Management von Komplikationen in der Adipositaschirurgie

BERNER SYMPOSIUM

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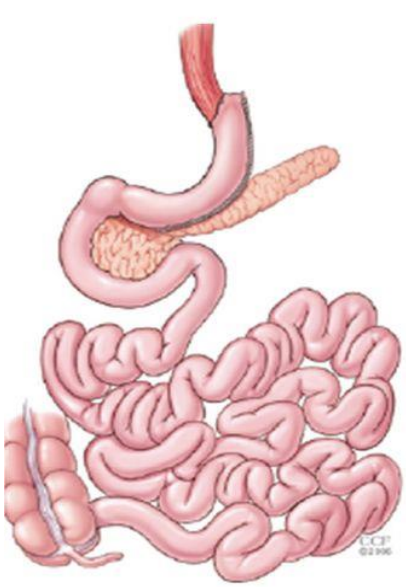
UNIVERSITÄT BERN

4 Dinge.
Eine Gemeinsamkeit.
Aber welche?

- Vanessa Banz
- LSD
- Knoblauchpresse
- Rhein

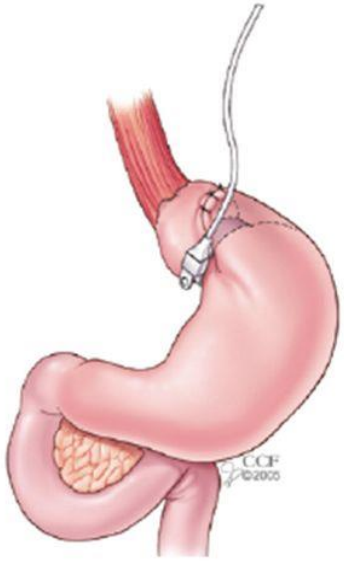
Bariatric Surgery Now

Data ASMBS 2015 (n= 196000)

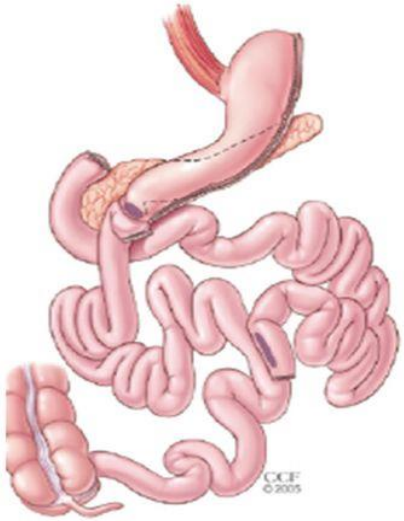


Sleeve Gastrectomy (SG)
Frequency 49%

Roux–en–Y Gastric Bypass (RYGB)
Frequency 43%



Laparoscopic Adjustable Gastric Banding (LAGB)
Frequency 6%



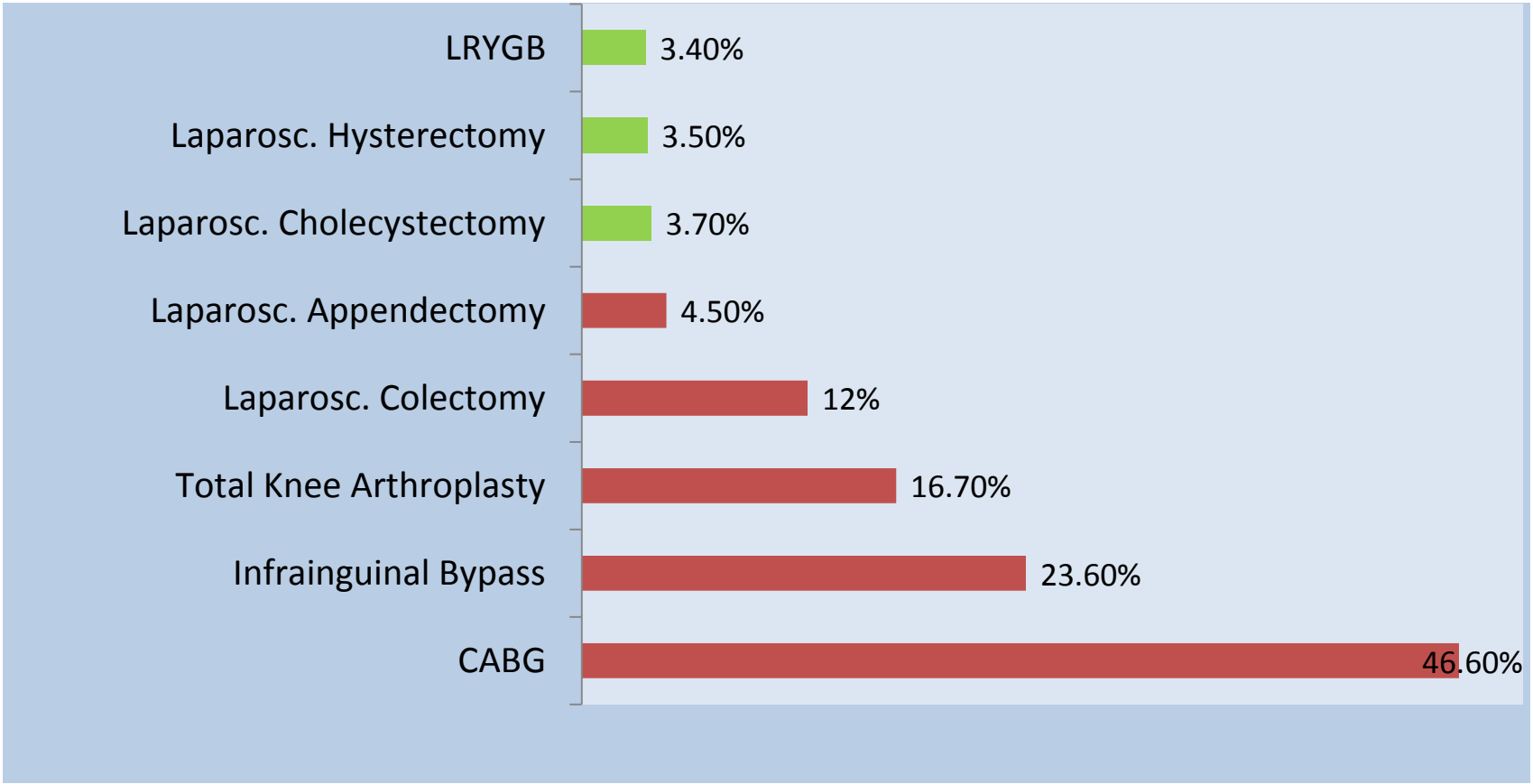
Biliopancreatic Diversion with Duodenal Switch (BPD+DS)
Frequency 2%

→ **Revisions …. 13.6%**

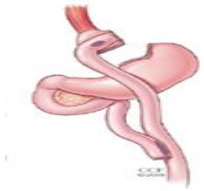
2016: 5020, 76% Bypass, 19% Sleeve

Safety

US national data of postoperative composite complications rate (%) of 8 procedures in patient with type 2 diabetes



N = 66 678 diabetic patients



Most common complications after Gastric bypass

Early (< 30 days)	Late
Leak with peritonitis (0.1- 5.6%)	Stomal stenosis/stricture (1-5%)
Bleeding (1- 4 %)	Gastric ulcer (1-5 %), gastro-gastric fistula
Bowel obstruction (0.5- 2%)	Bowel obstruction (0.5-2%)
PE/DVT (< 1.0%)	Incisional hernia
Wound infection	Cholecystitis, Choledocholithiasis
Nausea/Vomiting/Dehydration	Dumping
Pulmonary Complications	Vitamin and Mineral deficiency (23-80%)
Cardiac complications	Weight gain
	Hypoglycemia (11%), severe rare

Moustarah et al. Current Surgical Therapy Ed., Comeron 2010, Elvesier

Incidence of perioperative complications CH vs US

	SM- BOSS (227)	LABS 1 (4776)
All complications	28 (12.3%)	NA
DINDO III/IV	**2.6%**	4.1%
Leckage	**0.4%**	NA
Reoperations	2.2%	2.6%
Mortality	*0.4%*	*0.3%*

RCT: Sleeve Gastrectomy versus Gastric Bypass: 5-Year Outcomes of SM-BOSS

Under review JAMA

ORIGINAL ARTICLE

Perioperative Safety in the Longitudinal Assessment of Bariatric Surgery

The Longitudinal Assessment of Bariatric Surgery (LABS) Consortium

N Engl J Med 2009; 361:445-454 | July 30, 2009 | DOI: 10.1056/NEJMoa0901836

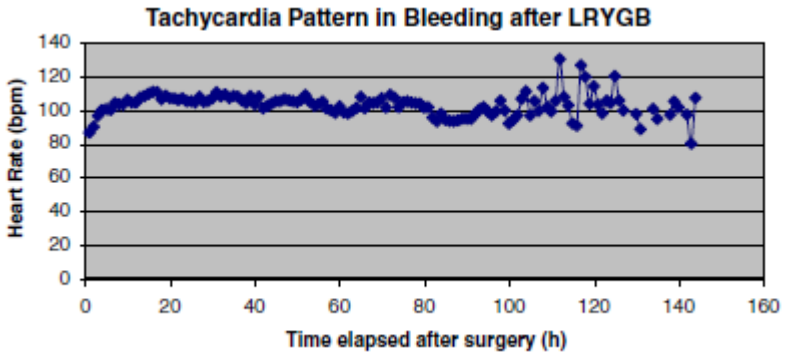
Early complications

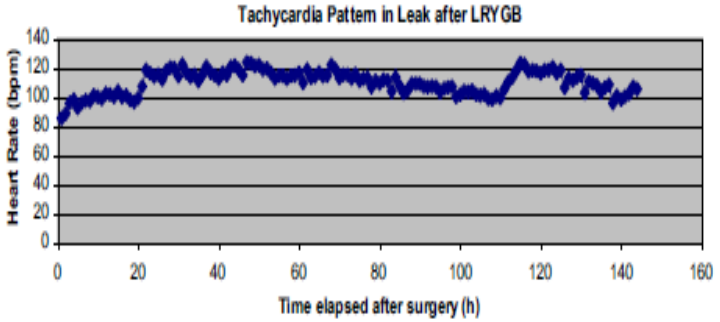
- Tachycardia!!
- Pain/malaise/distress
- Mangement

  CT/Laparoscopy (if early)

  Drain, Gastrostomy

  Endoscopy





OBES SURG (2011) 21:707–713
DOI 10.1007/s11695-010-0221-0

CLINICAL REPORT

Understanding the Significance, Reasons and Patterns of Abnormal Vital Signs after Gastric Bypass for Morbid Obesity

Omar Bellorin · Abraham Abdemur · Iswanto Sucandy · Samuel Szomstein · Raul J. Rosenthal

C-reactive protein on postoperative day 1

C-Reactive protein on postoperative day one : a significant predictive marker for early organ/space surgical side infections in patients undergoing elective bariatric surgery

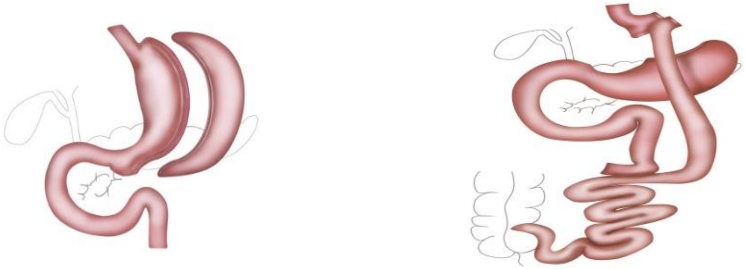
Kröll, Nakhostin, Erdem, Altmeier, Haltmeier, Borbely, Nett et al,.submitted SOARD

Primary objective

– To determine the ability of POD 1 CRP to predict early OS-SSI after LSG and RYGB

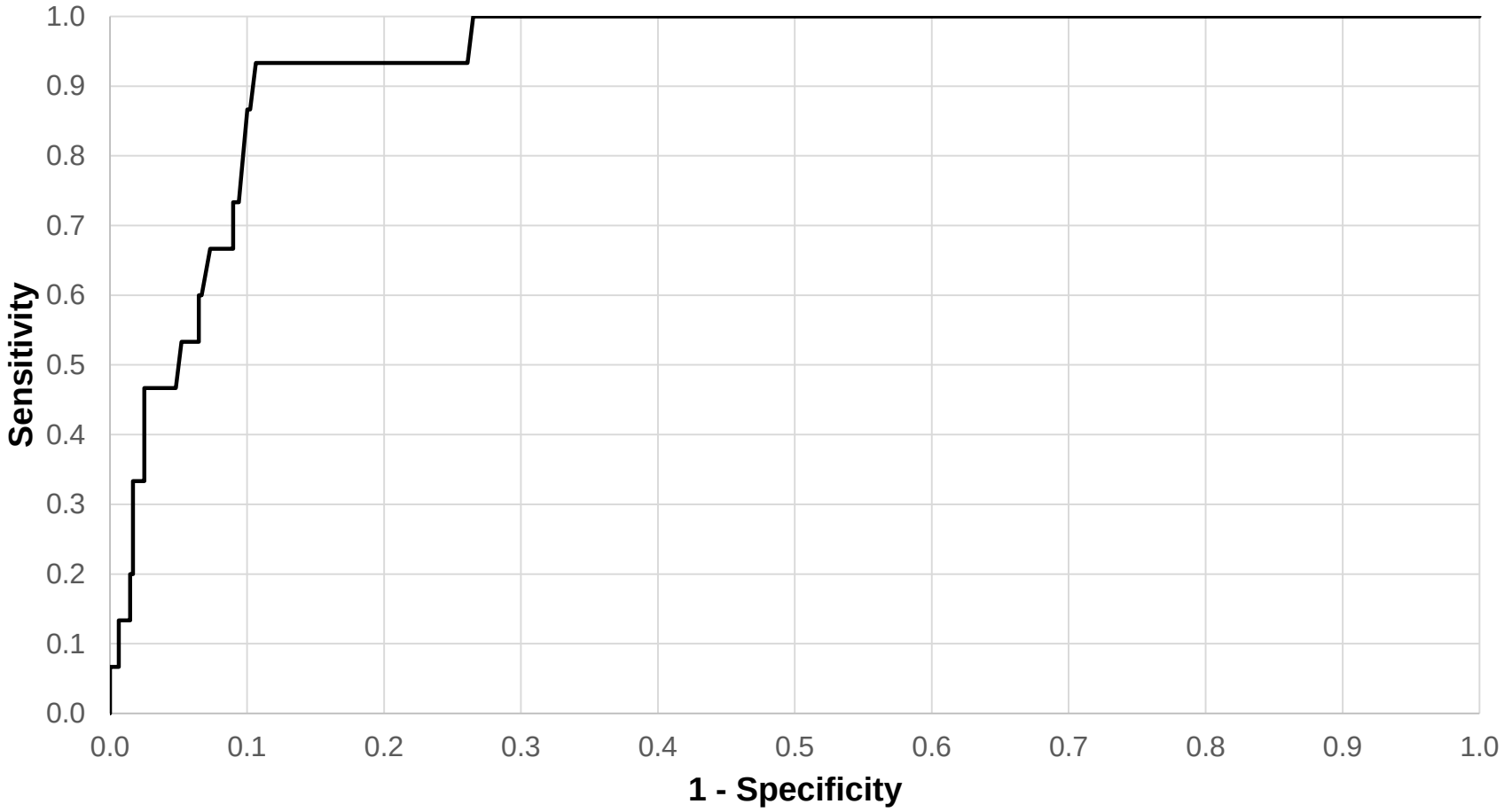
Secondary objectives

– To determine cut-off values for CRP on POD 1 for early OS-SSI



LSG and LRYGB

CRP on postoperative day 1 as a predictor for early organ space SSI



Receiver operating characteristics curve analysis
Area Under the Curve 0.937, 95% Confidence Interval 0.901-0.973, p<0.001
LSG: Laparoscopic Sleeve Gastrectomy; LRYGB: Laparoscopic Roux-en-Y Gastric Bypass

CRP day 1 ≥ 70 mg/L on POD 1

	AUC	95% CI	p-value	Sensitivity	Specifity	PPV	NPV
All (n=494)	0.937	0.901-0.973	<0.001	93%	88%	19%	100%
LSG (n=306)	0.987	0.975-0.999	<0.001	100%	98%	50%	100%
LRYGB (n=188)	0.864	0.744-0.983	0.001	88%	72%	12%	99%

Receiver Operating Characteristic Analysis
CRP: C-reactive protein, AUC: area under the curve, CI: confidence interval, PPV: positive predictive value, NPV: negative predicting value.

Discharge criteria:

- Tolerating free oral fluids (1l/12 h after surgery)
- No evidence of SSI
- Adequate pain relief (VAS < 4)
- No vomiting
- Heart rate < 100 beats/min
- Respiratory rate < 20 breaths/min
- Temperature < 38.0 ° C
- **CRP < 70 mg/l POD 1**

Risk factors for complications

- History of DVT/PE
- OSAS
- Impaired functional status
- BMI
- No risk factor:

  Age, sex, race, others

Impact of the surgeon? Age?

Impact of Surgeons Age ?

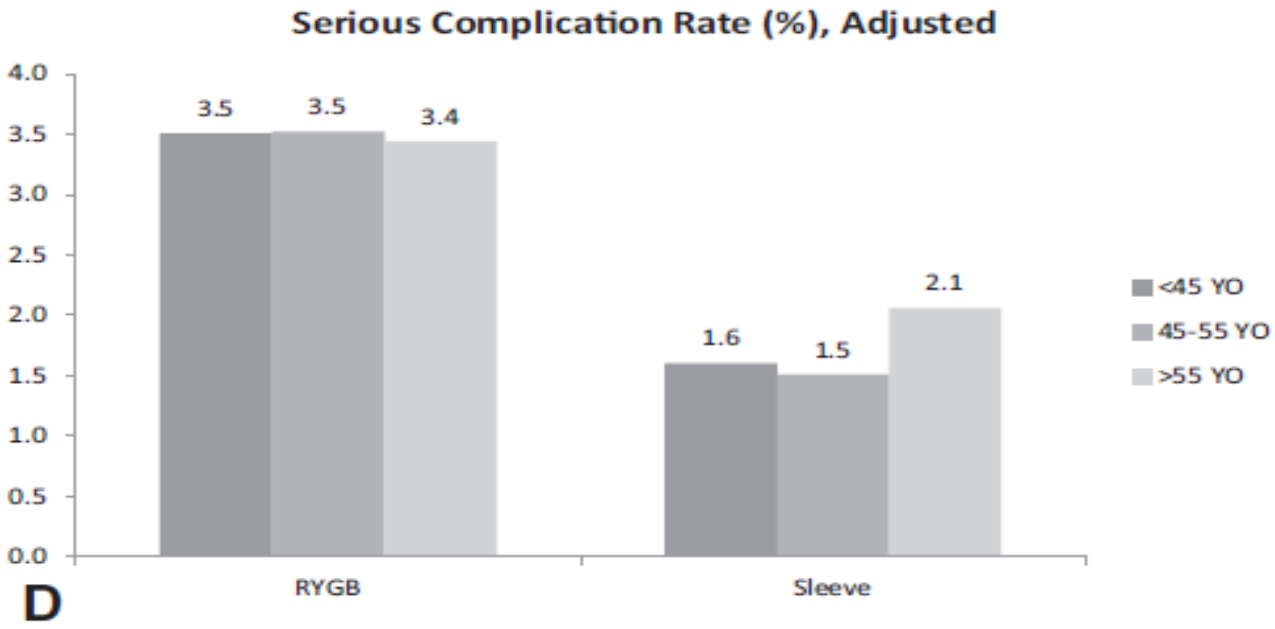
Effect of Surgeon Age on Bariatric Surgery Outcomes.

Stevens, Haley MPH; Carlin, Arthur M. MD; Ross, Rachel RN, MS; Stricklen, Amanda RN, MS; Wood, Michael H. MD; Ghaferi, Amir A. MD, MS

Annals of Surgery: Post Author Corrections: May 8, 2017
doi: 10.1097/SLA.0000000000002297

- Are old surgeons are performing better (experience)?
- 71 surgeons in Michigan
- 60.430 patients over 10 year period
- Performed Primary Sleeve or Gastric bypass
- 30 day complications rate

Impact of Surgeons Age ?



±Adjusted for patient characteristics, comorbidities, clustering by surgeon, case volume, years in bariatrics, and fellowship trained

✓**Older surgeons performed more RYGB (40% vs 35%)**

Conclusion: Impact on surgeons age

- No differenence regarding serious complication rate
- Keep on operating…..

Overview

✓Incidence and risk factors of complications

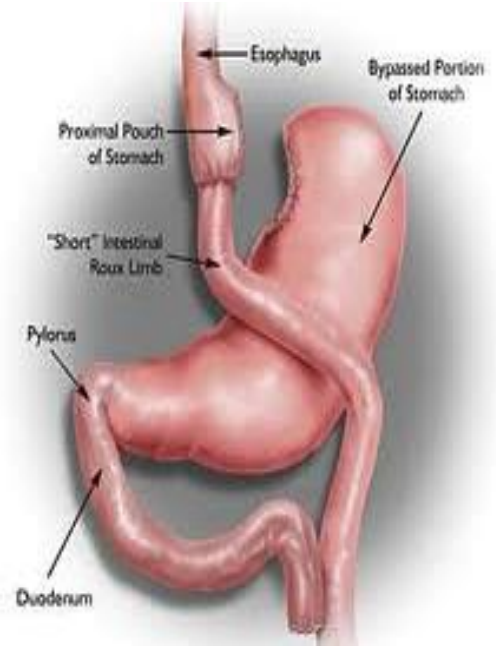
✓Type of complications

Differences between operative procedures

- Gastric bypass
- Sleeve
- (Banding)

Laparoscopic Gastric Bypass

- **Still a GOLDSTANDARD**
- Best Balance between
  - Excessive Weight Loss
  - Resolution of Co-Morbidities including DM Type 2
  - Acceptable complication rate
  - Acceptable long-term profile



→ Is becoming the salvage operation for patients with other failed bariatric procedures

Obes Surg. 2017 Sep;27(9):2324-2330. doi: 10.1007/s11695-017-2631-8.

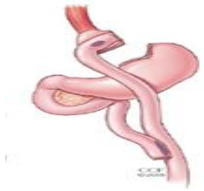
Three-Year Outcomes of Revisional Laparoscopic Gastric Bypass after Failed Laparoscopic Sleeve Gastrectomy: a Case-Matched Analysis.

Malinka T[1], Zerkowski J[1], Katharina I[1], Borbèly YM[1], Nett P[1], Kröll D[2].

Patients with LRYGB can develop long-term complications specific to the procedure

but

they still can develop every possible intra-abdominal pathology



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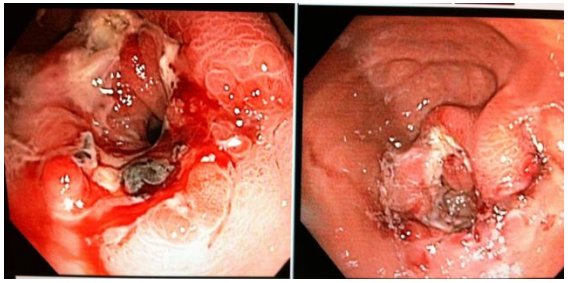
Pulmonary Complications	Vitamin and Mineral deficiency (23-80%)
Cardiac complications	Weight gain
	Hypoglycemia (11%), severe rare

Moustarah et al. Current Surgical Therapy Ed., Comeron 2010, Elvesier

Marginal Ulcer – (Bleeding)

- Up to 16% reported
- Risk associated with
  - Hyperacidity (Pouch size)
  - Persistent H. pylori infection
  - NSAR
  - SMOKING
  - CAVE: watch for gastro-gastric fistula !
- Treatment:
- Endoscopic treatment, PPIs, Sucralfat
- If perforated oversewing possible, better redo anastomosis
- If persistent laparoscopic redo gastro-jejunostomy



Before and after Endoscopic Treatment

Abdominal Pain after RYGB

- **15-30 % patients** will visit ED within 3 years after RYGB
  - Half will visit with abdomninal pain
  - Differential diagnosis are varied and require specilist knowledge
- Patients should be made aware of `alarm symtoms`
  - Return to specialist' pathway must be specified
  - Appropriate continuity arrangements should be made

Greenstein AJ[1], O'Rourke RW, Am J Surg. 2011 Jun;201(6):819-27. doi: 10.1016/j.amjsurg.2010.05.007. Epub 2011 Feb 18.***Abdominal pain after gastric bypass: suspects and solutions.***

Management of late post-operative complications of bariatric surgery, *Hamdan K, Somers S, Chand M Br J Surg 2011 Oct; 98(10): 1430*

.

COLIC

- Episodes of periodic ‘cramp-like’ abdominal pain

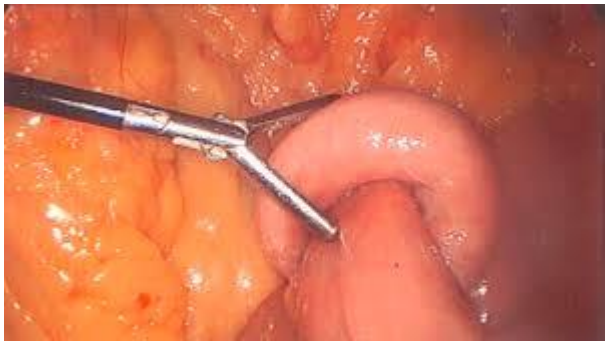
- Without vomiting (until alimentary or common limb obstruction)

- Background pain (often LUQ)

- History of repeated episodes before acute presentation, not uncommon

- Not always food intake related, unspecific, most normal lab

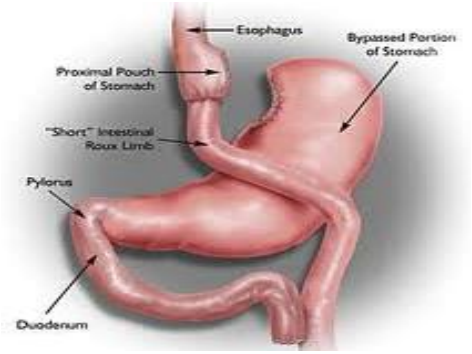
Internal Hernia 2 - 10%
J-J obstruction/kinking 4%
Intussusception <1%
Simple Adhesions <1%



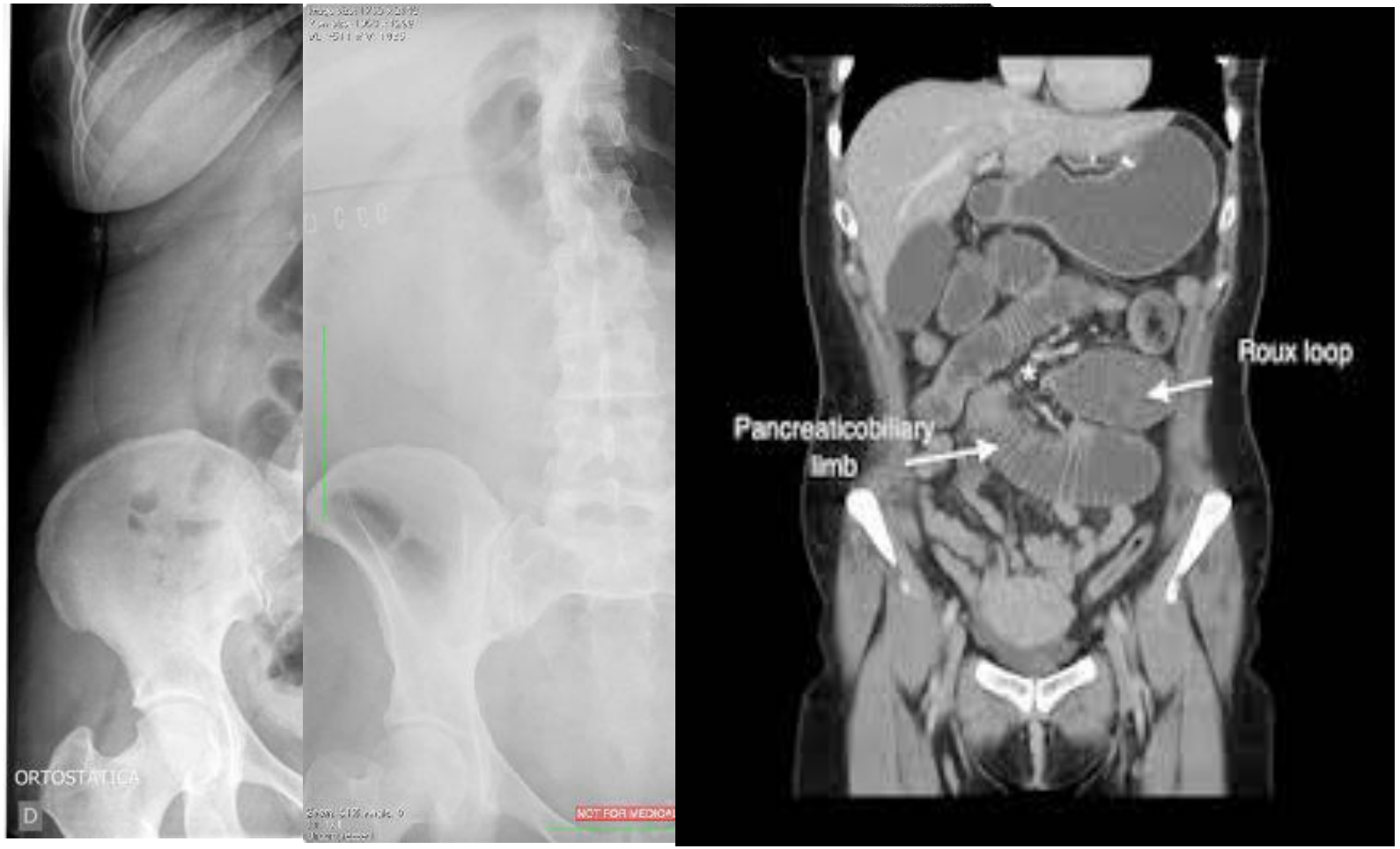
Basic Príncipes

- Symptoms depend on the obstructed segement(s)
- Classical symtoms of obstruction (nausea, vomiting) only if alimentary or common limb involved
- Cessation of gas or stool passage if common limb involved
- No classical symtom if only biliary limb involved

Vomiting after RYGB is not normal



Radiology



In the absence of symptoms, CT is sometimes inconclusive

Colic Symptoms

EARLY POST-OP

LATE POST-OP

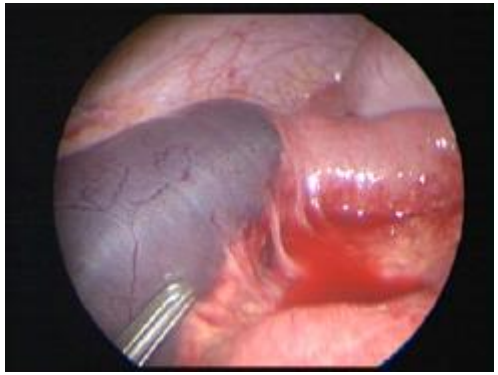
Malconstruction
Port site Hernia
Internal hernia - 'failure to close'

Urgent CT or
Straight to laparoscopy

Internal Hernia
J-J Malfunction
Intussusception
Adhesions

CT scan during episode
Exploratory Laparoscopy

AVOID EMERGENCY PRESENTATION
- No bariatric expertise
- Delayed diagnosis / treatment
- Catastrophic complications



Laparoscopy

- Intestinal Obstruction
  - Operative management

-Do not grasp or pull obstructed intestine

-Identify Ileo-Caecal valve

-Follow normal Small Intestine proximally

-Obstruction site will declare or unravel

-Check gastric pouch, G-J and J-J

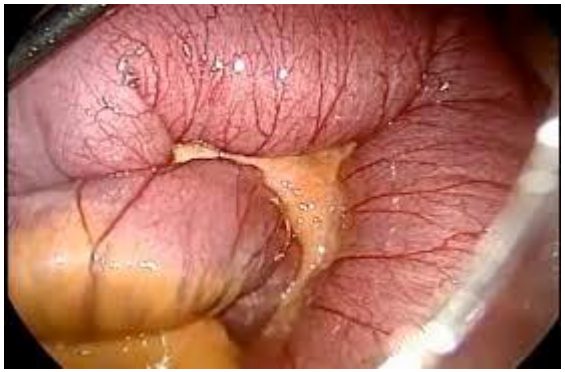


FIGURE 4. Loops of bowel in the Petersen space

Case Presentation 1

- 42 years old man, Mr. Hofmann from Baden, Chemist
- LRYGB in June 2012 (BMI of 42.2)
- Weight loss
  (40 kg and BMI of 25.4, EWL= 100%)

Evolution…

- 26.11.2016: Acute abdominal pain ER hospital (Graubünden)

  All tests (including CT) normal, spontaneous solution

- 23.12.2016: Acute abdoninal pain ER 2nd other hospital (Aarau)

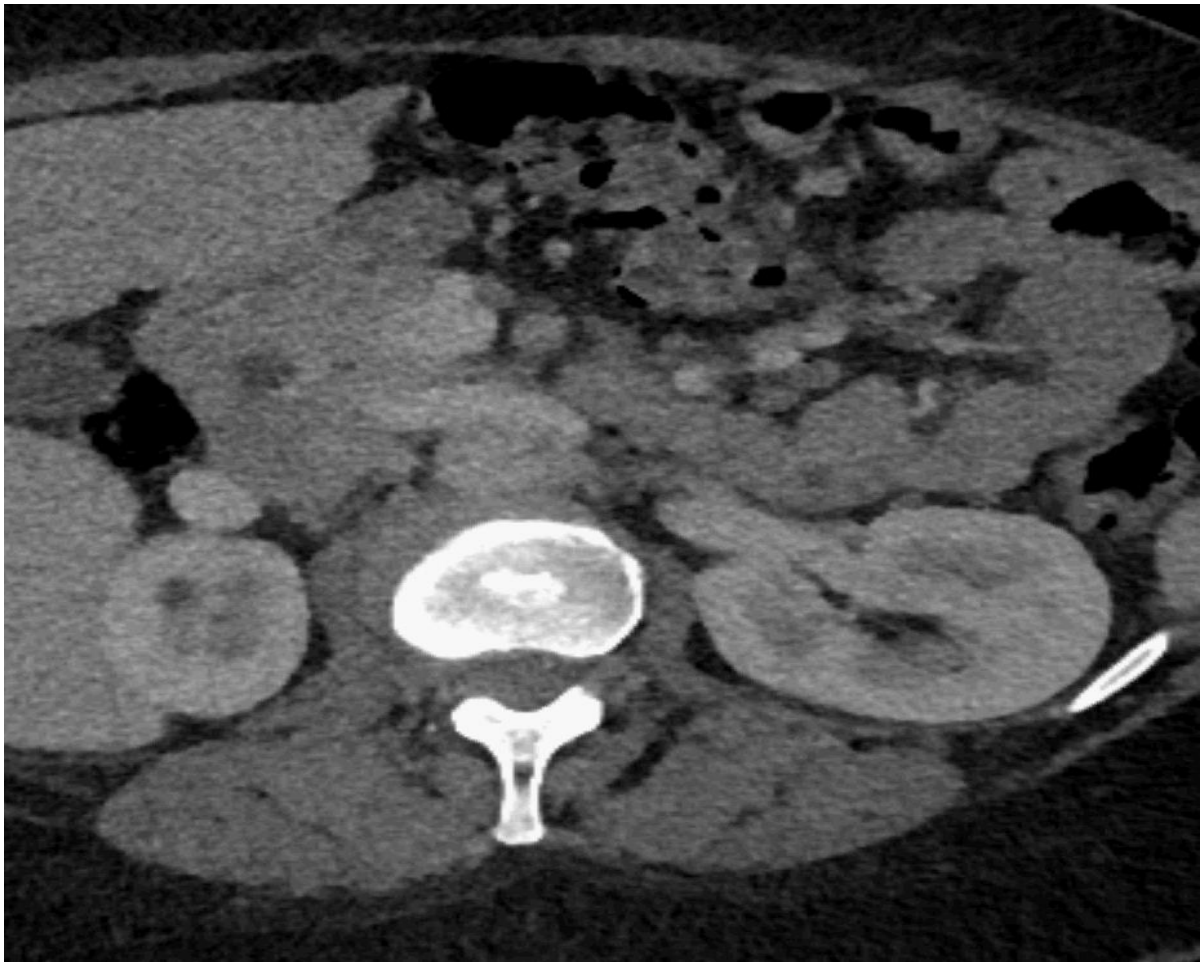
  All tests (without CT) normal, spontaneous solution

  Both times, acute onset of constant pain

- 15.01.2017 CT normal, Refuse elective exploration,«Bicycle day», January- August 2017: intermittent episodes

- 11.09.2017 Acut abdominal pain, silmiliar to previous episodes:

  Abdomen slightly painful on palpation, persistent pain after medication, no vomiting



Radiology. 2017 Mar;282(3):752-760. doi: 10.1148/radiol.2016160956. Epub 2016 Sep 30.

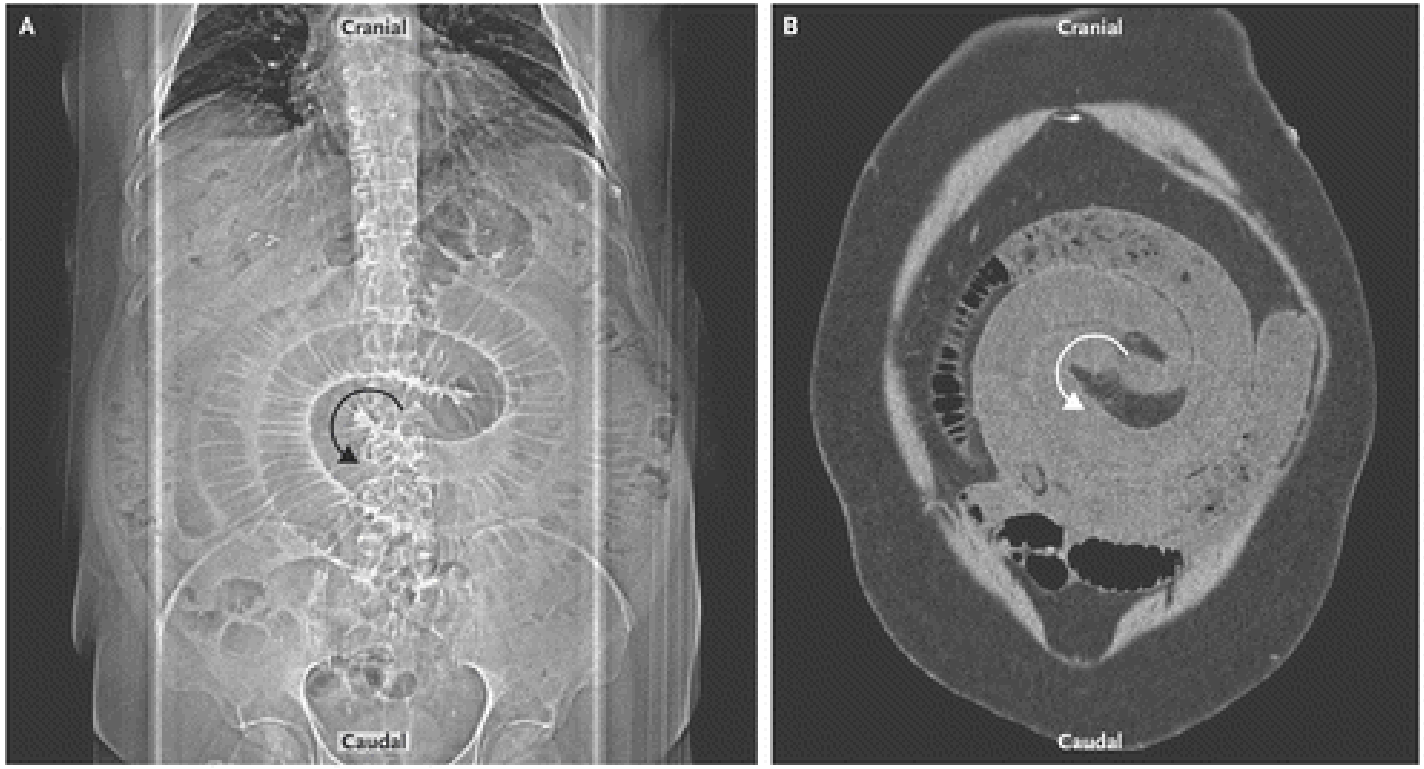
Internal Hernia after Laparoscopic Roux-en-Y Gastric Bypass: Optimal CT Signs for Diagnosis and Clinical Decision Making.

Dilauro M[1], McInnes MD[1], Schieda N[1], Kielar AZ[1], Verma R[1], Walsh C[1], Vizhul A[1], Petrcich W[1], Mamazza J[1].

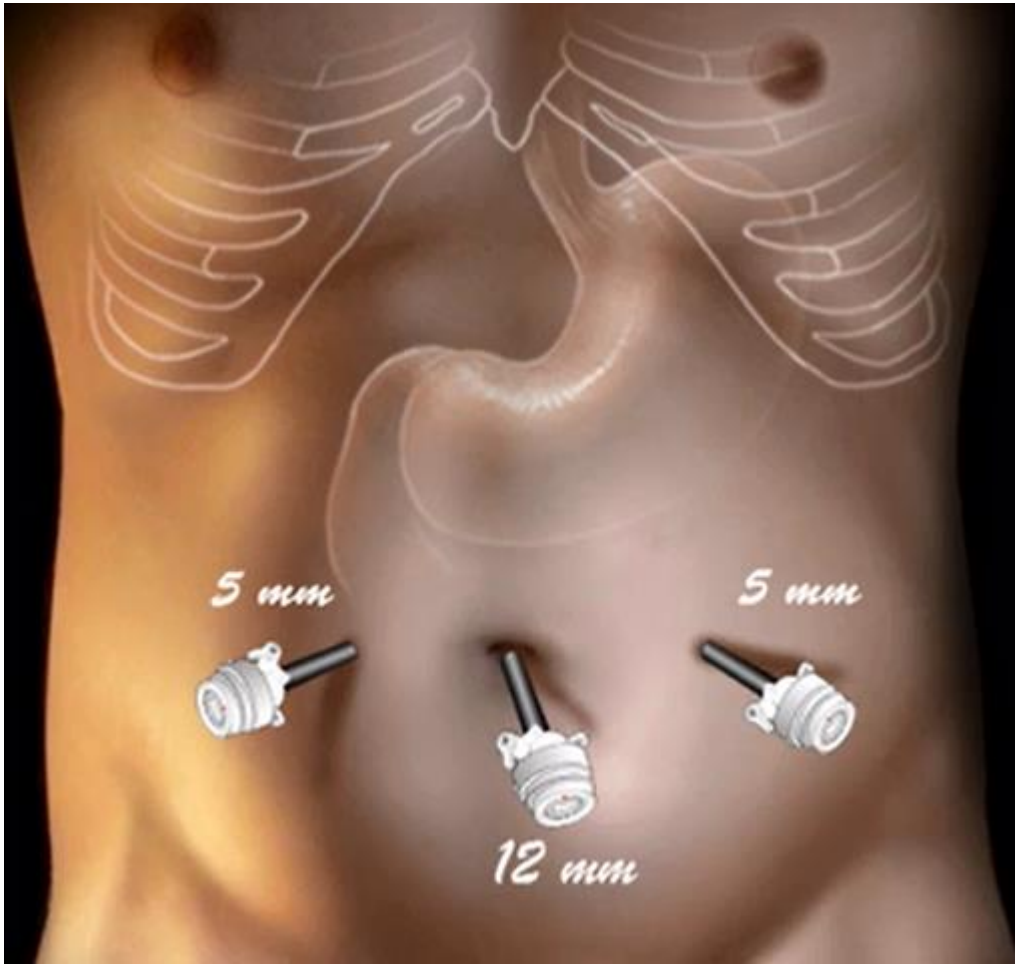
Swirl Sign, Mushroom Sign

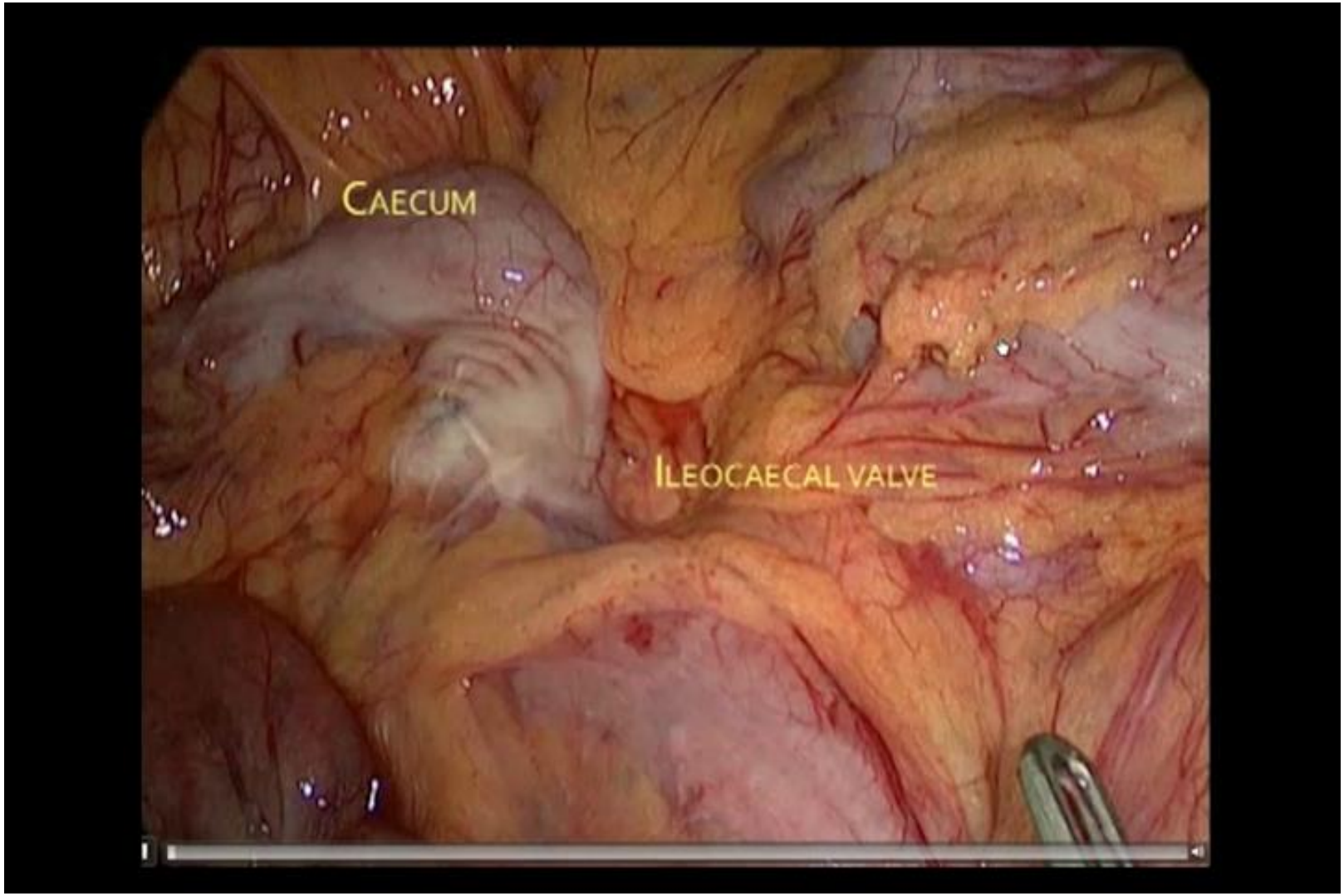
- mesenteric swirl
- small-bowel obstruction (SBO)
- mushroom sign
- clustered loops
- hurricane eye
- small bowel behind the superior mesenteric artery, and right-sided anastomosis
- superior mesenteric vein (SMV) "beaking" and "criss-cross" of the mesenteric vessels

Swirl Sign

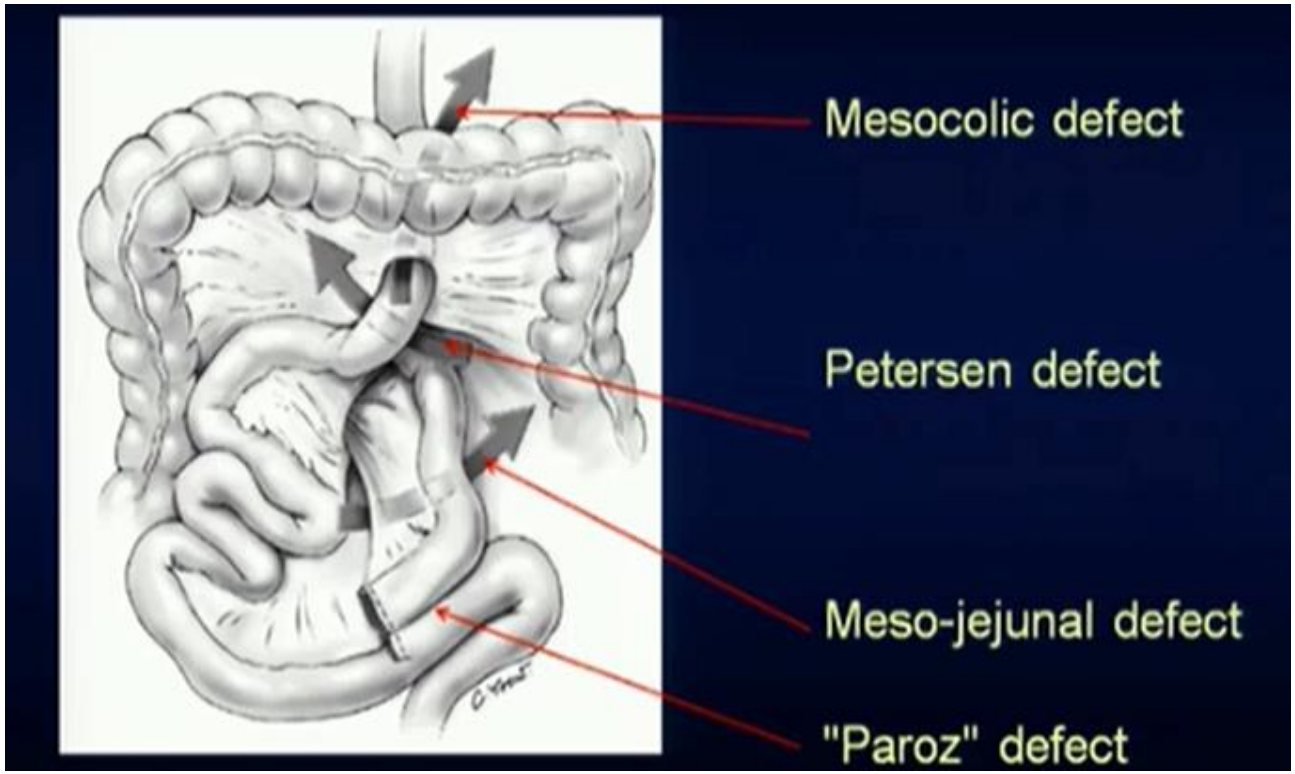


N Engl J Med. 2017 Jan 19;376(3)
Swirl Sign - Intestinal Volvulus after Roux-en-Y Gastric Bypass.
Fernandez-Moure J, Sherman V.


5 mm
5 mm
12 mm


CAECUM
ILEOCAECAL VALVE

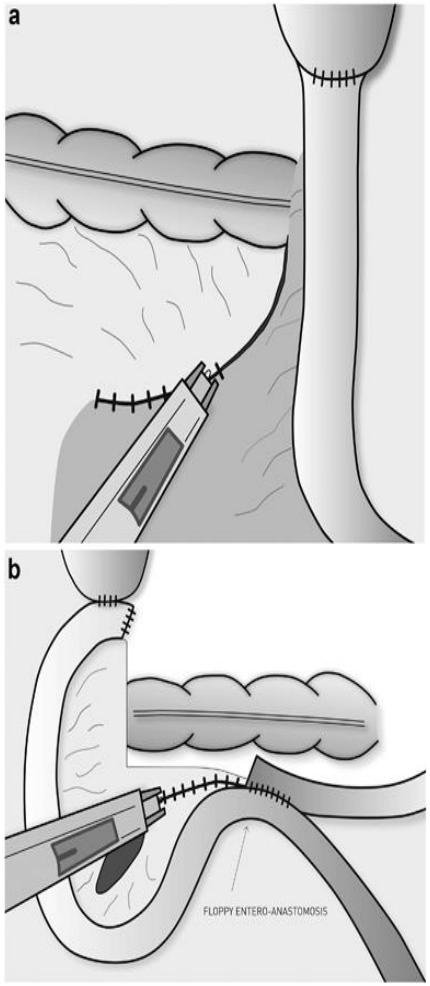
Sides of Hernia after Gastric Bypass

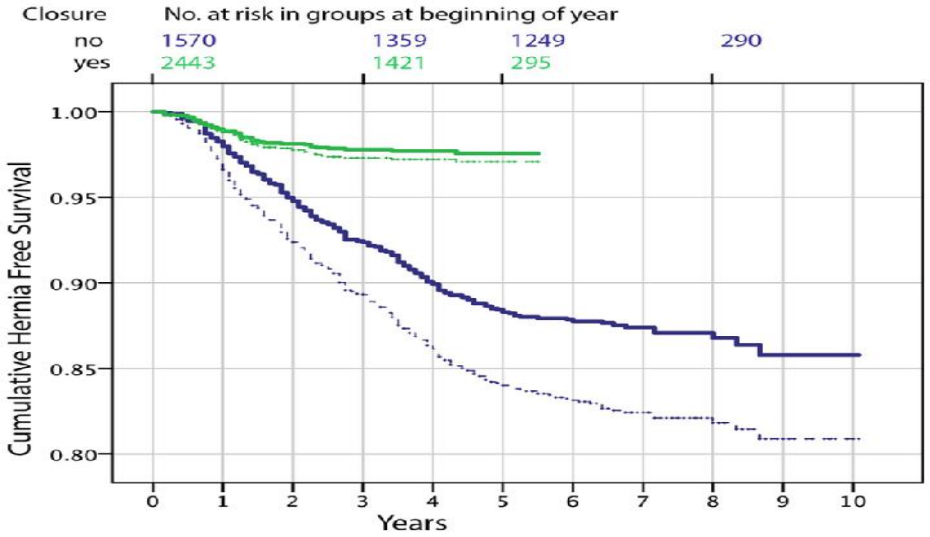


DJF flips to R through Petersen's defect
Any loop through Mesojejunal defect
Alimentary limb through Mesocolic defect

- **Can occur whether defects closed or not!**
- **Can occur after repeat repair!**

Incidence





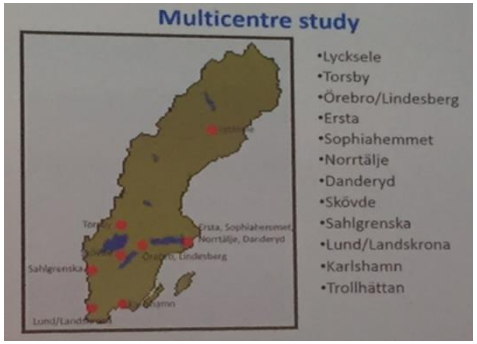
- Internal Hernia are more common if defects are not closed

  N = 4013
- 2.5% vs 11.7% internal hernia at 5 years post-RYGB
- The incidence is cumulative over time
- Closure substantially reduces risk of Internal Hernia

E Aghajani, B Nergaard, B Leifson, J Hedenbro, H Gislason
Surg Endoscopy: Feb 17; p1-6
DOI 10.1007/s00464-017-5415-2

Closure of mesenteric defects in laparoscopic gastric bypass: a multicentre, randomised, parallel, open-label trial

Erik Stenberg, Eva Szabo, Göran Ågren, Johan Ottosson, Richard Marsk, Hans Lönroth, Lars Boman, Anders Magnuson, Anders Thorell, Ingmar Näslund



Design

Randomisation with closed envelopes

-Closure of mesenteric defects with running, non-absorbable (N=1259)

-Leaving the mesenteric defects open (N= 1248)

Outcome

- Efficacy: opertion for small bowel obstruction
- Safety: severe postop.complications (Calvien-Dindo >3b)

Follow-up

-SOReg-30 days, 1 year, 2 yeras

Stenberg-E, Lancet 2015

ADIPOSITAS ZENTRUM BERN

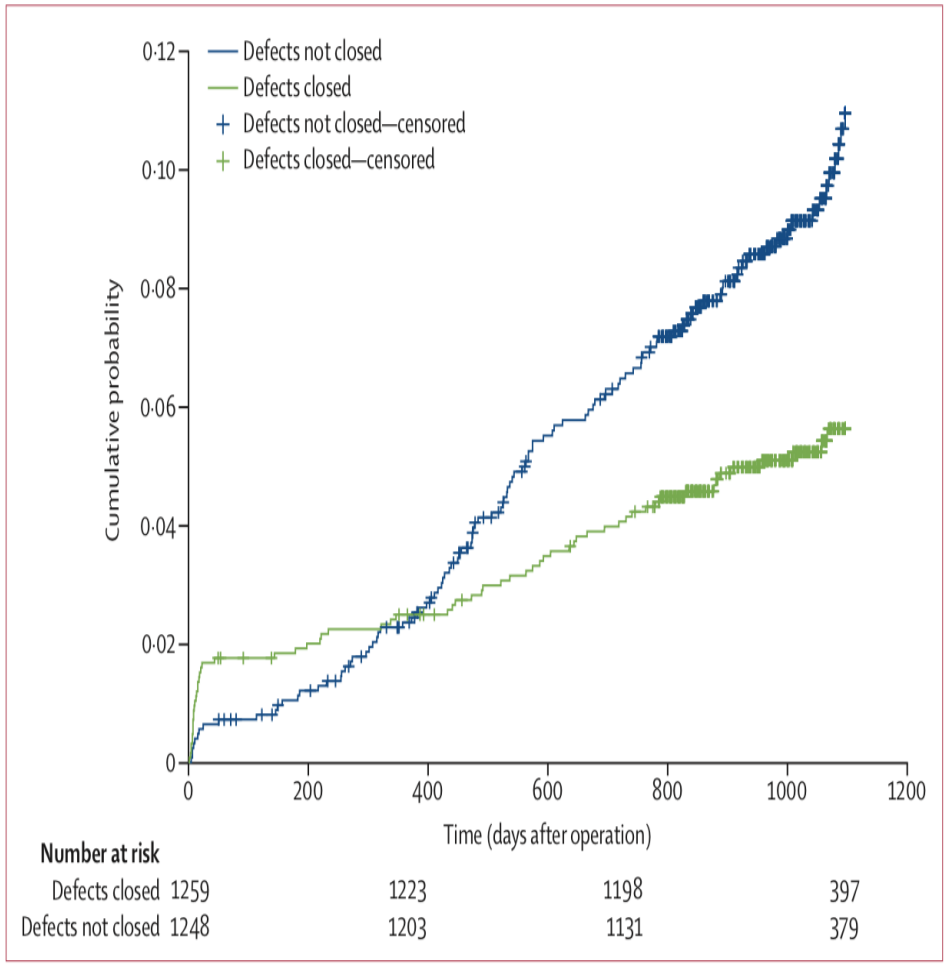


Figure 2: Cumulative probability of reoperation because of small bowel obstruction

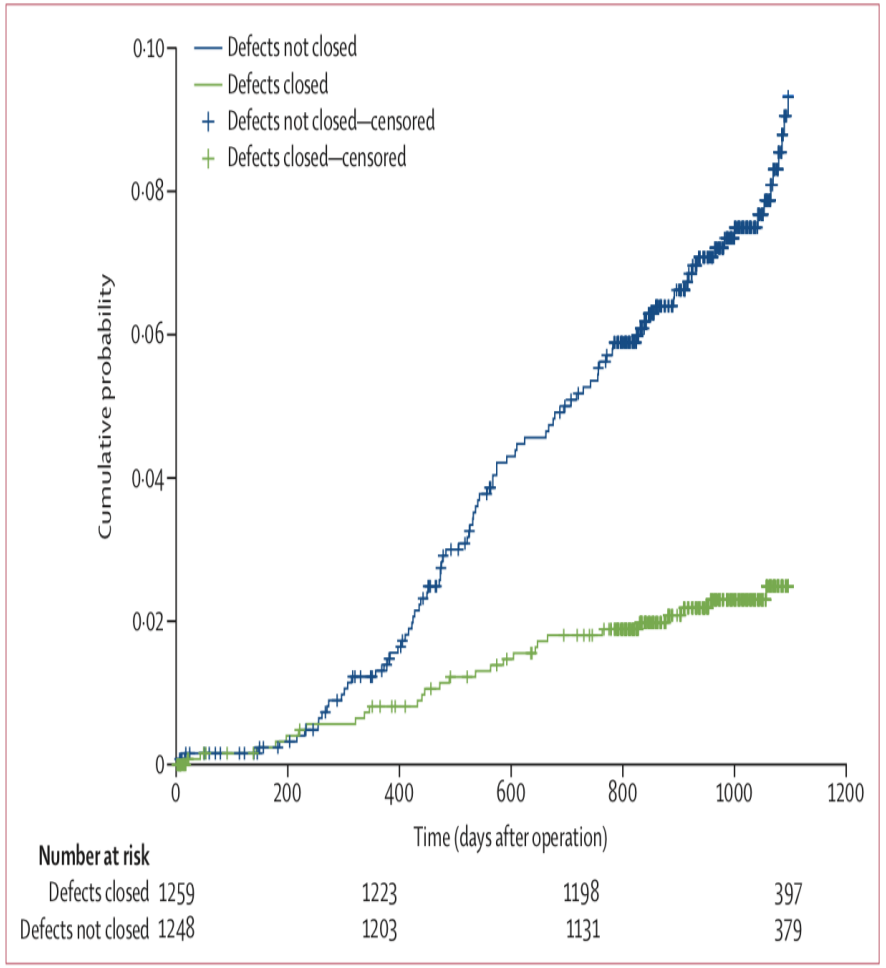


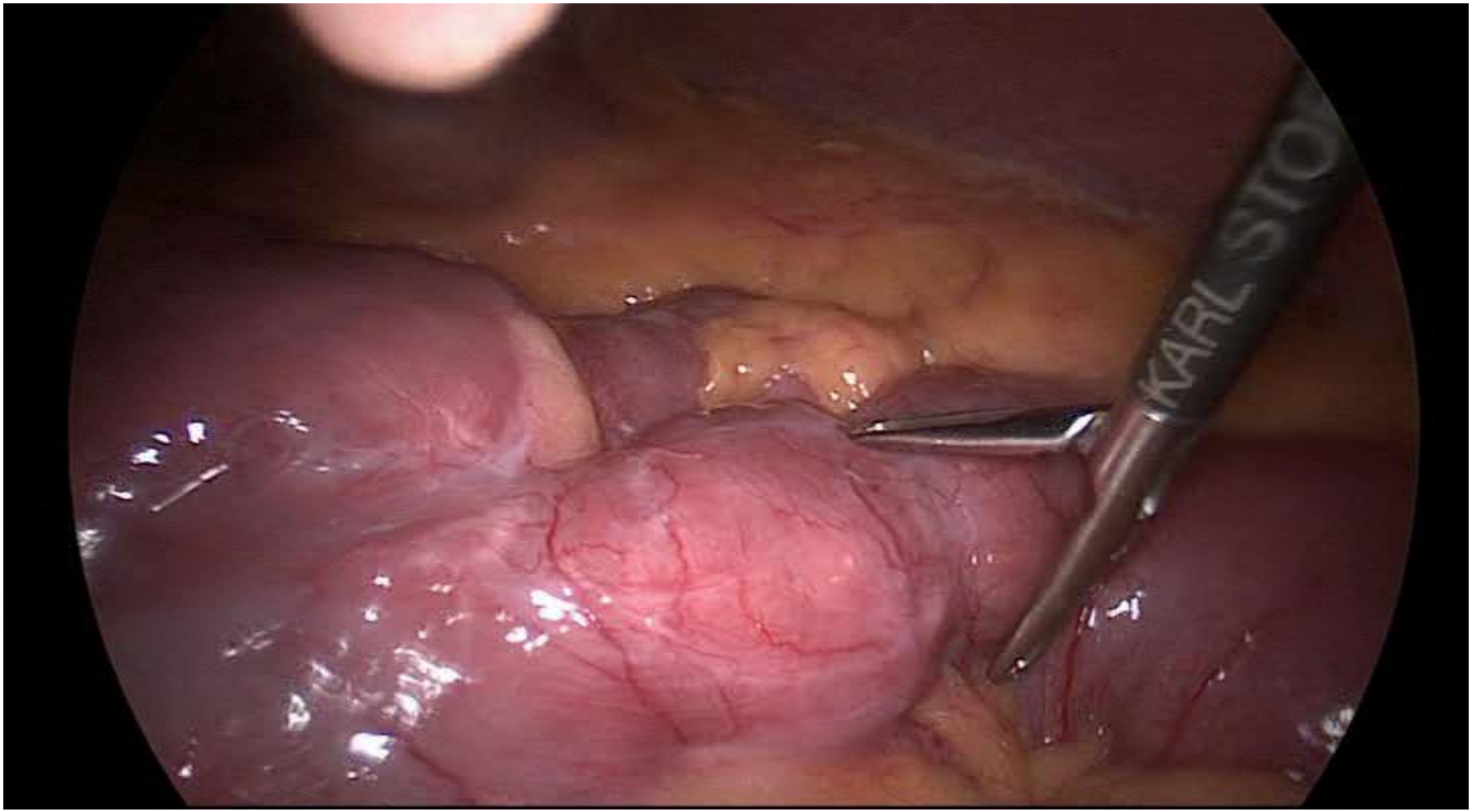
Figure 3: Cumulative probability of reoperation because of small bowel obstruction due to internal hernia

Stenberg-E, Lancet 2015

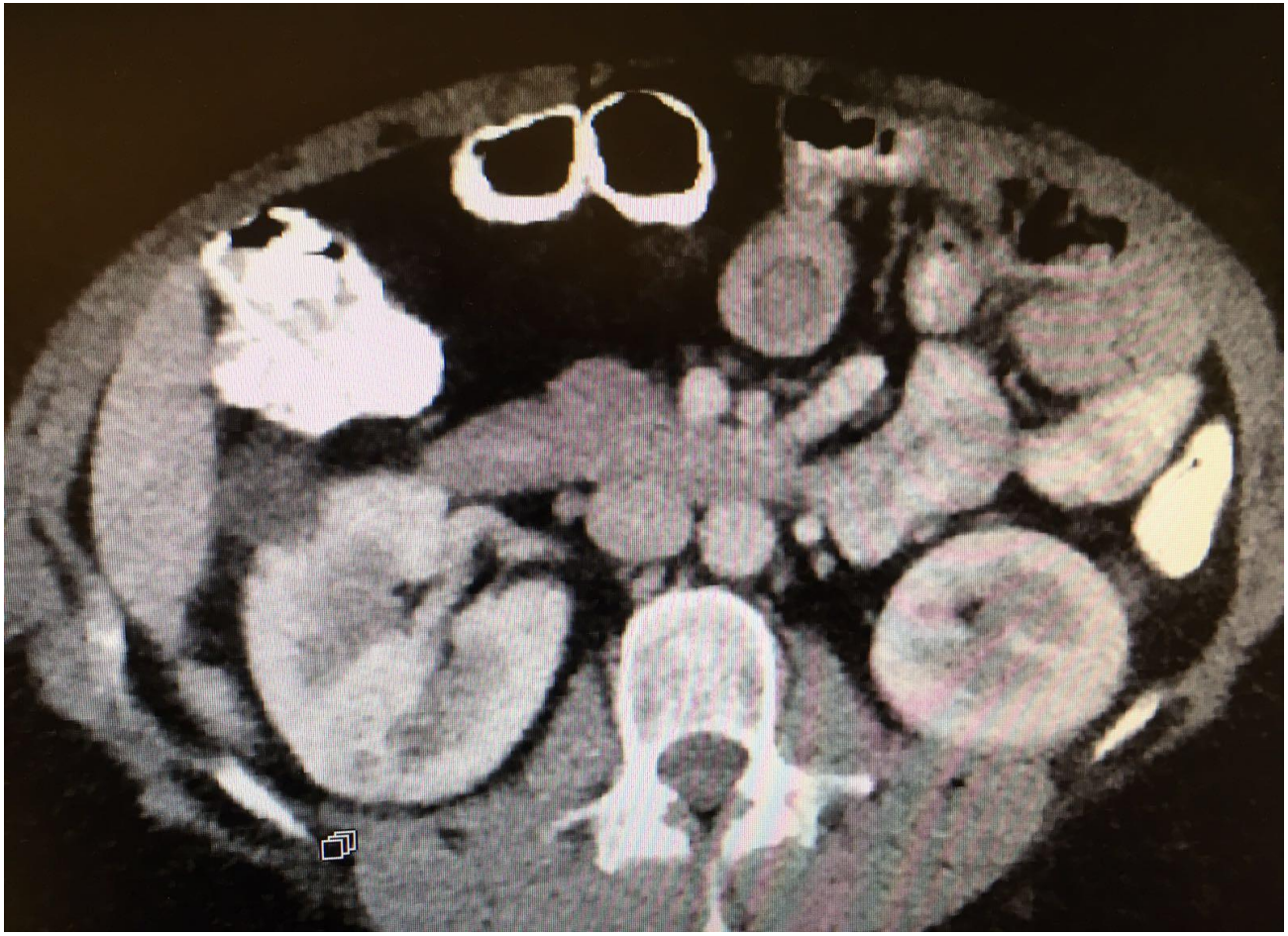
Summary

- Closure of mesenteric defects

  - Reduces risk for re-operation for small bowel obstruction
  - Can be perforemd witch acceptable morbidity


KARL STO

Invagination at JJ-Anastomosis



Case presentation 2

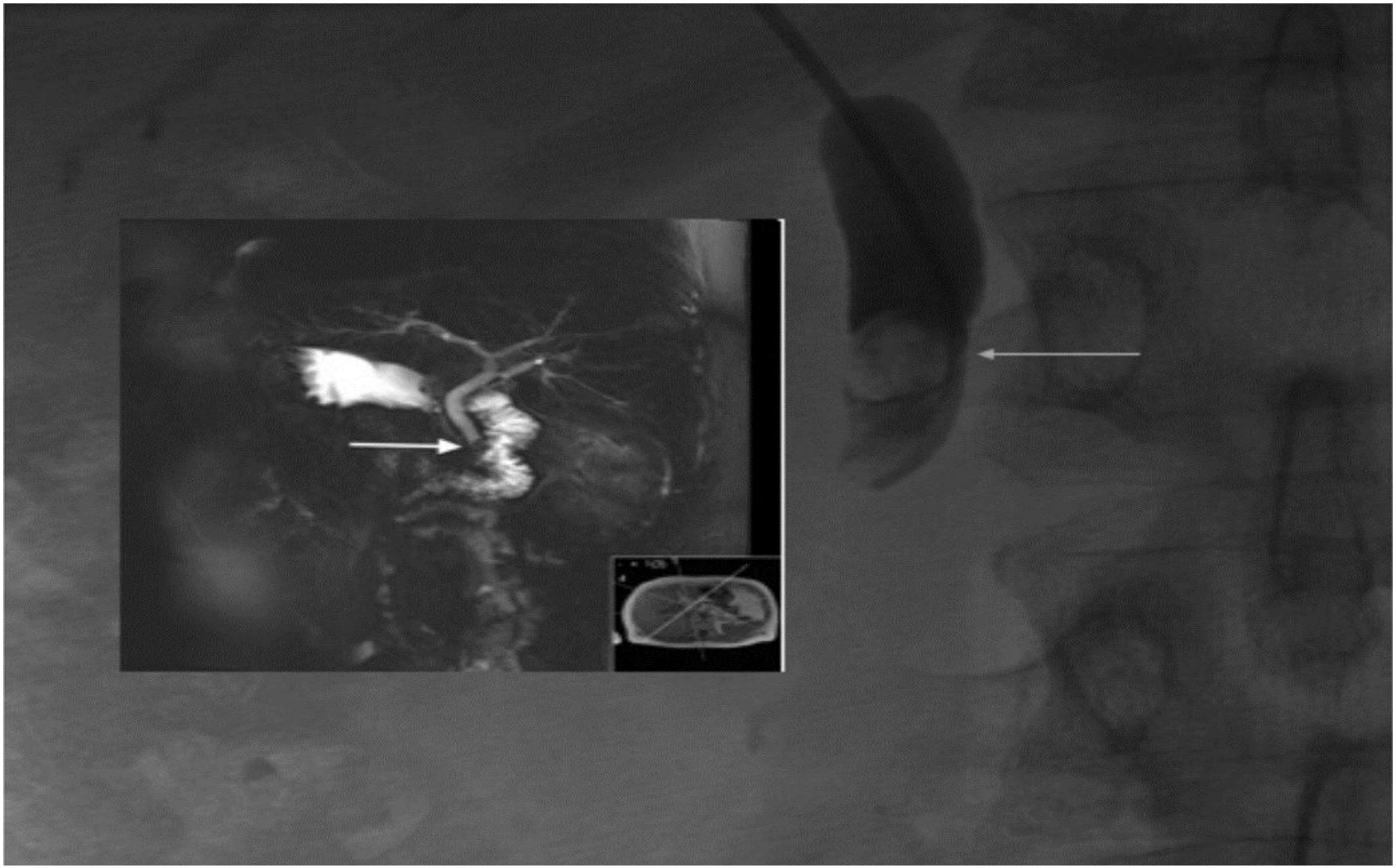
42 years old man, moved to Lyss

LRYGB in June 2012 (BMI of 42.2)

Weight loss
(40 kg and BMI of 25.4, EWL= 100%)

Unspecific pain, no vomiting, fever, jaundice

Scope the CBD problem



Risk factors for Gallstone Formation and Types of CBD stones

Age > 40 years

Female gender

Pregnancy

Genetics

Obesity

Rapid weight loss

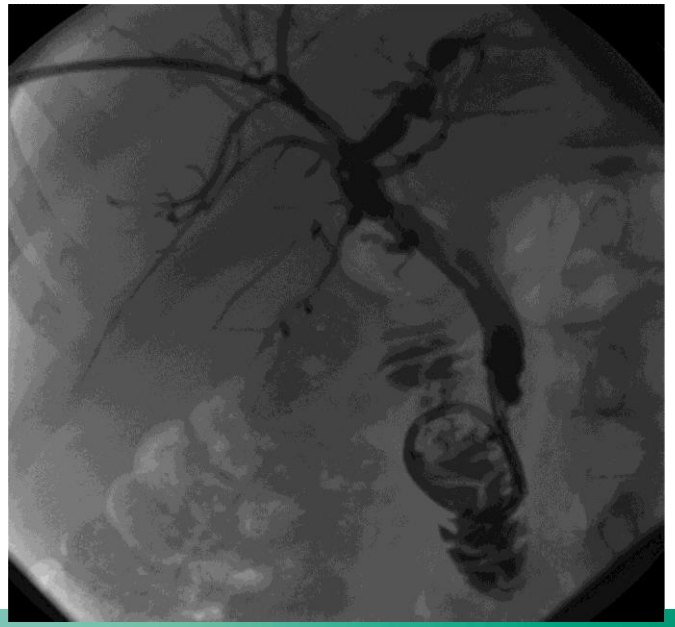
	Primary	Secondary
Incidence	Rare	2%-5% of gallstones
Composition	Pigment	Cholesterol
Risk factor	Infection, stasis	Gallstones
Mangement	Remove, treat cause	Prophylaxis, remove

Treatment

- Percutanoues clearance of CBD
- Endoscopic clearance of CBD
- Operative clearance of CBD

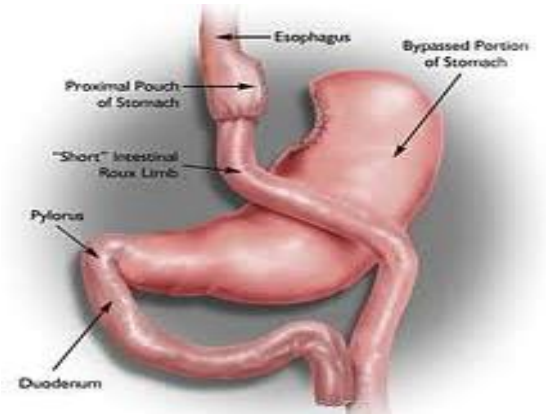
Percutaneous Trans-hepatic Clearance of CBD

- Introduced 1981 by Nimura
- Useful when complicated testined stones and poor surgical candiadates
- Technically easy and effective especially when combined with papillary ballon dilatation
- Sucess rate of 100 % reported



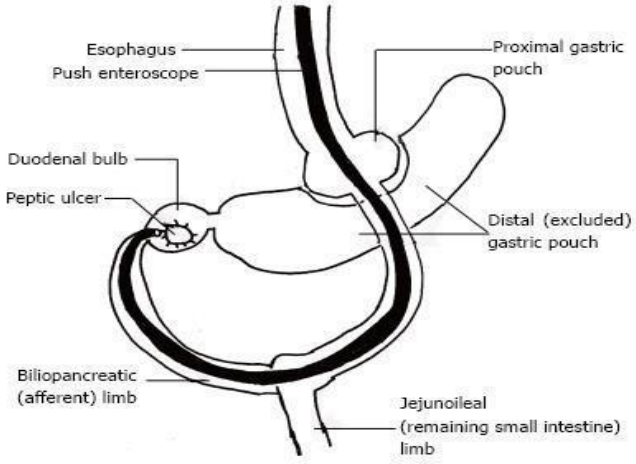
Endoscopic clearance of CBD

- Easier accessible after Sleeve Gastrectomy
- More challenging after Gastric Bypass
- Laparoscopic-assited ERC



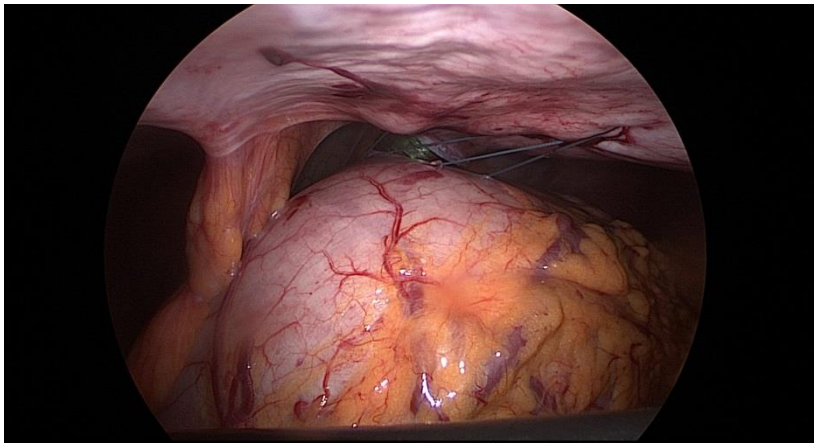
ERCP with Double-Ballon Enteroscopy

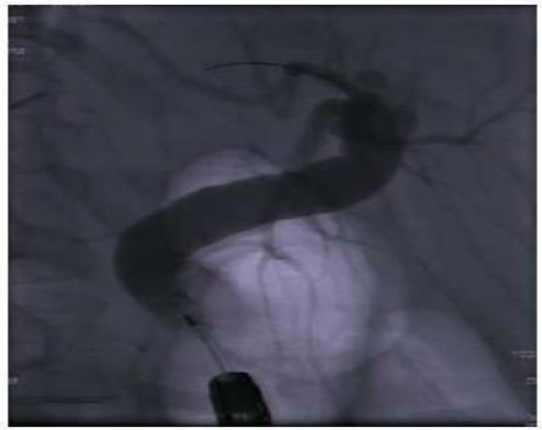
- Technically challenging
- Long procedure
- Tattooing BP limb helps
- ERCP papilla sucessfull 60 %
- May create retrograde PEG for trans-gastric ERCP to avoid surgery



Laparoscopic-Assited ERCP

- Laparoscopic gastrostomy, Single port
- Side-viewing endoscope advanced to papilla
- In study of 15 patients, procedures performed 16 m after RYGB
- Sucess rate 100 %, 10 patients had cocomitant cholecystectomy
- One patient mild pancreatitis





Lap.assisted ERCP vs. Ballon enteroscopy assisted ERCP

24 patients LA-ERCP vs 32 patients BEA-ERCP

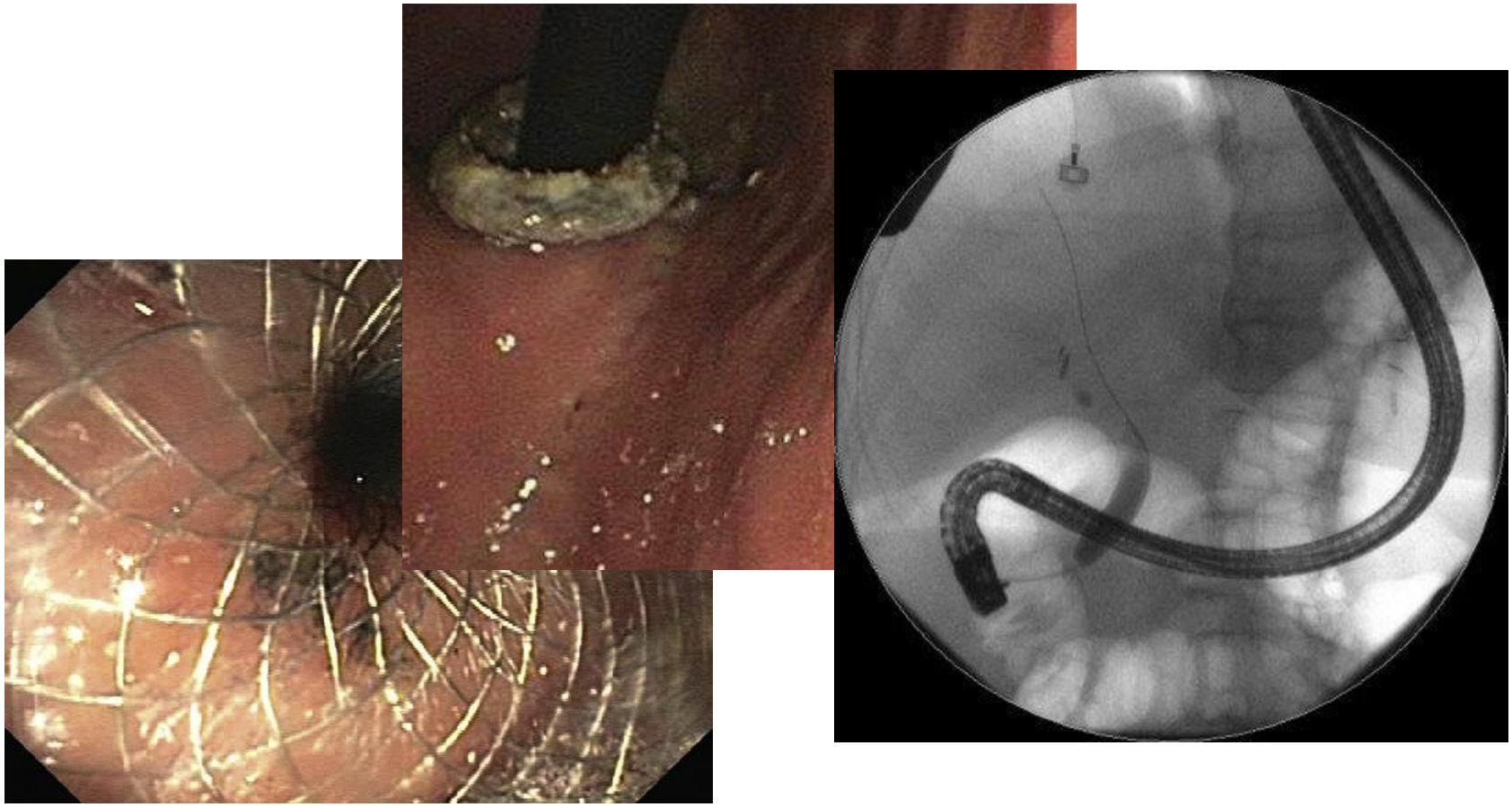
LA-ERCP was superior in

- Papilla identification (100 %vs.72%)
- Pailla cannulation (100% vs. 59%)
- Therapeutic sucess (100 % vs. 59%)
- Duration in favour of lap. ass. ERC

Laparoscopy-assisted versus balloon enteroscopy-assisted ERCP in bariatric post-Roux-en-Y gastric bypass patients.

Schreiner MA[1], Chang L, Gluck M, Irani S, Gan SI, Brandabur JJ, Thirlby R, Moonka R, Kozarek RA, Ross AS.

EUS-directed transgastric ERCP for Roux-en-Y gastric bypass anatomy: a minimally invasive approach



Summary

Bariatric Surgery has become quite safe

If complications occur, timely diagnosis and treatment

Consider internal hernia in patients with colic pain

CT Scan if symptoms active, Laparoscopy

Prevention, primary closure of defects

CBD stones after gastric bypass: numerous creative and effective modalities have been devised

Older surgeons are performing well and can keep on operating

4 Dinge.
Eine Gemeinsamkeit.
Aber welche?

- Vanessa Banz — geb. Aarau
- LSD — Erfinder: Albert Hofman aus Baden
- Knoblauchpresse — Erfinder: Karl Zysset aus Lyss
- Rhein — Quelle: Tomasee, Graubünden

4 Dinge.
Eine Gemeinsamkeit.
Aber welche?

- Wer hat’s erfunden?

Thank you