The Obesity Paradox and the Outcome of Vascular Surgery
Thin May Be In, But Fat Is Where It’s At

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FINANCIAL DISCLOSURE
I Have No Financial Relationships to Disclose

Health Effects of Obesity
- Hypertension
- Diabetes Mellitus
- Cardiovascular Disease
- Heart Failure
- All-Cause Mortality

Obesity Paradox
- Smaller Myocardial Infarct Size
- Improved CHF Survival
- Improved Survival: CABG & PTCA
- Reduced Early & Late Mortality: Acute Stroke

Obesity Among Adults: Worldwide


Obesity is a Disease, Why Are So Many Obese People Healthy?
Obesity Paradox: Vascular Surgery

NSQIP: 7,543 Patients

LE Revasc: 24.6%  Amputations: 9.4%  Other: 31.3%
AAA Repair: 17.4%  Cerebrovascular: 17.3%

Obesity Paradox: Carotid Endarterectomy

NSQIP

Patients: 23,652 Patients

Years: 2005 – 2009

Underweight (BMI < 18.5): 1.8%
Normal Weight (BMI 18.5 – 24.9): 26.6%
Overweight (BMI 25.0 – 29.9): 39.9%
Class I Obese (BMI 30.0 – 34.9): 21.2%
Class II Obese (BMI 35.0 – 39.9): 7.7%
Class III Obese (BMI > 40): 3.5%

Obesity Paradox: Carotid Endarterectomy

Meta-Analysis

Patients: 92,525

LE Revasc: 28,267 (42.1%)
Cerebrovasc: 25,691 (38.2%)
Open AAA Repair: 5,768 (8.6%)
EVAR: 4,374 (6.5%)
Mesenteric/Renal Revasc: 110 (0.1%)

UW (<18.5): 2,223 (2.4%)
NW (18.6–24.9): 29,727 (32.1%)
OW (25–29.9): 34,517 (37.3%)
OB (>30): 26,858 (28.2%)
30-Day Mortality

- Mortality higher in UW compared to NW individuals (p = .005)  

- Mortality lower in OB compared to NW individuals (p = .005)

30-Day Cardiac Complications

- Cardiac complications lower in OB compared to NW individuals (p = .005)

30-Day Respiratory Complications

- Respiratory complications lower in OB than NW individuals (p < .0001)

30-Day Wound Complications

- Wound complications higher in OW than NW individuals (p < .0001)
Health Professionals Follow-up Study
38,006 Men (40-75 Yrs.)
1987 - 2012

Obesity Paradox: Etiology
ADIPOSE TISSUE
Adipokines: ADIPONECTIN

BMI  ADIPONECTIN
REDUCED RISK OF:
- Coronary Events
- Risk of Heart Failure
- Cardiovas. Mortality / CVA

SUMMARY
- Impact of Weight on Vascular Surgical Outcomes is Complex
- Modest Excessive Weight May be Protective for Perioperative Mortality & Cardiorespiratory Morbidity
- Excess Weight is a Risk Factor for Wound Complications
- Obesity Paradox May be Related to Endocrine Function of Adipose Tissue

Obesity-Related Mortality
Deaths: 1990
Deaths: 2015

In US, ~7 percent of kids on track for obesity by 15:
study

BMI  ADIPONECTIN
REDUCED RISK OF:
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Researchers debunk claim that obesity improves end-of-life survival for CVD patients

Dec 11, 2017 | Anicka Slachta

Cardiovascular disease’s “obesity paradox”—the idea that being dangerously overweight can improve end-of-life outcomes in heart patients—recently debunked by a team of researchers in New York and Michigan, finding the claim to be untrue for those with incident heart disease.

The body of existing research on the paradox is “controversial,” according to a release from New York University, and suggests that obesity, which is a known risk factor for cardiovascular disease (CVD), is actually associated with higher survival rates in those with CVD. This notion makes little sense, the scientists observed, and they found that the “obesity paradox” was actually a “false paradox.” Risk of death was 18 to 36 percent lower for patients with a BMI of 30-34.9, they found, compared to individuals at a healthy weight.

However, in patients with matched cardiovascular conditions but newer, incident disease, there was no evidence of any survival benefit.

“The loss of an obesity paradox when switching from prevalent to incident cases and pre-diagnosed weight to time-diagnosed suggests that prevalent disease are skewed biased by factors such as disease-related weight loss and selective survival,” lead author Virginia C. Caldi, MD, PhD, said in the release.

“Given that many diseases result in wasting at the end of life, the notion that extra catabolic reserve can prolong survival makes intuitive sense,” she said. “However, despite the plausibility of these hypotheses, we did not find evidence of an obesity paradox when using methods that are less prone to bias.”

These biases include weight status itself, she said, which can waver based on a patient’s health. If a normal-weight individual sheds pounds because of a severe disease, researchers will underestimate the adverse effects of obesity to healthy weight. In addition, patients who are severely overweight tend to live longer than obese individuals who suffer from severe disease, skewing the eventual patient sample.

Prevalence of Obesity: USA

<table>
<thead>
<tr>
<th>OVERWEIGHT: BMI &gt; 25</th>
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<td>OBESITY</td>
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<td>72.3%</td>
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Source: The National Health & Nutrition Survey

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Source: The National Health & Nutrition Survey
30-Day Respiratory Complications

- Respiratory complications lower in NW than UW individuals (p < .0001)

**Obesity Paradox: Vascular Surgery**

**NSQIP:** 5,455 AAA Repairs
- Open: 2,097
- EVAR: 3,358

**SURGICAL SITE INFECTION**

**Obesity Paradox: Carotid Endarterectomy**

**NSQIP**
- Patients: 23,652 Patients
- Years: 2005 – 2009

**SURGICAL SITE INFECTION: 0.6%**

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**PLANET GIRTH** Two billion people across the world are obese – with one in four battling fat-related diseases, experts warn.

Four million people died in 2015 as a result of being too tubby, struck by cancer, heart disease, diabetes and other killer conditions.

WHO estimates a quarter of the global adult population is suffering from fat-related health problems, a daunting report warns.

Another four million people died in 2015 as a direct result of being too tubby, according to the study.

Levels of obesity have doubled in more than 75 countries since the 80s, according to the major study in the New England Journal of Medicine.