

PREGNANCY AFTER BARIATRIC SURGERYArchana Mishra^{*1}, Sana Tiwari² and Renu Arora³¹Associate Professor, Department of Obstetric and Gynaecology, VMMC and SJH.²Senior Resident, Department of Obstetric and Gynaecology, VMMC and SJH.³Professor and Consultant, Department of Obstetric and Gynaecology, VMMC and SJH.***Corresponding Author: Dr. Archana Mishra**

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INTRODUCTION

Obesity is the upcoming health problem in developed and developing countries. Women in reproductive age group who have BMI ≥ 30 kg/m² are considered as obese. There are various complications owing to obesity of which most important is infertility and others are during pregnancy. The low fertility rate is increased because of increased incidence of PCOS, menstrual irregularity leading to anovulation. During pregnancy there is increased risk of miscarriage, foetal abnormality, prematurity, macrosomia, dystocia, birth injury, still birth and neonatal death, pregnancy-induced hypertension, gestational diabetes, thrombosis, difficulty in delivery leading to higher caesarean rates, anaesthetic complications, infection, postpartum haemorrhage and maternal mortality. Bariatric surgery has been considered as a boon in reducing weight loss and thereby improving fertility rates and decreasing associated morbidities.^[1] Though the data regarding increase in fertility rate is limited.^[2] According to International Diabetes Federation (IDF) 2011, "Bariatric surgery is treatment for people with type 2 diabetes and obesity with a BMI of 35 or more or as option in patients with a BMI between 30 and 35 when diabetes cannot be adequately controlled by optimal medical regimen, especially in the presence of other major cardiovascular disease risk factors."^[3]

Types of surgery

Bariatric surgeries are of two types – Restrictive and Malabsorptive. The surgery helps in regularization of the menstrual cycle, and hence improves ovulation.^[4] The extent of weight loss determines the improvement in fertility potential.^[5] There are various procedures which are performed today such as Roux-en-Y gastric bypass (RYGB), adjustable gastric banding (AGB), vertical sleeve gastrectomy (VSG), and biliopancreatic diversion (BPD). These can be performed either via laparoscopy or laparotomy. In RYGB (a combined procedure) the stomach is divided and a gastric pouch is created which can hold <30 mL (restrictive portion). The jejunum is then divided distally to the ligament of Treitz and the distal segment is anastomosed to the gastric pouch. In AGB (restrictive surgery), an inflatable band is placed below the gastroesophageal junction and connected with a tube to an injection port, leaving a gastric pouch of 50 mL. Some studies have suggested that the laparoscopic adjustable gastric banding (LAGB) or sleeve gastrectomy are more suitable for young women than Roux-en-Y gastric bypass or Biliopancreatic Diversion. The Roux-en-Y Gastric Bypass is considered the 'gold standard' of weight loss surgery.

It is recommended that after bariatric surgery one should conceive after 12-18 months because in that phase there is rapid weight loss which can lead to maternal and fetal

morbidity, for which the women should use some form of contraceptive.^[6] Care should be taken while taking oral contraceptives as their absorption is decreased. In such cases other routes of administration like transdermal and vaginal can be used. Preconceptional counselling is recommended. Restrictive bariatric procedures cause weight loss by reducing stomach capacity, while malabsorptive operations decrease the gastric volume and disrupt proper absorption of nutrients. Each type of surgery has its own impact on absorption of nutrition and the outcomes of pregnancy. The malabsorptive procedures are associated with higher risk of nutritional deficiency.^[7] There is increased complaint of vomiting with restrictive procedures.

Complications

Most important complication is restriction of growth of baby which can arise due to nutritional deficiency due to decreased absorption.^[6] Of these nutritional deficiencies; calcium deficiency is caused by its inadequate consumption or malabsorption, hence it is advised to increase the intake from 1000 mg of calcium citrate with 10 mcg vitamin D to 2000 mg of calcium citrate with vitamin D (50–150 mcg). Inadequate calcium intake may result in maternal bone loss, reduced breast milk calcium secretion, or inappropriate mineralization of fetus skeleton. Because in surgery there is bypassing of duodenum and proximal jejunum and hence eliminating

the first and main site of the iron absorption leading to iron deficiency. The levels should be regularly checked through iron profile. An increased dose of 40–65 mg daily is required and the supplementation is given according to laboratory tests. The dose of folic acid is increased to 4mg to prevent neural tube defects. Another important nutrient is vitamin K. Not many cases have been reported though but in 2010, Eerdeken et al. reported five cases with severe intracranial bleeding and skeletal malformations which were caused by vitamin K deficiency of mothers following bariatric surgery.^[8] Another important complication is Dumping syndrome. They are of two types. Early dumping occurs due to osmotic fluid shifts because of rapid gastrointestinal food transit, whilst late dumping occurs due to hyperinsulinemic response to rapid absorption of simple carbohydrates. Diet modification is the best management which can be done in such cases.^[9]

Weight gaining during pregnancy is important as few women lose weight during pregnancy, few gain weight. To avoid restriction of growth of fetus, regular biometry should be done. Apart from restriction of growth there is risk of ,→ Preterm delivery and still birth. Obesity is a risk factor for diabetes which can lead to macrosomic baby. After bariatric surgery there is decreased incidence of diabetes and hypertension in pregnancy. In a study conducted in 2015, it was found that only 1.9% had gestational diabetes unlike control group in which 6.8% had; but there was increased percentage of FGR in case (15.6%) than control (7.6%) and still birth were also more 1.7% in case group and 0.7% in control group.^[10]

There are various other side effects of bariatric surgeries such as abdominal hernias, gallstones, gastrointestinal hemorrhage, internal herniation of the bowel than intestinal obstruction apart from malabsorption. Abdominal pain is also an emergency condition.

During labour as such there is no contraindication for vaginal delivery though in some studies it has been found that caesarean rates are higher. In 2011 in Brazil, a study was conducted in post Bariatric surgery patients and an increased rate of caesarean was found.^[11] If an extensive and complicated surgery was done for weight loss, preconsultation for labour is suggested. For every case it is better to balance the risks and benefits for mode of delivery.

There is an increase in congenital malformations in babies of mother with bariatric surgery such as neural tube defects, cardiac abnormalities particularly septal defects, cleft lip and cleft palate, anorectal atresia, hydrocephalus, and limb shortening.^[12] This occurs because of folate deficiency. Various studies show no significant prevalence of malformations and it ranges from 0.5 to 5.1%.^[10,13,14]

Pregnant women, who are having hyperemesis, after gastric banding surgery can have the band deflated or get

it opened to facilitate pouch emptying, thereby reducing the frequency of vomiting.^[15,16]

In postpartum period the mothers post bariatric surgery are allowed to breastfeed as other mothers. In post bariatric surgeries there is malabsorption of micronutrients hence it is essential to maintain their supplementation after delivery and during breastfeeding. It will also prevent vitamin B deficiency, which can indicate severe complications including failure in thriving, megaloblastic anemia, and development delays.

CONCLUSION

Pregnancy after Bariatric surgery has similar outcome as in normal population apart from certain complications which need attention and immediate management. Pregnancy after bariatric surgery should be considered as high risk and both maternal and fetus should be under constant surveillance.

REFERENCES

1. Alatishe A, Ammori BJ, New JP, Syed AA. Bariatric surgery in women of childbearing age. *QJM.*, 2013; 106(8): 717–20.
2. Milone M, De Placido G, Musella M, Sosa Fernandez LM, Sosa Fernandez LV, Campana G, et al. Incidence of successful pregnancy after weight loss interventions in infertile women: a systematic review and meta-analysis of the literature. *Obes Surg.* 2016; 26(2): 443-51.
3. International Diabetes Federation. (2011). Bariatric surgical and procedural interventions in the treatment of obese patients with type 2 diabetes. Accessed March 2012 from <http://www.idf.org/webdata/docs/IDF-Position-Statement-Bariatric-Surgery.pdf>.
4. Neff KJ, Prener C, Chuah LL, O'Donnell K, Godsland IF, Miras AD, et al. A holistic assessment of bariatric surgical outcomes in a Northern Irish cohort. *Ir Med J.*, 2014; 107(1): 24–6.
5. Musella M, Milone M, Bellini M, Sosa Fernandez LM, Leongito M, Milone F. Effect of bariatric surgery on obesity-related infertility. *Surg Obes Relat Dis.*, 2012; 8(4): 445–9.
6. M. M. Kjaer and L. Nilas, "Pregnancy after bariatric surgery—a review of benefits and risks," *Acta Obstetrica et Gynecologica Scandinavica*, 2012.
7. J. E. Edwards, "Pregnancy after bariatric surgery," *AWHONN Lifelines*, 2005; 9(5): 388–393.
8. A. Eerdeken, A. Debeer, G. Van Hoey et al., "Maternal bariatric surgery: adverse outcomes in neonates," *European Journal of Pediatrics*, 2010; 169(2): 191–196.
9. Narayanan RP, Syed AA. Pregnancy Following Bariatric Surgery-Medical Complications and Management. *Obes Surg*, 2016; 26(10): 2523-9.

10. Johansson K, Cnattingius S, Näslund I, Roos N, et al. Outcomes of pregnancy after bariatric surgery. *N Engl J Med.*, 2015; 372: 814-24.
11. Bebbler FE, Rizzolli J, Casagrande DS, et al. Pregnancy after bariatric surgery: 39 pregnancies follow-up in a multidisciplinary team. *Obes Surg.* 2011; 21(10): 1546-51.
12. Stothard KG, Tennant PW, Bell R, Rankin J. Maternal overweight and obesity and the risk of congenital anomalies: a systematic review and meta-analysis. *JAMA*, 2009; 301(6): 636–50.
13. Patel JA, Patel NA, Thomas RL, Nelms JK, Colella JJ. Pregnancy outcomes after laparoscopic Roux-en-Y gastric bypass. *Surg Obes Relat Dis.*, 2008; 4(1): 39–45.
14. Sheiner E, Edri A, Balaban E, Levi I, Aricha-Tamir B. Pregnancy outcome of patients who conceive during or after the first year following bariatric surgery. *Am J Obstet Gynecol.* 2011; 204(1): 50.
15. C. S. Williamson, “Nutrition in pregnancy,” *Nutrition Bulletin*, 2006; 31(1): 28-59.
16. G. A. Decker, J. M. Swain, M. D. Crowell, and J. S. Scolapio, “Gastrointestinal and nutritional complications after bariatric surgery,” *American Journal of Gastroenterology*, 2007; 102(11): 2571-2580.