The Obesity Epidemic: Impact on Pregnancy

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Obesity Classification

- Class I Obesity – BMI 30 – 34.9
  5’4” woman who weighs 175 lbs has BMI = 30
- Class II Obesity – BMI 35 – 39.9
  5’4” woman who weighs 205 lbs has BMI = 35
- Class III Obesity – BMI ≥ 40
  5’4” woman who weighs 235 lbs has BMI = 40

Don’t “eyeball it” – calculate BMI and write it on the chart

Etiology of Obesity

- Environment
- Behavior
- Psychology
- Genetics & Fetal Programming

No disclosures
Endocrine Disruptors and Obesity

- Chemicals that bind with hormone receptors in the human body
- Example: BPA and estrogen
- Higher exposure to BPA in utero associated with higher offspring body weight at age 7 (Hoepner et al, Columbia Center for Children’s Environmental Health)
- Evidence that animals are also becoming more obese over time

Obesity is associated with metabolic dysfunction

- Some obese have little to no metabolic dysfunction
- Many normal weight people have metabolic dysfunction

BMI does not equal Health/disease

Persons of every size deserve dignity and respect

What The Fat-Acceptance Movement Is Really About

The Well-Rounded Mama

The Fat Vagina Theory: “Soft Tissue Dystocia”

I write about health for people of size, plus-size pregnancy and birth, pregnancy and childbirth in general, parenting, and health of Every Kind.

BMI is not health, but a measure of body mass in relation to height. It’s a simple indicator of whether a person is within a healthy weight range. However, it’s not a perfect measure and should not be used as the sole indicator of health.

Persons of every size deserve dignity and respect.
Obesity and Stigma

• Weight bias = inequities in education, employment, & healthcare
• Widespread negative stereotypes: “lazy, unmotivated, lacking discipline, not competent, non-compliant, sloppy”
• Implicit bias tests in providers shows strong preference for thin
• Obese persons are less likely to undergo recommended cancer screening

Obesity and Stigma

68% of women with BMI > 55 reported delaying healthcare because of their weight, and 83% reported that their weight was a barrier to getting care
• Women reported disrespectful treatment and negative attitudes from providers, embarrassment about being weighed, and too small gowns, exam tables, equipment

Obesity and Stigma

• Language is important
• In one study, patients preferred the term “weight” to “obesity” or “fat”
• Focus on patients’ chosen behavioral and lifestyle goals (rather than emphasizing weight measurement as only measure of success)
• Avoid blaming and judgmental statements
"It’s interesting because we recently had someone who was over 400 pounds who got transferred to us because her out-of-the-city hospital was too terrified of delivering her. They thought if she needed a C-section or whatever it would be impossible to do it and they just didn’t want to deal with her.

So we induced her and it was just like passing the hot potato. No one wanted to be around. We induced her for days, we sent her home, we brought her back, we induced her some more. Because there’s a situation – you may not want to pull the baby out but you do not want to do a C-section either.”

- Academic CNM, from focus group study

Early Pregnancy Concerns

- Spontaneous abortion & recurrent loss more common
- Fetal anomalies, esp neural tube defects
- 20% decrease in detection of anomalies by ultrasound

Early Pregnancy Concerns

- Cell-free fetal DNA screening may result in test failure or inaccurate result as obese women may have a lower fetal fraction of the cell-free DNA
- First and second trimester serum-based screening tests are adjusted for maternal weight
- Accurate NT measurement may be more difficult to obtain

Antepartum Complications

- GDM and DM2
- Chronic hypertension
- Postterm pregnancy
- Difficult ECV – should be able to palpate fetal parts
Intrapartum Complications

- Prolonged labor
- Lower likelihood of VBAC success
- Preeclampsia
- Higher rates of cesarean delivery
- Anesthetic complications
- Macrosomia and shoulder dystocia
- Stillbirth

Postpartum Complications

- Longer hospital stays
- Infections
  - Wound infection and endometritis
- Lower rates of breastfeeding

Long-term Risks to Offspring

- Obesity
- Cardiometabolic diseases
- Autism/developmental delay

Fetal Programming

- Animal studies support the role of diet during pregnancy on body composition and metabolism after birth
- Improving diet during pregnancy may have long-term benefits for offspring
Prenatal Care for Obese Women

At first prenatal visit

- Screen for DM2 (repeat at 24 wks if neg)
- Measure and record BMI in chart
- Review weight gain goals and strategies with patient
- Discuss risks especially re: weight gain
- If concern for CHTN: baseline Cr, 24hour urine, LFTs

Fetal growth

- Obese women at increased risk for both SGA and LGA
- If fundus easily palpated, can follow fundal height
- If fundus not easily palpated, consider serial ultrasound for fetal growth

Antenatal Testing

- Increased stillbirth risk in obese women
- No RCT to support or refute benefit of antenatal testing, but many recommend it
- At ZSFG we start weekly NST/AFI at 32 weeks for women with BMI of 40 or greater
Intrapartum Management

When to deliver?

- No evidence to support nor refute, but we consider **induction of labor at 39-40 weeks** in women with BMI ≥ 40, especially if cervix is favorable
- Elevated risk of IUFD
  
  *If induction is not progressing after 24+ hours and maternal/fetal status reassuring (and intact membranes), will stop induction and either try again in a few days or wait for spontaneous labor*

“Trial of Induction”

- Unpublished cohort study, UCSF
- Women sent home after failed IOL, reassuring maternal and fetal status and no urgent indication for delivery
- ~70% ultimately delivered vaginally
- ~23% came in later in spontaneous labor, the rest came back for second induction attempt
- This is our approach to BMI ≥ 40

- Retrospective cohort study showed reduced risk of cesarean delivery and macrosomia among obese women undergoing elective IOL 37-39 weeks versus expectant management
- RCT needed to address this question especially neonatal risks
On admission to L&D

- Consult anesthesia on admission (or prior)
- Place internal monitors if needed
- Assess IV access
- Prepare for shoulder dystocia, especially if GDM/DM2 or suspected macrosomia
- Staffing considerations

Preparing for cesarean

- 20-degree Left lateral tilt is even more important because of the added weight of the abdominal pannus, but,
- The tilt puts the midline far from the operating surgeon and is ergonomically challenging
- Retraction of the pannus with Montgomery straps and/or extra surgical assistants
- Retraction of the extremely large pannus can cause hypotension, difficult ventilation, and fetal compromise

Cesarean with BMI >= 40

Cesarean – type of incision and closure?

- No randomized trial of incision type; no evidence that vertical skin is preferable – choose based on surgeon’s preference
- When pannus is massive, a supra-umbilical incision may be considered – transverse or vertical
- Some evidence that vertical incisions are associated with more pain and poorer healing, but study results are mixed
- Vertical incisions may increase the risk of classical uterine incision if access to LUS is limited
Cesarean – type of incision and closure?

- Pre-op antibiotics – at least 2g cefazolin IV
- Subcutaneous sutures decrease risk of seroma, but not good evidence in BMI ≥ 50
- Drains not shown to provide benefit and may increase infection
- Staple vs. suture – ongoing clinical trial in obese women, but current evidence suggests some benefit of suture over staples
- If staples uses, delayed removal may improve outcomes

Prevent difficult extraction of infant

- Make all incisions larger than usual – skin, fascia, and uterus
- Have vacuum available since fundal pressure may be difficult to apply
- Station of presenting part may be lower than it feels
DVT Prophylaxis?

Mechanical thromboprophylaxis (pneumatic compression) SCDs pre and post-operatively

Early ambulation

Enoxaparin 0.5 mg/kg every 12 hours (starting 12h post-op), or 40mg/day

Emergency Cesarean BMI ≥ 40

Need to plan for extra time to
• move patient to OR table
• induce anesthesia, and
• do the surgery
All will take longer, so have to move earlier to C/S especially for fetal indications

Incision to Delivery Time Increases with Increasing BMI

<table>
<thead>
<tr>
<th>BMI</th>
<th>Time</th>
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<tbody>
<tr>
<td>&lt;30</td>
<td>9 minutes</td>
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<tr>
<td>30-39</td>
<td>11 minutes</td>
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<tr>
<td>40-49</td>
<td>13 minutes</td>
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<tr>
<td>&gt;=50</td>
<td>16 minutes</td>
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Length of labor

• First stage of labor takes longer among obese women
• As long as maternal and fetal status reassuring, may tolerate a slower labor curve in obese patient
• Second stage length NOT associated with BMI (nullips)
Why are cesarean rates so high among obese women?

- Much of this may be iatrogenic
- Obese women should be given a chance for a safe vaginal birth
- Allow labor to take longer
- Provide continuous labor support (doulas)
- Obesity alone (BMI of 30-39/Classes 1-2) may not “risk a woman out” for midwifery or birth center delivery

Previous C-section: Balancing Risks

Consider patient preferences and values

Advantages of vaginal birth

VS.

Risks of unplanned c-section

ROCK

HARD

PLACE

Among TOL cohort, low 5 minute Apgar and NICU admission higher BMI ≥40
Weight Gain During Pregnancy for Obese Women

The IOM Report and Guidelines

IOM Recommendations for Weight Gain in Pregnancy 2009

<table>
<thead>
<tr>
<th>Pre-pregnancy BMI (kg/m²)</th>
<th>IOM Recommended Gestational Weight Gain (kg / lbs)</th>
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<tbody>
<tr>
<td>&lt;18.5 (Underweight)</td>
<td>12.5-18 / 28-40</td>
</tr>
<tr>
<td>18.5 – 24.9 (Normal)</td>
<td>11.5-16 / 25-35</td>
</tr>
<tr>
<td>25.0 - 29.9 (Overweight)</td>
<td>7-11.5 / 15-25</td>
</tr>
<tr>
<td>≥30.0 (Obese)</td>
<td>5-9 / 11-20</td>
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Comparison of weight gain by BMI category between PRAMS 2002-2003, and new IOM guidelines

Does Prenatal Advice on Weight Gain Matter?

- Receiving correct advice about weight gain was associated with actual weight gain within guidelines;
- Receiving no advice about weight gain was associated with gain outside guidelines;
- About a third of women report receiving no advice about how much weight to gain.

Barriers to weight gain counseling

- Insufficient nutrition training
- Belief that counseling is ineffective
- Concern about sensitivity of topic

What do patients want?

- Women were advised to gain too much weight or given no advice;
- Providers perceived as being *unconcerned about excessive gain*;
- Women desire and value weight gain advice from providers

Bariatric Surgery & Pregnancy

- Important to know *TYPE* of procedure to plan management and predict risks
- May reduce the risks of macrosomia and GDM
- May increase risks of SGA and preterm birth
- May increase risk of cesarean birth
- Perinatal providers should be aware of possible complications, especially intra-abdominal emergencies
Antenatal Considerations

- Bands can be adjusted to relieve pregnancy-related nausea and vomiting.
- If weight gain is inadequate, band can be loosened to allow increased caloric intake.
- Restrictive procedures may increase risk of gastric ulceration, so NSAIDS may be contraindicated.
- Roux-en-Y may reduce absorption of extended release medications, so these should be avoided.

Micronutrient supplementation for Roux-en-Y

- Vitamin B1
- Vitamin D
- Vitamin K
- Zinc
- Biotin
- Iron
- Folate
- Calcium citrate
- Vitamin B12

Usually these can be met by adding a multivitamin/PNV plus calcium and B12.
Dietary Advice

- Whole-foods diet, high in fiber and nutrients
- Reduce or cut out high-calorie, highly-processed, nutrient-poor foods
- Cut out high-calorie beverages including juice
- Replace refined grains with whole grains
- Replace saturated fat/trans fat with plant-based and fish-based fats (nuts, avocados, olive oil, salmon)
- Encourage use of smartphone apps to track calories & nutrients
- Allow patient to choose goal, make a plan, write it down

Exercise/physical activity

- At least 30 min/day 5 days a week
- Base it on prior level of activity
- Walking
- Group activities

Summary

- Most obese women are gaining more than recommended weight
- Excessive weight gain compounds risks of obesity
- On L&D, **be patient** but be prepared!
- We *can* improve outcomes among obese pregnant women w/ lifestyle interventions (counseling, diet, exercise)
- Be aware of risks related to bariatric surgery
- Discuss weight issues BUT be aware of our biases, watch language and attitude – focus on health rather than size
Parting quote:
"In the course of my life I have often had to eat my words, and I must confess that I have always found it a wholesome diet."
—Recounted by Lord Norman Brook in Working with Churchill

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