



GB Obesitas Skåne

Reversal of Gastric Bypass

Experience with 51 patients 2019-2021

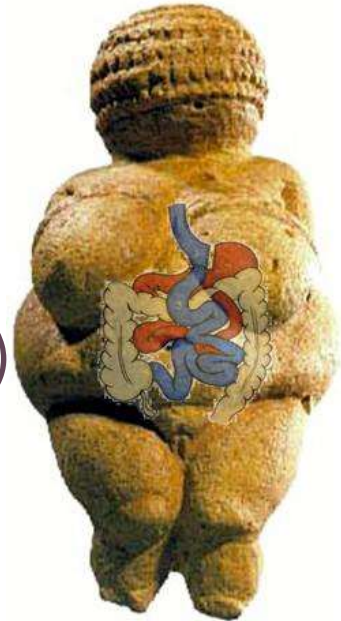
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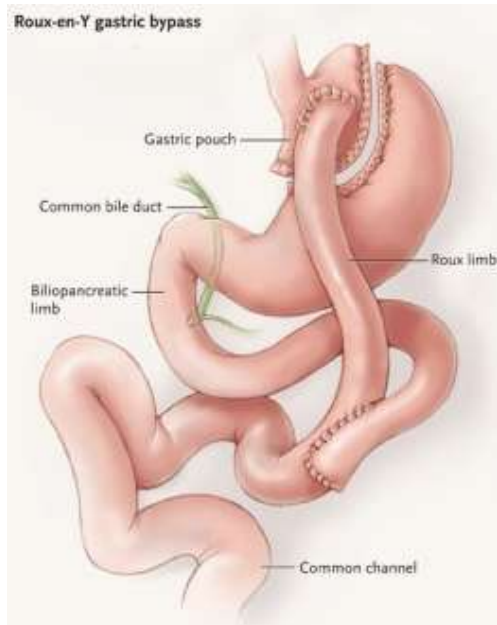
Reversal of Gastric Bypass - Literature



- Gastric bypass malfunction – reversal required in 0,5-1%
- Most extensive published literature: Himpens – 48 patients over 25 years
- Large risk of complications (leakage, bleeding, ventricular retention 30-40%)
- Duration of surgery (2-3 hours)

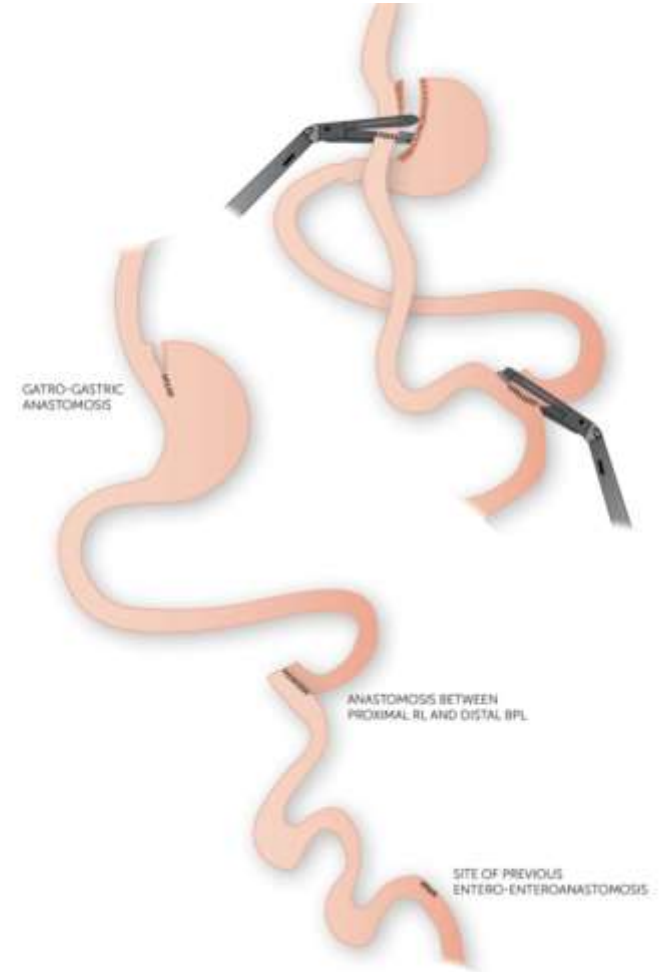


Reversal of Gastric Bypass - Complete Anatomy



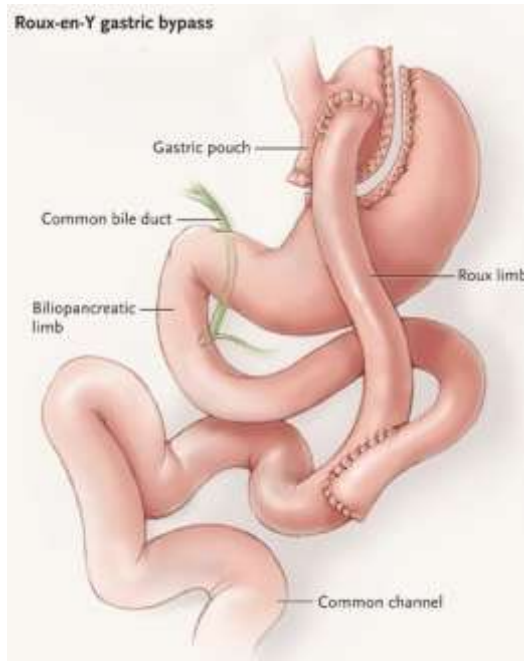
e

Transection of the BPL off the jejuno-jejunostomy and attachment to the proximal end of the RL.



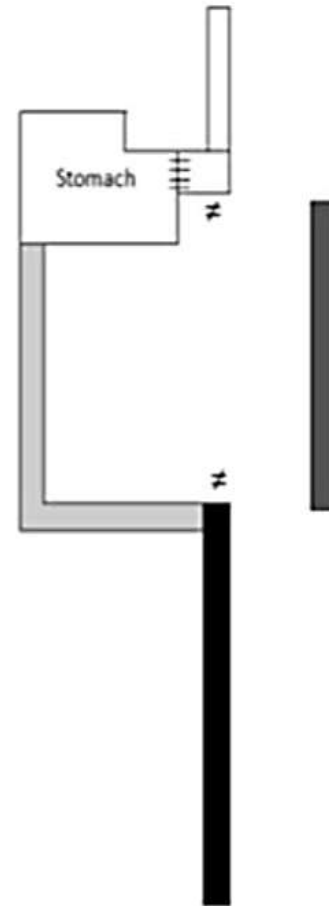
Reversal of Gastric Bypass

-Partial removal of intestine (Alimentary Limb)

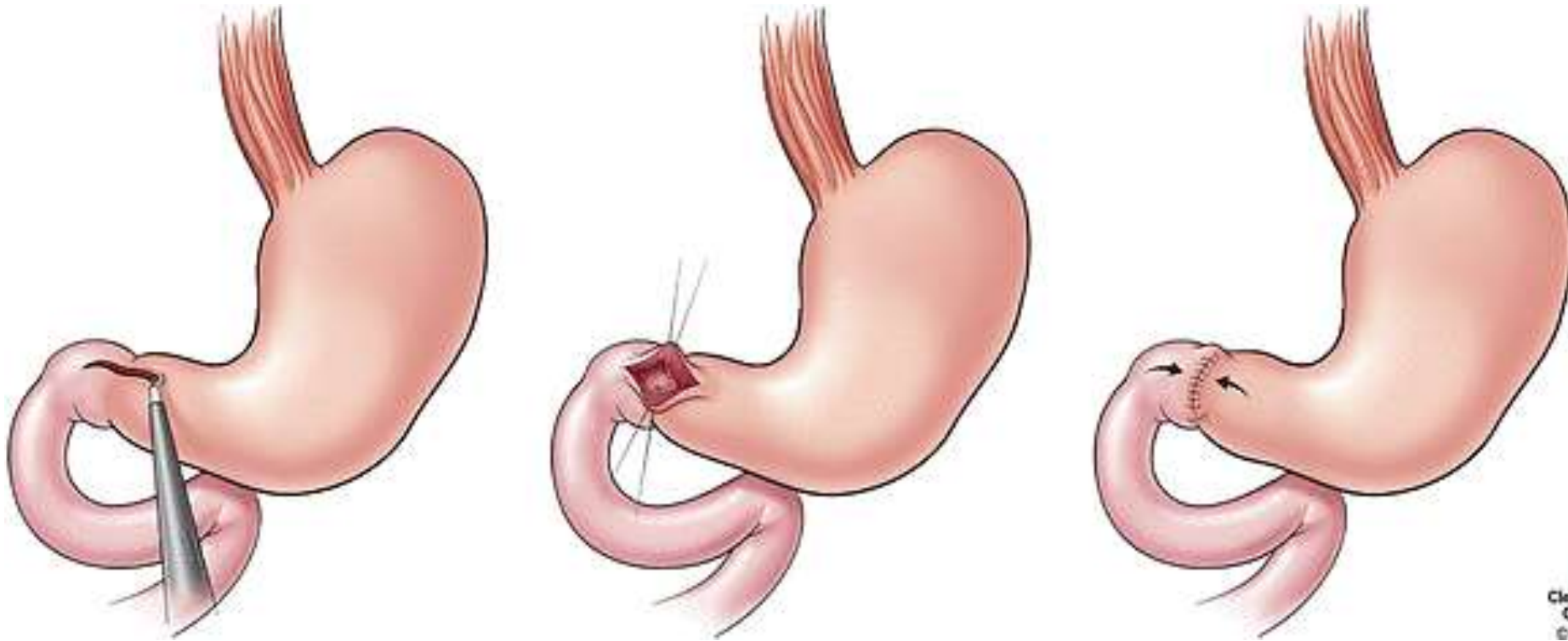


b

Reattachment of the gastric pouch to the remnant stomach and the subsequent resection of the roux-limb (RL).



Pyloroplasty

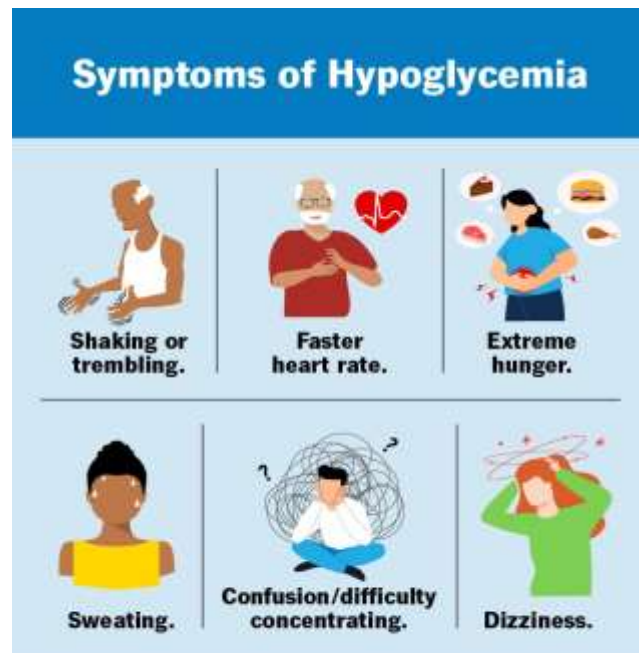


Indications for Reversal Surgery

- **Abdominal pain and opioid abuse:** abdominal pain for > 6 months without any obvious underlying physical cause which is confirmed through negative abdominal CT, gastroscopy and laparoscopy or recurrent bowel obstructions due to adhesions
- **Psychological intolerance:** psychological reactions causing mental incompatibility with the surgery and the subsequent diet and behavioral requirements
- **Fatigue:** feeling of lack of energy and motivation. Often seen in conjunction with malnutrition and food intolerance. It is not considered a separate condition
- **Malnutrition:** hypoalbuminemia and/or hypoproteinemia and/or vitamin/mineral deficiencies treated with enteral or parenteral administration. Always treat with gastrostomy tube first

Indications for Reversal Surgery

- **Postprandial hypoglycemia:** severe hypoglycemia occurring 1-3 h after a meal causing sweating, tremor, loss of concentration, hunger and fainting. Acarbose, diazoxide, octreotide or similar pharmaceuticals affecting the glucose metabolism can be used to ease symptoms



Symptomatic hypoglycemia is **diagnosed** clinically using **Whipple's triad**: symptoms of hypoglycemia, plasma glucose concentration <55 mg/dl (3.0 mmol/l), and resolution of those symptoms after the plasma glucose concentration is raised.

Indications for Reversal Surgery

- **Excessive weight loss:** Rapidly progressing weight loss often leading to BMI levels <20
- **Diarrhea** (not dumping related): adhesions (sub-obstruction) or blind loop syndrome. The frequency of loose stool (Bristol Stool Scale: 6-7) and depending on medication such as loperamide, cholestyramine, probiotics, and/or antibiotic
- **Nausea and vomiting:** Symptoms requiring medication such as metoclopramide, ondansetron, meclizine or similar
- **Early dumping syndrome:** abdominal pain, flushing and sweating. Occurs postprandially

Symptom Questionnaire VAS

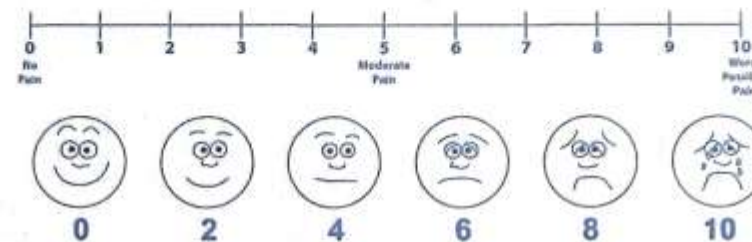
- Abdominal pain
- Nausea and vomiting
- Malnutrition
- Food intolerance
- Diarrhea
- Postprandial hypoglycemia
- Early dumping syndrome
- Chronic fatigue
- Psychological intolerance

Namn:

Personnummer:

Frågeformulär for patienter som har komplikationer (svårigheter) etter gastrisk bypass: svar med gradering av symptomene (0= inget besvær, 10= mycket besvärlige invalidiserende symptomene):

Magsmärtor:



Illamående:



Kräkningar:



Nutritjonsbrister

(vitamin, protein eller liknande):



Symptoms Leading to Reversal - Results

- **Group 1**

Patient with abdominal pain as the main symptom; n=38

- Continuous opioid treatment: 63% (24/38)
- Operated for internal hernia: 68% (26/38)
- Number of reoperations after RYGBP: 4.6 (1-16)
- Nutrition via gastrostomy 5 pts and via PICC-line 3 pts before reversal

n = 38	Abdominal pain	Nausea /vomiting	Malnutrition	Hypoglycemia	Food intolerance	Dumping	Psychological intolerance - Fatigue
VAS severity of symptoms	7.7	4.2	4.4	2.2	1.3	2.3	6.2

Symptoms Leading to Reversal - Results

- **Group 2**

*Patient with psychological intolerance /chronic fatigue as the main symptom;
n=13*

- Continuous opioid treatment: 0
- Operated for internal hernia: 31% (4/13)
- Number of reoperations after RYGBP: 0.4 (0-3)
- Nutritional problem before reversal: 0

n = 38	Abdominal pain	Nausea /vomiting	Malnutrition	Hypoglycemia	Food intolerance	Dumping	Psychological intolerance - Fatigue
VAS severity of symptoms	2.2	1.1	4.4	4.7	2.7	4.0	7.9

Reversal of Gastric Bypass - Results

- **Table:** Patient demographics at index operation (RYGB) and preoperatively before reversal to normal anatomy (n= 51)
Mean (range) or number of patients and %

n = 51	At index operation	At reversal to normal anatomy
Duration from RYGB to reversal, months	116 (24-276)	
Follow-up post reversal, months		12 (47/51= 92%)
Age, years	33.6 (16-60)	43.3 (28-66)
Female/male, ratio	47/4 (85%)	
Surgical time (minutes)		78 (48-130)
Hospital stay (days)		2.9 (1-12)
Completed laparoscopically		51 (100%)

Complications of Reversal - Results

- Early reoperations: 16% (8/51)
- Late reoperations: 14% (7/51)
- Total reoperations first year: 29% (15/51)
- Overall complication rate 45% (23/51)

n=51	Early reoperations (<30d)	Late reoperations
Leak/intra abdominal infection	5 (10%)	
Intra abdominal bleeding	2 (4%)	
Negative laparoscopy	1 (2%)	
Small bowel obstruction		1 (2%)
Extreme hunger/Weight regain - sleeve		1 (2%)
Severe GERD – pyloroplasty		5 (10%)
Severe GERD treated medically: 6 patients		
Portal / mesenteric vein thrombosis: 5 (4/1) pts		

Reversal of Gastric Bypass - Results

n = 51	At RYGB	At reversal	At 1-year follow-up	Δ Difference
Weight, kg	126.9 (95-180)	83.5 (54-125)	93.9 (62-148) **	8.6 (-15-41)
BMI, kg/m ²	44.3 (34.8-65)	29.9 (19.5-47)	32.8 (22.1-46.3) *	2.9 (-5.8-32.2)

Unpaired t-test comparison between "At 1-year follow-up" and "At reversal"

Δ Difference = "At 1-year follow-up" – "At reversal"

* P < 0.05

** P < 0.01

Correlation Between Time from Primary RYGB vs. Weight Regain after Reversal?

RESUMEOUTPUT								
<i>Regressionsstatistik</i>								
Multipel R	0,245817969							
R-kvadreret	0,060426474							
Justeret R-kvadreret	0,049749502							
Standardfejl	0,458106772							
Observationer	90							
ANAVA								
	<i>fg</i>	<i>SK</i>	<i>MK</i>	<i>F</i>	<i>Signifikans F</i>			
Regression	1	1,187715914	1,187715914	5,659514187	0,019522949			
Residual	88	18,46783964	0,209861814					
I alt	89	19,65555556						
	<i>Koefficienter</i>	<i>Standardfejl</i>	<i>t-stat</i>	<i>P-værdi</i>	<i>Nedre 95%</i>	<i>Øvre 95%</i>	<i>Nedre 95,0%</i>	<i>Øvre 95,0%</i>
Skæring	0,517355655	0,095182827	5,435388617	4,82476E-07	0,328199787	0,706511523	0,328199787	0,706511523
Months	-0,002666162	0,00112072	-2,378973347	0,019522949	-0,004893357	-0,000438967	-0,004893357	-0,000438967

Changes in Symptoms One Year after Reversal - Results

Group 1

- Patients with abdominal pain as the main symptom; n = 38
- Complete resolution of symptoms: 65% (22/34)
- Significant improvement of symptoms: 20% (7/34)
- Not satisfied, still severe symptoms: 15 % (5/34)

One mortality: cerebral hemorrhage after 11 months

Three not attended at one year follow-up

Changes in Symptoms One Year after Reversal - Results

Group 2

- Patients with psychological intolerance/chronic fatigue and/or hypoglycemia as the main symptom; n = 13
- Complete resolution of symptoms: 92% (12/13)
- Not satisfied, still severe psychological symptoms and weight regain: 8 % (1/13)
- Eight patients with hypoglycemia (VAS 4-10) reported total relief of symptoms

Conclusions – Reversal of RYGB

- Symptom relief achieved in most patients after one year
- Patients with abdominal pain and/or severe malnutrition are demanding
- Is associated with weight regain (8.6 kg/2.9 BMI at one year)
- Complication rate is of concern (45% but can be reduced)

Thank you

