

Lingering Risk: Bariatric Surgery Before Total Knee Arthroplasty

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Objectives

- Background
- Methods
- Results
- Discussion of strengths and limitations
- Conclusion of study

Obesity - Weight higher than what is considered as a healthy weight for a given height. (Body Mass Index/ BMI)

- CLASSIFICATIONS:

- BMI less than 18.5 = Underweight.
- BMI 18.5 to < 25 = Normal
- BMI 25 to < 30 = Overweight
- BMI 30 or higher = Obese

- CLASS OF OBESITY

- Class 1: 30 to < 35
- Class 2: 35 to < 40
- Class 3: Greater than 40, severe or morbid obesity.

Widely acknowledged as an independent risk factor for knee osteoarthritis.
Estimated 56.5% of patients with TKA are obese.

Other complications of obesity

- Est. 35 - 39% of U.S. adults are Obese
- 8% of adults are considered bariatric (BMI > 40)

- Multiple comorbidities
 - Type II diabetes
 - Cardiovascular disease
 - Asthma
 - Chronic back pain
 - Increased risk of morbidity and mortality

Benefits of Bariatric Surgery

When counseling, lifestyle or pharmacotherapy yield only modest weight control, bariatric surgery is an option.

220,000 performed in US and Canada 08'-09'

Average BMI drop 15 points.

- Sustained weight loss
- Improves HTN, dyslipidemia, CVD, stroke, sleep apnea, GB disease, gout, OA, insulin resistance.

Does dramatic
weight loss
from bariatric
surgery mean
positive results?

if BS reduces pre-op BMI and comorbidities it would be reasonable to conclude it to be an excellent option to reduce risk during procedure...

... Endocrinology and general surgery literature suggests otherwise.

Methods

- Medicare data search from 2005 - 2012 to find TKA patients falling in 3 groups
 1. BS before TKA (group 1)
 2. No BS before TKA. >40 BMI (Control 2)
 3. Pt with TKA BMI < 25 BMI (Control 3)
- Follow up for complications at 30 days, 90 days, 2 years.
 - Group 1: 5,914 patients
 - Group 2: 26,616 patients
 - Group 3: 6,480 patients

Results

	Group I, BS Before TKA, n = 5918 (%)	Group II, BMI >40, n = 26,616 (%)	Group III, BMI <25, n = 6480 (%)
Female	83.05	76.38	62.75
Less than 65	57.77	27.18	4.78
Congestive heart failure	15.85	13.80	4.80
Valvular disease	12.45	8.23	9.97
Peripheral vascular disease	12.59	9.14	9.09
Hypertension	83.25	74.17	60.32
Other neurological disorders	16.09	7.05	6.10
Chronic pulmonary disease	40.35	28.54	15.68
Diabetes without chronic complications	46.77	42.06	13.94
Diabetes with chronic complications	11.64	10.28	2.36
Hypothyroidism	30.60	21.02	17.50
Renal failure	8.58	8.63	4.58
Liver disease	9.75	3.36	1.50
Chronic peptic ulcer disease	1.35	0.17	0.19
HIV/AIDS	1.54	0.85	1.06
Deficiency anemias	43.68	21.83	22.24
Alcohol abuse	3.90	1.29	1.31
Drug abuse	6.94	1.83	1.03
Psychoses	18.22	6.65	3.01
Depression	44.00	18.16	10.12
Smoking	25.77	14.97	15.48

Complications

- 30 day follow up (medical)

Group I vs Group III (all clinically sign.)

- Respiratory failure (1.82% to .37%)
- Pneumonia (5.31% to 1.34%)
- Heart Failure (10.09% to 2.67)
- UTI (17.08% - 7.79 %)
- Other notable: DVT, PE, Stroke, acute renal failure, death

Group I vs Group II

- Stroke (.96% to .41%)
- Pneumonia (5.31% to 1.82%)
- UTI (17.08% to 10.82%)
- DVT (4.98% to 2.99%)
- Mortality (.22% to .06%)

Complications

- 90 day follow up (Surgical)
- 2 year follow up (surgical)

Surgical Complication	Group I <u>BS Before TKA</u> n = 5918 (%)	Group II <u>BMI >40</u> n = 26,616 (%)	Group III <u>BMI <25</u> n = 6480 (%)
90-d follow-up			
Periprosthetic infection	1.76	1.73	0.57
Revision	1.03	0.69	0.29
Manipulation	1.37	0.64	1.00
Extensor rupture	0.63	0.43	0.31
Vascular/neuro injury	0.44	0.47	0.25
Minimum 2-y follow-up			
Periprosthetic infection	5.80	4.83	1.98
Revision	7.38	4.83	2.52
Manipulation	3.13	1.61	2.39
Extensor rupture	2.11	1.42	0.66
Osteolysis	0.44	0.28	0.39
Vascular/neuro injury	1.00	0.88	0.74

Discussion

Strengths of study:

1. Cohort size (total size >39,000, group studied just < 6,000)
2. Dual reporting short term medical and long term surgical complications.
 - Most patients in group 1 (<65 years, with first TKA)
 - 200% greater deficiency anemia (group 1 vs Group 3)

Discussion continued...

Limitations:

1. Based only on medicare and not private payer
2. No standardization of surgical techniques, implants, patient selection and post-op protocol.
3. Medicare data only as reliable as the documentation.

Conclusion

- BS before TKA has significantly greater risk compared to non obese patients.
- Does not decrease complications compared to extremely obese patients.
 - Possibly due to medical and psychiatric comorbidities, malabsorption and malnourishment
- Patients should be screened and counseled appropriately.