Obesity and Its Challenges:

Bariatric Surgery: Why or Why Not

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Disclosures

I have nothing to disclose

Outline

Growing obesity epidemic
Not just about weight loss: treating metabolic disease and reducing mortality.
RY gastric bypass, gastric band, sleeve gastrectomy: what is the difference?
Current AAP recommendations

Outline

Growing obesity epidemic

Obesity Trends* Among U.S. Adults
BRFSS, 1990, 2000, 2010
(*BMI ≥30, or about 30 lbs. overweight for 5'4" person)
Obesity Trends* Among U.S. Adults
BRFSS, 1986
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5’ 4” person)
No Data        <10%        10%–14%

Obesity Trends* Among U.S. Adults
BRFSS, 1987
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5’ 4” person)
No Data        <10%        10%–14%

Obesity Trends* Among U.S. Adults
BRFSS, 1988
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5’ 4” person)
No Data        <10%        10%–14%

Obesity Trends* Among U.S. Adults
BRFSS, 1989
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5’ 4” person)
No Data        <10%        10%–14%

Obesity Trends* Among U.S. Adults
BRFSS, 1990
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5’ 4” person)
No Data        <10%        10%–14%

Obesity Trends* Among U.S. Adults
BRFSS, 1991
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5’ 4” person)
No Data        <10%        10%–14%       15%–19%
Obesity Trends* Among U.S. Adults
BRFSS, 1992
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5' 4" person)

Obesity Trends* Among U.S. Adults
BRFSS, 1993
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5' 4" person)

Obesity Trends* Among U.S. Adults
BRFSS, 1994
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5' 4" person)

Obesity Trends* Among U.S. Adults
BRFSS, 1995
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5' 4" person)

Obesity Trends* Among U.S. Adults
BRFSS, 1996
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5' 4" person)

Obesity Trends* Among U.S. Adults
BRFSS, 1997
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5' 4" person)
Obesity Trends Among U.S. Adults
BRFSS, 1998
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5’4” person)

Obesity Trends Among U.S. Adults
BRFSS, 1999
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5’4” person)

Obesity Trends Among U.S. Adults
BRFSS, 2000
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5’4” person)

Obesity Trends Among U.S. Adults
BRFSS, 2001
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5’4” person)

Obesity Trends Among U.S. Adults
BRFSS, 2002
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5’4” person)

Obesity Trends Among U.S. Adults
BRFSS, 2003
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5’4” person)
Obesity Trends Among U.S. Adults
BRFSS, 2004
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5’ 4” person)

Obesity Trends Among U.S. Adults
BRFSS, 2005
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5’ 4” person)

Obesity Trends Among U.S. Adults
BRFSS, 2006
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5’ 4” person)

Obesity Trends Among U.S. Adults
BRFSS, 2007
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5’ 4” person)

Obesity Trends Among U.S. Adults
BRFSS, 2008
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5’ 4” person)

Obesity Trends Among U.S. Adults
BRFSS, 2009
(*BMI ≥ 30, or ~ 30 lbs. overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 2010
(*BMI ≥30, or ~30 lbs. overweight for 5’4’’ person)

Obesity reduces life expectancy
For young men, BMI >45 took off 13 years of life expectancy
For young women, BMI >45 took off 8 years of life expectancy

What about children and teens?....

Outline
- Not just about weight loss; it’s about treating metabolic disease and reducing mortality.
Pre- and Postoperative HbA1c According to T2DM Duration and Severity

8.2% before bypass
5.5% after bypass

Effect of Laparoscopic Roux-en-Y Gastric Bypass on Type 2 Diabetes Mellitus

- 50% of the morbidly obese have hypertension
- 40% of those on antihypertensives will be able to wean off medications completely.
- 50% of undiagnosed hypertensives will normalize their blood pressure

Change in lipid profile 2 years after gastric bypass

RYGB dropped percentage of dyslipidemic patients from 95% to 28%
Number taking medication dropped to 15%

Change in blood pressure in extremely obese patients who have undergone bariatric surgery

- systolic BP
- diastolic BP

Surgery reduces risk of:
- colon cancer
- endometrial cancer
- breast cancer
- prostate cancer
- ovarian cancer
Prospective, controlled trial
- 2010 patients underwent surgery
- 2037 matched patients underwent conventional Rx
- Mean 11 years of follow-up
- 99% of patients were followed
- Decreased mortality from decreased MI and cancer

Metabolic benefits of bariatric surgery in children and adolescents?

UNKNOWN

Resolution of Medical Comorbidities

- 4 Gastric Band studies
  Mean FU: 1.3 – 2.9 years
  Diabetes: 11/12 (2 studies)
  HTN: 15/21 (3 studies)

- 4 RYGB studies
  Mean FU: 5 m – 2.7 years
  HTN: 15/20 (3 studies)
  Sleep apnea: 16/16 (2 studies)


Outline

- RY gastric bypass, gastric band, sleeve gastrectomy: what is the difference?

RY gastric bypass

- Gold Standard – Long-term weight loss data
- Increased mortality and operative morbidity
- Permanently alters GI anatomy
- Not Reversible
- Requires lifelong nutritional supplementation
- ? osteoporosis, short stature, gastric CA, fetal anomalies, infertility?
R-Y Gastric Bypass
Complications (Children)

- No in-hospital deaths
  - death at 9 months postop (C diff colitis, hypovolemia, MOF)
  - 3 additional unrelated deaths
- Reported postop complications
  - shock
  - PE
  - severe malnutrition and micronutrient deficiency (most common)
  - bleeding
  - GI obstruction


Adjustable Gastric Banding

- Slower weight loss – less long-term data
- Reduced mortality and operative morbidity
- Reversible
- Not associated with nutritional deficiencies
- ? sustainability, "ethnic differences"?

Long-term Outcomes of Laparoscopic Adjustable Gastric Banding

Jagannath Dhoper, MB, Divya Rani Gaddam, MD, MPH, Aditya Madhi, MD, Michael Treadwell, MB, Benjamin Calloco, MD, Giovanni Dipo, MD.

84/151 patients who underwent gastric banding from 1994-1997
39% experienced major complications (28% had erosions)
48% of the bands were removed
17% required conversion to a gastric bypass

Adjustable Gastric Banding
Complications (Children)

- No in-hospital or postoperative deaths
- Reoperations 28/352 (8%)
  - band slippage 12/352 (3%)
  - intragastric band migration
  - psychologic intolerance of band
  - hiatal hernia
  - cholecystitis
  - tubing crack
- 8 cases of Fe deficiency
- 5 cases of hair loss


Kelleher et al, JAMA Pediatrics, 2013
Weight loss mechanism
Reduced gastric reservoir

Laparoscopic Sleeve Gastrectomy has Modality and Effectiveness Positioned Between the Band and the Bypass

Change in BMI after bariatric surgery


Reduced gastric reservoir

First Report from the American College of Surgeons Bariatric Surgery Center Network

What's the mortality from obesity in kids? How many kids die before the age of 18?

What's an acceptable mortality for an elective operation?

Sleeve Gastrectomy

NO PUBLISHED DATA FOR CHILDREN

So what about kids?....

- What's the mortality from obesity in kids? How many kids die before the age of 18?
- What's an acceptable mortality for an elective operation?
Outline

- Current AAP recommendations

Surgery for the Severely Obese

**NIH Consensus Panel - March 25-27, 1991**

- Initial approach: non-surgical program.
- Carefully selected patients after evaluation by multidisciplinary team.
- Gastric restrictive procedures.
- Experienced surgeon, working in appropriate setting.
- Lifelong medical surveillance after surgical therapy.


American Academy of Pediatrics Guidelines

- BMI ≥ 40 plus obesity related co-morbidities; AND
- Has attained or, depending on severity of co-morbidity, nearly attained adult stature; AND
- Has failed at least 6 months of organized conventional attempts at weight management; AND
- Demonstrates commitment to comprehensive pediatric psychological evaluation both before and after surgery; AND
- Agrees to avoid pregnancy for at least one year postoperatively; AND
- Is capable of and willing to adhere to nutritional guidelines postoperatively; AND
- Has decisional capacity and provides informed assent for surgical management.

*PEDIATRICS Vol 114, No.1, July 2004*

Algorithm

Severely obese adolescents: completed linear growth & been unsuccessful at organized attempts at weight management.

- **BMI ≥ 40**
  - NO: Continue behavioral approaches
  - YES: Severe Comorbidity?
    - NO: Severe or less severe comorbidity?
      - NO: Continue behavioral approaches
      - YES: Any contraindications to surgery?
        - NO: Consider specific bariatric surgical options
        - YES: **See Table 2**
    - YES: **See Table 3**

- **BMI ≥ 50**
  - NO: Continue behavioral approaches
  - YES: Any contraindications to surgery?
    - NO: Consider specific bariatric surgical options
    - YES: **See Table 2**

Table 2: OBESITY-RELATED CONDITIONS THAT MAY IMPROVE WITH BARIATRIC SURGERY

- Serious comorbidities:
  - Type 2 diabetes mellitus
  - Obstructive sleep apnea
  - Pseudotumor cerebri
- Less serious comorbidities:
  - Hypertension
  - Dyslipidemias
  - Non-alcoholic steatohepatitis
  - Venous stasis disease
  - Significant impairment in activities of daily living
  - Intertriginous soft tissue infections
  - Stress urinary incontinence
  - Gastroesophageal reflux disease
  - Weight-related arthropathies that impair physical activity
  - Obesity-related psychosocial distress
Table 3: Contraindications

Factors that preclude consideration of bariatric surgical treatment

- Presence of medically correctable cause of obesity
- Patient or family is unable or unwilling to participate in long-term follow-up
- Absence of decisional capacity on the part of patient
- Existence of medical, psychiatric, or cognitive condition that may impair patient’s ability to assess to surgery or adhere to post-op dietary and medication regimen
- Existence of substance abuse in preceding year
- Current lactation, pregnancy, or plans for pregnancy in upcoming 2 yrs

Summary Points

- Children are not immune to the growing obesity epidemic.
- Metabolic benefits of bariatric surgery for children are unknown. Long-term studies needed.
- Current recommendations are for gastric restrictive procedures (gastric band, possibly sleeve gastrectomy) to avoid the nutrient deficiency seen in gastric bypass procedures.
- The importance of preoperative psychological evaluation and long-term medical surveillance in the setting of a multidisciplinary team approach.

References