Update in General Internal Medicine

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Effects of bariatric surgery on mortality in Swedish obese subjects


**AIM**
To determine whether bariatric surgery reduces mortality.

**METHODS**
Two thousand obese (BMI > 34 for men, >38 for women) subjects underwent bariatric surgery between 1987-2001 in several different centers in Sweden. There were few exclusion criteria; and patients with diabetes mellitus, coronary artery disease, and prior stroke were included. Patients were prospectively matched to similar obese patients who were not pursuing surgical intervention. The surgical group was followed in routine postoperative fashion, whereas the matched controls received “usual” care by their own primary care doctors without any attempt to standardize care. Subjects were followed over the ensuing years for status (alive or dead), cause of death if any, as well as weight loss success.

**RESULTS**
At baseline, the two groups were quite similar, although the surgical group was slightly younger and more obese and had higher rates of tobacco use. Most of the surgical group (85%) underwent banded gastroplasty, and the rest received gastric bypass procedures (mostly open procedures). The mean follow-up was 11 years. The alive/dead status was known in 99.9% of patients, and most patients participated in follow-up visits out to 15 years. The surgery group lost significantly more weight and had a statistically significant reduction in mortality (hazard ratio, 0.76 [05%CI, 0.59-0.98]). There were significant reductions in deaths from both cardiovascular and oncologic diseases.
### CONCLUSIONS

In this large cohort of obese Swedish patients, bariatric surgery led to reductions in mortality (total, cardiovascular, and cancer-related) compared with matched controls over several years. The participation of multiple sites in this study makes these results more generalizable to a “real-world” situation. However, because patients were not randomized, it is possible that unmeasured differences between the groups contributed to the findings. Also, most of the surgeries done in this study were gastric banding, not bypass, so these data may or may not be applicable to bypass surgery. Finally and most important, the lack of specific follow-up care in the control group might mean that the reduction in mortality in the surgery group is due to increased participation in the healthcare system independent of the surgery itself. Thus, these results are very promising but not conclusive that bariatric surgery reduces mortality.

### IMPACT ON INTERNAL MEDICINE

This is the first study to show a reduction in mortality for any weight loss intervention, either surgical or lifestyle modification. A retrospective study published in the same journal found similar improvements in outcomes. Previous nonsurgical studies were usually too short or had results that were small and not sustainable over the many years required to show differences in mortality. While there are limitations to this study, particularly the lack of randomization, the results are noteworthy. Even the lack of increased mortality in the subject group is notable given the potential adverse effects of the procedure. Coupled with many other studies showing improvements in quality of life, sleep apnea, diabetes control, cardiovascular events, musculoskeletal pain, and functional status, this study supports the use of bariatric surgery in select groups of obese patients.

### RELATED REFERENCE


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### HAZARDS OF RADIOLOGIC TESTING

**Estimating risk of cancer associated with radiation exposure from 64-slice computerized tomographic coronary angiography**

Einstein Aj, Henzlova MJ, Rajagopalan S.


**AIM**

To determine the lifetime attributable risk (LAR) of cancer incidence associated with computed tomographic coronary angiography (CTCA) and to assess the influence of age, gender, and scan protocol on cancer risk.

**METHODS**

Using a computational model and simulation methods, the amount of ionizing radiation that a standard, spiral CTCA delivers to organs of male and female patients was assessed. Then, using the well-accepted approach of the National Academy’s Biologic Effects of Ionizing Radiation Seventh Report (BEIR VII), age- and sex-specific LARs for various types of cancer (e.g., lung, breast) and for the patients as a whole were estimated.

**RESULTS**

Expressed in the standard measure of radiation, the millisievert (mSv), the organ doses deriving from a standard CTCA ranged from 42 to 91 mSv to the lungs and from 50 to 80 mSv to the female breast (For purposes of comparison, the amount of radiation delivered by a standard chest radiograph is 0.01 mSv).

The LAR of cancer incidence from CTCA varied greatly based on patient age and sex. For example, radiation exposure from a single, standard CTCA is associated with an LAR of cancer of 1 in 3261 for an 80 year-old man, but 1 in 143 for a 20-year-old woman. Using simulation methods, the authors determined that dose-reduction strategies, particularly electrocardiographically controlled tube current modulation (ETCTM), substantially decreases these risk estimates (e.g., for a 20-year-old woman, the LAR improves for 1 in 143 to 1 in 219). In contrast, a combined scan of the heart and aorta was associated with a worse LAR (e.g., 1 in 114 for a 20-year-old woman).

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<thead>
<tr>
<th></th>
<th>Control</th>
<th>Surgical</th>
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</thead>
<tbody>
<tr>
<td>Weight loss at 10 years</td>
<td>+ 1%</td>
<td>- 18%</td>
</tr>
<tr>
<td>Mortality</td>
<td>6.3%</td>
<td>5% (P = 0.02)</td>
</tr>
<tr>
<td>Mortality with baseline CVD</td>
<td>25%</td>
<td>19% (P &lt; 0.05)</td>
</tr>
<tr>
<td>Mortality without baseline CVD</td>
<td>6%</td>
<td>5%</td>
</tr>
</tbody>
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CVD = cardiovascular disease.