

# Chi e come trattare con la terapia chirurgica? Complicanze e follow-up delle disionie post-intervento

CONGRESSO MACROREGIONALE AME DAY  
DESENZANO DEL GARDA, 23 MAGGIO 2015

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# CHIRURGIA DELL' OBESITA'

## LINEE GUIDA

AACE/TOS/ASMBS

Bariatric Surgery Guidelines 2013 (AME 2015)

NICE 2014

IFSO, EASO, ECOG, IOTF

Interdisciplinary European Guidelines  
for Surgery for Severe Obesity 2007

SICOB

Linee Guida Chirurgia Bariatrica 2008

Work in progress 2015

# CHIRURGIA DELL' OBESITA'

## INDICAZIONI

- 1) BMI  $\geq$  40 senza comorbidità (LE 1 A)
- 2) BMI  $\geq$  35 con DMT2, ipertensione, dislipidemia, OSA, sindrome da ipoventilazione associata all'obesità (OHS), sindrome di Pickwick (combinazione di OSA e OHS), steatosi non alcolica (NAFLD), steato-epatite non alcolica (NASH), pseudotumor cerebri, malattia da reflusso gastro-esofageo (GERD), asma, flebopatia da stasi, grave incontinenza urinaria, artrosi invalidante (LE 1 A)
- 3) BMI 30-34.9 con DMT2 (LE 2 B)

# INTERNATIONAL DIABETES FEDERATION STATEMENT

Lancet 2011

<b>BMI</b>	<b>Eligible for surgery</b>	<b>Prioritised for sugery</b>
< 30	No	No
30-35	Si*	No
35-40	Si	Si*
>40	Si	Si

\* HbA1 > 7.5% nonostante terapia ottimale a piene dosi, specie se il peso è in aumento o in presenza di comorbidità (ipertensione, dislipidemia o OSAS non controllate dalla terapia)

# OBESITY NICE GUIDELINES JULY 2014

- 889    **1.11**    ***Bariatric surgery for people with recent onset type 2***  
890                    ***diabetes***
- 891    1.11.1    Offer an assessment for bariatric surgery to people who have  
892                    recent onset type 2 diabetes<sup>15</sup> and who are obese (BMI of 35 and  
893                    over). **[new 2014]**
- 894    1.11.2    Consider an assessment for bariatric surgery in people who have  
895                    recent onset type 2 diabetes<sup>15</sup> with a BMI of 30–34.9. **[new 2014]**
- 896    1.11.3    Consider assessing people who have recent-onset type 2  
897                    diabetes<sup>15</sup> and are of Asian family origin for bariatric surgery at a  
898                    lower BMI (see recommendation 1.2.8). **[new 2014]**

## CONTROINDICAZIONI

- 1) Assenza di tentativo conservativo di calo ponderale
- 2) Incapacità di partecipare a programma di follow-up
- 3) Malattia psichiatrica severa giudicata controindicante  
la chirurgia da psichiatra di riferimento
- 4) Alcolismo, tossicodipendenza

## meccanismi di azione negli interventi bariatrici

Restrittivo meccanico

restrizione gastrica con riduzione dell'introito

Restrittivo anoressizzante

riduzione dell'appetito, sazietà precoce e restrizione

Malassorbitivo

riduzione della digestione e dell'assorbimento

## RESTRITTIVO MECCANICO

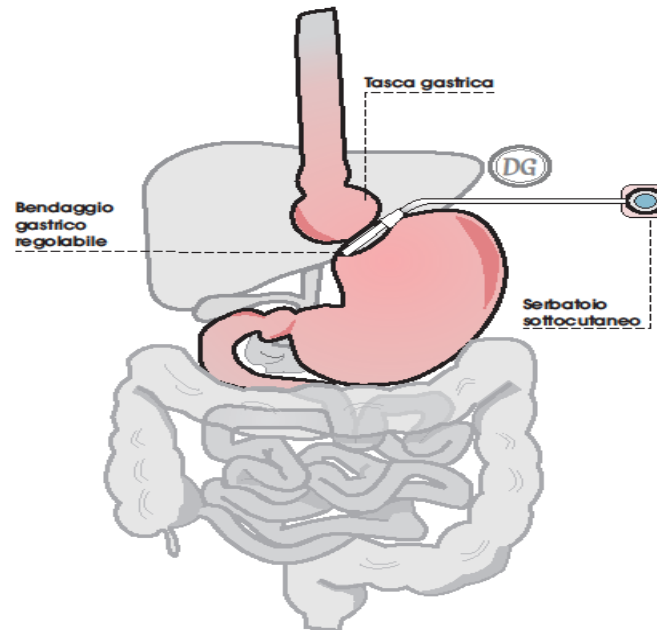
### bendaggio gastrico (gastroplastica verticale)

1. basso rischio chirurgico (mortalità bendaggio 0.04%)
2. non c'è sazietà vera, ma impaccio, fastidio, addirittura dolore: fondamentale collaborazione immediata per la perdita di peso
3. l'operato deve lavorare su quantità, modalità e qualità (nessun effetto sulla fame)
4. minore rischio di sequele metaboliche
5. minore efficacia: calo ponderale 40% dell' eccesso

*Himpens J et al. Long-term Outcomes of Laparoscopic Adjustable Gastric Banding. Arch Surg 2011*  
*Chapman AE, Laparoscopic adjustable gastric banding in the treatment of obesity: A systematic literature review. Surgery 2004*



# RESTRITTIVO MECCANICO



**Bendaggio Gastrico Regolabile**

# COMPLICAZIONI TARDIVE

## BENDAGGIO GASTRICO

vomito (DISIONIE)

dislocazione del bendaggio

esofagite

dilatazione della tasca gastrica

migrazione intragastrica

infezione o dislocazione del port

frequente recupero ponderale

REINTERVENTI: 10-50%

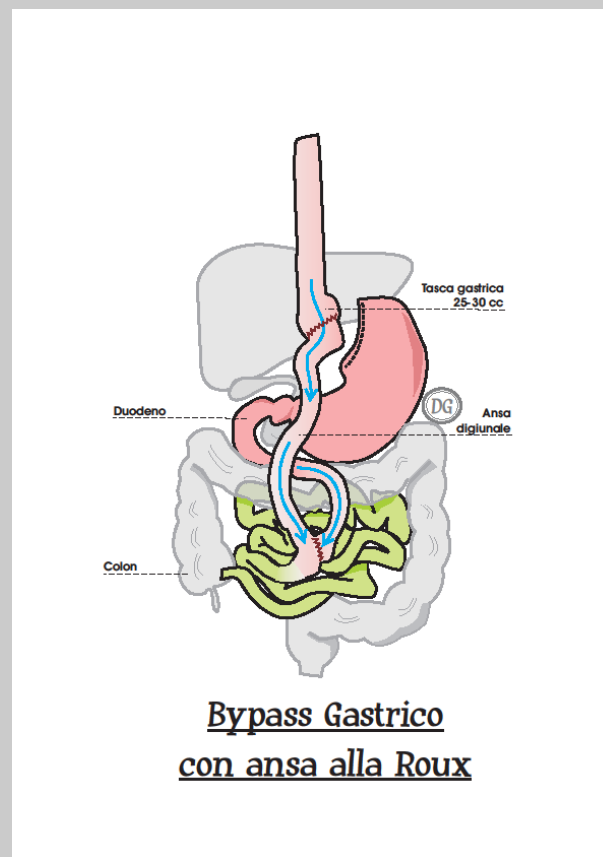
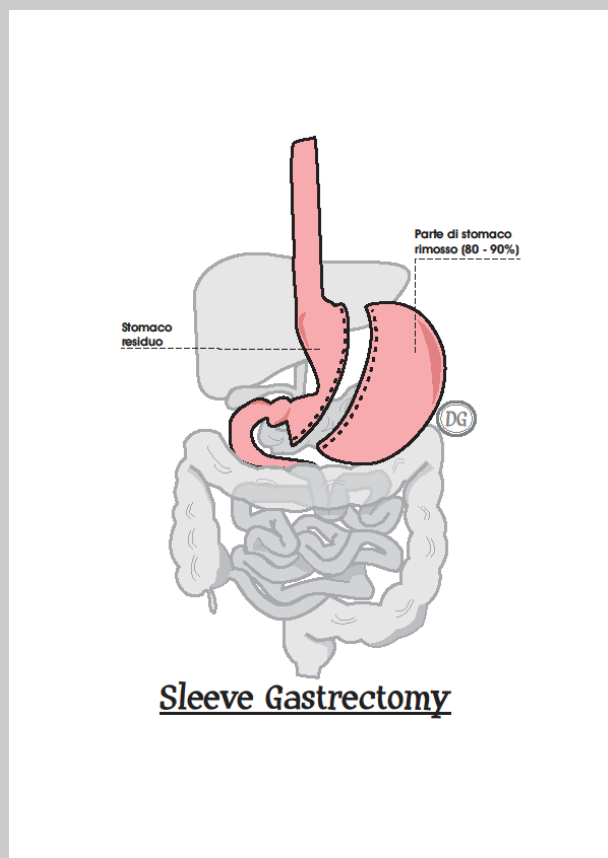
## RESTRITTIVO ANORESSIZZANTE

### bypass gastrico, sleeve gastrectomy

1. rischio chirurgico più elevato (mortalità 0.2%)
2. è presente sia riduzione dell'appetito sia sazietà precoce vera, solo di rado fastidiosa (grelina ↓, GLP 1 e PYY ↑)
3. serve collaborazione a distanza nel mantenimento del peso perso; forte effetto nella riduzione della quantità, necessaria compliance su qualità e modalità

# RESTRITTIVO ANORESSIZZANTE

## sleeve gastrectomy (SG), bypass gastrico (RYGBP)



## LA CHIRURGIA DELL' OBESITA'

### RESTRITTIVO ANORESSIZZANTE sleeve gastrectomy (SG), bypass gastrico (RYGBP)

Per SG e RYGBP il calo ponderale a medio termine (> 50% dell' eccesso) è sovrapponibile

Sleeve Gastrectomy può essere il primo tempo di una eventuale terapia sequenziale (possibile conversione in Duodenal Switch)

Differente effetto sulla MRGE (migliora dopo bypass, peggiora dopo SG)

Bypass più efficace su diabete tipo 2 di vecchia data (> 10 aa)

*Bohdjalian A et al. Sleeve gastrectomy as sole and definitive bariatric procedure: 5-year results for weight loss and ghrelin. Obes Surg 2010*

*Srinivasa S et al. Early and mid-term outcomes of single-stage laparoscopic sleeve gastrectomy. Obes Surg 2010*

*Peterli R et al. Metabolic and Hormonal Changes After Laparoscopic Roux-en-Y Gastric Bypass and Sleeve Gastrectomy: a Randomized, Prospective Trial. Ob Surg 2012*

*Franco JV et al. A Review of Studies Comparing Three Laparoscopic Procedures in Bariatric Surgery: Sleeve Gastrectomy, Roux-en-Y Gastric Bypass and Adjustable Gastric Banding. Obes Surg 2011*

RESTRITTIVO ANORESSIZZANTE  
sleeve gastrectomy (SG), bypass gastrico (RYGBP)

parziale malassorbimento nel bypass gastrico (ferro, calcio, B 12, acido folico, vitamina D), possibile deficit da ridotto introito di acido folico e ferro nella sleeve

Vomito in chi non adatta le abitudini alimentari alla chirurgia bariatrica (mangiare lentamente, masticare bene) DISIONIE

Reflusso GE nella SG

Sindrome di dumping nel RYGBP

# RESTRITTIVO ANORESSIZZANTE

## SLEEVE GASTRECTOMY

60 minuti

Transito intestinale integro

Più indicato di altre procedure in:

Anziani (> 60 aa)

Cirrosi Child A

Necessità terapie croniche maggiori  
per certezza assorbimento

Malattie infiammatorie intestinali

Candidati trapianto rene/fegato

Facile conversione in altre procedure

## BYPASS GASTRICO

120 minuti

Shunt gastroduodenale e conseguente  
malassorbimento Fe, Ca, folati, B12  
Rischio di ernie interne

Più indicato di altre procedure in:

Diabete mellito tipo 2 > 10 aa

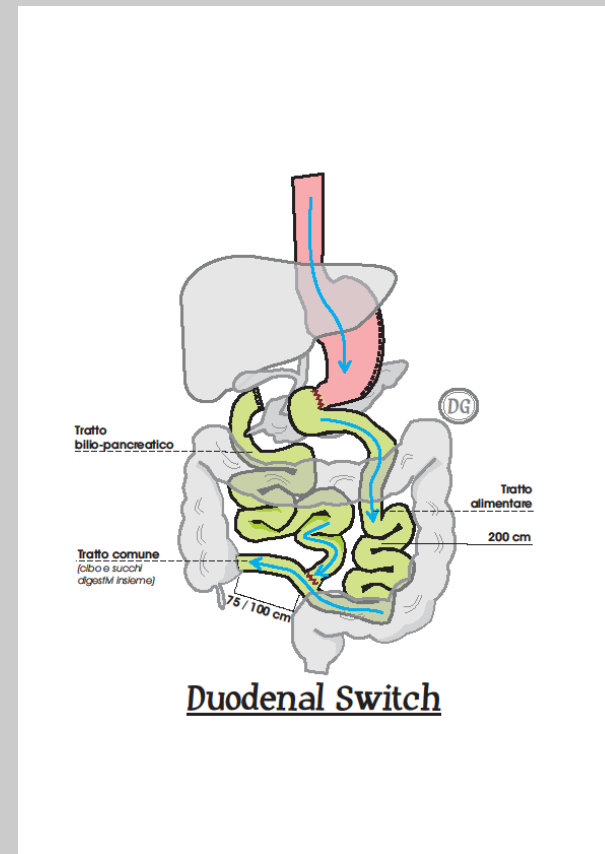
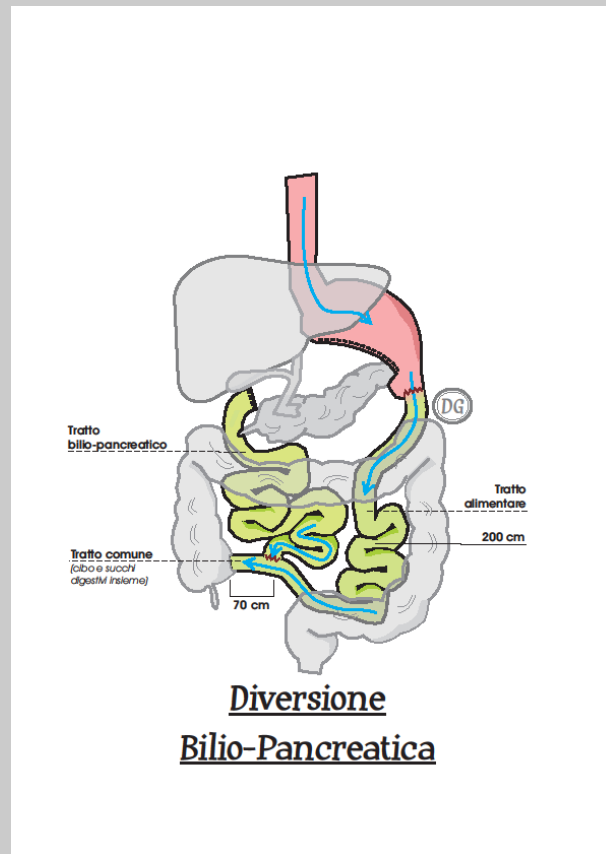
Grave malattia da reflusso GE

Conversione in altre procedure non  
standardizzata

# LA CHIRURGIA DELL' OBESITA'

## MALASSORBITIVO

diversione biliopancreatica (BPD), duodenal switch (DS)





## MALASSORBITIVO

diversione biliopancreatica (BPD), duodenal switch (DS)

1. maggiore rischio di sequele metaboliche: necessaria compliance (anche economica) per prevenire iperparatiroidismo, anemia sideropenica, osteoporosi, malnutrizione proteica, disvitaminosi (ridotto assorbimento di calcio, ferro, vitamine, proteine)
2. effetti collaterali: alvo frequente (se diarrea: DISIONIE), meteorismo e feci maleodoranti
3. maggiore efficacia specie nel mantenimento del peso (calo ponderale > 70%)
4. eccellente effetto metabolico su diabete e lipidi (maggiore degli altri interventi)
5. rischio chirurgico sovrapponibile (forse maggiore) agli altri interventi
6. intervento di salvataggio in caso di fallimento di altre procedure: < 5% di tutte gli interventi eseguiti

# PATOLOGIE ASSOCIATE NON CORRELATE

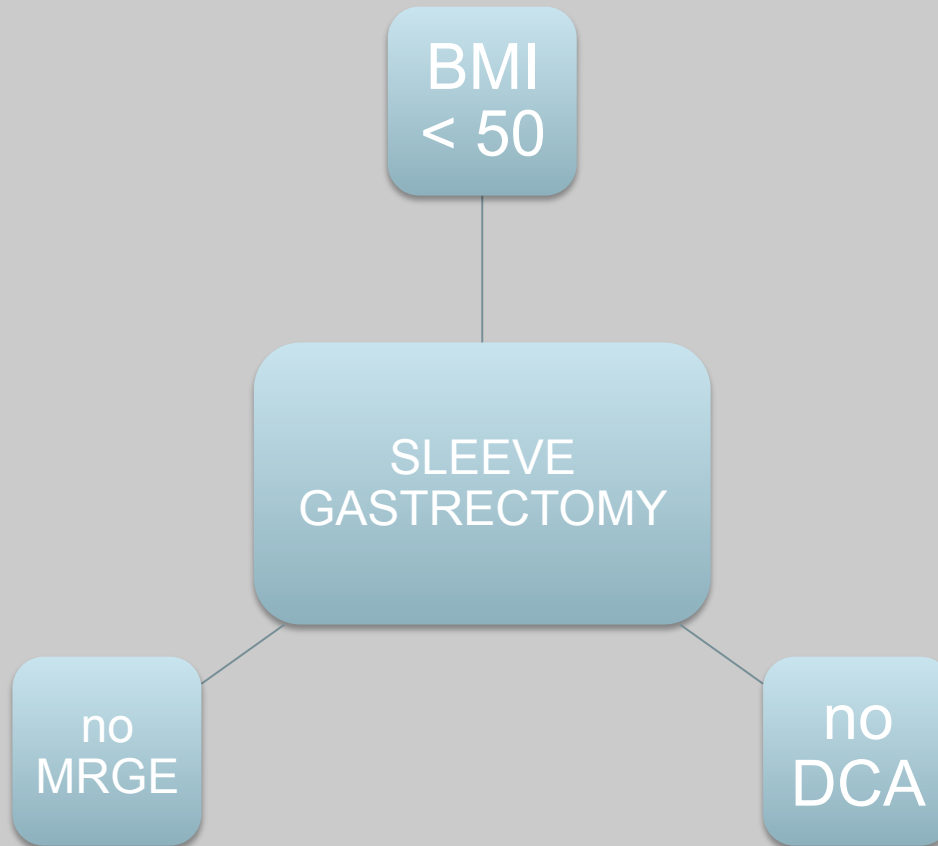
	<b>controindicazione relativa a:</b>
masticazione inefficace	restrizione gastrica
reflusso GE severo (C o D sec. LA)	bendaggio, sleeve
metaplasia intestinale diffusa e malattie gastriche in genere	bypass gastrico
NASH in evoluzione cirrotica	malassorbimento
MICI, diarrea cronica	malassorbimento

LA CHIRURGIA DELL'OBESITA' E' BENEFICA PER TUTTI  
GLI APPARATI ECCETTO IL DIGERENTE !!!

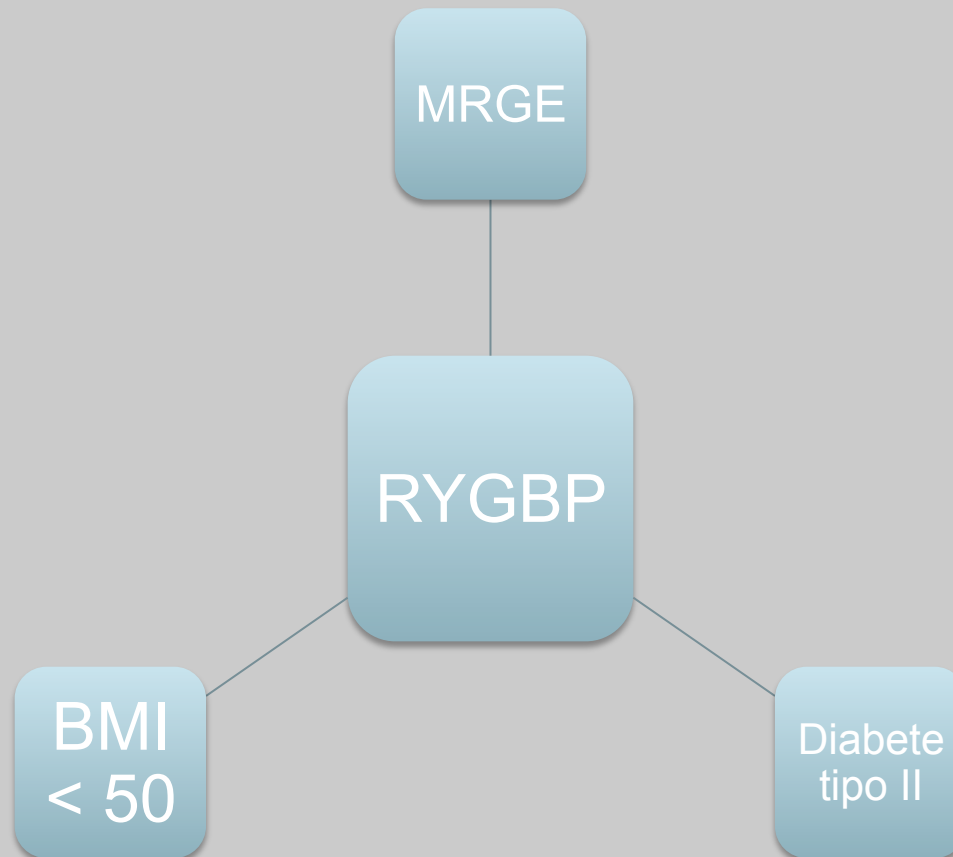
# PROPOSTA 1



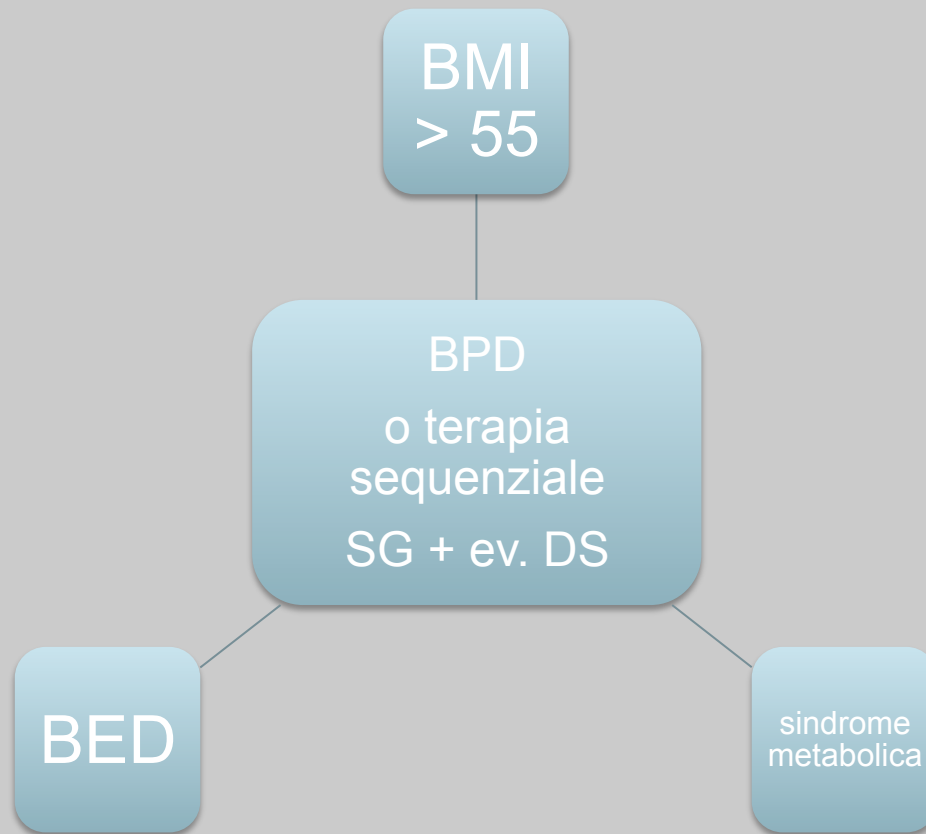
## PROPOSTA 2



## PROPOSTA 3



## PROPOSTA 4



Weight and Type 2 Diabetes after Bariatric Surgery: Systematic Review and Meta-analysis

Buchwald H, Estok R, Fahrbach K, Banel D, Jensen MD, Pories WJ, Bantle JP, Sledge I. 1990-2006; 19 studies, 4070 diabetic patients

**Table 8** Overview of Weight Loss, Surgical Procedure, and Diabetes Resolution

	Total	Gastric Banding	Gastroplasty	Gastric Bypass	BPD/DS
% EBWL	55.9	46.2	55.5	59.7	63.6
% Resolved overall	78.1	56.7	79.7	80.3	95.1
% Resolved <2 y	80.3	55.0	81.4	81.6	94.0
% Resolved ≥2 y	74.6	58.3	77.5	70.9	95.9

%EBWL = percent excess body weight loss; BPD/DS = biliopancreatic diversion/duodenal switch.

## REVIEW

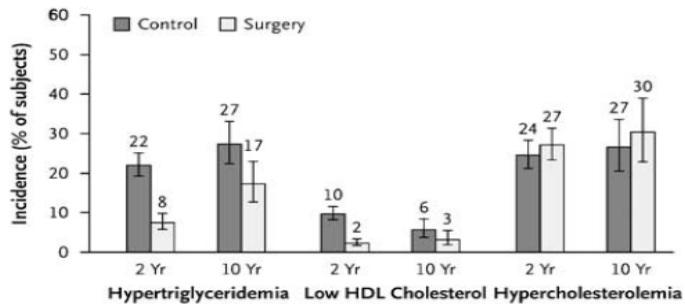
# Bariatric surgery and reduction in morbidity and mortality: experiences from the SOS study

L Sjöström

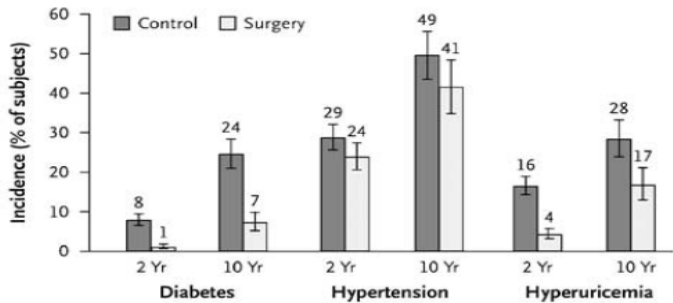


S96

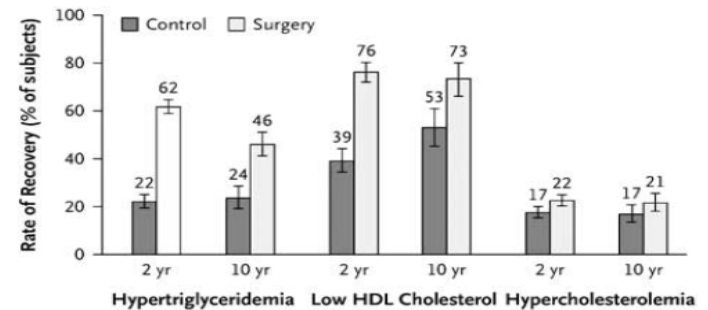
### Bariatric surgery and risk change L Sjöström



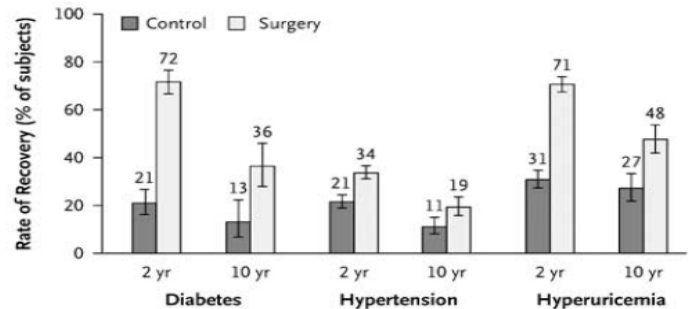
	807/751	281/225	1174/1293	440/431	596/504	188/155
No. of subjects						
Odds ratio	0.29	0.61	0.21	0.57	1.27	1.16
P value	<0.001	0.03	<0.001	0.12	0.11	0.57



	1402/1489	519/517	770/623	279/215	1017/1044	382/342
No. of subjects						
Odds ratio	0.14	0.25	0.78	0.75	0.22	0.49
95% CI	0.08–0.24	0.17–0.38	0.60–1.01	0.52–1.08	0.15–0.31	0.34–0.71
P value	<0.001	<0.001	0.06	0.13	<0.001	<0.001



	850/1102	331/402	1396/445	166/169	1048/1327	435/498
No. of subjects						
Odds ratio	5.28	2.57	5.28	2.35	1.22	1.30
95% CI	4.29–6.49	1.85–3.57	3.85–7.23	1.44–3.84	0.98–1.51	0.92–1.83
P value	<0.001	<0.001	<0.001	0.001	0.07	0.14



	248/342	84/118	880/1204	342/424	637/792	243/292
No. of subjects						
Odds ratio	8.42	3.45	1.72	1.68	5.36	2.37
95% CI	5.68–12.5	1.64–7.28	1.40–2.12	1.09–2.58	4.23–6.78	1.61–3.47
P value	<0.001	0.001	<0.001	0.02	<0.001	<0.001



## AACE/TOS/ASMBS Guidelines

Despite the known complications of bariatric surgery, overall mortality has improved since 2008. Data reported from the Swedish Obese Subjects (SOS) study, a large prospective observational study of >2000 patients who underwent bariatric surgery, demonstrated a mortality hazard ratio (HR) of .71, 10 years following bariatric surgery compared with matched obese controls (17 [EL 2, PCS]). More recent data from this cohort followed for up to 20 years demonstrated a HR of .47 in cardiovascular death (including stroke and myocardial infarction) among surgical subjects compared with obese controls (26 [EL 2, PCS]). In another cohort, all-cause mortality was reduced by 40% 7 years after RYGB, compared with the control group, and cause-specific mortality in the surgery group decreased by 56% for coronary artery disease, by 92% for T2D, and by 60% for cancer (27 [EL 2, RCCS]).

Surgery for Obesity and Related diseases, 2013

Obesity, 2013

Endocrine practice, 2013

Original Investigation

## Association of Bariatric Surgery With Long-term Remission of Type 2 Diabetes and With Microvascular and Macrovascular Complications

Lars Sjöström, MD, PhD; Markku Peltonen, PhD; Peter Jacobson, MD, PhD; Sofie Ahlin, MD, PhD; Johanna Andersson-Assarsson, PhD; Åsa Anveden, MD; Claude Bouchard, PhD; Björn Carlsson, MD, PhD; Kristjan Karason, MD, PhD; Hans Lönroth, MD, PhD; Ingmar Näslund, MD, PhD; Elisabeth Sjöström, MD; Magdalena Taube, PhD; Hans Wedel, PhD; Per-Arne Svensson, PhD; Kajsa Sjöholm, PhD; Lena M. S. Carlsson, MD, PhD

**RESULTS** The diabetes remission rate 2 years after surgery was 16.4% (95% CI, 11.7%-22.2%; 34/207) for control patients and 72.3% (95% CI, 66.9%-77.2%; 219/303) for bariatric surgery patients (odds ratio [OR], 13.3; 95% CI, 8.5-20.7;  $P < .001$ ). At 15 years, the diabetes remission rates decreased to 6.5% (4/62) for control patients and to 30.4% (35/115) for bariatric surgery patients (OR, 6.3; 95% CI, 2.1-18.9;  $P < .001$ ). With long-term follow-up, the cumulative incidence of microvascular complications was 41.8 per 1000 person-years (95% CI, 35.3-49.5) for control patients and 20.6 per 1000 person-years (95% CI, 17.0-24.9) in the surgery group (hazard ratio [HR], 0.44; 95% CI, 0.34-0.56;  $P < .001$ ). Macrovascular complications were observed in 44.2 per 1000 person-years (95% CI, 37.5-52.1) in control patients and 31.7 per 1000 person-years (95% CI, 27.0-37.2) for the surgical group (HR, 0.68; 95% CI, 0.54-0.85;  $P = .001$ ).

**CONCLUSIONS AND RELEVANCE** In this very long-term follow-up observational study of obese patients with type 2 diabetes, bariatric surgery was associated with more frequent diabetes remission and fewer complications than usual care. These findings require confirmation in randomized trials.

**TRIAL REGISTRATION** [clinicaltrials.gov](https://clinicaltrials.gov/ct2/show/study/NCT01479452) Identifier: NCT01479452

JAMA. 2014;311(22):2297-2304. doi:10.1001/jama.2014.5988



## Coronary Calcium Scores 6 Years After Bariatric Surgery

Tiffany Priester · Travis G. Ault · Lance Davidson ·  
Richard Gress · Ted D. Adams · Steven C. Hunt ·  
Sheldon E. Litwin

### Abstract

**Background** Obesity is associated with elevated coronary artery calcium (CAC), a marker of coronary atherosclerosis that is strongly predictive of cardiovascular events. We evaluated the effects of marked weight loss achieved through Roux-en-Y gastric bypass surgery (GBS) on CAC scores.

**Methods** We performed echocardiography and computed tomography of the heart in 149 subjects 6 years after enrollment in a prospective registry evaluating the cardiovascular effects of GBS. Coronary calcium scores, left ventricular ejection fraction, and left ventricular mass were measured.

**Results** At baseline, most coronary risk factors were similar between the GBS and nonsurgical groups including current smoking, systolic blood pressure, LDL-C, HDL-C, and TG. However, GBS patients were younger (4.7 years), less likely to be diabetic, and less likely to be postmenopausal. At 6 years after enrollment, CAC score was significantly lower in patients who underwent GBS than those without surgery ( $p < 0.01$ ). GBS subjects had a lower likelihood of having measureable coronary calcium (odds ratio of  $CAC > 0 = 0.39$ ; 95% CI of (0.17, 0.90)). Significant predictors of 0 CAC were GBS, female gender, younger age, baseline BMI, and baseline LDL-C. Substituting change in BMI for group status as a

predictor variable showed that BMI change also predicted CAC ( $p = 0.045$ ). Changes in LDL-C did not predict the CAC differences between groups ( $p = 0.67$ ).

**Conclusions** Sustained weight loss achieved through bariatric surgery is associated with less coronary calcification. This effect, which appears to be independent of changes in LDL-C, may contribute to lower cardiac mortality in patients with successful GBS.

**Keywords** Obesity · Atherosclerosis · Coronary calcium · Weight loss · Bariatric surgery

### Introduction

The prevalence of obesity has doubled over the past 30 years with nearly 70% of adults in the USA now classified as overweight or obese [1]. Severe obesity, defined as body mass index (BMI)  $> 35 \text{ kg/m}^2$ , is the fastest growing category of obesity [2]. There is substantial evidence that obesity is a risk factor for the development of premature and accelerated atherosclerosis [3–7]. A variety of mechanisms have been postulated to account for the pro-atherogenic effects of obesity, including the frequent coexistence of conventional coronary

## Cancer and Obesity: Effect of Bariatric Surgery

Ted D. Adams · Steven C. Hunt

control subjects were men. Of the specific cancers, incidence of uterine cancer was significantly less among surgical patients compared with severely obese control subjects. When cancers “likely” to be related to obesity were grouped and analyzed, there was a 38% reduction in cancer incidence among the post-gastric bypass patients compared with the applicant controls (HR, 0.62; 95% CI, 0.49–0.78;  $P < 0.0001$ ). There was no difference seen in cancer incidence for combined cancers not related to obesity. When

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## Bariatric surgery: why only a last resort?

Bariatric surgery has substantial benefits in terms of weight loss, metabolic status, and quality of life. It is safe and effective, and the future savings made through prevention of comorbid diseases could counterbalance its high cost. The surgery should, therefore, be available as an option to use when appropriate, and not only when all other options have been eliminated. Bariatric surgery offers a real opportunity for preventing comorbid diseases and complications of obesity. If it is only used as a final resort, this opportunity will be missed. ■ *The Lancet Diabetes & Endocrinology*