Metabolic Surgery

Chandra Hassan MD
Director of Bariatric Surgery
St. Vincent's Charity Medical Center
Cleveland, OH

Objectives

- brief overview of Bariatric surgery
- management of bariatric surgery patients and complications
- effects of bariatric surgery on diabetes
- revision procedures

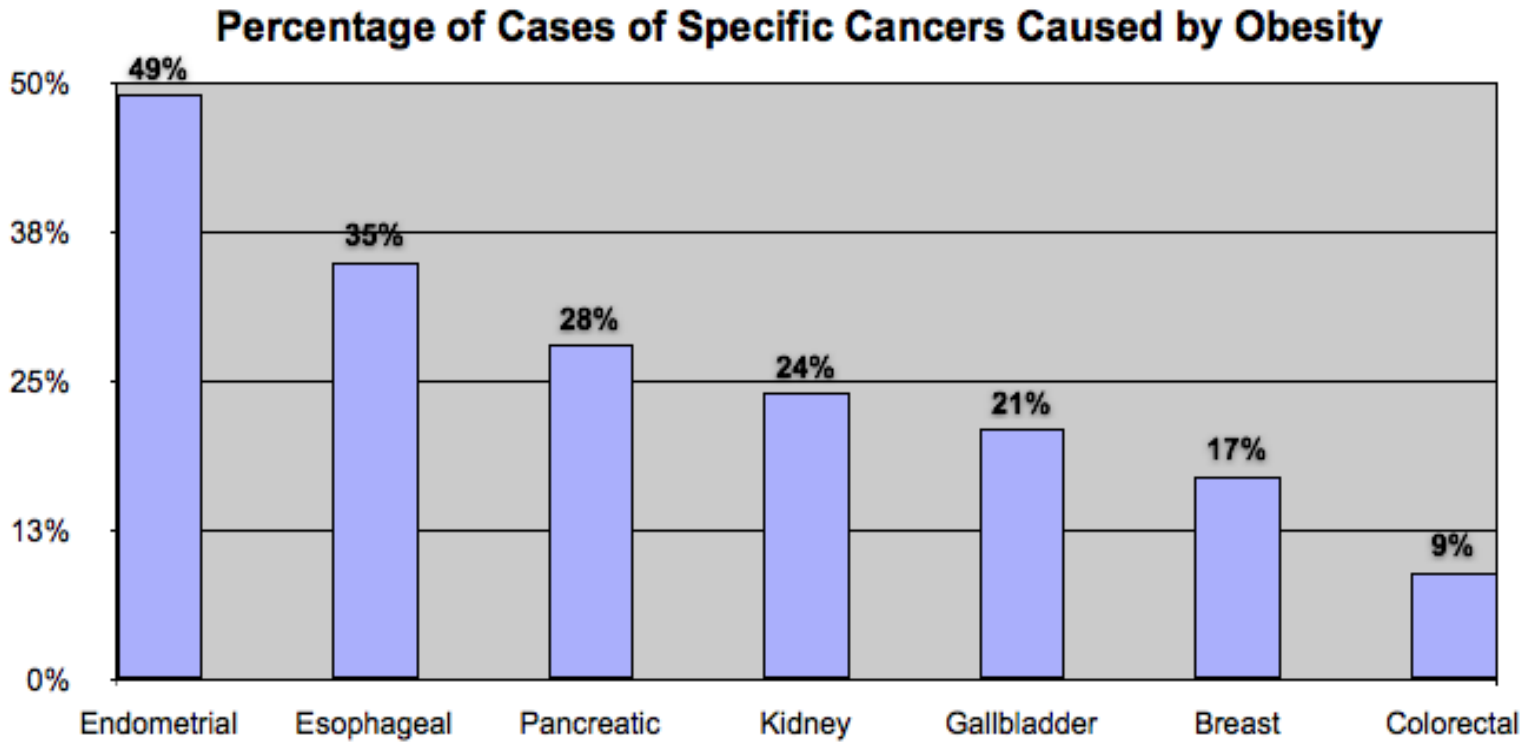
Metabolic Syndrome

- Central obesity. (defined as waist circumference ≥ 40 inches for men and ≥ 35cm for women)
- raised TG level: ≥ 150 mg/dL
- reduced HDL cholesterol: < 40 mg/dL
- raised blood pressure: systolic BP ≥ 130 or diastolic BP ≥ 85 mm Hg, or treatment of previously diagnosed hypertension
- raised fasting plasma glucose (FPG) ≥ 100 mg/dL or previously diagnosed type 2 diabetes

Metabolic Syndrome

- 54 Million Americans!
- A quarter of the world's adults have metabolic syndrome
- twice as likely to die from, and three times as likely to have a MI or CVA
- a five-fold greater risk of developing type 2 diabetes
- way ahead of HIV/AIDS in morbidity and mortality

Obesity is Directly Linked to Specific Cancers*



*American Institute for Cancer Research

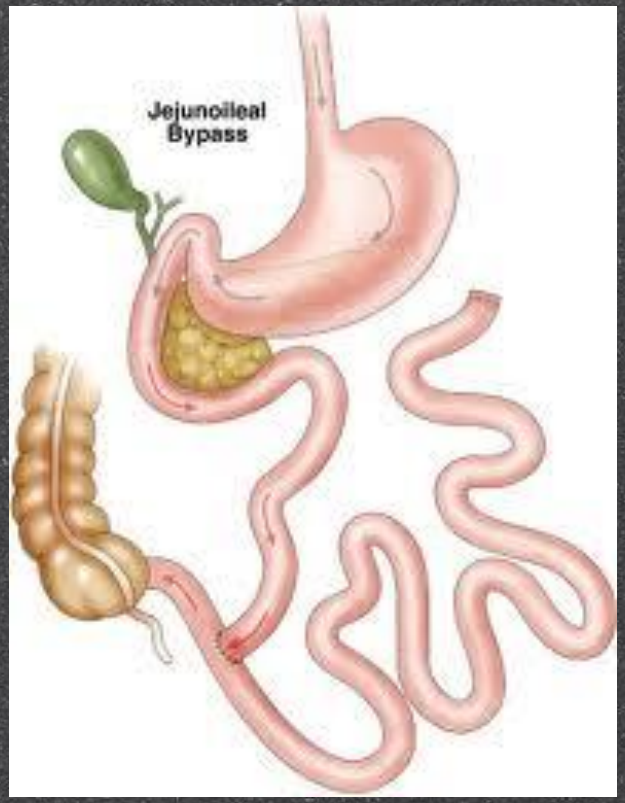
Body Mass Index

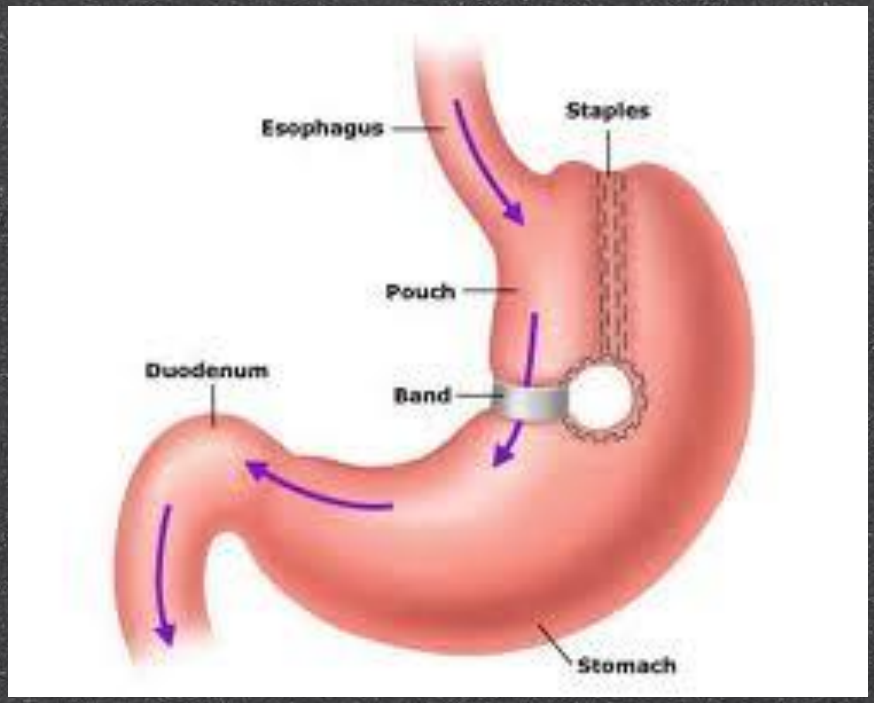
- BMI > 25: Over weight, 2/3rd US
- BMI > 30: Obese, 1/3rd US
- BMI > 40: Morbid Obese, 6% US (18 million Americans)

Criteria

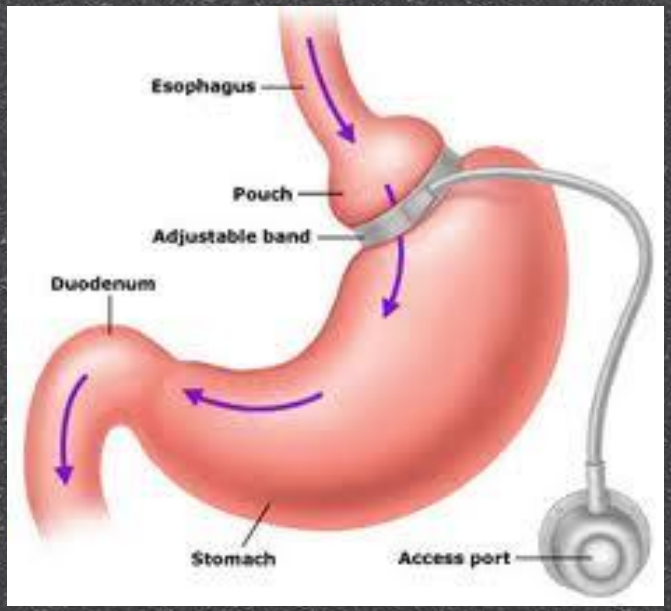
- BMI > 40
- BMI > 35 plus 1 or 2 co-morbidities
- T2D , Hypertension
- OSA, NASH
- Hyperlipidemia, Pseudo tumor cerebri
- Considerably impaired quality of life

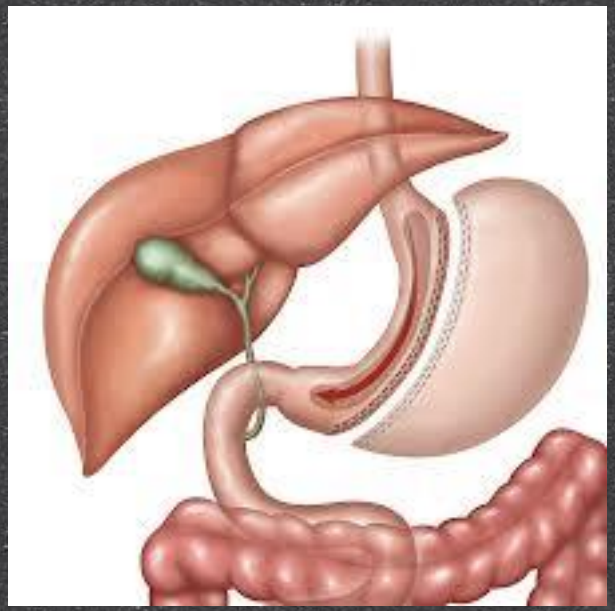
Historical Perspective

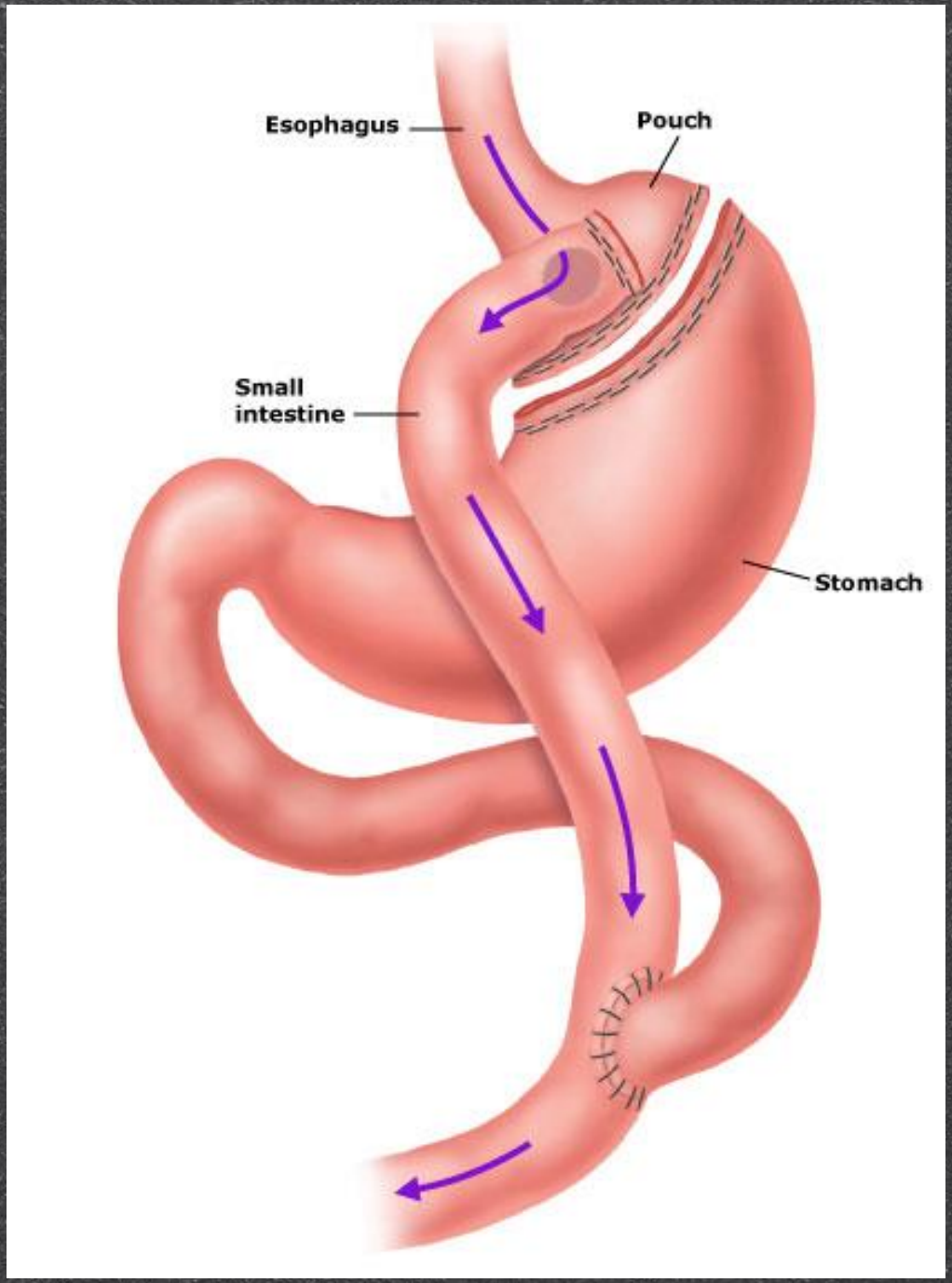




Band vs Sleeve






Esophagus
Pouch
Small intestine
Stomach

Pre-op work up

- Cardiology, Pulmonary, Psychiatry
- Home sleep study
- Blood test
- Clinical nutrition evaluation
- smoking cessation
- Pregnancy counseling


QuickTime™ and a
decompressor
are needed to see this picture.


QuickTime™ and a
decompressor
are needed to see this picture.


QuickTime™ and a
are needed to see this picture.

post-op care

- Monitored telemetry at least 24 hrs
- Protocol-derived staged meal progression
- Monitor blood glucose
- Adequate hydration
- Ambulation
- Incentive spirometry
- GI, DVT prophylaxis
- Specialists Consult

continued care

- Initial 2 weeks, then 3,6,12 months
- Monitor weight loss and complications
- Adjust medications
- Physical activity recommendations
- Blood work up per protocol
- Bone density (DXA) at 2 years
- Need for support groups
- Consider body contouring surgery

Early risks

- Anastomotic leak 1-4%
- Bleeding 0-5%
- Wound infection 0-5%
- Conversion <5%
- DVT 0-1.5%
- PE 0-1.3%

risks

- 30-day mortality for procedures 0.3%
- Increased risk if BMI > 50, h/o DVT, PE, OSA, Poor functional status

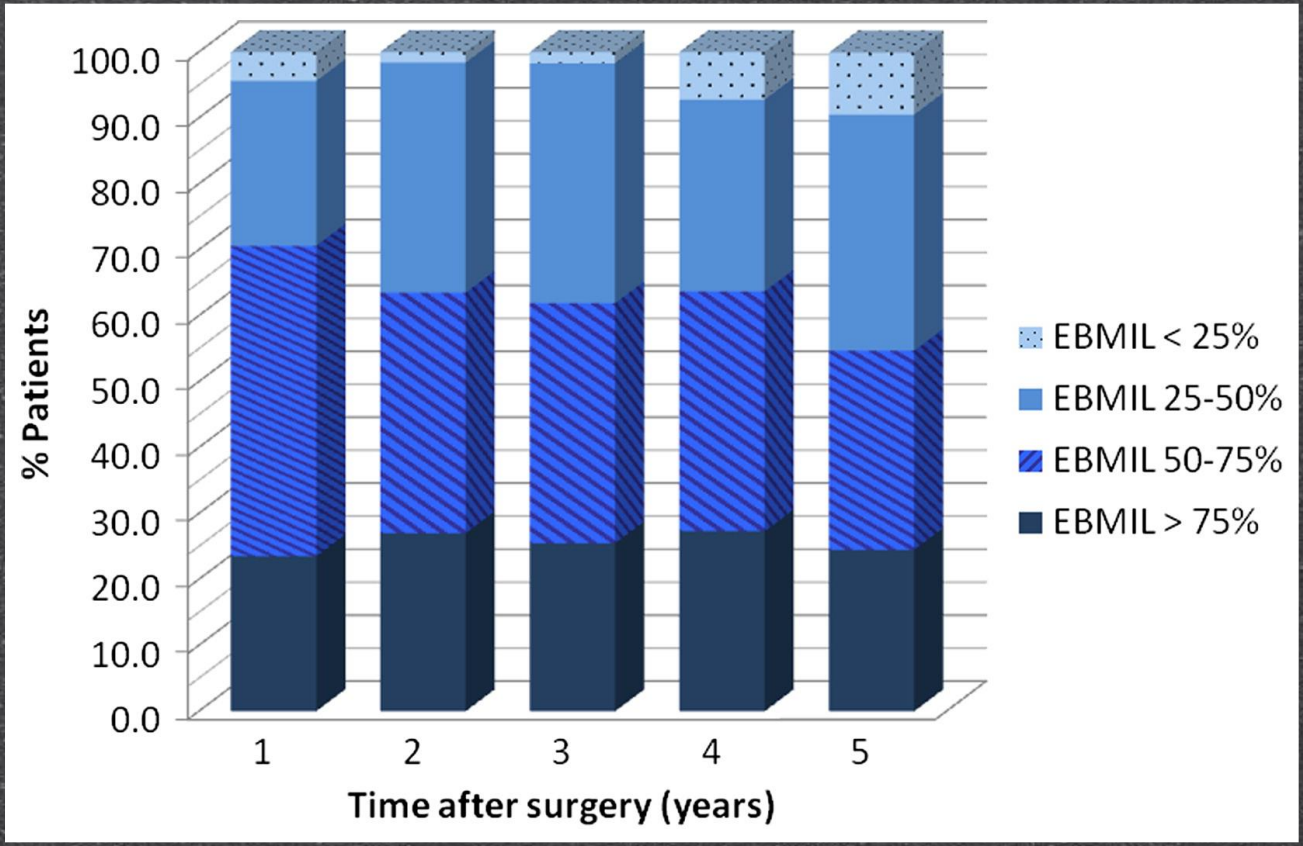
complications and management

- leak - return to OR
- bleed - may return to OR
- anastomotic stricture - EGD/dilatation
- internal hernia - laparoscopic repair
- pouch dilatation - diet/behavior mod.

Outcomes

- Non-Surgical management: only 5-10% success
- T2D remission: up to 72% at 2 years
- RYGB sustained remission of 62% at 6 years
- All-cause mortality reduced by 40% 7 years after RYGB
- Cause specific mortality reduction:
- T2D 92%, Cancer 60%, CAD 56%

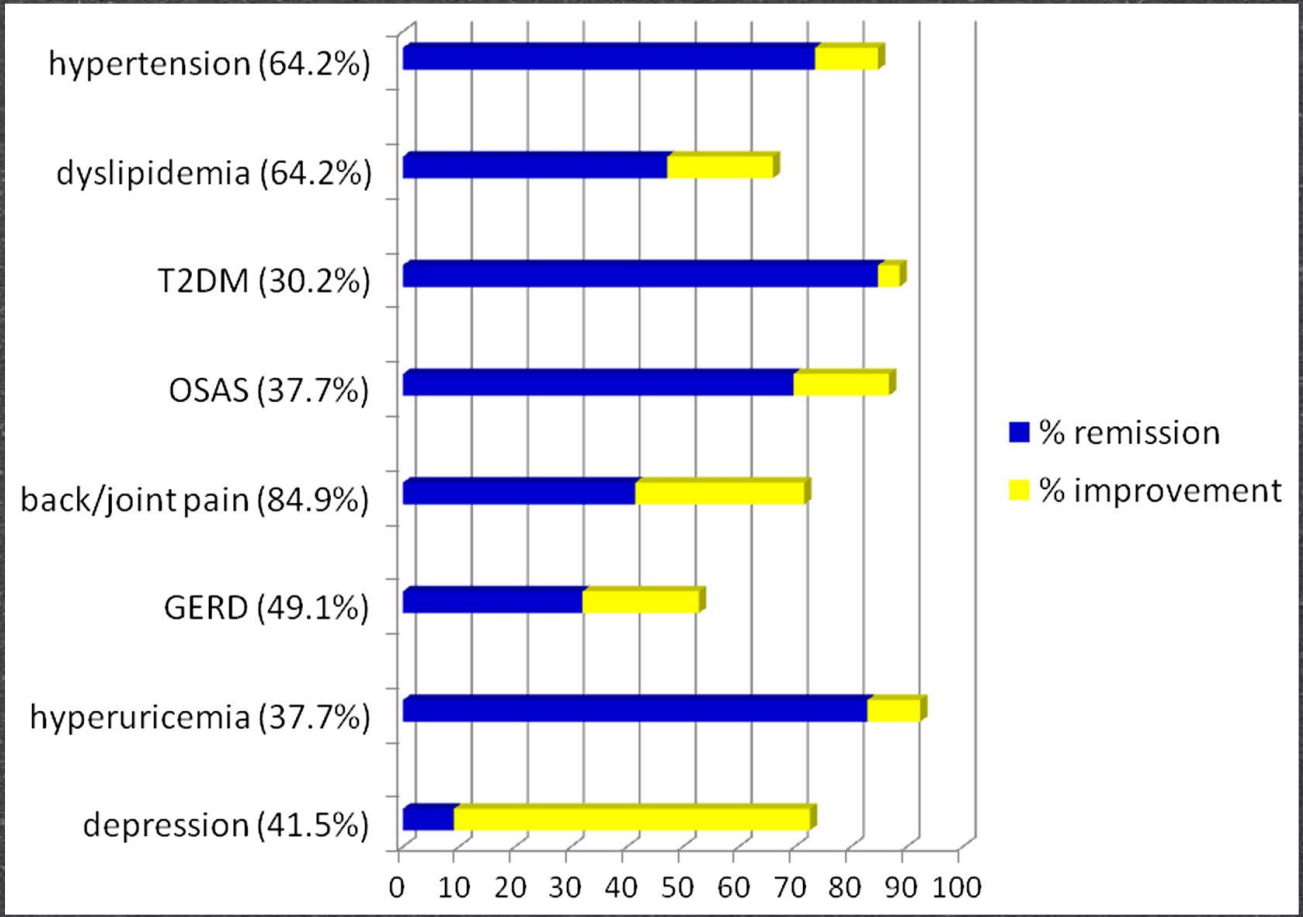
Five-Year Results of Laparoscopic Sleeve Gastrectomy



Patricia Sieber, M.D., Markus Gass, M.D., Beatrice Kern, M.D., Thomas Peters, M.D., Marc Slawik, M.D. and Ralph Peterli, Ph.D.

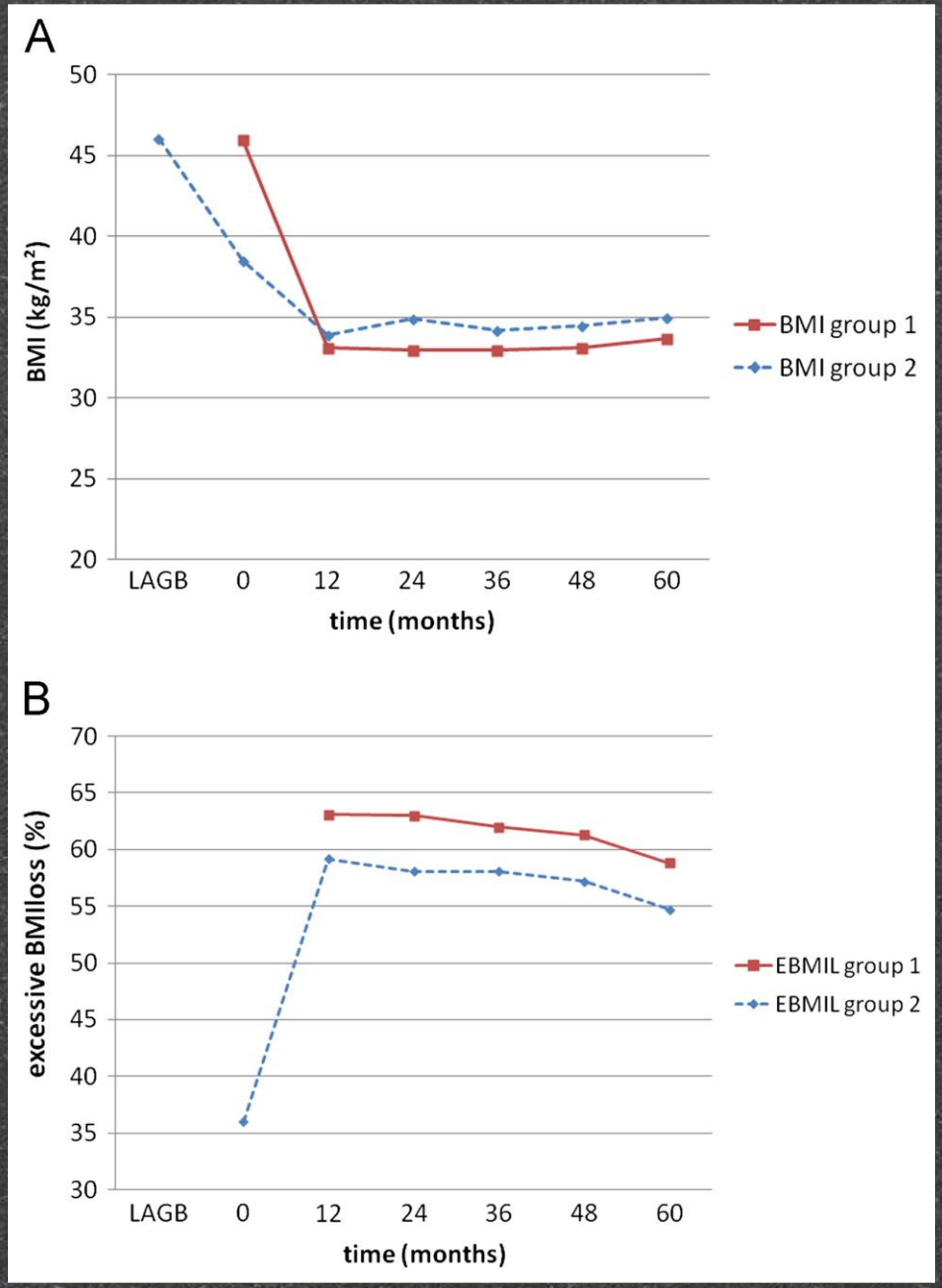
Surgery for Obesity and Related Diseases
DOI: 10.1016/j.soard.2013.06.024

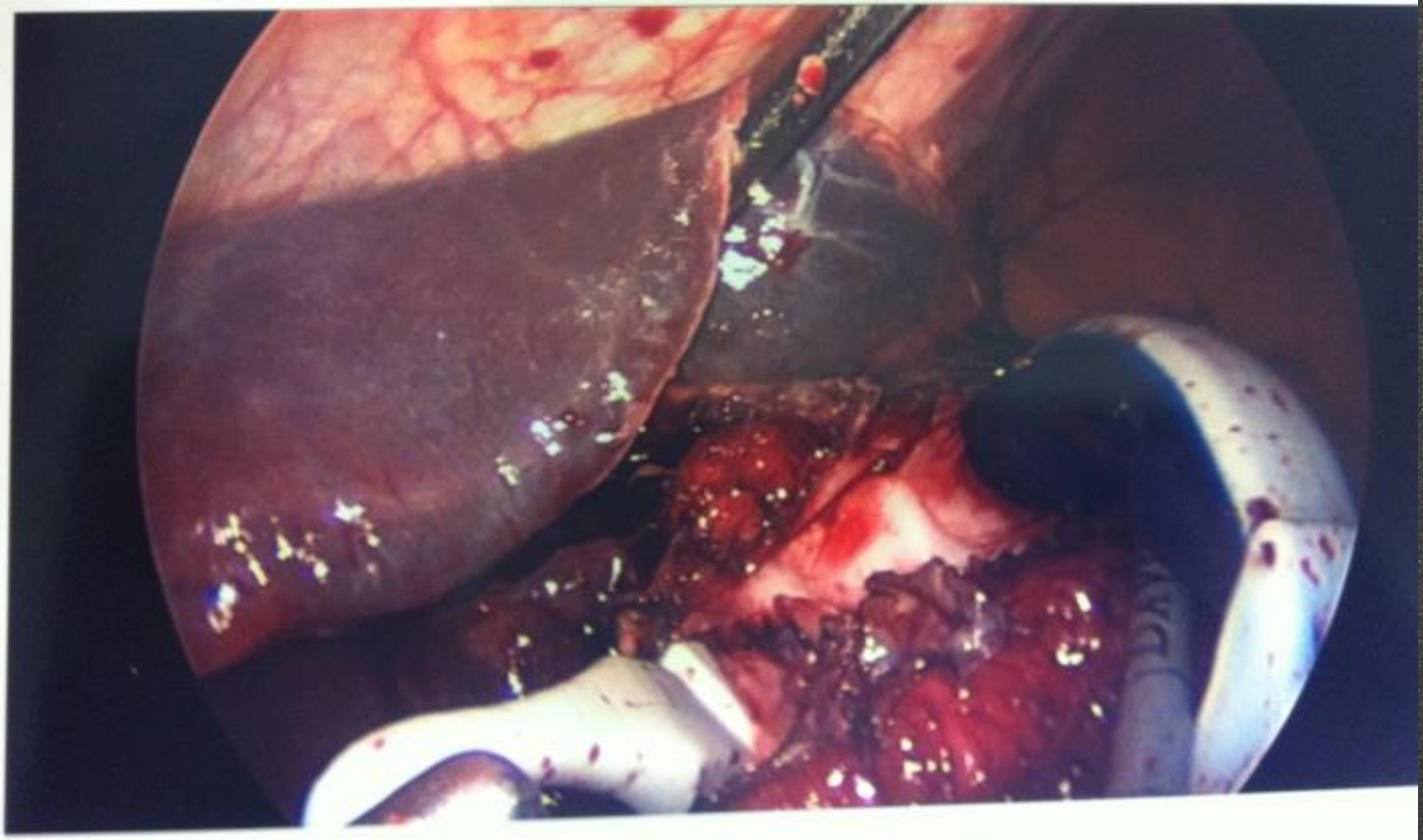
Five-Year Results of Laparoscopic Sleeve Gastrectomy



Patricia Sieber, M.D., Markus Gass, M.D., Beatrice Kern, M.D., Thomas Peters, M.D., Marc Slawik, M.D. and Ralph Peterli, Ph.D.

Surgery for Obesity and Related Diseases
DOI: 10.1016/j.soard.2013.06.024


A
50
45
40
35
30
25
20
BMI (kg/m²)
LAGB
0
12
24
36
48
60
time (months)
BMI group 1
BMI group 2
B
70
65
60
55
50
45
40
35
30
excessive BMIloss (%)
LAGB
0
12
24
36
48
60
time (months)
EBMIL group 1
EBMIL group 2

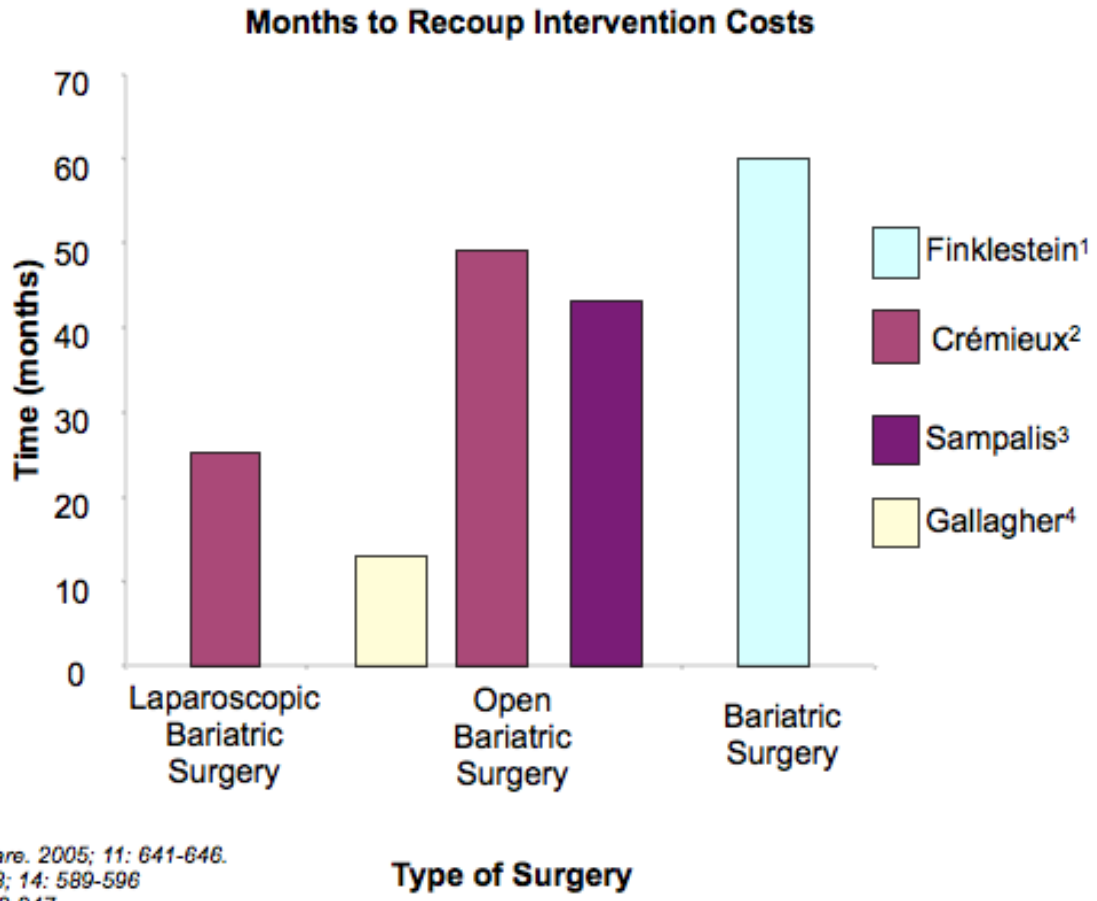


Return on Intervention

Surgical costs recovered in 13 to 60 months

ROI driven by

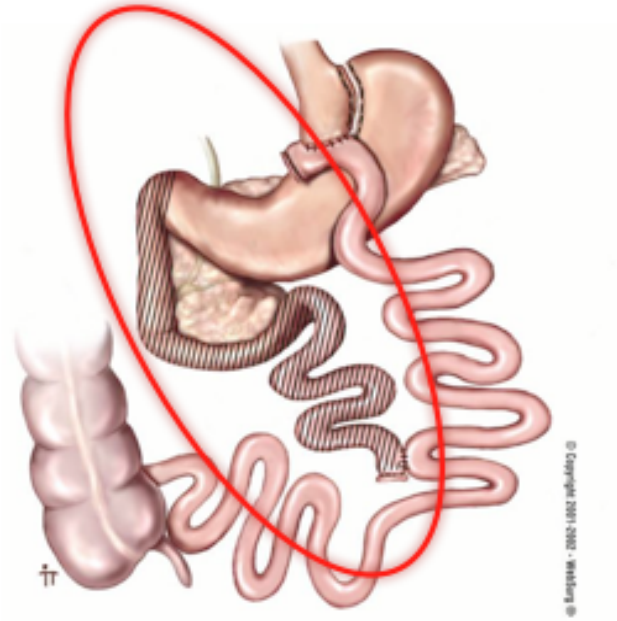
- **Cost of surgery**
- **Comorbidities prior to surgery**
- **Weight Loss**



1) Finkelstein and Brown Am J Manag Care. 2005; 11: 641-646.
2) Cremieux et al. Am J Manag Care 2008; 14: 589-596
3) Sampalis et al Obes Surg 2004; 14: 939-947
4) Gallagher et al Obes Surg 2003; 13: 245-248.

Foregut Theory

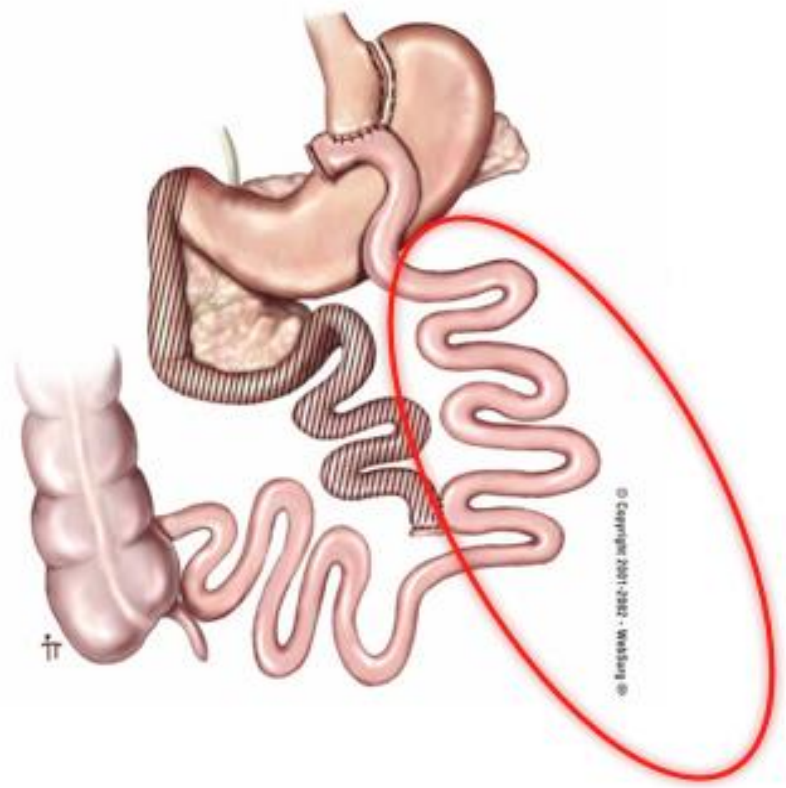
- Exclusion of the duodenum results in inhibition of a "putative"signal that is responsible for insulin resistance and/or abnormal glycemic control (T2DM)



Rubino et al, Ann Surg, 2006

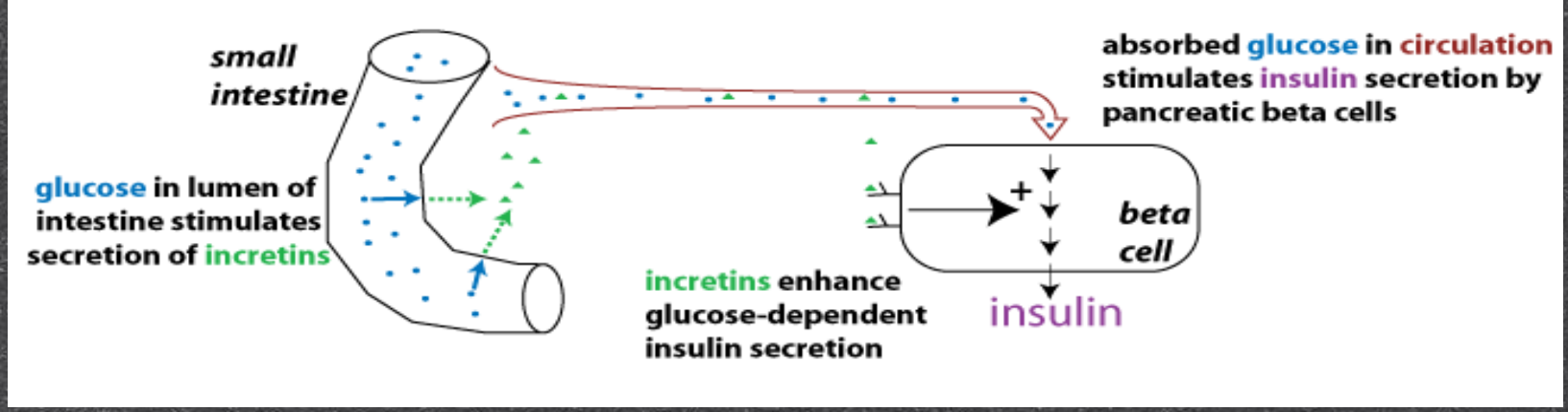
The Hindgut Theory

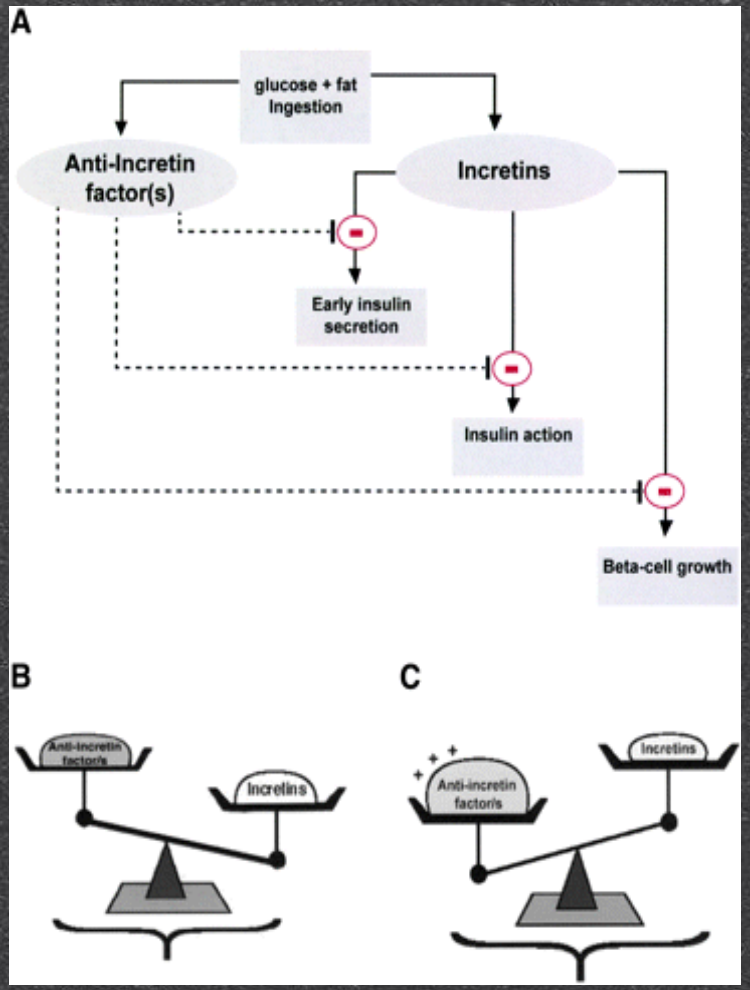
- The more rapid delivery of undigested nutrients to the distal bowel upregulates the production of L-cell derivatives like GLP-1



Mason E. Obes Surg 2005 15, 459-461

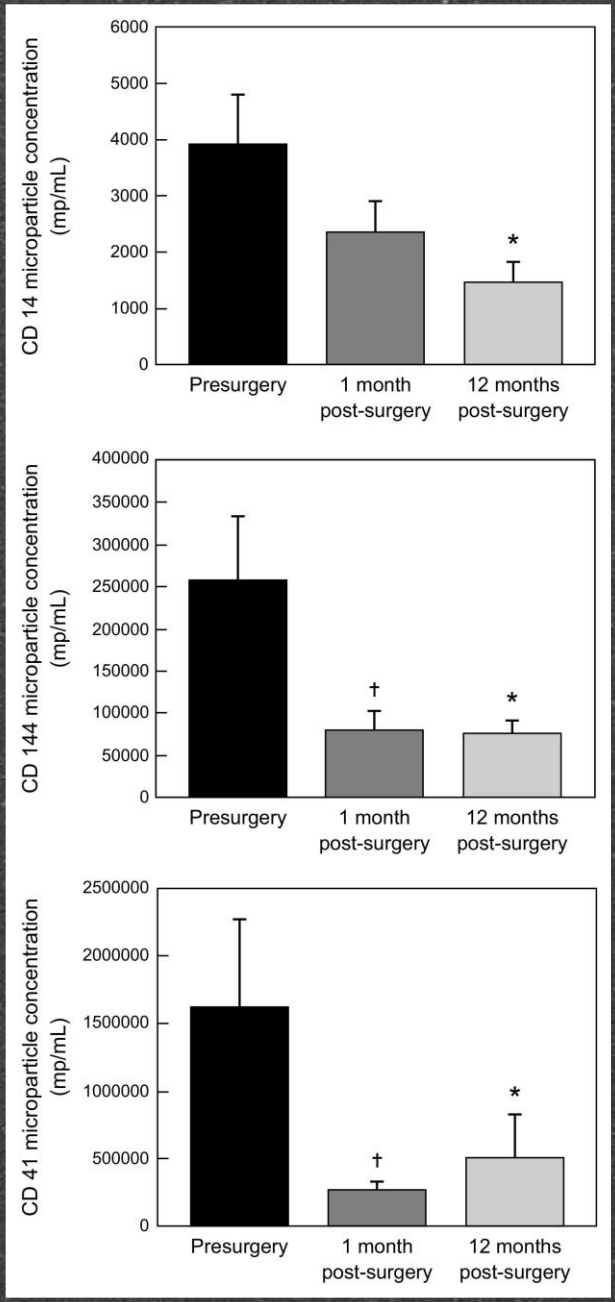
Rubino et al, Ann Surg, 2006


small intestine
glucose in lumen of intestine stimulates secretion of incretins
absorbed glucose in circulation stimulates insulin secretion by pancreatic beta cells
beta cell
incretins enhance glucose-dependent insulin secretion
insulin


A
glucose + fat Ingestion
Anti-Incretin factor(s)
Incretins
Early insulin secretion
Insulin action
Beta-cell growth
B
Anti-incretin factor/s
Incretins
C
Anti-incretin factor/s
Incretins

Restoration of glycemic control in patients with type 2 DM after bariatric surgery is associated with reduction in microparticles.

CD14 Monocyte
CD144 Endothelial
CD41 Platelets



Vicky Cheng, M.D., Sangeeta R. Kashyap, M.D., Philip R. Schauer, M.D., John P. Kirwan, M.D. and Keith R. McCrae, M.D.

Surgery for Obesity and Related Diseases

Volume 9, Issue 2, Pages 207-212 (March 2013)
DOI: 10.1016/j.soard.2011.09.026

revision procedures

- Lap band removal and conversion to sleeve or RNY (1 or 2 stage)
- Vertical banded gastroplasty to RNY
- Reversal of Nissens and RNY
- Sleeve to RNY