Pregnancy After Bariatric Surgery: Challenges And Considerations

Angela L. Kuznia M.D., M.P.H.
University of Michigan Department of Family Medicine
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Breakout Session #A-4/#B-4 (30 min)
Objectives

- Describe prevalence and options for weight loss surgery in reproductive age women
- Review optimal preparation and timing for pregnancy after bariatric surgery
- Discuss common complications in pregnancy after bariatric surgery
- Consider safe contraceptive methods for morbidly obese women and make strong recommendations for contraception in the immediate post-bariatric period
Epidemiology/Background\textsuperscript{[1,2]}

- 2/3 of US adult population overweight or obese
- 193,000 weight loss surgeries in 2014
- 80% of weight loss surgery patients are female
- 40-50% of weight loss surgery patients are reproductive age women
- Average BMI before bariatric surgery: 45
- Most common diagnosis among persons who undergo bariatric surgery: diabetes

Types of weight loss surgery:
- Restrictive
  - Sleeve gastrectomy 52%
  - Gastric band 9%
- Restrictive + Malabsorptive
  - Roux-en-Y or "gastric bypass" 27%
  - Biliopancreatic diversion with duodenal switch <1%
Impact of Obesity on Fertility\textsuperscript{[2]}

- Reduced fertility
  - Oligo-ovulation or anovulation

- Increased risks in pregnancy
  - Maternal risks: GDM, Pre-E, c/s, infection, preterm delivery, IOL, longer labor
    - c/s risks in morbid obesity: prolonged operative time, anesthesia, bleeding, VTE, wound healing
  - Fetal risks: congenital anomalies, growth abnormalities, miscarriage, stillbirth, preterm delivery
    - Most common: NT defects, cardiac, facial clefting
    - Impaired visualization on u/s may mask fetal anomalies
    - Increased risk of SGA or LGA (*u/s EFW not impacted by obesity*)
    - Stillbirth risk 2.1-4.3x higher among obese vs normal weight pregnancy
    - Increased risk of childhood obesity
Impact of Weight Loss on Fertility$^{[2,3]}$

- Weight loss increases fertility
  - In adolescents, pregnancy rates **double** after bariatric surgery
  - Improvements in: PCOS, anovulation, irregular menses
  - *Weight loss surgery is *not* a treatment for infertility!*

- Weight loss improves medical comorbidity
  - DM, HTN
  - Decreased risk of gHTN, gDM, pre-E

- Weight loss surgery impacts contraception
  - Decreased absorption of OCPs -> increased risk of unintended pregnancy
Impact of Weight Loss Surgery on Pregnancy\cite{3-6}

\begin{itemize}
  \item Decreased maternal weight gain
    \begin{itemize}
      \item Decreased risk LGA fetus
      \item Increased risk IUGR (?)
    \end{itemize}
  \item Increased risk of PPROM but no increased risk of PTL
  \item No change in rates of c/s (many still classified as “obese”)
  \item Increased risk of medical complications
    \begin{itemize}
      \item Intestinal obstruction, GI bleed
      \item Need for exploratory surgery during pregnancy
    \end{itemize}
\end{itemize}
Example Case 1:

- 28yo G2P1 presents with positive pregnancy test, LMP 7wk ago
  - Unintended but welcome pregnancy, married, 3yo son
  - BP: 124/68 – Current Weight: 137lb – Pre-preg weight: 140lb (BMI 24) 18mo ago
  - Gyn Hx: regular menses, stopped using BC 4mo ago to “see what happens”
  - ObHx: term NSVD 2015, no complications
  - MedHx: Vit D def
  - Surg Hx: h/o sleeve gastrectomy at OSH in 2013 (max weight 245lb, BMI 42)
  - Current meds: PNV, started after positive pregnancy test
  - No plans for f/u with bariatric surgeon, thinks she got extra vitamins in last pregnancy
  - Last pregnancy prenatal care provided by OB group at the Catholic hospital across town
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Post-Surgical Recommendations[7]

- Post-operative visits
  - 2-3 day hospital stay after procedure
  - 2wk, 2mo, 6mo, then annually (lifelong)

- Restricted Diet
  - Small portions
  - High protein, low carb
  - No EtOH or carbonated beverages for life

- Weight loss
  - Will reach steady weight after 1-2yrs
  - Expect 5-10% gain from lowest #
Post-Surgical Recommendations

- Vitamin Supplementation
  - Lifelong risks for anemia, neurologic deficiencies, and osteoporosis
  - Different needs based on procedure
    - Bypass: MVI BID, calcium citrate 500mg TID, B12 500 mcg daily (or 1x/mo IM), Vit D 2000IU daily
    - Sleeve: MVI daily, calcium citrate 500mg BID, B12 500 mcg daily (or 1x/mo IM), Vit D 2000IU daily

- Pregnancy: Not recommended for 12-18mo
  - Due to perceived risks of fetal development in a woman who is experiencing rapid weight loss
  - Recommend 2 forms of birth control until this time
Nutrition in Post-Bariatric Pregnancy[^2,^8]

- Micronutrient deficiencies are common after weight loss surgery
  - Only 14-59% of post-surgical patients continue to follow vitamin recommendations

- Micronutrient status during pregnancy
  - Broad eval at start of pregnancy
    - Albumin, CBC, iron studies, B12, folate, Vit D, calcium
  - Appropriate treatment and monitoring for proven deficit
  - Q-trimester screening in absence of deficiency
    - Blood count, iron, ferritin, Vit D, calcium
  - PNV recommended in addition to regular vitamins
    - Be careful about vitamin A supplements (max 5000 IU/day in pregnancy) due to birth defects

- Limit severe calorie restriction, recommend 60g protein daily for ALL pregnant women
  - Gastric band may need to be adjusted to allow more oral intake during pregnancy

- Consider nutrition/dietician consultation
Example Case 1: Conclusion

- 28yo G2P1 presents with positive pregnancy test, LMP 7wk ago
  - Missed opportunity for preconception counseling
  - Re-start on post-bariatric vitamins + PNV
    - Consider nutrition consult
  - Pregnancy weight gain recommendation: 15-25lb given BMI 24 now
  - Other pregnancy recommendations: typical anticipatory guidance, essentially low risk given her history of prior healthy FT NSVD
    - Obtain OSH records from previous pregnancy and from her gastric sleeve procedure
Example Case 2:

- 34yo G1P0, c/o abdominal pain, positive pregnancy test, LMP 7wk ago
  - Desired pregnancy, married, previously unable to conceive
  - BP: 124/68 – Current Weight: 267lb (BMI 46) – Pre-surgery weight: 307lb (BMI 53)
  - Gyn Hx: irregular menses, s/p (-) infertility workup and planning for REI consult soon; had unsuccessful IUD placement prior to surgery and discussed Nexplanon but did not get one placed yet
  - ObHx: none
  - MedHx: HTN since 2010 – d/c’d meds before bariatric surgery b/c BPs improved with weight loss
  - Surg Hx: h/o gastric bypass surgery 3mo ago (max weight 357lb, BMI 61)
  - Current meds: MVI BID, ca citrate 500mg TID, B12 500 mcg daily (or 1x/mo IM), Vit D 2000IU daily
  - Post-bariatric diet: 1200 cal/day, choosing to do mostly protein shakes
  - Incremental weight loss goals: 10-15lb/mo for another year
  - Goal weight: 145lb
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DDx: Post-surgical vs Pregnancy[2]

<table>
<thead>
<tr>
<th>Post-Surgical</th>
<th>Symptoms</th>
<th>Pregnancy</th>
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</thead>
<tbody>
<tr>
<td>Operative complications</td>
<td>Nausea</td>
<td>Normal physiology</td>
</tr>
<tr>
<td>(Anastomotic leak, bowel obstruction,</td>
<td>Vomiting</td>
<td>Ectopic</td>
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<tr>
<td>hernia, band erosion or migration)</td>
<td>Abdominal Pain</td>
<td>Miscarriage</td>
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<td></td>
<td></td>
<td>Infection</td>
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<tr>
<td>Dumping syndrome</td>
<td>Abdominal cramps, bloating, nausea, vomiting,</td>
<td>Normal physiology</td>
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<tr>
<td></td>
<td>diarrhea</td>
<td>Miscarriage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Infection</td>
</tr>
<tr>
<td>Hyperinsulinemia/hypoglycemia pattern</td>
<td>Tachycardia, palpitations, anxiety, diaphoresis</td>
<td>Gestational diabetes</td>
</tr>
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<td></td>
<td></td>
<td>Pulmonary embolism</td>
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</tbody>
</table>

- Involve bariatric surgeon early in eval and workup for possible complications
Post-Surgical Pregnancy Issues\textsuperscript{[2,8]}

- Inability to tolerate oral glucose load for glucose tolerance test due to dumping syndrome/hyperinsulinemia
  - Impacts up to 60% of gastric bypass patients
  - Consider home glucose monitoring (fasting and 2h post-prandial) for 1wk during 24-28wk GA and/or A1c

- Medication choices and dosages
  - If h/o malabsorptive procedure, avoid extended-release preparations, consider liquid meds
  - Avoid NSAIDs in post-partum period due to increased risk of gastric ulceration

- h/o bariatric surgery is an independent risk factor for cesarean delivery
  - Be prepared for this possibility (62% of post-bariatric pregnancies delivered via c/s)
    - Ensure surgical records have been obtained, consider MFM or c/s consult per your practice environment

- Malabsorption may impact breast milk supply and nutrient-density – B12 deficiency passed to infants
  - Ensure new mothers continue all vitamins post-partum, consider lab eval at post-partum visit
  - Consider infant at-risk for poor weight gain and act accordingly

- Continued risks of obesity-related pregnancy complications
Example Case 2: Conclusion

- 34yo G1P0, c/o abdominal pain, positive pregnancy test, LMP 7wk ago
  - Consider multiple post-operative diagnoses in workup for current abdominal pain issue
  - Obtain high-risk OB consult and inform surgeon ASAP
  - Decrease pace of weight loss – involve surgeon and nutritionist/dietician
  - Start PNV in addition to bariatric vitamins; evaluate for nutritional deficiencies now, treat appropriately, re-screen each trimester
  - Consider A1c now and blood glucose monitoring x1wk during 24-28wk GA period
  - Avoid NSAID use in post-partum period (ie Tylenol or oxycodone for postpartum pain)
  - Encourage breast-feeding but with low threshold to investigate for infant nutritional deficiencies
Example Case #3:

- 21yo morbidly obese F, presents for HME/WWE, interested in weight loss surgery
  - Not sure if she wants kids, not in a relationship currently
  - BP: 124/68  –  Current Weight: 287lb (BMI 49)
  - Gyn Hx: irregular menses, “bleeding issues” with OCPs, failed attempt at IUD insertion last year, interested in Nexplanon but was told it wouldn’t work for her due to her size
  - ObHx: none
  - MedHx: depression with h/o suicide attempt and psych hospitalization @16yo; steady weight gain 20+ lb/yr since 15yo (BMI 27 in 2012)
  - Surg Hx: none
  - Current meds: sertraline 100mg daily
  - Lost 20lb last year, but gained it back
  - Full-time college student, also works 20-30h/wk, commutes 60 mi/day for school
  - Her mom recently had bariatric surgery with 100 lb weight loss in 1 year, working out 45 min 5d/wk
Example Case #3:

- **21yo** morbidly obese female, presents for HME/WWE, interested in weight loss surgery

  - Not sure if she wants kids, not in a relationship currently
  - BP: 124/68 – Current Weight: 287lb (BMI 49)
  - Gyn Hx: irregular menses, “bleeding issues” with OCPs, failed attempt at IUD insertion last year, **interested in Nexplanon but was told it wouldn’t work for her due to her size**
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Pre- and Post- Surgery Fertility and Contraceptive Needs [1-3,9]

- Obesity-related anovulation common
- Adolescent fertility rates double after surgery, adult rates increase – unclear by how much

- Pregnancy not recommended for 12-18mo post-operatively (American Society for Metabolic and Bariatric Surgery)
  - Recommend 2 forms of birth control
  - 2015 Study by Chor et al reveals gaps in bariatric surgeon practices
    - 2/3 of surgeons refer to OB/GYN or PCP for contraception
    - 5% of surgeons comfortable prescribing contraception
    - 40% of surgeons do not require early post-operative contraception

- Longitudinal Assessment of Bariatric Surgery-2 U.S. cohort of ~700 women
  - 30% identified future pregnancy as “important” (3 point scale)
  - 42% not using contraception consistently within the first year
  - 4.2% seeking pregnancy within the first year
## Contraception Options

### Selected Items from 2016 Summary Chart of U.S. Medical Eligibility Criteria for Contraceptive Use

<table>
<thead>
<tr>
<th>Condition</th>
<th>Sub-Condition</th>
<th>Copper IUD</th>
<th>LNG-IUD</th>
<th>Implant</th>
<th>DMPA</th>
<th>POP</th>
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<tr>
<td>Obesity</td>
<td>BMI &gt;/= 30</td>
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<td>1</td>
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<td>2</td>
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<tr>
<td></td>
<td>&lt; 18yo</td>
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<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>History of Bariatric Surgery</td>
<td>Restrictive procedures</td>
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<td>1</td>
<td>1</td>
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<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Malabsorptive procedures</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
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</tbody>
</table>

Abbreviations: DMPA = depot medroxyprogesterone acetate. IUD = intrauterine device. LNG = levonorgestrel.

<table>
<thead>
<tr>
<th>Key:</th>
</tr>
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<tbody>
<tr>
<td>1 <strong>No restriction (method can be used)</strong></td>
</tr>
<tr>
<td>2 <strong>Advantages generally outweigh theoretical or proven risks</strong></td>
</tr>
</tbody>
</table>
Example Case #3: Conclusion

- 21yo morbidly obese F, presents for HME/WWE, interested in weight loss surgery
  - Eligible for Nexplanon today, may consider early swap at 2 years instead of 3
  - Strong recommendation for 2nd form of birth control after surgery (condoms, ring, patch)
  - (Avoid combined oral contraceptive pills if she has malabsorptive gastric bypass procedure)
  - (Avoid Depo due to common side effect of weight gain in adolescents)
Objectives: Take-Home Points

- Describe prevalence and options for weight loss surgery in reproductive age women
  - Increasingly common with increasing obesity rates
  - Restrictive vs Malabsorptive procedures

- Review optimal preparation and timing for pregnancy after bariatric surgery
  - Wait 12-18 months, or until weight is stable

- Discuss common complications in pregnancy after bariatric surgery
  - Maternal risks: nutritional deficiencies, post-op surgical complications, c/s
    - Benefits: decreased risk of gDM, decreased risk of gHTN/pre-E
  - Fetal risks: congenital anomalies due to maternal morbidity, PPROM/PTL, IUGR
    - Benefits: less LGA

- Consider safe contraceptive methods for morbidly obese women and make strong recommendations for contraception in the immediate post-bariatric period
  - Obesity is not a contraindication to any contraceptive method
  - Recommend 2 forms of contraception for 12-18 mo post-op
Resources


