

The impact of bariatric surgery and gestational weight gain on neonatal birthweight

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OBJECTIVE

- Bariatric surgery (BS) is an effective treatment for obesity¹.
- It is increasingly being performed in women of child-bearing age^{2,3}.
- Following BS, women are at increased risk of having a small for gestational age (SGA) neonate but the underlying reason for this is not well understood⁴.
- The aim of the study was to investigate the impact of gestational weight gain (GWG) of these women on neonatal birthweight compared to pregnancies without BS.

DESIGN

- Prospective longitudinal observational study looking at the impact of bariatric surgery, obesity and GWG on pregnancy outcomes.

METHOD

- 250 pregnant women recruited
- 100 women with previous BS and 100 pregnant women without BS matched for early pregnancy BMI.
- 50 of the same BS patients were also matched to 50 women without BS but with pre-BS BMI.

RESULTS

Table 1: Matched for early pregnancy BMI

Variable	No Surgery (n=100)	Post-bariatric Surgery (n=100)	P value	Post-Restrictive (n=51)	Post-Malabsorptive (n=49)
Weight gain (12-22 weeks) (kg)	3.41 (3.62)	3.49 (2.78)	0.86	3.42 (3.22)	3.57 (2.24)
Weight gain (22-36 weeks) (kg)	5.03 (4.24)	5.49 (3.55)	0.43	6.15 (3.75)	4.79 (3.22)
Weight gain (12-36 weeks) (kg)	8.35 (5.85)	8.93 (5.38)	0.46	9.29 (6.18)	8.57 (4.44)
IOM-Weight gain			0.76		
Appropriate, n(%)	27 (27)	31 (31)		16 (31.4)	15 (30.6)
Insufficient, n(%)	32 (32)	28 (28)		14 (27.5)	14 (28.6)
Excessive, n(%)	41 (41)	41 (41)		21 (41.2)	20 (40.8)
Gestational age at delivery (weeks)	39.21 (1.32)	38.98 (1.35)	0.22	39.14 (1.49)	38.82 (1.18)
Birth weight (grams)	3444.03 (486.79)	3174.90 (488.97)	<0.001*	3254.14 (472.80)*	3092.43 (496.66)*
Birth weight percentile	66.05 (31.72-82.39)	39.46 (11.11-68.34)	<0.001*	39.46 (14.48-71.55)*	36.69 (9.41-61.67)*
Small for gestational age, n (%)	14 (14)	21 (21)	0.19	9 (17.6)	12 (24.5)
Large for gestational age, n (%)	15 (15)	7 (7)	0.07	5 (15)	2 (4.1)*

*denotes p<0.05, small for gestational age includes babies born with birthweight percentile < 10th percentile, large for gestational age includes babies born with birthweight percentile > 90th percentile.

Table 2: Matched for pre-BS BMI

Variable	No Surgery (n=50)	Post-bariatric Surgery (n=50)	P value	Post-Restrictive (n=25)	Post-Malabsorptive (n=25)
Weight gain (12-22 weeks) (kg)	2.02 (3.18)	3.62 (2.28)	0.008	3.66 (2.67)*	3.58 (1.88)*
Weight gain (22-36 weeks) (kg)	4.19 (3.48)	5.64 (3.23)	0.04	6.54 (3.34)	4.81 (2.96)
Weight gain (12-36 weeks) (kg)	6.21 (5.15)	9.28 (4.89)	0.003	9.58 (5.39)*	8.98 (4.40)*
IOM-Weight gain			0.55		
Appropriate, n(%)	18 (36.0)	20 (40.0)		9 (36.0)	11 (44.0)
Insufficient, n(%)	18 (36.0)	13 (26.0)		6 (24.0)	7 (28.0)
Excessive, n(%)	14 (28.0)	17 (34.0)		10 (40.0)	7 (28.0)
Gestational age at delivery (weeks)	39.09 (1.46)	39.30 (1.22)	0.44	39.49 (1.47)	39.10 (0.89)
Birth weight (grams)	3522.54 (525.22)	3249.14 (513.43)	0.01	3290.28 (539.43)*	3208.00 (493.65)*
Birth weight percentile	64.11 (29.80)	43.09 (32.43)	0.001	43.32 (34.93)*	42.85 (30.44)*
Small for gestational age, n (%)	3 (6.0)	9 (18.0)	0.06	5 (20.0)	4 (16.0)
Large for gestational age, n (%)	13 (26.0)	6 (12.0)	0.07	4 (16.0)	2 (8.0)

*denotes p<0.05, small for gestational age includes babies born with birthweight percentile < 10th percentile, large for gestational age includes babies born with birthweight percentile > 90th percentile.

CONCLUSION

- Post-BS women gained more weight during pregnancy compared to pre-surgery BMI matched women.
- Post-BS women delivered smaller babies with a higher rate of SGA, lower rate of LGA neonates and less gestational diabetes than women without surgery, in accordance with published literature.
- In conclusion GWG does not appear to influence neonatal birthweight in this group of women.

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