Maternal and neonatal outcome after laparoscopic adjustable gastric banding: a systematic review

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CRD summary
This review found that laparoscopic adjustable gastric bands appeared to be relatively safe during pregnancy in women classified as obese. Methodological flaws in the review conduct and the paucity of evidence mean that the reliability of the authors’ conclusions is unclear.

Authors’ objectives
To evaluate both maternal and neonatal outcomes in pregnancy in obese women who have had laparoscopic adjustable gastric band surgery.

Searching
MEDLINE, DARE and NGC (National Guideline Clearinghouse) were searched for studies in English, Dutch or French; search terms were reported, but search dates were not. Reference lists of relevant retrieved articles were searched for additional studies.

Study selection
Studies of women with a body mass index over 30/kg/m² who had received laparoscopic adjustable gastric band surgery and reported data on maternal and neonatal outcomes were eligible for inclusion. The results of case reports were excluded.

The included studies were published from 2001 up to 2011. The mean pre-pregnancy body mass index ranged from 30.3kg/m² to 41.7kg/m² (where reported). The intervals from the gastric band surgery to conception ranged from 17 months to 12 years. Balloon management included active management of the band to prevent first trimester nausea and vomiting, deflation of the band in cases of poor nutrition or frequent vomiting, or emptying only in the event of hyperemesis. The control groups in most of the studies were obese women who had not undergone laparoscopic adjustable gastric band surgery; there were also overweight women no longer classified as morbidly obese (body mass index 29.9kg/m² ±3.5) and normal weight women (body mass index 22.2kg/m² ±1.4).

The reported maternal outcomes included band-related complications or adjustments, gestational weight gain, gestational diabetes, pregnancy-induced hypertension, pre-eclampsia, and caesarean section delivery rates. Neonatal outcomes included preterm delivery (prior to 37 weeks gestation), low birth weight (less than 2,500g), high birth weight (over 4,000g), large for gestational age, small for gestational age, spontaneous abortion, congenital abnormalities, and admissions to neonatal intensive care units.

The authors did not state how many reviewers performed the study selection.

Assessment of study quality
The authors did not state they assessed methodological quality.

Data extraction
Data were extracted on maternal and neonatal outcomes and tabulated.

The authors did not state how many reviewers extracted data.

Methods of synthesis
The results were summarised in a narrative review, with text supporting the tables. The results of included observational studies were presented separately to studies in which control groups were used.

Results of the review
Eleven studies (728 pregnancies in 628 women) were included in the review, comprising four comparative observational studies and seven single-group observational studies.

**Maternal outcomes:** There were significant decreases in incidence in gestational weight gain (four studies), and gestational diabetes, (four studies) in pregnancies occurring post laparoscopic adjustable gastric band surgery than in obese or normal weight women without laparoscopic adjustable gastric bands. The incidence of pregnancy-induced hypertension, pre-eclampsia, and caesarean sections were lower in pregnancies occurring post laparoscopic adjustable band surgery compared with obese women without gastric bands, but higher than in normal-weight women. Band-related complications or adjustments included requirements of band deflation, gastric prolapse, adjustments to attain sufficient nutrition for foetal development, band slips, and port leaks. The reasons for adjustment or deflation were not specified in most studies.

**Neonatal outcomes:** Rates of pre-term delivery (prior to 37 weeks gestation), admissions to neonatal intensive care units (one study), and spontaneous abortions were higher in obese patients both with and without laparoscopic adjustable gastric band surgery. There were non-significant decreases in rates of large gestational weight babies in the patients who received gastric band surgery compared to obese patients without gastric bands and the normal weight groups. The incidence of low birth weight was lower in pregnancies in women with gastric band surgery compared with obese women without gastric bands (one study). One study found no differences between post-gastric band surgery groups and obese patients without gastric band surgery in the rate of admissions of infants to neonatal intensive care units.

**Authors' conclusions**
Laparoscopic adjustable gastric band surgery appeared to be relatively safe during pregnancy in obese women and could have a positive effects on neonatal and maternal outcomes where weight loss was insufficient to attain a body mass index of less than 30kg/m\(^2\).

**CRD commentary**
The review addressed a defined question and broad criteria for the inclusion of studies in the review were stipulated. Appropriate databases were searched for relevant studies, although the restriction to studies published in particular languages meant there may have been some risk of language bias resulting in missed studies. No steps were reported to minimise reviewer error and bias for study selection and data extraction.

The methodological quality of the included observational studies was not assessed; the results from observational studies may be vulnerable to a number of potential sources of bias. The decision to summarise the results in a narrative review appeared justified because of clinical heterogeneity in outcomes, outcome measurement, and control groups.

Potential biases arising from the conduct of the review, the unknown quality of the included studies, and the paucity of the evidence mean the authors' conclusions should be interpreted with some caution and their reliability is unclear.

**Implications of the review for practice and research**
**Practice:** The authors stated that women with a gastric band who become pregnant should be closely monitored by a multidisciplinary team of surgeons, gynaecologists, obstetricians, nutritionists and primary care physicians to attain a successful pregnancy.

**Research:** The authors stated that larger scale studies and further research were required to further understand the extent to which gastric band surgery could improve pregnancy outcomes.

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**Bibliographic details**

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.