated through yet incompletely understood mechanisms may play a more significant role [5].

Conclusions: This review finds that a larger pouch or stoma size may be associated with adverse weight loss outcomes but the quality of data does not allow us to precisely determine optimum pouch or stoma size with RYGB. There is a need for more randomized data comparing long-term weight loss outcomes with pouches or stoma of different sizes.

Limb Lengths

ELSEVIER

Surgery for Obesity and Related Diseases 18 (2022) 555–564

SURGERY FOR OBESITY AND RELATED DISEASES

Review article

The role of total alimentary limb length in Roux-en-Y gastric bypass: a systematic review

Alice Wang, M.D., M.H.S.[a], Lauren Poliakin, M.D.[a], Naresh Sundaresan, M.D.[a], Vilok Vijayanagar, D.O.[b], Alexander Abdurakhmanov, M.D.[a], Kyle J. Thompson, Ph.D.[b], Iain H. Mckillop, Ph.D.[b], Selwan Barbat, M.D.[a], Roc Bauman, M.D.[a], Keith S. Gersin, M.D.[a], Timothy S. Kuwada, M.D.[a], Abdelrahman Nimeri, M.D., F.A.C.S., F.A.S.M.B.S.[a,*]

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Received 3 May 2021; accepted 21 August 2021

Abstract

Background: Roux-en-Y gastric bypass (RYGB) is an established surgical treatment for obesity. Variations in limb length during RYGB procedures have been investigated for optimizing weight loss while minimizing nutritional deficiencies. The role of the total alimentary limb length (TALL; Roux limb plus common channel [CC]), however, is poorly defined.

Objective: Compare TALL in RYGB procedures for weight loss outcomes and malnutrition.

Setting: Systematic review.

Methods: Ovid Medline and PubMed databases were searched for entries between 1993 and 2020. Search terms included "gastric bypass" and "TALL." Two independent reviewers screened the results.

Results: A total of 21 studies measured TALL in RYGB. Of these, 4 of 6 reported a relationship between TALL and weight loss. Additionally, 11 studies reported that when TALL was ≤400 cm and CC <200 cm, 3.4% to 63.6% of patients required limb lengthening for protein malnutrition.

Conclusions: The majority of studies on RYGB do not report TALL length. There is some evidence that weight loss is affected by shortening TALL, while a TALL ≤400 cm with CC<200 cm should be avoided due to severe protein malnutrition. More studies on the effect of TALL are needed. (Surg Obes Relat Dis 2022;18:555–563.)

Key Words: Total alimentary limb length; Roux-en-Y gastric bypass

Roux-en-Y gastric bypass surgery (RYGB) is established as an effective weight loss and co-morbidity resolution strategy that is superior to medical management alone [1,2]. Up to 20% of patients with morbid obesity (body mass index [BMI] >40 kg/m^2) and up to 40% of patients with super obesity (BMI >50 kg/m^2), however, will experience significant weight regain at 10-year follow-up [3–6]. Subsequently, studies have investigated the effect of changing limb lengths to optimize weight loss while minimizing nutritional deficiencies. Few studies, however, have focused on the impact of the total alimentary limb length (TALL), which is composed of the Roux limb (RL) and the common channel (CC). Of further note, the biliopancreatic limb (BPL) and TALL are closely related as increases in the BPL results in a shorter TALL [7,8].

Most surgeons do not measure TALL when performing RYGB with the exception of performing a distal RYGB.

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ELSEVIER

Surgery for Obesity and Related Diseases 19 (2023) 755–762

SURGERY FOR OBESITY AND RELATED DISEASES

Review article

American Society for Metabolic and Bariatric Surgery literature review on the effect of Roux-en-Y gastric bypass limb lengths on outcomes

Essa M. Aleassa, M.D.[a,*], Pavlos Papasavas, M.D.[b], Toms Augustin, M.D.[c], Zhamak Khorgami, M.D.[d], Sue Benson-Davies, Ph.D.[e], Saber Ghiassi, M.D.[f], Jonathan Carter, M.D.[g], Abdelrahman Nimeri, M.D.[h], Clinical Issues Committee of the American Society for Metabolic and Bariatric Surgery

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Received 26 March 2023; accepted 2 April 2023

Abstract

This literature review is issued by the American Society for Metabolic and Bariatric Surgery regarding limb lengths in Roux-en-Y gastric bypass (RYGB) and their effect on metabolic and bariatric outcomes. Limbs in RYGB consist of the alimentary and biliopancreatic limbs and the common channel. Variation of limb lengths in primary RYGB and as a revisional option for weight recurrence after RYGB are described in this review. (Surg Obes Relat Dis 2023;19:755–762.)

Keywords: Alimentary limb; Biliopancreatic limb; Common channel; Distalization; Roux-en-Y gastric bypass; Roux limb; Total alimentary limb length; Weight loss

The inception of utilizing gastric bypass for weight loss was adopted from gastric operations performed to treat peptic ulcer disease and was initially performed as a loop procedure. This was later modified to a Roux-en-Y configuration to avoid bile reflux esophagitis. Mason and Ito were the first to describe gastric bypass as a means to treat obesity following a series of animal and human studies in 1967 [1]. Their initial gastric bypass operation consisted of a horizontal gastric pouch of fundus that was anastomosed to a loop of jejunum 60 cm distal to the ligament of Treitz. The surgery was performed without the use of a surgical stapler. In 1977, Alden described the use of a nondividing stapler to create a smaller horizontal pouch after taking down the proximal attachments of the greater curvature of the stomach [2]. In the same year, Griffen et al. modified the Mason gastric bypass from a loop to a Roux-en-Y configuration [3]. The jejunum was divided 12–15 cm from the ligament of Treitz, creating a very short biliopancreatic limb (BPL), and the Roux limb was created to be only 30–35 cm long [4]. Thereafter, Torres modified the horizontal pouch into a vertical one [5]. In 1994, Wittgrove et al. described a laparoscopic technique of Roux-en-Y gastric bypass (RYGB) utilizing a circular end-to-end anastomosis (EEA) [6].

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https://doi.org/10.1016/j.soard.2023.04.298

OBES SURG (2016) 26:1627–1634
DOI 10.1007/s11695-016-2201-5

REVIEW ARTICLE

Revision of Roux-En-Y Gastric Bypass for Weight Regain: a Systematic Review of Techniques and Outcomes

Daniel D. Tran[1] · Ifeanyi D. Nwokeabia[2] · Stephanie Purnell[2] · Syed Nabeel Zafar[1] · Gezzer Ortega[1] · Kakra Hughes[1] · Terrence M. Fullum[1]

Published online: 2 May 2016

Abstract
Background Weight regain has led to an increase in revision of Roux-en-Y gastric bypass (RYGB) surgeries. There is no standardized approach to revisional surgery after failed RYGB. We performed an exhaustive literature search to elucidate surgical revision options. Our objective was to evaluate outcomes and complications of various methods of revision after RYGB to identify the option with the best outcomes for failed primary RYGB.
Method A systematic literature search was conducted using the following search tools and databases: PubMed, Google Scholar, Cochrane Clinical Trials Database, Cochrane Review Database, EMBASE, and Allied and Complementary Medicine to identify all relevant studies describing revision after failed RYGB. Inclusion criteria comprised of revisional surgery for weight gain after RYGB.
Results Of the 1200 articles found, only 799 were selected for our study. Of the 799, 24 studies, with a total of 866 patients, were included for a systematic review. Of the 24 studies, 5 were conversion to Distal Roux-en-y gastric bypass (DRYGB), 5 were revision of gastric pouch and anastomosis, 6 were revision with gastric band, 2 were revision to biliopancreatic diversion/duodenal switch (BPD/DS), and 6 were revision to endoluminal procedures (i.e., stomaphyx). Mean percent excess body mass index loss (%EBMIL) after revision up to 1 and 3-year follow-up for BPD/DS was 63.7 and 76 %, DRYGB was 54 and 52.2 %, gastric banding revision 47.6 and 47.3 %, gastric pouch/anastomosis revision 43.3 and 14 %, and endoluminal procedures at 32.1 %, respectively. Gastric pouch/anastomosis revision resulted in the lowest major complication rate at 3.5 % and DRYGB with the highest at 11.9 % when compared to the other revisional procedures. The mortality rate was 0.6 % which only occurred in the DRYGB group.
Conclusion All 866 patients in the 24 studies reported significant early initial weight loss after revision for failed RYGB. However, of the five surgical revision options considered, BPD/DS, DRYGB, and gastric banding resulted in sustained weight loss, with acceptable complication rate.

Keywords Roux-en-Y · Gastric bypass · Bariatric surgery · Revision · Conversion · Weight gain · Weight regain · Weight recidivism

Introduction

Currently, bariatric surgery remains the gold standard of treatment for sustainable weight loss and reduction of comorbidities in morbidly obese patients when compared to other non-surgical options including behavioral modification, diet modification, drug therapy, and exercise [1–4]. Roux-en-Y Gastric Bypass (RYGB) still remains one of the most commonly performed bariatric surgery in the USA [5, 6]. RYGB is a restrictive/malabsorptive procedure that creates a small gastric pouch limiting food intake and calorie absorption [7]. The divided 15–30 mm pouch is anastomosed to the Roux limb of small bowel [8].

Over the last decade, long-term weight loss after RYGB has been remarkable. However, approximately 10-20 % of patients either regain weight or fail to achieve significant weight loss [9]. RYGB failure is due to both anatomical and

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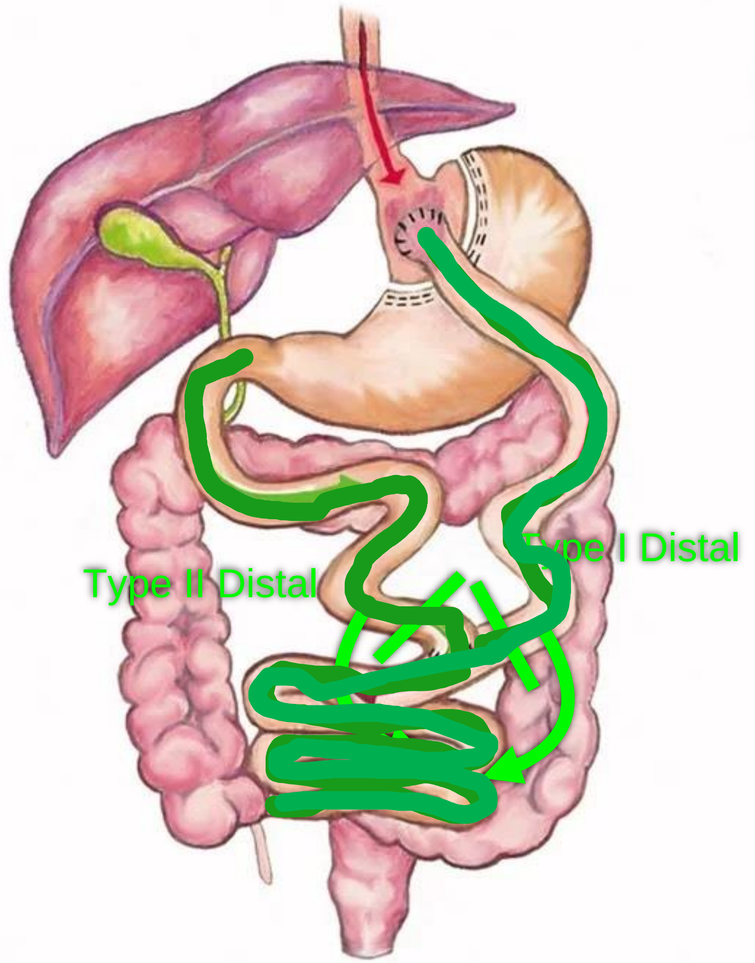
Roux = AL
alimentary limb

BPL
biliopancreatic limb

CL
common channel

AL + CL = TALL
Total alimentary limb



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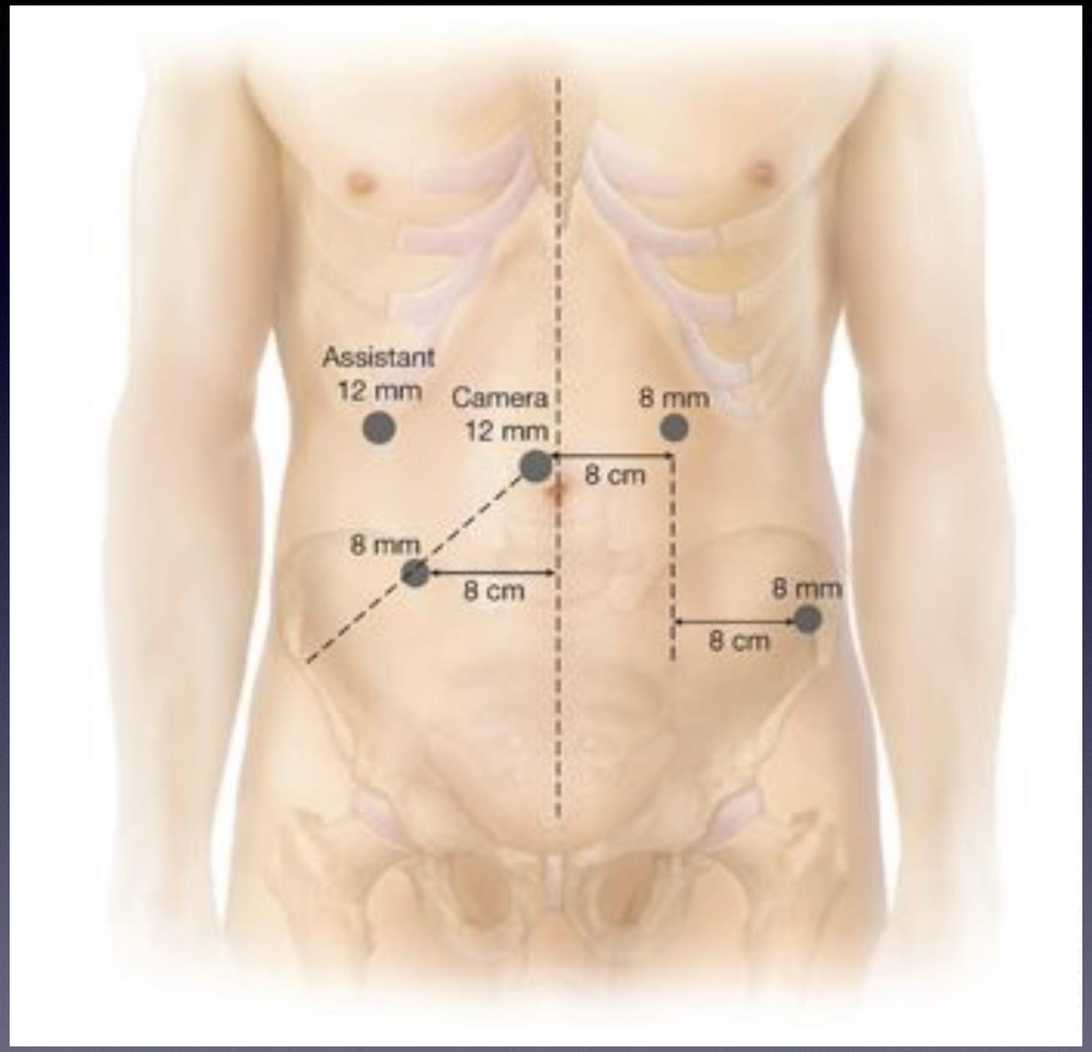
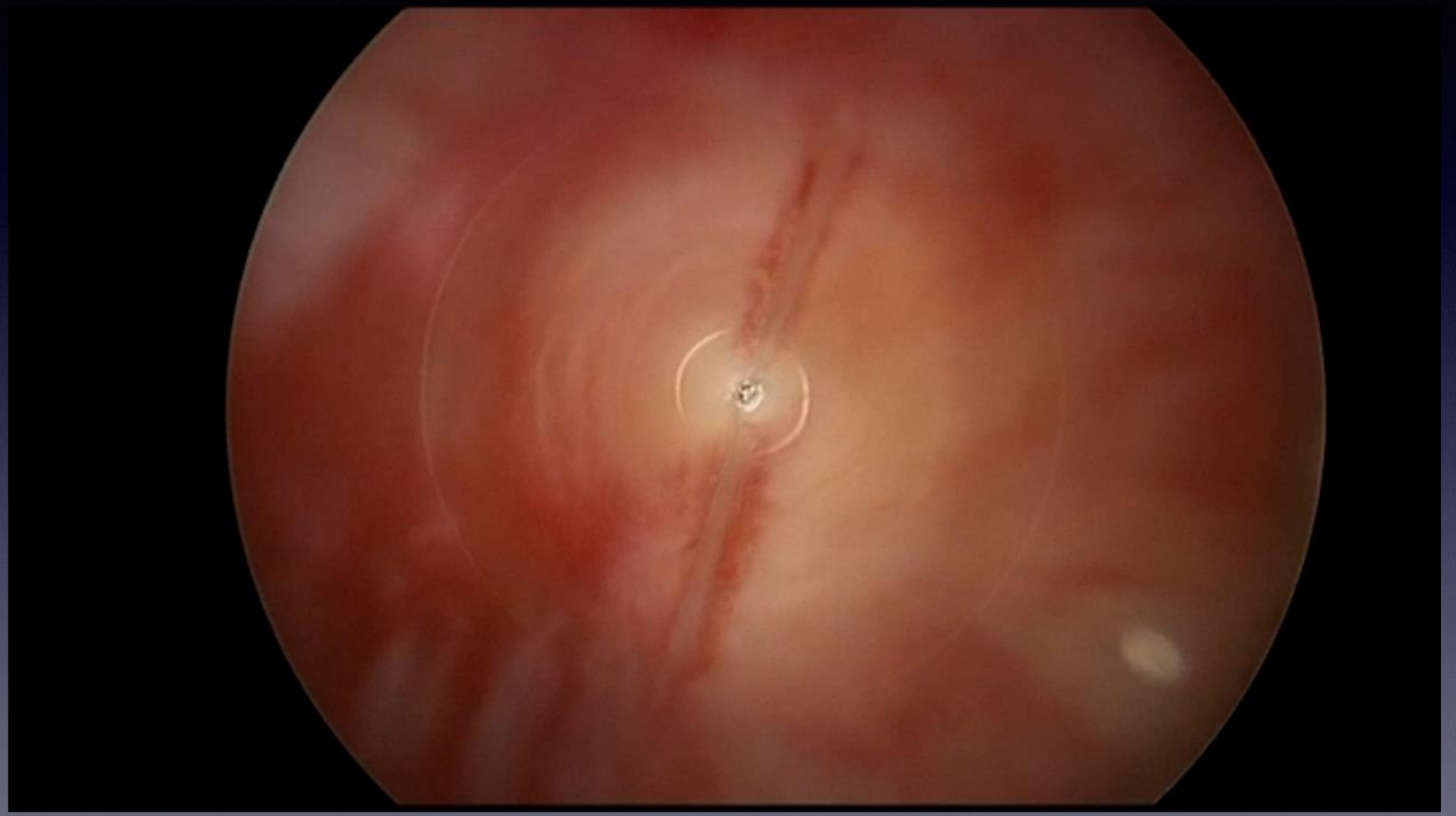
TIPS and TRICKS

Do not use external landmarks for port placement.



Initial Entry



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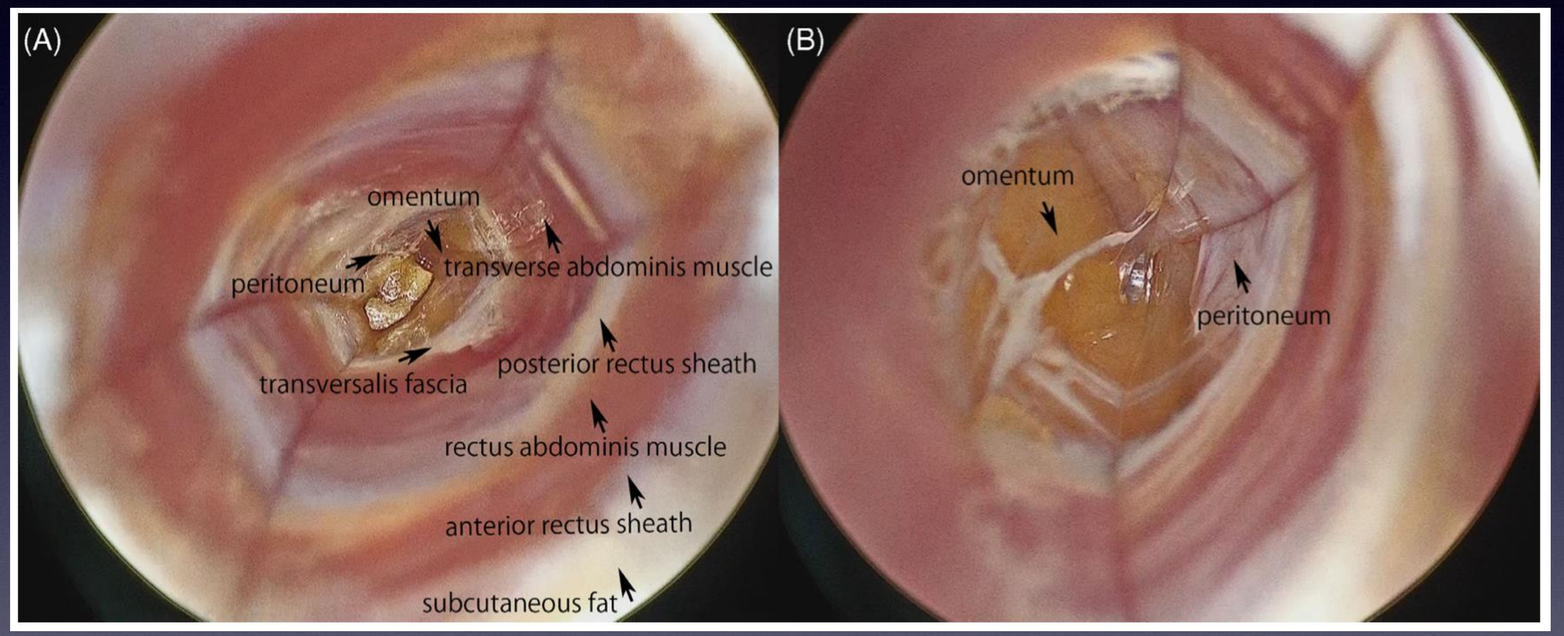
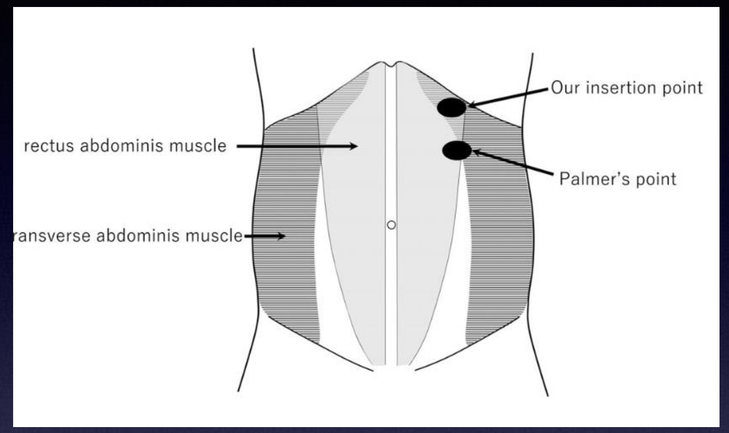
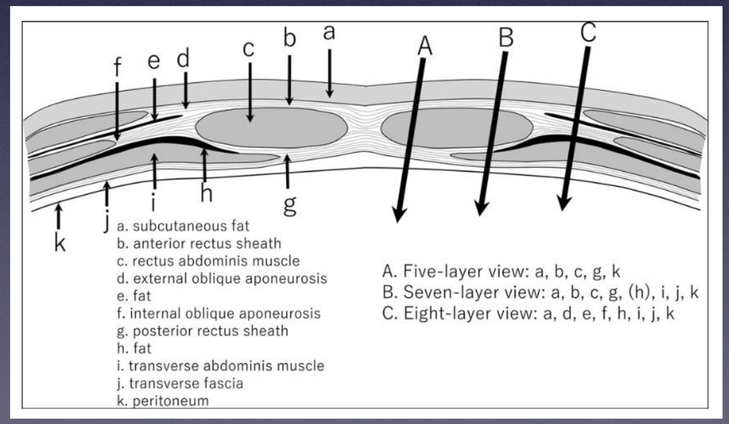
Initial entry via the left upper quadrant with an optical trocar in laparoscopic bariatric surgery.

Amiki M, Ishiyama Y, Harada T. et al: Asian J Endosc Surg. 2022;1–4







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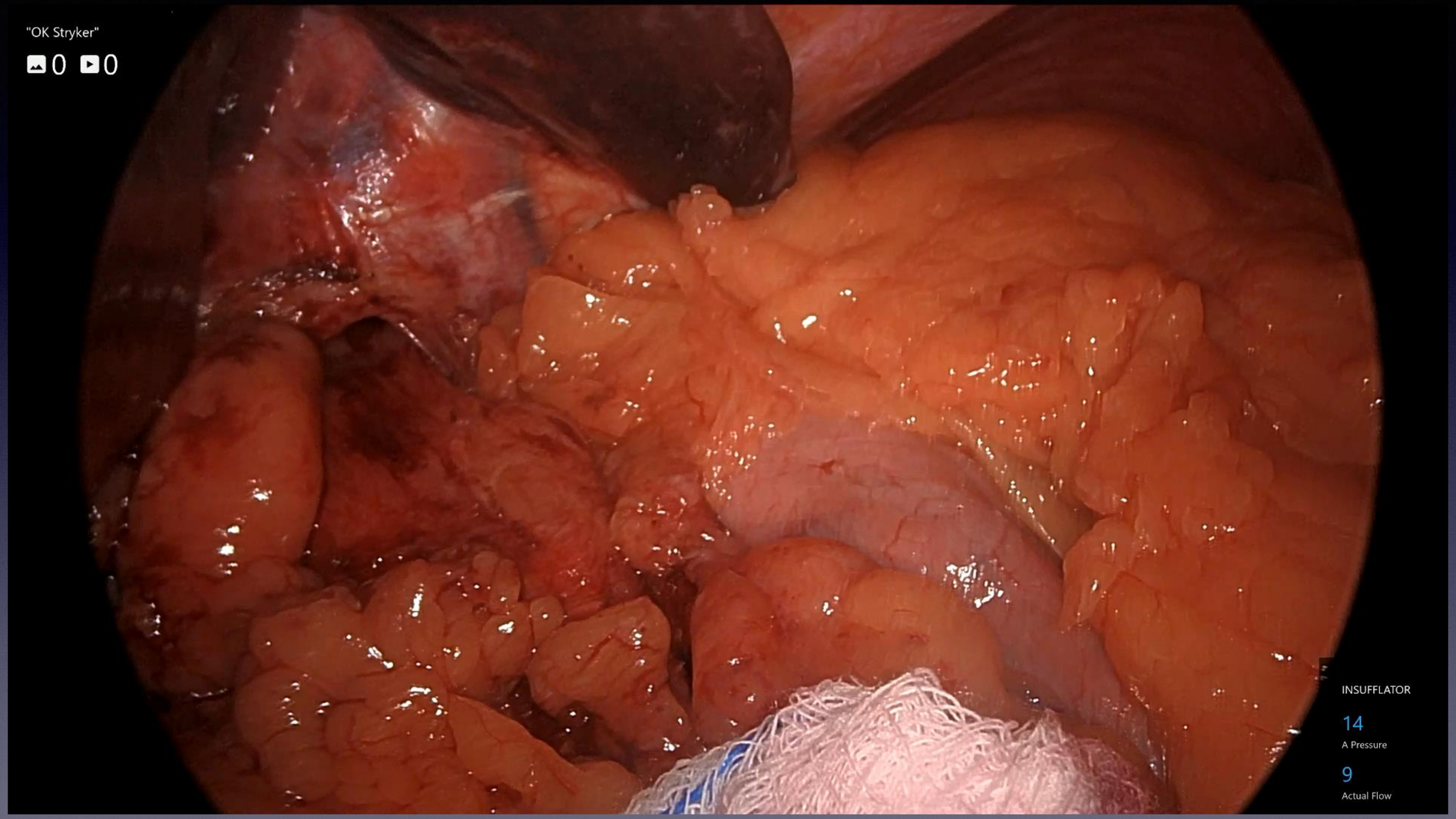
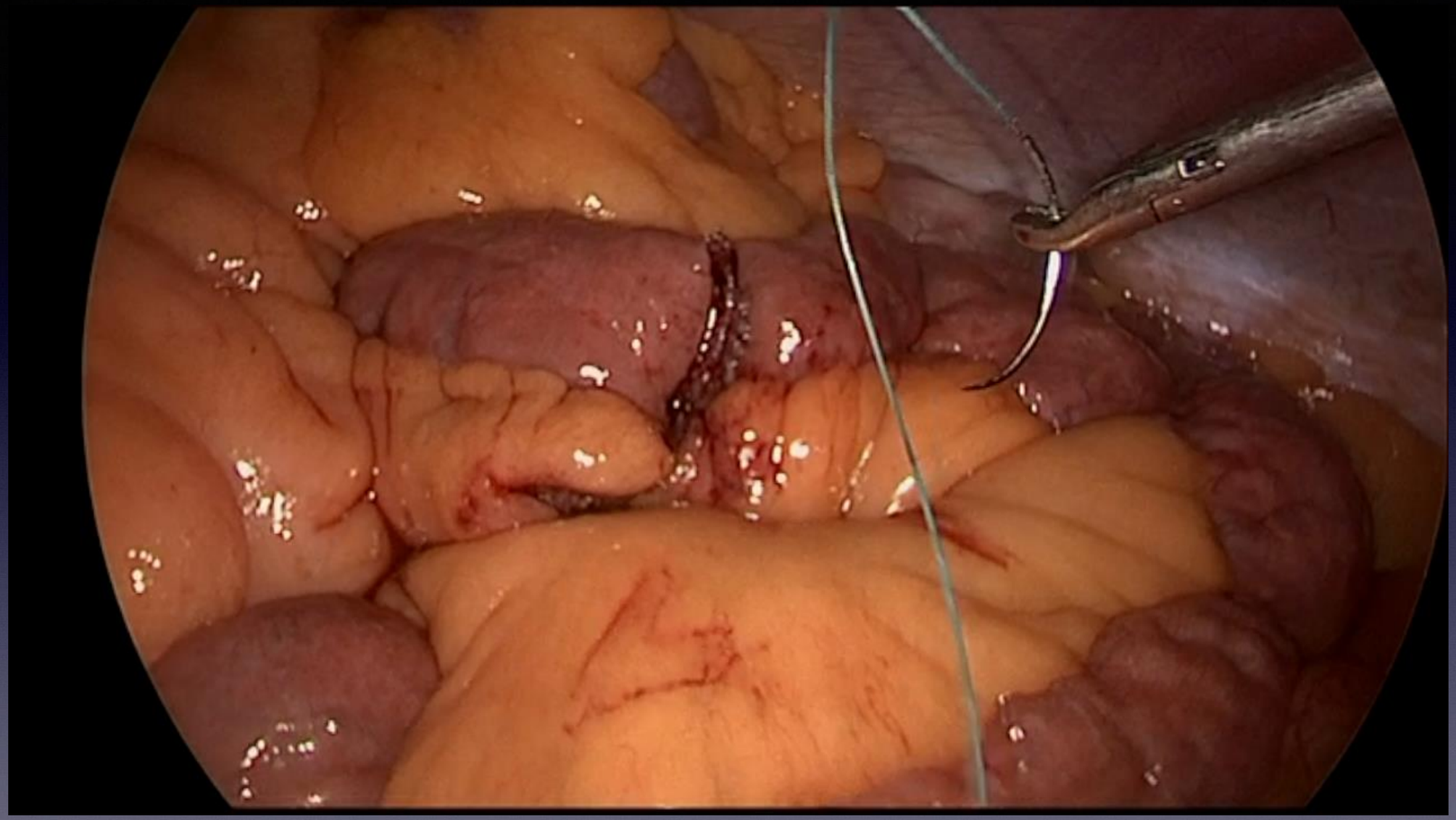
“Chase perfection to catch excellence.”





"Great things in business are never done by one person; they are done by a team of people." Steve Jobs

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