Obesity, Bariatric Surgery and Cancer

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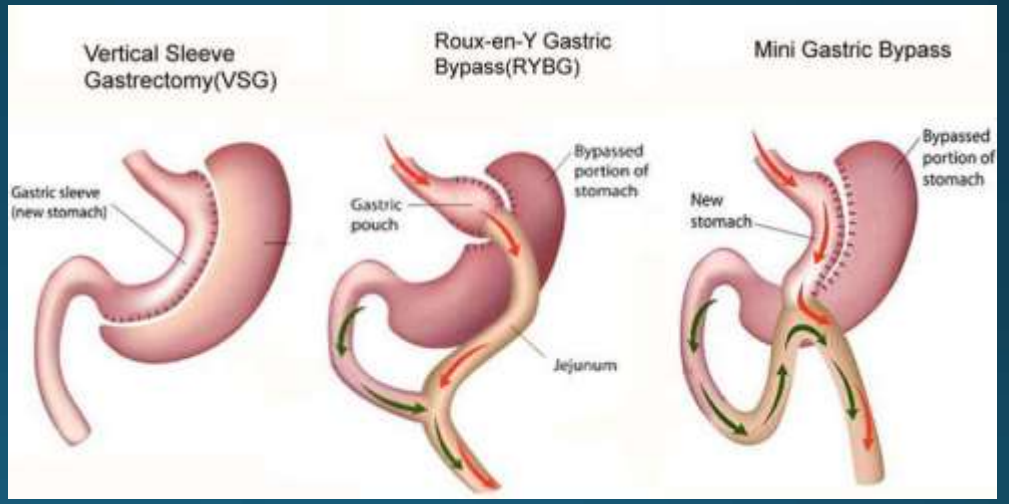
Cancer, Obesity and Bariatric surgery ?



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The New England Journal of Medicine
357;8 , August 23, 2007, 753

Long-Term Mortality after Gastric Bypass Surgery

Ted D. Adams, Ph.D. et al.

Long-Term Mortality after GBP / Ted D. Adams, Ph.D.,

States, only limited long-term data are available on mortality among patients who have undergone this procedure as compared with severely obese persons from a

Decreased mortality in the surgical group by 40 % !!

7925 surgical patients and 7925 severely obese control subjects were matched for age, sex, and body-mass index. We determined the rates of death from any cause and from specific causes with the use of the National Death Index.

Results

56% for coronary artery disease
92% for diabetes
60% for cancer !!!!!!!!!!!

58% higher in the surgery group than in the control group (11.1 vs. 6.4 per 10,000 person-years, P = 0.04).

Conclusions

Long-term total mortality after gastric bypass surgery was significantly reduced, particularly deaths from diabetes, heart disease, and cancer. However, the rate of death from causes other than disease was higher in the surgery group than in the control group.

Bariatric Surgery and the Risk of Cancer in a Large Multisite Cohort

Daniel P. Schauer, MD, MSc, Heather Spencer Feigelson, PhD, MPH,† Corinna Koebnick, MSc, PhD,‡ Bette Caan, DrPH,§ Sheila Weinmann, PhD, MPH,¶ Anthony C. Leonard, PhD,|| J. David Powers, MS,† Panduranga R. Yenumula, MD,§ and David E. Arterburn, MD, MPH***

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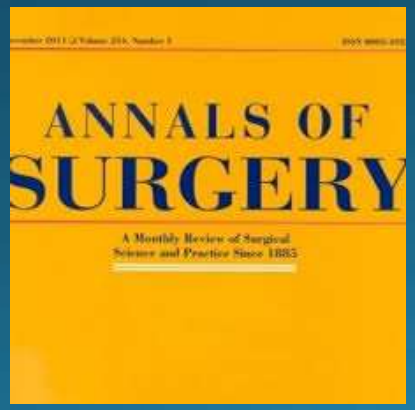

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Methods

Multisite, retrospective, observational, cohort study.

5 study sites from Kaiser Permanente (regions of Southern California, Northern California, Northwest (Oregon), Colorado and Washington.

Data covering **January 1, 2004** through **December 31, 2014** were collected from existing electronic health record databases and registries.

Schauer, D. P. et al. Bariatric Surgery and the Risk of Cancer in a Large Multisite Cohort. Annals of Surgery 1 (2017). doi:10.1097/SLA.0000000000002525

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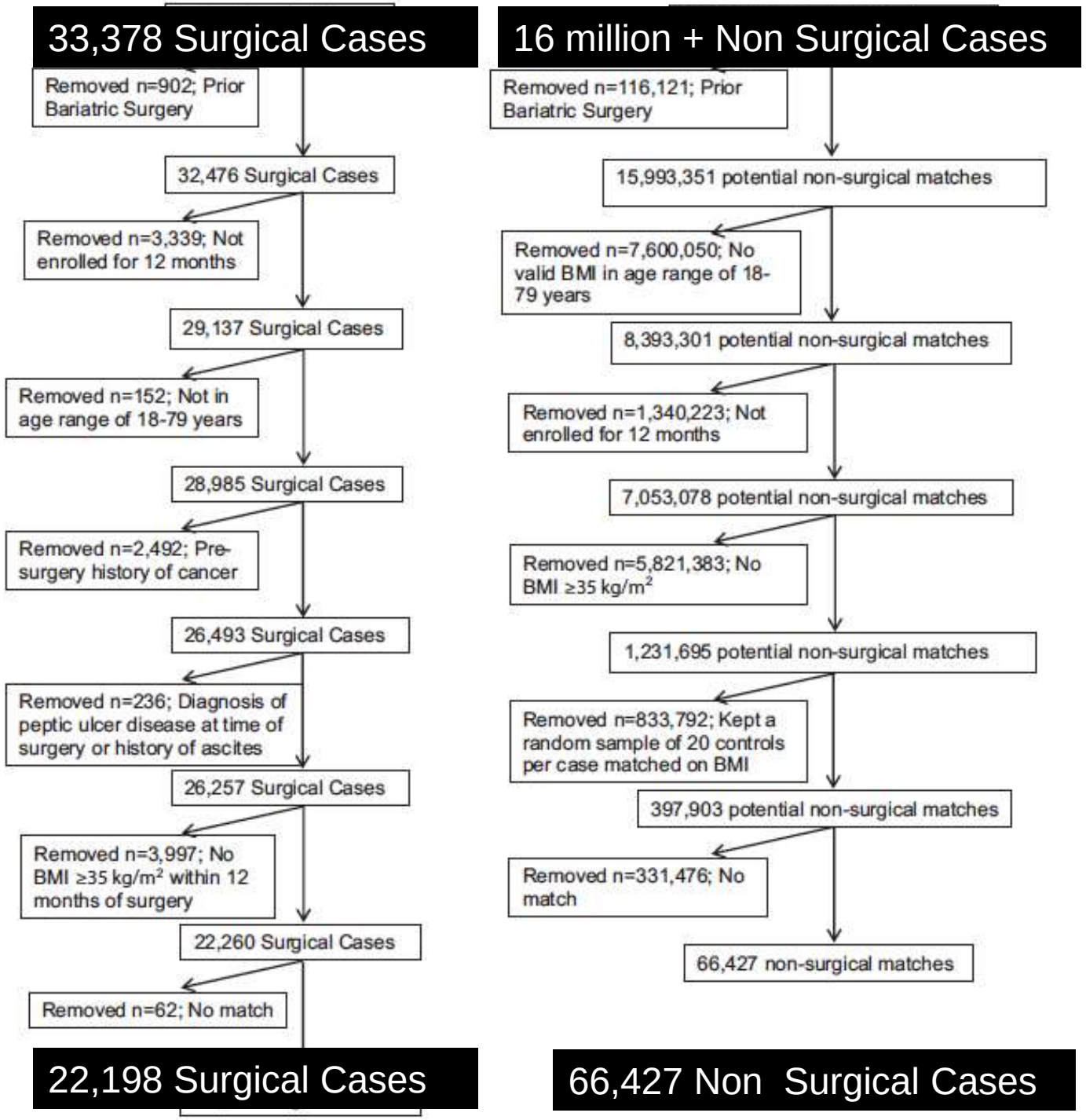

Schauer, D. P. et al. Bariatric Surgery and the Risk of Cancer in a Large Multisite Cohort. Annals of Surgery 1 (2017). doi:10.1097/SLA.0000000000002525

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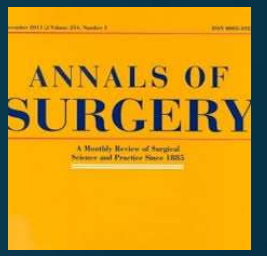
TABLE 1. Baseline Characteristics of Bariatric Surgical Patients and Matched Nonsurgical Patients

	Surgical Patients (n = 22,198)	Matched Nonsurgical Patients (n = 66,427)	Standardized Difference
Female, %	81.08	81.13	*
Age, mean (SD)	45.02 (11.08)	45.10 (11.05	0.01
Body mass index, mean (SD), kg/m^2	44.84 (6.71)	44.37 (6.24)	0.07
Follow-up, mean (SD), mos	47.07 (23.08)	41.19 (24.42)	0.24
Race/ethnicity			
Non-Hispanic white, %	48.5	41.34	
Hispanic, %	30.55	32.22	
African-American, %	16.02	15.74	
Asian, %	1.42	2.36	
Other, %	3.5	8.35	
Site, %			*
Kaiser Permanente Washington	4.65	4.63	
Kaiser Permanente Southern Cal.	58.74	58.78	
Kaiser Permanente Nouthern Cal.	27.61	27.65	
Kaiser Permanente Northwest	2.03	2.02	
Kaiser Permanente Colorado	6.97	6.92	
Clinical characteristics[†]			
Diabetes, %	34 %	35 %	0.01
% of Patients with diabetes on insulin	30.78	29.01	0.03
% of Patients with diabetes on metformin	60.02	63.53	0.07
Hypertension, %	60 %	60 %	0.005
Hyperlipidemia, %			0.13
% of Patients with hyperlipidemia on statins	71.95	82.6	0.27
Coronary artery disease, %	2.04	1.92	0.08
Smoker, ever (%)[‡]	32.1	25.46	0.15
Nonalcoholic steatohepatitis, %	2.93	1.32	0.12
Alcohol abuse, %	1.32	2.09	0.06
Peripheral vascular disease, %	0.98	1.56	0.05
Cerebral vascular disease, %	0.76	1.1	0.03
Use of hormone replacement therapy			
Estrogen only (% of women)	3.12	2.08	
Progesterone only (% of women)			
Combination (% of women)			
Elixhauser, mean (SD)			0.07
Mammogram, %			0.08
Bariatric procedure type (n, %)			
Gastric bypass			
Sleeve gastrectomy			
Laproscopic adjustable band			
Other[§]			
Indeterminate[¶]	1355 (6.1%)		

13545 61 % GBP

6047 27 % SG



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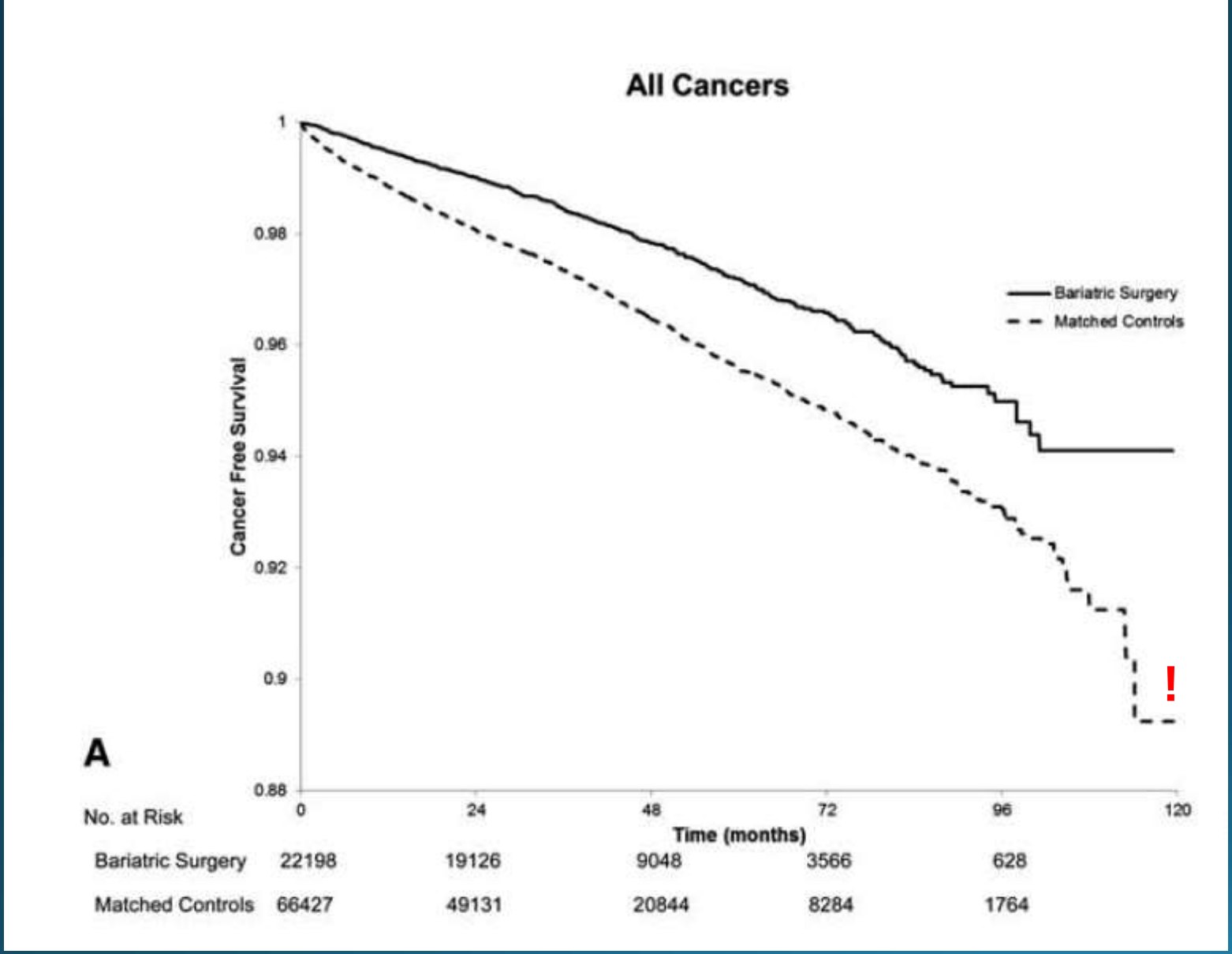

Results

Schauer, D. P. et al. Bariatric Surgery and the Risk of Cancer in a Large Multisite Cohort. Annals of Surgery 1 (2017). doi:10.1097/SLA.0000000000002525

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Obesity and Cancer Supplement
ENERGETICS AND CANCER

Obesity

Association Between Weight Loss and the Risk of Cancer after Bariatric Surgery

Daniel P. Schauer[1], *Heather Spencer Feigelson*[2], *Corinna Koebnick*[3], *Bette Caan*[4], *Sheila Weinmann*[5], *Anthony C. Leonard*[6], *J. David Powers*[2], *Panduranga R. Yenumula*[4], *and David E. Arterburn*[7]

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Methods

Multisite, retrospective, observational **matched** cohort study.

Five study sites from Kaiser Permanente (Southern California, Northern California, the Northwest [Oregon], Colorado, and Washington)

Included individuals with obesity who were enrolled between **January 1, 2005**, and **December 31, 2012**. Follow-up extended through 2014.

Schauer, D. P. et al. Association Between Weight Loss and the Risk of Cancer after Bariatric Surgery. Obesity 25, S52–S57 (2017).

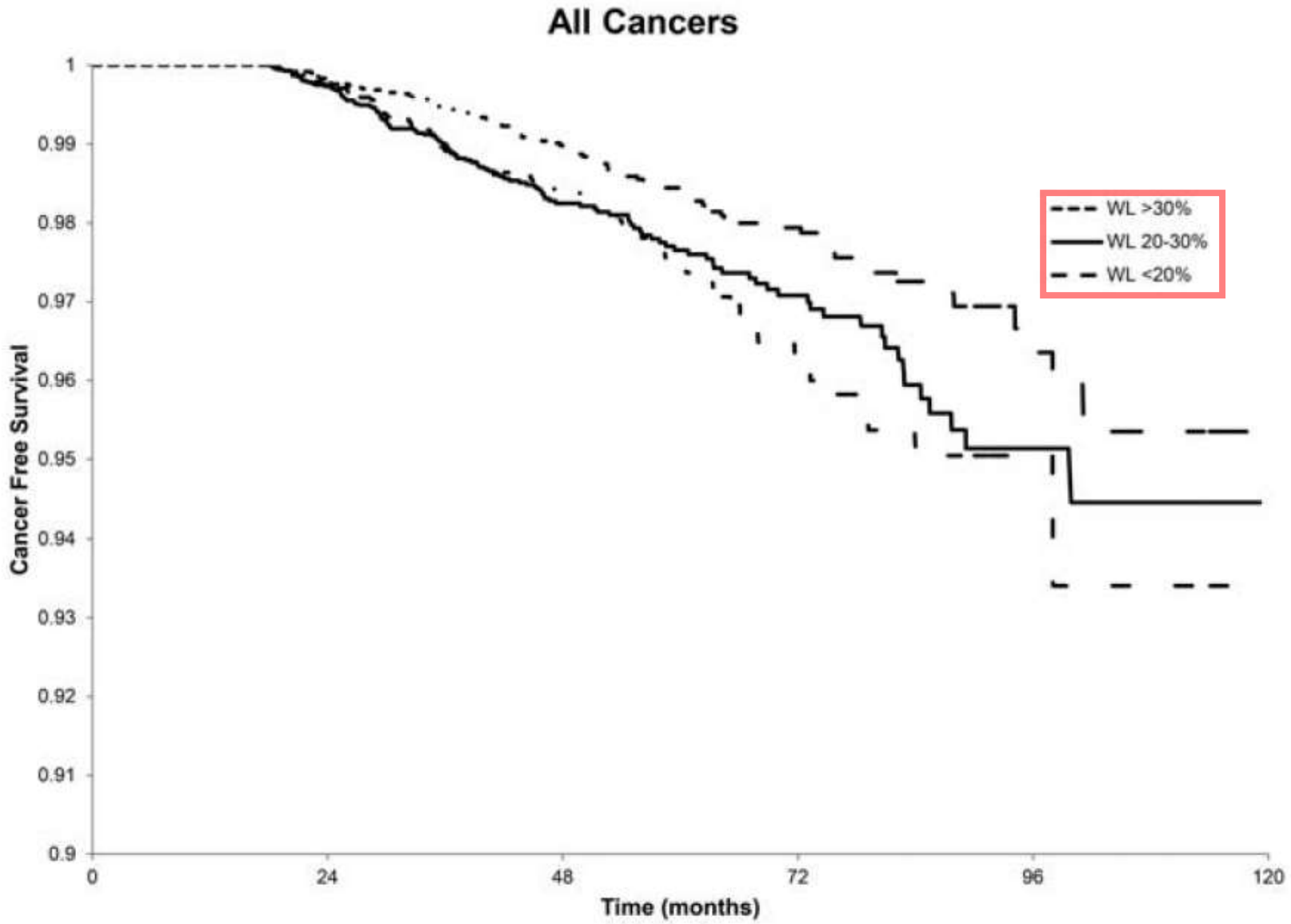
Methods

18,355 bariatric surgery subjects and **40,524 nonsurgical** subjects matched on **age, sex, BMI, site, and Elixhauser comorbidity index**.

Multivariable Cox proportional hazards models examined the relationship between **weight loss at 1 year** and **incident cancer during up to 10 years of follow-up.**

Schauer, D. P. et al. Association Between Weight Loss and the Risk of Cancer after Bariatric Surgery. Obesity 25, S52–S57 (2017).

Bariatric, Metabolic and Oncologic Surgery



>30%: 7,295 surgery patients

20%-30%: 7,224 surgery patients

< 20%: 3,836 surgery patients.

*At one year.

Schauer, D. P. et al. Association Between Weight Loss and the Risk of Cancer after Bariatric Surgery. Obesity 25, S52–S57 (2017).

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Conclusions

Bariatric surgery is associated with a lower risk of incident of cancer.

Patients having bariatric surgery have a 14% cancer risk reduction for each 10% of weight loss.

For obesity-associated cancer, percent weight loss is highly associated with cancer risk.

Significant association between non obesity-associated cancers and weight loss; suggest the list of obesity-associated cancers may need to be expanded.

Schauer, D. P. et al. Association Between Weight Loss and the Risk of Cancer after Bariatric Surgery. Obesity 25, S52–S57 (2017).

Cancer Risk Drops in Half With Over 20% Weight Loss After Bariatric Surgery

Posted 11/5/2019

SURGERY FOR OBESITY AND RELATED DISEASES

ASMBS

ABSTRACT ONLY | VOLUME 15, ISSUE 10, SUPPLEMENT , S3-S4, OCTOBER 01, 2019

A107 Association between weight loss and serum biomarkers with risk of incident cancer in the Longitudinal Assessment of Bariatric Surgery cohort

Andrea Stroud • Elizabeth Dewey • Bruce Wolfe

DOI: https://doi.org/10.1016/j.soard.2019.08.053 • Check for updates

Article Info

Related Articles

Bariatric surgery reduces the risk of cancer in populations with obesity. It is unclear if weight loss alone or physiologic changes related to bariatric surgery cause this protective effect. We evaluated the relationship between surgical weight loss and changes in serums biomarkers with incident cancer in a bariatric surgery cohort.

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SURGERY FOR OBESITY AND RELATED DISEASES

OFFICIAL JOURNAL OF THE AMERICAN SOCIETY FOR METABOLIC AND BARIATRIC SURGERY

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BJS
British Journal of
SURGERY

Obesity surgery and risk of cancer

H. Mackenzie[1], S. R. Markar[1,5], A. Askari[1], O. Faiz[1,3], M. Hull[4], S. Purkayastha[1], H. Møller[2] and J. Lagergren[2,5]

[1]Department of Surgery and Cancer, Imperial College London, and [2]Division of Cancer Studies, King's College London, and Guy's and St Thomas' NHS Foundation Trust, London, [3]Department of Surgery, St Mark's Hospital and Academic Institute, Harrow, and [4]Section of Molecular Gastroenterology, Leeds Institute of Biomedical and Clinical Sciences, St James's University Hospital, Leeds, UK, and [5]Department of Molecular Medicine and Surgery, Karolinska Institutet, Karolinska University Hospital, Stockholm, Sweden

Correspondence to: Dr S. R. Markar, Department Surgery and Cancer, Imperial College London, 10th Floor QEQM Building, St Mary's Hospital, South Wharf Road, London W2 1NY, UK (e-mail: s.markar@imperial.ac.uk)

Mackenzie, H. et al. Obesity surgery and risk of cancer. British Journal of Surgery (2018). doi:10.1002/bjs.10914

Cleveland Clinic

Background

Hormone-related cancer (breast, endometrium and prostate), colorectal cancer and oesophageal cancer have all been associated with obesity.

This study aimed to uncover the risk of hormone-related (breast, endometrial and prostate), colorectal and oesophageal cancers following obesity surgery.

Mackenzie, H. et al. Obesity surgery and risk of cancer. British Journal of Surgery (2018). doi:10.1002/bjs.10914

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Methods

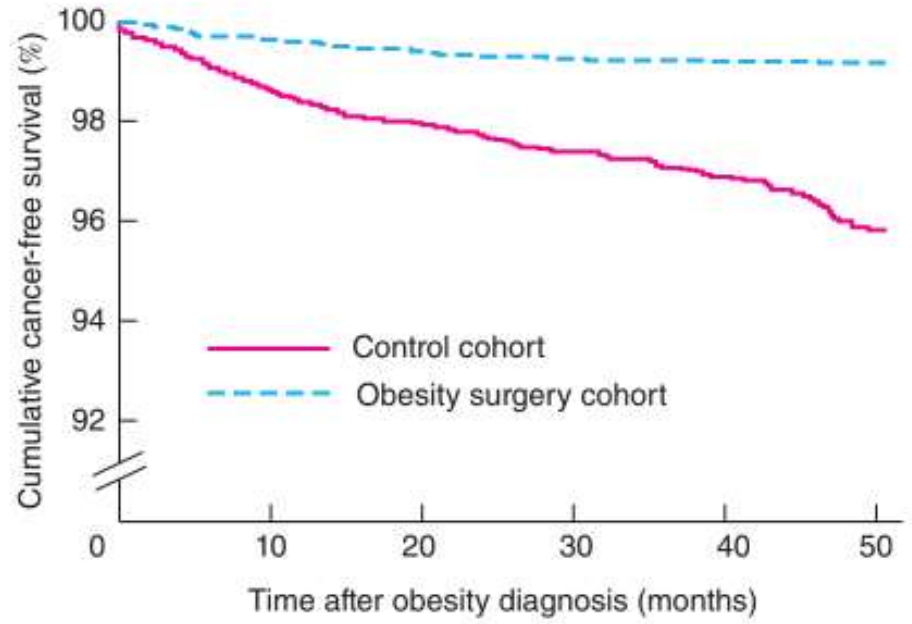
This national **population-based cohort study** used data from the Hospital Episode Statistics.

Database in England collected between **1997 and 2012**.

Propensity matching on **sex, age, co-morbidity and duration of follow-up** was used to compare cancer risk among obese individuals undergoing bariatric surgery (gastric bypass, gastric banding or sleeve gastrectomy) and obese individuals not undergoing such surgery.

Mackenzie, H. et al. Obesity surgery and risk of cancer. British Journal of Surgery (2018). doi:10.1002/bjs.10914

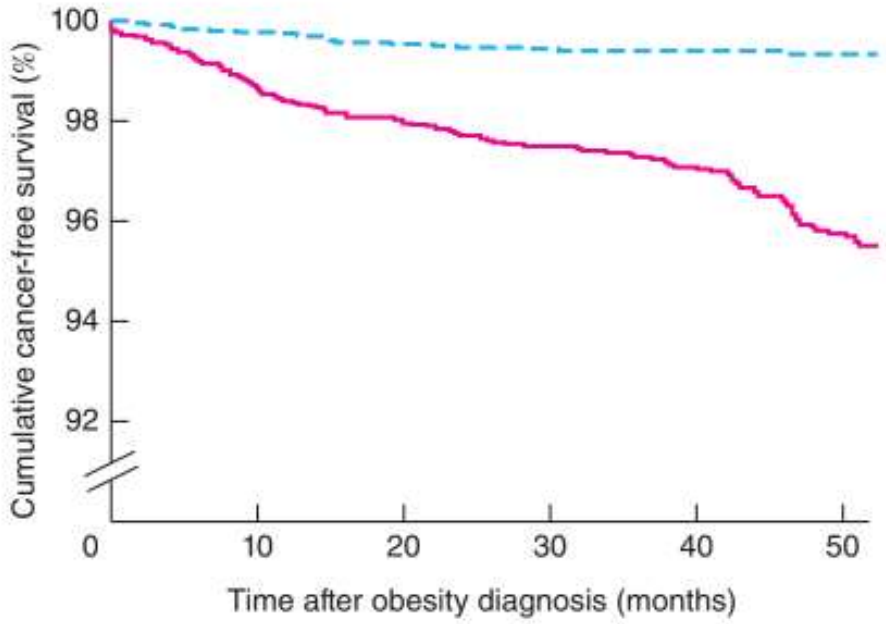
Results



No. at risk

Surgery	8794	7468	6184	4838	3699	2718
Control	8794	7393	6099	4769	3654	2676

a Any bariatric surgery



No. at risk

Surgery	4978	4227	3447	2689	1994	1450
Control	4978	4184	3402	2651	1971	1430

b Gastric bypass

Fig. 1 Kaplan–Meier curves of freedom from hormone-related cancer following **a** any bariatric surgery and **b** gastric bypass *versus* the control unoperated cohort. **a** $P < 0{\cdot}001$, **b** $P < 0{\cdot}001$ (log rank test)

Mackenzie, H. et al. Obesity surgery and risk of cancer. British Journal of Surgery (2018). doi:10.1002/bjs.10914

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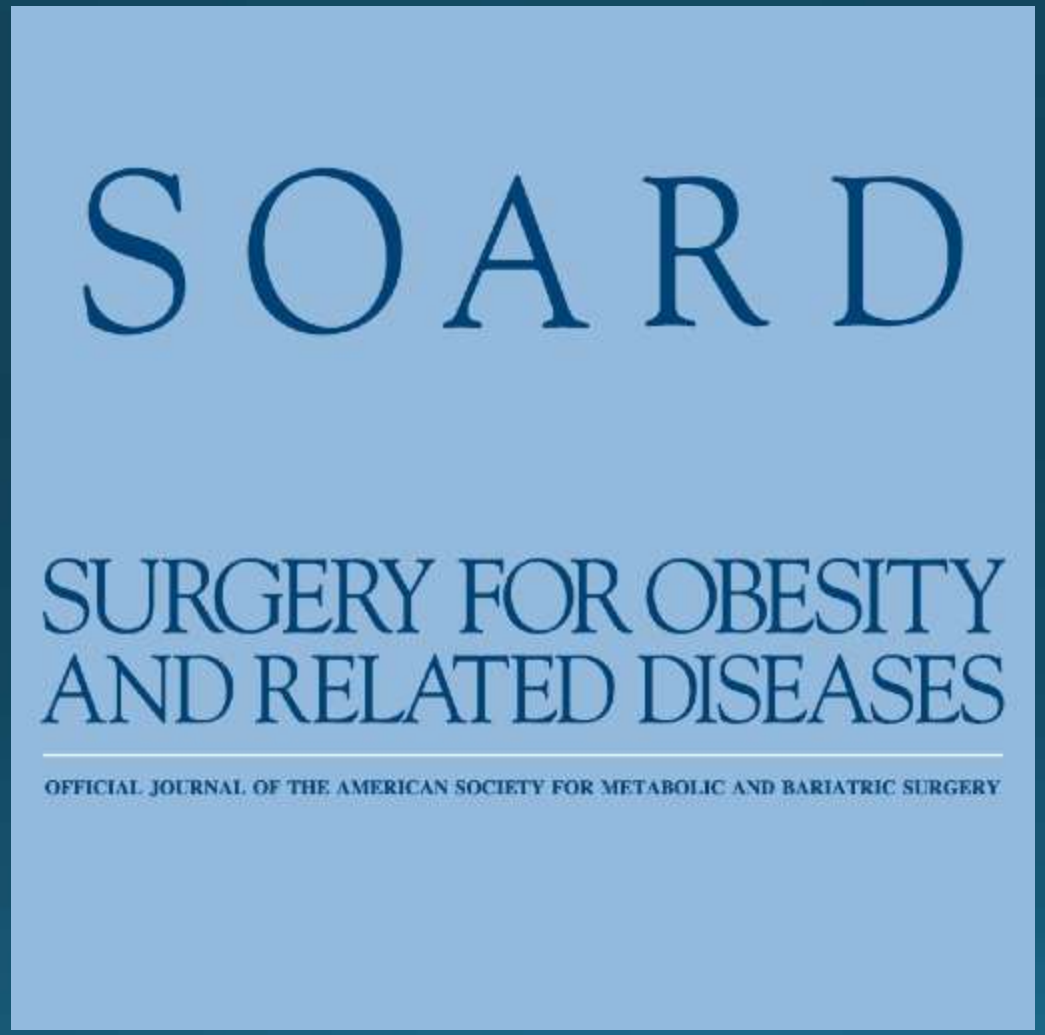
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ASMBS Position Statement on the Relationship Between Obesity and Cancer, and the Role of Bariatric Surgery

Published May 2020

Download PDF Document

ASMBS Position Statement on the relationship between obesity and cancer, and the role of bariatric surgery: risk, timing of treatment, effects on disease biology, and qualification for surgery Saber Ghiassi, M.D. , Maher El Chaar, M.D. , Essa M. Aleassa, M.D. , Fady Moustarah, M.D. , Sofiane El Djouzi, M.D. , T. Javier Birriel, M.D. , Ann M. Rogers, M.D., for the American Society for Metabolic and Bariatric Surgery Clinical Issues Committee

Surg Obes Relat Dis 2020;16:713-724

SURGERY FOR OBESITY AND RELATED DISEASES
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The risk of developing breast, ovarian, and endometrial cancer in obese women submitted to bariatric surgery: a meta-analysis

Beatriz P. Ishihara • Daniela Farah, Pharm.D., M.Sc. • Marcelo C.M. Fonseca, M.D., Ph.D. •
Afonso Nazario, M.D., Ph.D.

Published: June 13, 2020 • DOI: https://doi.org/10.1016/j.soard.2020.06.008

Abstract

This article performs a systematic review and meta-analysis to investigate the impact of bariatric surgery and the risk of developing breast, ovarian, and endometrial cancer in obese women. MEDLINE, EMBASE, LILACS, and Cochrane databases were searched from inception until January 2019 to retrieve studies that assessed the risk of breast, ovarian, or

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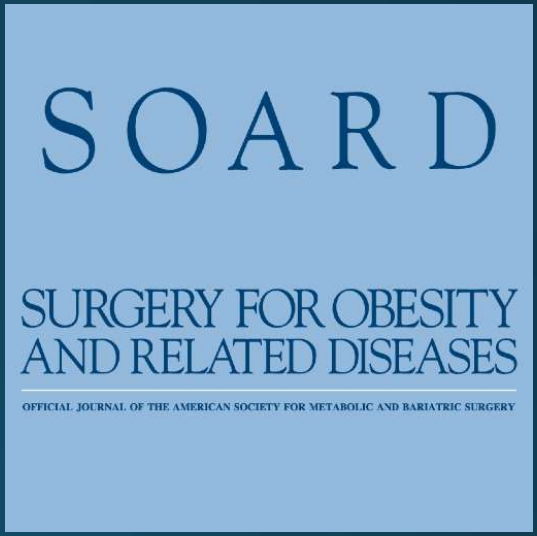
The risk of developing breast, ovarian, and endometrial cance…

which incorporated a total of 150,537 patients in the bariatric surgery arm and 1,461,938 women in the control arm. The total RR of breast, ovarian, and endometrial cancer was .41 (95% confidence interval [CI]: .31–.56]; I^2 = 90%; 7 studies). The risk of breast cancer was reduced by 49% (RR: .51; 95%CI: .31–.83]; I^2 = 92%; 6 studies). The risk of ovarian cancer was reduced by 53% (RR: .47; 95%CI: .27–81; I^2 = 0%; 3 studies). The risk of endometrial cancer was reduced by 67% (RR: .33; 95%CI: .21–.51; I^2 = 88%; 7 studies). Bariatric surgery may have a protective effect reducing the risk of breast, ovarian, and endometrial cancer in obese women. The high heterogeneity and other issues justify the need for further studies to deepen our knowledge.

Key words



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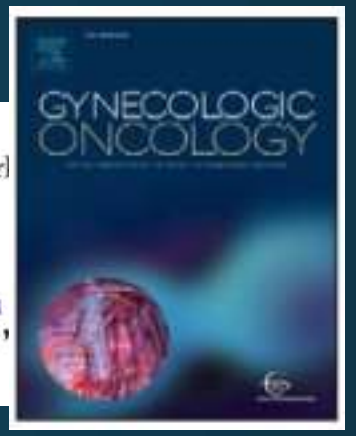
Female-specific Cancer

Available online 1 March 2017



Long-term incidence of female-specific cancer after bariatric surgery or usual care in the Swedish Obese Subjects Study

Åsa Anveden [a,b,1], Magdalena Taube [a,1], Markku Peltonen [c], Peter Jacobson [a], Johanna C. Andersson-Assarsson [a], Kajsa Sjöholm [a], Per-Arne Svensson [a,d,*], Lena M.S. Carlsson [a]

The prospective, matched Swedish Obese Subjects with a median follow-up of 18.1 years.

Bariatric surgery was associated with reduced risk of overall cancer.

About half of the observed cancers were female-specific.

Incidence was lower in the surgery group compared with the control group.

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Bariatric Surgery Decreases the Number of Hospital Admissions for Cancer in the Obese Population: A Nationwide Case-

Camila Ortiz Gómez, MD ; David Romero-Funes, MD ; Juliana Henrique, MD; Rene Aleman, MD; Joel S. Frieder, MD; David Gutierrez-Blanco, MD; Emanuele Lo Menzo, MD, PhD, FACS, FASMBS; Samuel Szomstein, MD, FACS, FASMBS; Raul Rosenthal, MD, FACS, FASMBS.

Ortiz et al.,
Accepted for Publication
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Methods

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H·CUP
HEALTHCARE COST AND UTILIZATION PROJECT

The National inpatient sample (NIS) database

Largest all-payer inpatient care collection of hospital care data in the US

More than seven million hospital stays

The NIS database between 2010 and 2014

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Results

Control Group
n = 1,423,367

Case Group
n = 246,668

The NIS database between 2010 and 2014

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Multivariate analysis

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Likelihood of developing obesity-related cancer

Bariatric Surgery

Control

Vs.

Case

Bariatric Surgery

OR = 1.21

Confidence Interval 95% *P value < 0.01*

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GENETICALLY PREDISPOSED PATIENTS

Likelihood of developing obesity-related cancer

Control
37.2%

n=259

Vs.

Case
25.5%

n=51

OR = 1.7

P value = 0.1116

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Risk Factors Associated with Primary Liver Cancer in Severely Obese Subjects and the Impact of Metabolic Surgery as a Measure of Primary Prevention: A Nationwide Case-Control analysis.

David Romero Funes MD, Luis Felipe Okida MD, Liang Hong PhD, David Gutierrez Blanco MD, Emanuele Lo Menzo MD PhD FASMBS, Samuel Szomstein MD FASMBS, and Raul J. Rosenthal MD FASMBS

Cleveland Clinic

Conclusions

- **Higher risk of liver cancer in obese-diabetic patients** is primarily governed by the occurrence of **NASH and not diabetes** alone

- **Bariatric surgery could potentially represent a preventive measure for:**

1. Decreasing the number of first time liver cancer admission
2. And the probability of liver cancer in a severely obese and diabetic population.

Risk Factors Associated with Primary Colorectal Cancer in Severely Obese Subjects and the Impact of Metabolic Surgery on Spontaneous Occurrence versus Hereditary Transmission: A Nationwide Case-Control analysis.

David Romero Funes MD, Luis Felipe Okida MD, Liang Hong PhD, David Gutierrez Blanco MD, Emanuele Lo Menzo MD, PhD, FASMBS, Samuel Szomstein MD, FASMBS, Raul J. Rosenthal MD, FACS FASMBS and Steven Wexner MD, PhD, FACS, FRCS(Eng), FRCS (Edin), FRCSI (Hon), Hon FRCS(Glasg)

Cleveland Clinic

CONCLUSIONS

- Family History of CRC and personal history of polyps are the most significant risk factors for CRC in severely obese patients
- Bariatric surgery could potentially represent a preventive measure for:

1. Decreasing the number of first time CRC admission
2. And the probability of CRC cancer in the severely obese.

Research

JAMA | Original Investigation

Association of Bariatric Surgery With Cancer Risk and Mortality in Adults With Obesity

Ali Aminian, MD; Rickesha Wilson, MD; Abbas Al-Kurd, MD; Chao Tu, MS; Alex Milinovich, BA; Matthew Kroh, MD; Raul J. Rosenthal, MD; Stacy A. Brethauer, MD; Philip R. Schauer, MD; Michael W. Kattan, PhD; Justin C. Brown, PhD; Nathan A. Berger, MD; Jame Abraham, MD; Steven E. Nissen, MD

IMPORTANCE Obesity increases the incidence and mortality from some types of cancer, but it remains uncertain whether intentional weight loss can decrease this risk.

OBJECTIVE To investigate whether bariatric surgery is associated with lower cancer risk and mortality in patients with obesity.

DESIGN, SETTING, AND PARTICIPANTS In the SPLENDID (Surgical Procedures and Long-term Effectiveness in Neoplastic Disease Incidence and Death) matched cohort study, adult patients with a body mass index of 35 or greater who underwent bariatric surgery at a US health system between 2004 and 2017 were included. Patients who underwent bariatric surgery were matched 1:5 to patients who did not undergo surgery for their obesity, resulting in a total of 30 318 patients. Follow-up ended in February 2021.

EXPOSURES Bariatric surgery (n = 5053), including Roux-en-Y gastric bypass and sleeve gastrectomy, vs nonsurgical care (n = 25 265).

JAMA | Original Investigation

Association of Bariatric Surgery With Cancer Risk and Mortality in Adults With Obesity

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RESULTS The study included 30 318 patients (median age, 46 years; median body mass index, 45; 77% female; and 73% White) with a median follow-up of 6.1 years (IQR, 3.8-8.9 years). The mean between-group difference in body weight at 10 years was 24.8 kg (95% CI, 24.6-25.1 kg) or a 19.2% (95% CI, 19.1%-19.4%) greater weight loss in the bariatric surgery group. During follow-up, 96 patients in the bariatric surgery group and 780 patients in the nonsurgical control group had an incident obesity-associated cancer (incidence rate of 3.0 events vs 4.6 events, respectively, per 1000 person-years). The cumulative incidence of the primary end point at 10 years was 2.9% (95% CI, 2.2%-3.6%) in the bariatric surgery group and 4.9% (95% CI, 4.5%-5.3%) in the nonsurgical control group (absolute risk difference, 2.0% [95% CI, 1.2%-2.7%]; adjusted hazard ratio, 0.68 [95% CI, 0.53-0.87], P = .002). Cancer-related mortality occurred in 21 patients in the bariatric surgery group and 205 patients in the nonsurgical control group (incidence rate of 0.6 events vs 1.2 events, respectively, per 1000 person-years). The cumulative incidence of cancer-related mortality at 10 years was 0.8% (95% CI, 0.4%-1.2%) in the bariatric surgery group and 1.4% (95% CI, 1.1%-1.6%) in the nonsurgical control group (absolute risk difference, 0.6% [95% CI, 0.1%-1.0%]; adjusted hazard ratio, 0.52 [95% CI, 0.31-0.88], P = .01).

JAMA | Original Investigation

Association of Bariatric Surgery With Cancer Risk and Mortality in Adults With Obesity

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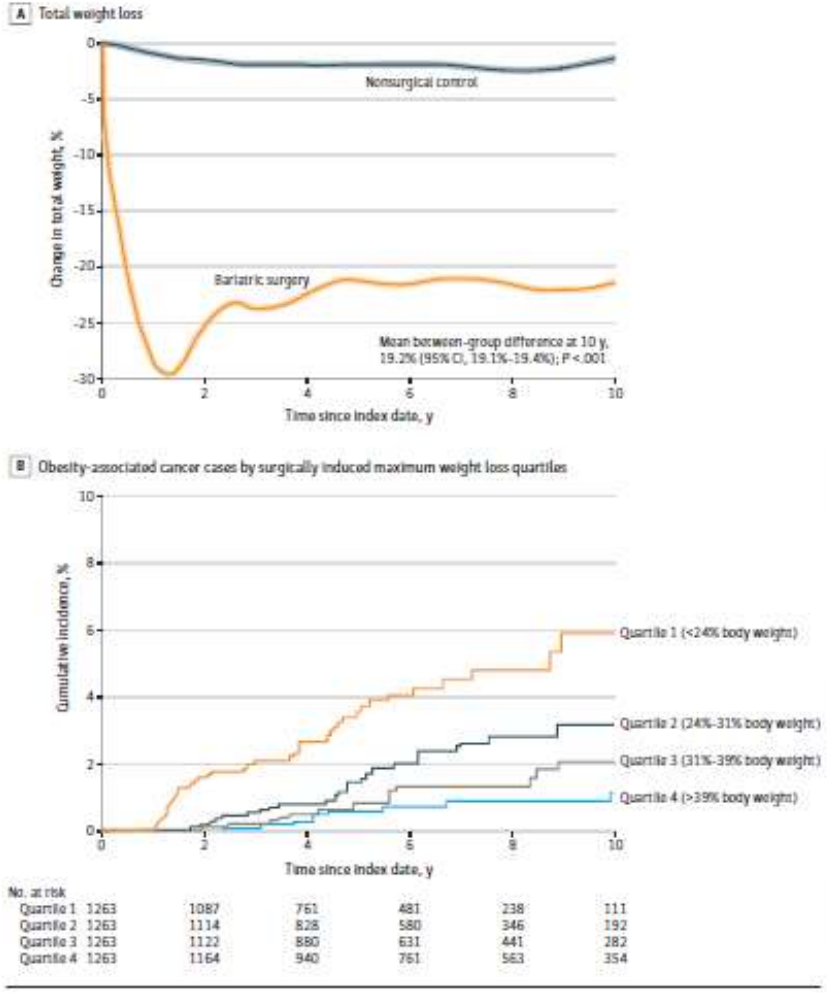
Figure 4. Weight Loss and Cumulative Incidence of Primary End Point Stratified by Maximum Weight Loss Quartile



A, The data were smoothed and are mean trends for the percentage change in body weight from baseline in patients in the bariatric surgery group and the nonsurgical control group during follow-up. The shaded areas indicate 95% CIs. The mean between-group difference at 10 years from baseline was estimated from a flexible regression model with a 4-knot restricted cubic spline for the time × treatment interaction. The median observation time was 5.9 years (IQR, 3.4-9.0 years) for patients in the bariatric surgery group and was 6.3 years (IQR, 4.0-9.2 years) for patients in the nonsurgical control group. B, The data are Kaplan-Meier estimates for incidence of obesity-associated cancer types by the quartile of maximum (the largest) weight loss in the bariatric surgery group ($P < .001$ from log-rank test). The findings suggest that weight loss in the bariatric surgery group was associated with lower risk of incident cancer cases in a dose-dependent response.

JAMA | Original Investigation

Association of Bariatric Surgery With Cancer Risk and Mortality in Adults With Obesity

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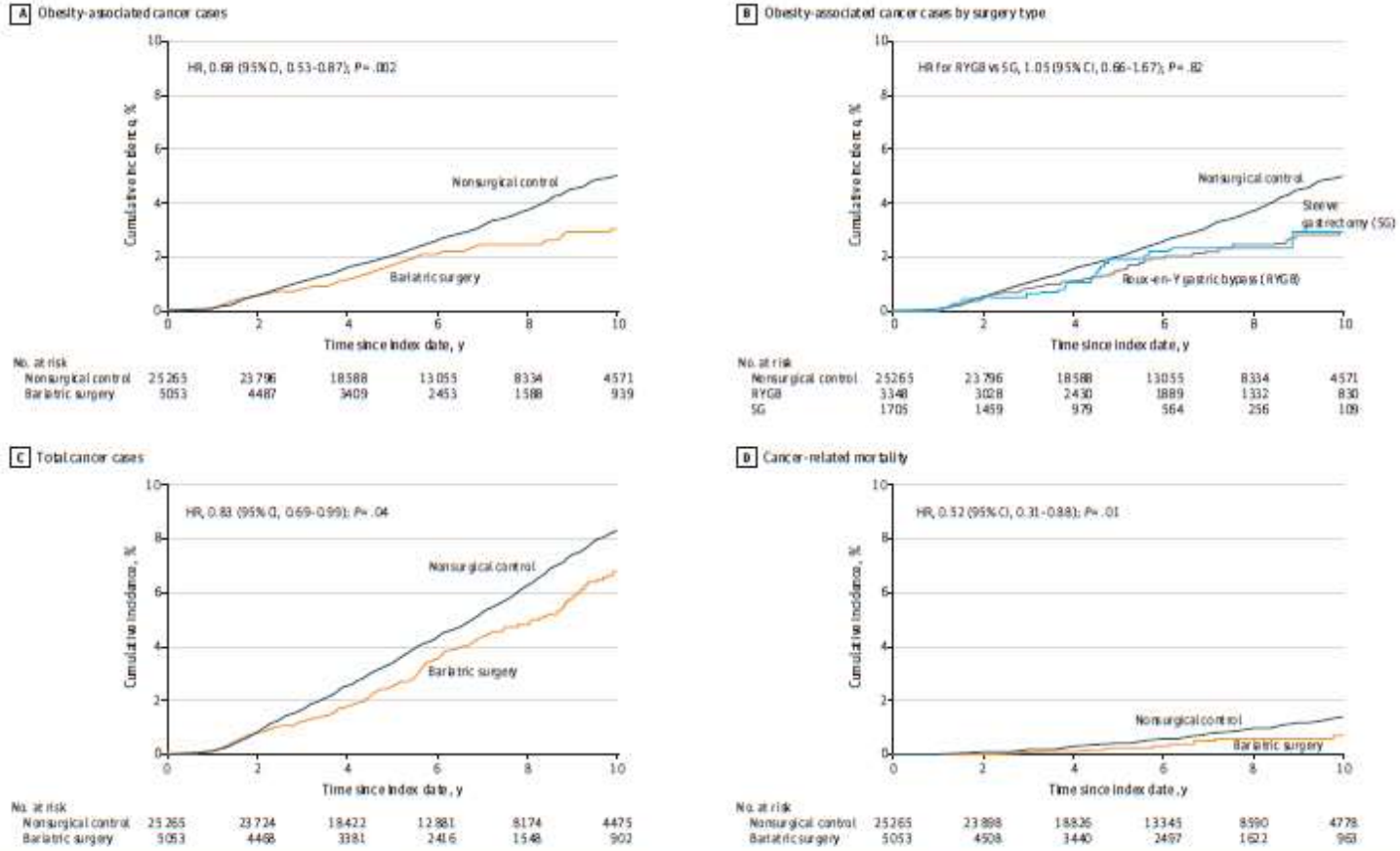
Figure 2. 10-Year Cumulative Incidence Estimates (Kaplan-Meier) for the Primary and Secondary End Points



A, The primary composite end point was the first occurrence of 1 of the 13 types of obesity-associated cancer. The median observation time was 5.9 years (IQR, 3.4-8.9 years) for patients in the bariatric surgery group and was 6.1 years (IQR, 3.9-9.2 years) for patients in the nonsurgical control group. B, The risk for the primary end point was assessed separately after RYGB and SG. The median observation time was 6.8 years (IQR, 3.4-10.0 years) for RYGB and was 4.6 years (IQR, 3.0-6.8 years) for SG. C, The occurrence of all cancer types was a secondary end point. The median observation time was 5.8 years (IQR, 3.4-8.8 years) for patients in the bariatric surgery group and was 6.1 years (IQR, 3.9-8.9 years) for patients in the nonsurgical control group. D, Cancer-related mortality was a secondary end point. The median observation time was 6.0 years (IQR, 3.4-9.0 years) for patients in the bariatric surgery group and was 6.3 years (IQR, 4.0-9.1 years) for patients in the nonsurgical control group. HR indicates hazard ratio.

CONCLUSIONS AND RELEVANCE Among adults with obesity, bariatric surgery compared with no surgery was associated with a significantly lower incidence of obesity-associated cancer and cancer-related mortality.

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