Weight-Loss Surgery and Breastfeeding

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Obesity is quickly becoming a national epidemic with serious implications for the entire medical field, including lactation (Rasmussen et al., 2004). Obesity is a complex medical condition. Many in the medical and scientific communities classify obesity as a disease (Conway & Rene, 2004). Treatment options include a number of advances in weight-loss surgery (WLS) with resultant effects on pregnancy and corresponding challenges in the field of lactation and the care of nursing mothers. This article explores some of those advances with practical applications for lactation professionals.

Keywords: Obesity, lactation, weight-loss surgery
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At a recent congressional workshop on Capitol Hill for the Campaign to End Obesity, a physician from Massachusetts General Obesity Research Center stated "in the medical community, obesity hides in plain sight." He went on to say that medical residents don't recognize overweight/obesity until a body mass index (BMI) >30 (the standard for obesity), and therefore miss much of the overweight population. Healthcare practitioners readily counsel patients about hypertension, diabetes and high cholesterol, but not obesity. They acknowledge there are no easy prescriptive treatments. In addition, stigmatization of the overweight/obese lead to many believing that obesity is a character issue or a matter of simple choice (Friedman et al., 2005). The true complexity of obesity is still unknown and may well be a combination of over 100 different disorders and involve over 1,500 human genes.

Treating Obesity with Weight-Loss Surgery

According to the American Society for Bariatric Surgery, diet, exercise, and behavior modification for people who are 100 pounds or more overweight has been a uniform failure (Streisand, 2006). On the other hand, depending on the type of surgery, patients can have 50% to 80% of excess body weight (EBW) lost with weight-loss surgery (WLS). The most successful operations reduce body weight by 35% to 40%, and most of this effect is maintained for at least 15 years (McTigue et al., 2003). Looking at co-morbid conditions that can accompany obesity, such as type-2 diabetes and hypertension, Pories et al. (1995) report in a follow-up of 300 weight-loss surgery patients who were either glucose intolerant or diabetic, 91% maintained normal fasting glucose levels after surgery.

According to Harpreet Gujral, a nurse practitioner and Certified Bariatric Nurse at Inova Fair Oaks Hospital in Fairfax, VA, who was interviewed for this article, patients who meet the requirements for WLS (see text box) have months of pre-op work, including nutrition and nursing classes, behavior modification, smoking cessation and much more. Many programs want to see a recent 15 pound weight-loss from WLS candidates before surgery. They must pass post-tests after classes, demonstrate they can slow down their eating time by finishing meals in no less than 30 minutes (often using their non-dominate hand or even chopsticks!), and seek therapy for any addiction disorders.

NIH Obesity Surgery Treatment Guidelines

- **BMI >40 or**
- **BMI >35 with 2 co-morbid conditions, including**
  - **Hypertension**
  - **Type 2 diabetes**
  - **Sleep apnea**
  - **Arthritis**
  - **Hypercholesterolemia**
  - **Female reproductive system disorders**
  - **Depression**

Weight-loss surgery came about in the 1960s after it was noticed, incidentally, that patients who had undergone partial stomach removal for ulcers, lost weight (www.asbs.org/html/patients/bypass.html). The French surgeon, Dr. Philibart Roux, modified it to the present day form, now referred to as the *Roux-en-Y gastric bypass* (RYGB), so named as one branch of the Y is the short limb of the intestine, and the other is the remnant stomach and duodenum. Another WLS, the *Laparoscopic Adjustable Gastric Band* (LAGB) surgery was made popular in Europe in the 1980s and approved by the FDA in 2001 (www.fda.gov/MedicalDevices/ProductsandMedicalProcedures/DeviceApprovalsandClearances/RecentlyApprovedDevices/ucm248133.htm)

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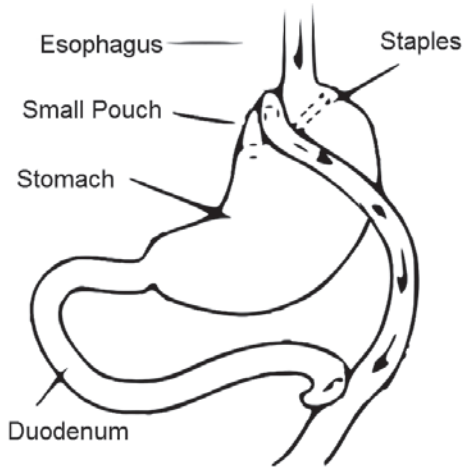
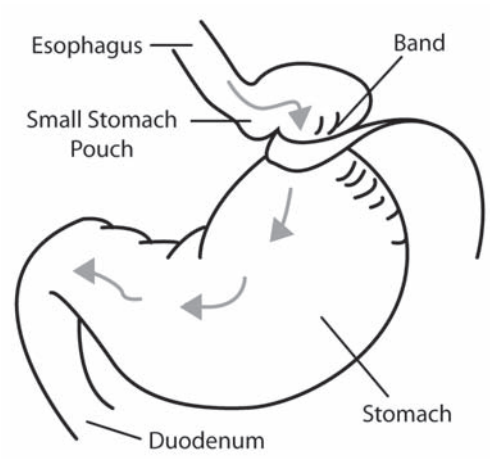
Roux-en-Y Gastric Bypass



National Institute of Health

Laproscopic Adjustable Gastric Band



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WLS can be categorized as restrictive, malabsorptive, or a combination of the two. The RYGB (see schematic) the most commonly performed and the gold standard for weight-loss surgery, is both. A small pouch is surgically created from the stomach, taking it from a 1 liter size to the size of your thumb, about 20 to 30 ml (restrictive). About 20% of the small intestine (3 to 5 feet) is then bypassed and reanastamosed further down the intestine, thus bypassing the portion of the stomach and duodenum that produce certain digestive hormones and absorb nutrients (malabsorptive). Advantages include a rapid weight loss with an average of 76% of excess body weight (EBW) lost in the first year and a 78% resolution of diabetes (Tice et al., 2008). Disadvantages include decreased intestinal absorption of food and nutrients calling for lifelong vitamin and mineral supplementation. "Dumping syndrome" is also a common side effect with a variety of symptoms (cramping, diarrhea, etc.) after eating highly sweetened foods (Gabel 2007).

The LAGB (see schematic) is a restrictive procedure and minimally invasive as neither the stomach or intestine are surgically separated. A gastric band is placed around a portion of the upper stomach, forming a small pouch. This limits the amount of food that can be eaten at one time. The band is connected to a tube with a reservoir placed under the skin of the abdomen. Saline can be added or removed via the reservoir port to adjust the size of the band constriction, or even completely reverse the surgery. Most patients need three to five adjustments before the band is the ideal tightness for weight loss and proper nutrition. While there is no negative effect on the absorption of nutrients, weight loss is not as rapid as RGYB and only an average of 48% of EBW is lost by one year (Tice et al., 2008). Two other types of WLS include bilieopancreatic diversion and vertical sleeve gastrectomy, which are less common.

Bariatric surgery is one of the fastest growing sub-surgical fields in the U.S., with about 220,000 surgeries performed in 2008 (www.asmbs.org).

Impact of Weight-Loss Surgery on Pregnancy and Lactation

Of the 103,000 surgeries performed in 2003, 84% were on women of childbearing age (Moore et al., 2004). It is likely that in the future, lactation consultants will encounter increased numbers of mothers with a history of WLS.

While WLS patients are cautioned to avoid pregnancy for 12 to 24 months during the period of rapid weight loss following surgery, many become pregnant soon after surgery. It is well known that as obesity decreases, fertility increases. The strongest evidence of increased fertility is in women with polycystic ovarian syndrome, as biochemical studies have shown a normalization of hormones after WLS (Maggard et al., 2008a). In addition, WLS with a significant malabsorption component can increase the risk of oral contraception failure (ACOG, 2009). Pregnancy during the period of rapid weight loss is of significant concern as we know that prenatal nutritional status and maternal weight gain are two of the most important variables that determine fetal outcome (Viswanathan et al., 2008).

Until 2005, there were very few studies about WLS and perinatal outcomes for mothers and infants. These included a handful of case studies, such as "Small Bowel Ischemia after Roux-en-Y Gastric Bypass Complicated by Pregnancy" (Charles et al., 2005) and "Maternal and Fetal Deaths after Gastric Bypass Surgery for Morbid Obesity" (Moore, 2004), each presenting serious adverse outcomes. Sheiner was the first to review a large number of women (N=298) who had a pregnancy post-WLS and found no adverse maternal or

perinatal outcomes; however, the study did find an increased incidence of C-section, fetal macrosomia, PROM, and labor induction (Sheiner et al., 2004). Now many more studies have examined perinatal outcomes for women with a history of WLS, including a 2008 review, which concluded that bariatric surgery is a safe and effective method of weight loss for morbidly obese women of childbearing age, with favorable outcomes for pregnancies after surgery (Grundy et al., 2008).

What IBCLCs Need to Know

The explosive use of malabsorptive types of WLS, such as RYGB with documented risks (up to 30% to 90% of patients can develop a post-surgery nutritional deficiency), is increasing the frequency of working with nutritionally challenged mothers (Stefanski, 2006). Post WLS mothers may have vitamin and mineral deficiencies including vitamin B12, vitamin D, folate and iron, and, less common, a condition called protein energy malnutrition. RYGB patients are eating with a stomach pouch that is now basically the size of a shot glass and may have difficulty tolerating meat, which has a higher proportion of protein than other foods. In addition, with the stomach and duodenum bypassed, the decreased intrinsic factor production limits the release of vitamin B12 from food sources. Decreased gastric acid secretion reduces conversion of iron into a more absorbable form. As you can readily see, patient compliance with bariatric supplementation is critical.

Pregnancy Post-WLS

- **Type and date of surgery**
- **Status of co-morbid condition**
- **Weight check each prenatal visit or more frequently**
- **Monthly growth ultrasounds after 24 week**
- **Lab checks for protein, iron, Vitamins B12 and D, folate, and urinary ketones**
- **Referral for nutrition counseling to a dietician specializing in bariatric surgery**
- **Conditions, such as hyperemesis gravidum, require hospitalization and parenteral nutrition**

For lactation purposes, the prenatal nutritional status of mother and baby is inextricably linked to breastfeeding outcomes. Recommendations for pregnancy after RYGB include frequent lab work to spot any micronutrient deficiencies (ACOG, 2009). Bariatric vitamin and mineral supplements should continue, avoiding high doses due to possible teratogenic affect. Also, prenatal women (with a history of RYGB) should avoid a fasting blood sugar (FBS) with Glucola due to the possibility of dumping syndrome (Gabel, 2007). An FBS and 1 hour postprandial may be substituted. For the woman with a history of LAGB, band adjustment may be necessary for poor weight gain during pregnancy or severe reflux (Carelli et al., 2010).

Assisting a Mother Succeed in Breastfeeding after WLS

Case Report

A mother on postpartum day 1 with a history of RYGB two years ago, self-reports losing 120 pounds and being severely anemic and "slightly" vitamin B12 deficient during her pregnancy. She has delivered a full-term baby weighing 5 lb 3 oz. The baby did not grow and develop well in utero (IUGR). In addition, the mother was vitamin B12 deficient during her pregnancy and gave birth to a B12 deficient baby who is now being breastfed with B12 deficient breast milk. A thorough evaluation of her nutritional status is in order with her history of bariatric surgery and nutritional deficiencies. Forming a multi-disciplinary team with her obstetrician, pediatrician, a registered dietitian and lactation consultant is a great way to optimize care. At a minimum, all maternal-child healthcare professionals caring for this mother must be aware of her WLS and nutritional status. See box for other questions you might want to ask her.

Questions for a Post-WLS Breastfeeding Mother

- **What vitamin and mineral supplements did you take *regularly* during pregnancy?**
- **Were vitamin B12 injections prescribed? Did you get them?**
- **Have you had lab work to rule out vitamin B12, vitamin D, or folate deficiency?**
- **Has your doctor told you are anemic?**
- **Did you experience breast growth during this pregnancy?**
- **Any history of reconstructive plastic surgery?**

Adapted from Biancuzzo (2004).

Clinical practice considerations for this mother would first include lots of skin-to-skin time as we know from a recent study, which demonstrated a dose-response relationship between early skin-to-skin contact and exclusive breastfeeding (Bramson et al., 2010). In addition, frequent, effective breastfeeds, particularly in the first 24 hours postpartum have been shown to help ameliorate delayed lactogenesis, a risk for overweight/obese women (Nommsen-Rivers et al., 2010). There may be challenges to positioning as many women who lose a large amount of weight have breast ptosis (sagging from the reduction of volume/adipose tissue in the breast). In fact, many women have plastic surgery to correct this, usually a mastopexy (breast lift), often combined with augmentation. Be sure to take a thorough history as these plastic surgery procedures potentially impact breastfeeding.

Creative positioning, including the use of blanket rolls and pillows, while trying Suzanne Colson's Biological Nurturing™ position (also known as "laid-back nursing"), is an option

(Colson, 2010). With the loss of adipose tissue, the breasts feel "pillowy" and the glandular tissue seems "hard to find," making it difficult for baby to "milk" the ducts. With Biological Nurturing ™, the mother is semi-reclined and baby is in a full frontal feeding position, not fighting gravity, but using it, to settle in and latch deeply onto the breast. Alternately, these mothers may also be at risk for fluid overload (with their increased incidence of labor induction and C-section) and so reverse pressure softening is a good tool for areolar edema (Cotterman, 2004; Sheiner et al., 2004). Also, mothers with a history of overweight/obesity may have certain body image issues which call for more attention to positioning and latch and increased sensitivity for privacy (Sarwer et al., 2010).

Breast ptosis
Photo courtesy of Wikimedia Commons

We already know that obese women have a higher incidence of delayed lactogenesis, but what about the woman who has had WLS and lost weight? Does she have the same risk? Further research is needed. But, any way that you can help a motivated mother optimize her milk production is time well spent. An excellent resource to give to mothers is ILCA's Inside Track, *Breastfeeding after Weight Loss Surgery*. This handout (which gives permission to photocopy and distribute freely) answers many of the questions mothers with a history of WLS might have, such as "will I make enough milk for my baby and will it be good?" and "how will I know if my baby is growing well?" (Kombol, 2008).

Critical Thinking

- **The human body adapts to the changing demands of lactation by:**
  - **Increasing nutrient intake**
  - **Improving absorption**
  - **Decreasing excretion**
  - **Using tissue stores**
- **For the woman who has undergone WLS, can her body overcome the physiological changes the surgery has created to adapt for lactation?**

Stefanski J, ***Today's Dietitian*****, 2005, Used with permission.**

Impact of Growth and Development of the Breastfed Baby Born to a Mother with a History of WLS

Celiker's 2009 case study presents an exclusively breastfed infant, born to a mother with a history of RYGB six years prior. At 4 months of age, baby showed physical and neurological developmental delays (i.e., failure to thrive, lethargy) and pancytopenia (a shortage in the amount of different kinds of blood cells). Serum studies showed low vitamin B12 and iron. Treatment of both mother and baby with parenteral B12 resolved the baby's pancytopenia, improved the neurological status and resulted in steady weight gain. Re-testing at 16 months found normal growth and labs, but gross motor and speech significantly delayed. The authors state "this case illustrates that maternal B12 deficiency following gastric bypass surgery may lead to severe B12 deficiency with long-term neurological sequelae in their infants. Screening and prompt treatment of these deficiencies both during pregnancy and lactation are important" (Celiker et al., 2009, p. 640). In addition, while there is no documented evidence that WLS results in changes in breast milk fat content, there is anecdotal evidence. Hendrix describes a mother with a history of RYGB and vitamin B12 deficient as the inspiration for her recent phenomenological study (unpublished). This mother's baby experienced faltering weight around 3 months of age. Furthermore, this mother described her pumped milk as having no "fat" separation with an appearance of "watered down skim milk" (P. Hendrix, personal communication, Jan 18, 2011). Once again, further studies are needed. This underscores the importance of the pediatrician being aware of a mother with a history of WLS. Frequent checks for appropriate growth and development (particularly between 4 to 6 months of age when growth can falter) and labs (vitamin B12, vitamin D, folate, calcium, and iron) must be considered.

Conclusion

Weight-loss surgery may not be the best option for everyone. But for the motivated woman who commits to the surgery, loses weight, and then has a baby, her chance for a healthier future are high. A 2008 review in *Journal of the American Medical Association* shows that rates of adverse outcomes for these mothers and babies may be lower after bariatric surgery when compared with women who are still obese (Maggard et al., 2008b). As lactation consultants, we have a responsibility to the women who choose WLS and their babies to guide them safely through the breastfeeding experience.

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