
Pregnancy outcomes in women who have had bariatric surgery

A Swedish population-based cohort study found that pregnant women who had previously undergone bariatric surgery for obesity had a lower risk of gestational diabetes, smaller infants, shorter gestation, and were at slightly higher risk of stillbirth or neonatal death than pregnant women with obesity who had not undergone surgery.

Overview: An estimated 5% of pregnant women in the UK are obese (BMI ≥35 kg/m^2; Centre for Maternal and Child Enquiries 2010). The risk of fetal death, stillbirth and infant death is higher in pregnant women with obesity than in pregnant women of normal weight (Aune et al. 2014). Obesity in pregnancy is also linked to preterm delivery (Cnattingius et al. 2013), congenital abnormalities (Stothard et al. 2009) and infants who are large for gestational age (Surkan et al. 2004).

Bariatric surgery – such as gastric banding and gastric bypass – can be used to treat people who are dangerously obese (NHS Choices 2015). Becoming pregnant after bariatric surgery may affect the risks of adverse infant outcomes, such as small-for-gestational-age birth, but existing evidence is mixed (Kjaer and Nilas 2013).

Current advice: The NICE guideline on obesity recommends considering bariatric surgery in people who have a BMI of 40 kg/m^2 or more, and in people who have a BMI of between 35 kg/m^2 and 40 kg/m^2 and other significant disease (for example, type 2 diabetes or high blood pressure) that could be improved if they lost weight. Surgery should be considered once all appropriate non-surgical measures have been tried but the person has not achieved or maintained adequate, clinically beneficial weight loss.

The NICE guideline on weight management before, during and after pregnancy recommends that women with a BMI of 30 kg/m^2 or more should be encouraged and helped to reduce their weight before becoming pregnant. Dieting during pregnancy is not recommended.

The NICE pathway on obesity brings together all related NICE guidance and associated products on the condition in a set of interactive topic-based diagrams.

New evidence: A population-based cohort study by Johansson et al. (2015) investigated fetal outcomes among pregnant women in Sweden who had previously undergone bariatric surgery. A total of 628,778 singleton pregnancies were identified from the Swedish Medical Birth Register. The
Scandinavian Obesity Surgery Registry was used to find 596 pregnancies in women who had previously undergone bariatric surgery (mean pre-surgery BMI=43.7 kg/m$^2$; 98% had gastric bypass surgery). These women were then matched to a control group of 2356 pregnancies in women with no history of bariatric surgery and who had a BMI similar to the pre-surgery BMI of those who had undergone surgery (mean BMI=41.8 kg/m$^2$). Fetal outcomes were established from the Medical Birth Register and the National Patient Register.

Women who had previously undergone bariatric surgery were less likely to develop gestational diabetes than control women (1.9% versus 6.8%; odds ratio [OR]=0.25, 95% confidence interval [CI] 0.13 to 0.47, p<0.001). Pregnancies in women who had previously undergone bariatric surgery had a lower risk of resulting in large-for-gestational-age infants (8.6% versus 22.4% in control women; OR=0.33, 95% CI 0.24 to 0.44, p<0.001) or big babies (macrosomia; 1.2% versus 9.5%; OR=0.11, 95% CI 0.05 to 0.24, p<0.001). However, women who had undergone surgery were at higher risk of having small-for-gestational-age infants (15.6% versus 7.6%; OR=2.20, 95% CI 1.64 to 2.95, p<0.001).

Gestation was shorter for pregnancies in women who had undergone surgery than in those who had not (273.0 days versus 277.5 days; mean difference=-4.5 days, 95% CI −2.9 to −6.0, p<0.001), although the risk of preterm birth was not significantly different (10.0% versus 7.5%; OR=1.28, 95% CI 0.92 to 1.78, p=0.15). Women who had a history of bariatric surgery had a slightly higher risk of stillbirth or neonatal death (1.7% versus 0.7%; OR=2.39, 95% CI 0.98 to 5.85, p=0.06).

Limitations of this study include its observational nature and that it could not control for all possible confounding factors. The Swedish population is mostly white, and nearly all women in this study who had surgery had gastric bypass rather than banding surgery, so the results may not be generalisable to other populations.

**Commentary by Dr Anna Lawin-O’Brien, Subspecialty Trainee in Fetal and Maternal Medicine, and Dr Christoph Lees, Clinical Reader in Obstetrics and Honorary Consultant in Obstetrics, Head of Fetal Medicine, Queen Charlotte’s and Chelsea Hospital, Imperial College Healthcare NHS Trust, London:**

“Obesity in pregnancy is associated with significant health risks to mother and fetus. However, data on the effectiveness of interventions to reduce pre-pregnancy weight remain limited and controversial. Bariatric surgery has been shown to reduce weight substantially but is associated with serious complications such as malabsorption and possibly increased perinatal mortality.

“This study by Johansson et al. (2015) is the largest data set comparing pregnancy outcomes in obese women after bariatric surgery with no-surgery matched controls. Pregnancies after bariatric surgery had a significantly lower incidence of gestational diabetes and large-for-gestational-age fetuses. Pregnancies after bariatric surgery also had higher rates of small-for-gestational-age neonates and a slightly higher rate of perinatal mortality. Prematurity and congenital anomalies were similar in the two cohorts.

“Other authors, such as Devlieger et al. (2015), suggested that post-surgical complications could be a contributory factor to the raised perinatal mortality – a factor that Johansson et al. did not mention. The results to date of an ongoing study (www.aurorastudy.org) suggest that 14% of women who become pregnant after bariatric surgery need further surgery, which may explain the increased perinatal mortality rate. Further confounding factors include that underlying social and health differences between women opting for or against surgery were not accounted for in the Johansson et al. analysis, nor were the women’s histories of gestational diabetes mellitus or preterm birth.

“A recent Cochrane review by Opray et al. (2015) evaluated the effectiveness of preconception health programmes and interventions – including surgical interventions – for improving pregnancy outcomes in obese women. This review concluded that further research was needed and that no recommendations can be given until the effectiveness of health programmes and interventions for this group is established. This paper by Johansson et al. valuably adds to what is known, but cannot
answer the question as to whether bariatric surgery is advisable before pregnancy. It remains for the clinician to deliver carefully considered, balanced and individualised counselling in each case.”

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