Functional Status is More Strongly Associated with Complication Rate After Bariatric Surgery than is Age – A NSQIP Analysis

Olivia Ziegler, MD, Joy Zhou Done, MD, Siva Vithiananthan, MD ❖ The Warren Alpert Medical School of Brown University

Background:

Bariatric surgery results in:

- Sustained weight loss
- Remission of components of metabolic syndrome and related comorbidities + attendant reduction in mortality

Bariatric Surgery in older individuals

- Rate is increasing
- Bariatric surgery appears to be safe in those up to 65
- Beyond age 65 data are more limited

Overall Methods + Data Collation

National Surgery Quality Improvement Project

- Data obtained from NSQIP database with permission from institutional review board and NSQIP review
- Patients selected from data from 2005 – 2018 based on CPT codes for sleeve gastrectomy, RYGB, lap band placement, or duodenal switch with diagnosis of morbid obesity
  - Selection criteria yielded 164,711 patients
- Analysis performed in Stata statistical software

Complications defined as:

- Superficial, deep surgical site infection (SSI), organ space infection, wound dehiscence, sepsis, septic shock, UTI, PNA, failure to wean from ventilator for over 24 hours, re-intubation, pulmonary embolism, MI, DVT, CVA, cardiac arrest, bleeding requiring transfusion, acute renal failure
- Aggregate complication rate = 4.57%

RESULT: Mortality rate increases with age but does not differ among those over 50

METHOD: Stratified into 4 age groups: 18-50 (N = 109,707), 51-60 (N = 38,782), 61-70 (N = 15,206), over 70 (N = 1,016)

- One-way ANOVA + tukey post hoc test shows significant differences in overall complication rate between age groups [F(3,167411) = 20.96, (p <.000)]

RESULT:

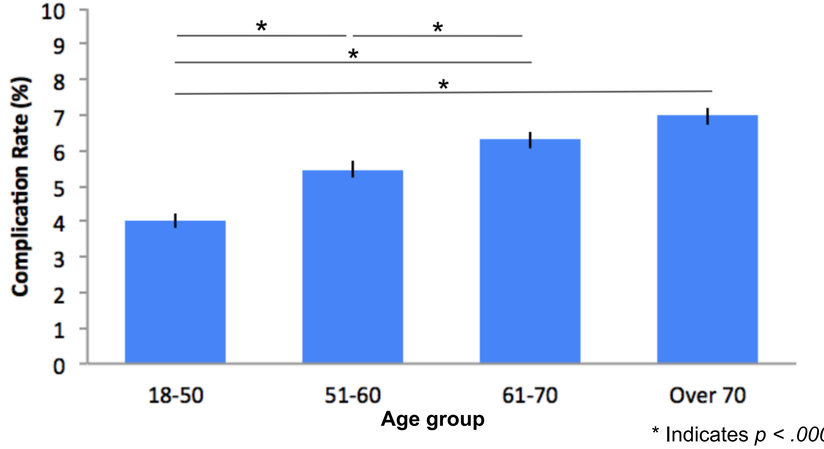
- Increased mortality rate in all groups compared to 18-50 year old group / No difference in mortality between any other groups

RESULT: Complication rate increases with age but does not differ among those over 60

METHOD: Stratified as above, One-way ANOVA + tukey post hoc test

- significant differences in overall complication rate between age groups [F(3,167411) = 88.55, (p <.000)]
- Increased rate in all groups compared to 18-50 year old group and in patients in their 50s vs patients in their 60s, (p <.000)
- No difference between 50s vs 70s (*p* = .092) 60s vs 70s (*p* = .716)

Complication rate vs age group



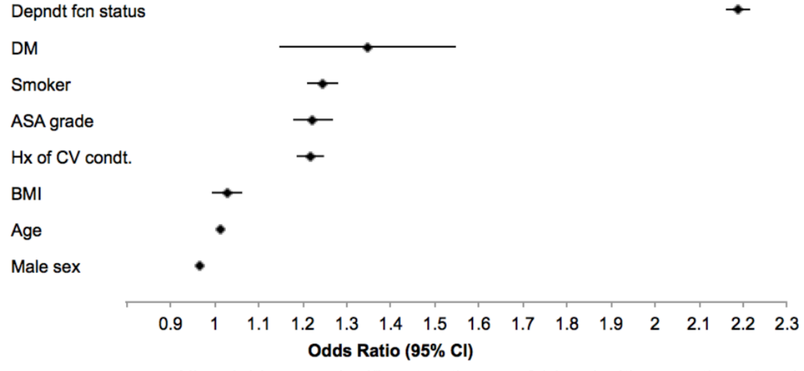
* Indicates *p* < .000

RESULT: Functional status is more associated with complication rate than is age

METHOD: Multivariate regression equation: X^2 (8) = 1437.27, (*p* <.000)

- Dependent functional status, ASA grade, diabetes, smoking status, underlying cardiovascular conditions, bmi and age were all significantly predictive of complication rate (p < .000)
- Dependent functional status had the largest effect; odds ratio of 2.18
- Age had a smaller, though significant impact: odds ratio of 1.014
- Sex showed no effect on complication rate (*p* = .228)

Variables associated with aggregate complication rate



All variables are significant at the *p* < .01 level with exception of male sex

- Age is associated with increased complication and mortality rate in bariatric surgery, however there are not significant differences between older age groups
- Functional status appears more important than age in overall complication risk and may help in candidate selection among older patients