Obesity in Pregnancy: Impact and Interventions

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Pelham Staples Symposium

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I have no financial disclosures.
Define obesity
Epidemiology
The surgical challenge of the obese parturient
The role of the Obstetrician and Gynecologist in the care of the obese patient
Summary
Not new, but news....

✓ “[Obesity is] the most significant nutritional disease in the affluent countries of the world.” *Lancet*, 1974

✓ Since 1980, the prevalence of obesity has almost doubled.
OBESITY A CRIME

How I reduced 100 pounds in one year, and gained health, strength and happiness.

Thousands, noting my changed appearance, have asked how I did it.

You are fat because you eat an excess proportion of certain classes of food, and not enough of other classes. Eat right and weigh right. Scientific and simple, plain and practicable, no exercise, starvation or dope. Full course $1.

Dr. Ezra S. McMullen
BROWNSVILLE, TEXAS
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Defining Obesity:

- Highly variable
- Multiple indices used
  - Ideal body weight (MetLife)
  - Absolute body weight
  - Body mass index (BMI)
- Varies by ethnicity
  - Hispanic
  - African American
  - Caucasian
  - Asian
- Obese: BMI > 30
### Defining Obesity:

<table>
<thead>
<tr>
<th>Weight Category</th>
<th>BMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>&lt;18.5</td>
</tr>
<tr>
<td>Normal weight</td>
<td>18.5-24.9</td>
</tr>
<tr>
<td>Overweight</td>
<td>25-29.9</td>
</tr>
<tr>
<td>Obese (Class I)</td>
<td>30-34.9</td>
</tr>
<tr>
<td>Obese (Class II)</td>
<td>35-39.9</td>
</tr>
<tr>
<td>Obese (Class III)</td>
<td>≥40</td>
</tr>
</tbody>
</table>
Obesity: How BIG is the problem?

Comparison of percentages of population classified as obese

Female

Male
Obesity: How BIG is the problem?

- 2/3 US population overweight or obese
- 120 million Americans
  - 34% adults overweight
  - 27% obese
  - 5% morbidly obese
- 9 million (15%) children

- It is estimated that 112,000 individuals die annually of obesity-associated causes.
- Projections: >85% overweight or obese by 2030
Obesity in the United States

White non-Hispanic

Black non-Hispanic

Hispanic

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

1990

1999

2009

No Data          <10%           10%–14%           15%–19%           20%–24%          25%–29%          ≥30%
Rates of Overweight or Obese Youth (NSCH, 2003):
Childhood Obesity

Figure 1. Trends in obesity among children and adolescents: United States, 1963–2008

NOTE: Obesity is defined as body mass index (BMI) greater than or equal to sex- and age-specific 95th percentile from the 2000 CDC Growth Charts.

Who’s to Blame?
AN EXPERIMENTAL BURGER AND FRIES HAS BROKEN OUT OF THE CONTAINMENT FACILITY!!
IT'S ACCOMPANIED BY A MEDIUM COKE AND/OR PEPSI!!

GOD HELP US ALL...

1964, the height of the cold war. In an average community surrounding a little-known biological warfare institute, the obesity epidemic is quietly unleashed.
Morbidity of Obesity:

- Type 2 diabetes
- Hypertension
- Sleep apnea
- Osteoarthritis
- Heart disease / stroke
- Cancer*
- Gall bladder / fatty liver disease
- Dyslipidemia
The Cost of Obesity:

- Over $147 billion each year in direct and indirect costs.
- Increases cost for inpatient ambulatory care by 33% and medication costs by 77%. (Health Affairs, 2002)
- Cost to states: $75 billion, with government and taxpayers financing about half.
The Co$t of Obe$sity:
Obesity in Pregnancy: Why do we care?

- Over 1/3 of reproductive age women are obese, 40% of pregnant women are overweight or obese.

- Obesity is associated with 18% of obstetric causes of maternal death.

- Rate of macrosomia is doubled (15%) in obese women, especially in those with excess weight gain.
Obesity in Pregnancy: Why do we care?

- Obesity and pregnancy-related morbidity and mortality
  - Gestational diabetes
  - Hypertensive disorders of pregnancy
  - Neonatal death/stillbirth
  - Labor complications*
  - Operative vaginal deliveries
  - Fetal macrosomia
  - Increased Cesarean delivery rates
  - Post surgical complications
  - Increased NICU/nursery admissions
Morbid obesity and cesarean complications, >300 lbs.

- Emergency cesarean section rate (OR 4.7)
- Operative time and delivery time (OR 7.0)
- Blood loss >1000 ml (OR 5.2)
- Postoperative endometritis (OR 9.9)
- Length of stay (OR 22.5)
Morbid obesity and pregnancy complications (BMI >35)

- Gestational Diabetes (OR 4.0)
- Gestational hypertension (OR 3.2)
- Preeclampsia (OR 3.3)
- Preterm delivery (OR 1.5)
- BW >4500 g (OR 2.4)
- BW >4000 g (OR 1.9)
- IUGR (OR 0.8)
- PPROM (OR 1.3)
- Placenta previa (OR 0.7)
- Placental abruption (OR 1.0)
Morbid obesity and adverse perinatal outcomes (BMI >40)

- Preeclampsia (OR 4.82)
- Stillbirth after 28 weeks (OR 2.79)
- Delivery <37 weeks (OR 1.22)
- Delivery <32 weeks (OR 1.45)
- SGA (OR 1.37)
- LGA (OR 3.82)
- Meconium aspiration (OR 2.85)
- Fetal Distress (OR 2.52)
- 5 min APGAR <7 (OR 2.91)
- >4500 g (OR 3.55)
- Early neonatal death (OR 3.41)
Guidelines for weight gain in pregnancy:

<table>
<thead>
<tr>
<th>Weight</th>
<th>Pre-pregnancy BMI</th>
<th>Total Weight Gain (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>&lt;19.8</td>
<td>28-40; 37-54</td>
</tr>
<tr>
<td>Normal Weight</td>
<td>19.8-26.0</td>
<td>25-35; 31-50</td>
</tr>
<tr>
<td>Overweight</td>
<td>&gt;26.0-29.0</td>
<td>15-25; 25-42</td>
</tr>
<tr>
<td>Obese</td>
<td>&gt;29</td>
<td>11-20; NSF</td>
</tr>
</tbody>
</table>
Antepartum concerns:

- Preconception counseling when possible.
  - Encourage weight management/exercise
  - Supplemental folic acid (1 mg/day)
  - Nutrition consult
  - Optimize control of chronic illnesses.

- Confirm dates as early as possible.
Antepartum concerns:

- Screen for GDM (+/- early) and other disorders.
- Targeted ultrasound at 18-22 weeks.
- Fetal surveillance
Fetal concerns:

- Macrosomia
- IUGR
- Stillbirth
- Malformations
- Fetal programming and implications for child health
  - Genetics
  - “Thrifty phenotype”
  - Metabolic aberrations
Maternal Obesity and risk for birth defects

✓ Obese women (BMI >30) more likely to have:
  – Spina Bifida (OR 3.5)
  – Heart defects (OR 2.0)
  – Omphalocele (OR 3.3)
  – Multiple anomalies (OR 2.0)
Intrapartum concerns:

- Fetal monitoring
- Appropriate accommodations and instruments
- Regional anesthesia

Mode of delivery:
- Increased rate of Cesarean (FASTER, 2005)
- Successful VBAC rates decreased to as little as 13% in morbidly obese patients (Chauhan, et al)
Obesity as a risk factor for failed VBAC

<table>
<thead>
<tr>
<th>BMI</th>
<th>No. of Patients</th>
<th>No. failed VBAC</th>
<th>OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;25</td>
<td>277</td>
<td>39</td>
<td>1.00 (ref)</td>
</tr>
<tr>
<td>25-29.9</td>
<td>191</td>
<td>39</td>
<td>1.57</td>
</tr>
<tr>
<td>30-39.9</td>
<td>191</td>
<td>53</td>
<td>2.34</td>
</tr>
<tr>
<td>&gt;40</td>
<td>66</td>
<td>20</td>
<td>2.65</td>
</tr>
</tbody>
</table>
Surgical considerations for the Obese Patient: 

- Optimize exposure:
  - Type of skin incision
  - Location of skin incision
  - Assistants

- Patient positioning

- Anesthesia for procedure
Morbid obesity and prior cesarean section:

- Mean weight 343 pounds
- 30/69 attempted VBAC
- 4/30 (13%) successful
- Failed VBAC – CPD (46%), non-reassuring fetal heart rate tracing (38%), failed induction (15%)
- Infectious morbidity (RR 1.78) and wound infection (RR 1.79) higher in those with TOL.
- Neonates with pH <7.1 (9%), <7.0 (3%)
Anesthesia perioperative concerns:

- Risks of intubation/General anesthesia
- Risks of aspiration
- Ventilation and volume status
- Central Access
- Delayed recovery
**Surgical Approaches to the Obese Gravida:**

- Pfannenstiel
- Vertical Midline
- Supraumbilical

- +/- Panniculectomy
- Right Paramedian
- Variations utilizing mechanical techniques
Bariatric Surgery:

- Approximately 83% of bariatric surgery patients are women.

- Bariatric Surgery
  - Restrictive
    • AGB
    • VBG
  - Malabsorptive
    • Roux-en-Y
Pregnancy and Bariatric Surgery:

- No relationship between increased pregnancy risk or adverse perinatal outcomes.
- Weight stabilization is key!
- Delay conception for 18 months after bariatric surgery.
- Watch for bariatric surgery-related complications and GDM.
- Close monitoring of nutrition status and fetal well-being.
Recommended nutrient supplement

✓ Folic acid 1 mg

✓ Vitamin B$_{12}$ 350 mcg (crystalline form)

✓ Calcium 1200-1500 (citrate form)

✓ Iron 40-65 mg (ferrous form)
Exercise in pregnancy

✔ Evolution of recommendations over time:

- **1950**: Walking max. 1 mile per day
- **1985**: 15-20 minutes of exercise 3 days per week in uncomplicated pregnancies
- **1994**: “Mild to moderate exercise” in those with previously-established exercise programs.
- **2002**: Moderate exercise (30 minutes or more) on most, if not all, days of the week in women with low risk pregnancies. Also, previously sedentary women could initiate an exercise program during pregnancy.
What can we do?

- TALK to the patient about her weight.
- Encourage exercise and sensible diet, with referrals for nutrition if indicated.
- Encourage preconception vitamin supplementation.
What can we do?

✓ Consider referral for bariatric surgery if patient is a candidate (morbid obesity with comorbidities).

✓ Educate patient on significance of excess weight in terms of her overall health.
Summary

❖ Obesity is an epidemic affecting the world populous.

❖ Obesity is associated with excess morbidity and mortality, and when coupled with pregnancy, obese women are at significantly increased risk of complications when compared to non-obese women.
Summary

✓ Surgical approach should be tailored to fit the patient’s body habitus, operator’s comfort level, and obstetric needs. There is no incisional type or location which has proven to be superior.

✓ Postoperative considerations include postpartum DVT prophylaxis, incision care, and high index of suspicion for infection.
Bariatric surgery has not been associated with any adverse perinatal outcomes.

It is recommended that conception be delayed for 18 months after weight loss surgery, or until weight loss has stabilized.
The End

Questions?