Gestational Diabetes Screening in Patients with Prior Bariatric Surgery: Audit and Recommendations

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Background

- The prevalence of obesity is increasing, so too is the occurrence of bariatric surgery (BS)
- 21.8% of the UK antenatal population is obese (NICE: BMI ≥30 kg/m2), and over 50% of BS is performed in women of reproductive age.
- BS is an umbrella term, with the most common procedures illustrated in Figure 1.
- It is an effective treatment of obesity resulting in a significant sustained weight loss with reduction of obesity related complications including those specific to pregnancy. Although BS is not without risks, see Table 1.
- Women with normal BMI and prior BS still remain at higher risk of Gestational Diabetes (GDM) and T2DM than women with normal BMI + no prior BS*
- MBRACE-UK 2020 reported that pregnancy following BS should be considered 'high-risk' and that they should receive 'specialist multidisciplinary care'.
- Diagnosis GDM in women with prior BS is challenging:
  - Concern regarding tolerability and accuracy of OGTT given altered GIT affecting consumption and absorption e.g. delayed gastric emptying, dumping syndrome
  - Increased incidence of vomiting/ regurgitation
- Guidance is lacking on pregnancy following BS:
  - No specific guidelines on diabetes screening during pregnancy in women with prior BS.
  - "…diagnosis of gestational diabetes is probably best performed on a diurnal blood glucose profile rather than an attempt at formal glucose tolerance testing." (RCOG, 2015)
  - Consensus guideline recommendations for periconception, antenatal and postnatal care (Shawe et al., 2019)

Figure 1.

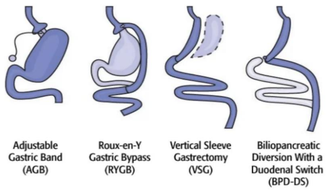

Table 1. Pregnancy Outcomes associated with BS

Reduce in risk ↓	Increase in risk ↑
GDM *	Surgical complications
Gestational hypertensive disorders	Congenital anomalies
Large for gestational age (LGA)	Micronutrient deficiency
Improved weight loss	Preterm Birth
	Small for Gestational age (SGA)
	Perinatal Mortality

Findings

- During this period, there were 28 deliveries to women recorded as having 'gastric-banding':
  - 7 in 2018, 10 in 2019 and 11 in 2020.
- Type of Bariatric Surgery (BS)
  - Although all were classed as 'gastric-banding' on NIMATS, NIECR showed 4 types of BS.
- Weight at booking: 20/28 obese, 6/28 overweight, 2/28 normal BMI
- MOD: 14/28 NVD, 3/28 Instrumental Delivery, 8/28 ELCS and 3/28 Emergency CS
- Infant outcomes:
  - 29 live births (1 twin delivery) the majority of which were a normal weight
  - 5/29 (2/29 <2.5kg and 3/29 >4kg) – all born to women with LAGB
    - 2 SGA and 1 LGA not screened for GDM
- GDM screening and how it compares to recommendations
  - According to Consensus Guidelines all should have been screened for GDM, however 22/28 were, and 13/28 were screened using the correct method
  - 6/28 received a diagnosis GDM

Table 2. Type of BS and GDM diagnostic method and result

Type Prior BS	No. with BS	No. diagnosed with GDM	Test used
Gastric Balloon	1	1	OGTT
LAGB	15	2	Fasting Glucose
			Home BM monitoring
RYGB	6	2	OGTT
			Home BM monitoring
SG	6	1	Home BM monitoring

Conclusions

- The number of pregnant women with prior BS delivering in RJMH has risen over the past three years, although numbers are small.
- The audit results suggest that GDM screening is not currently in line with Consensus Guideline:
  - Not everyone is screened
  - Appropriate method of screening is not consistently employed.
- Barriers to correctly identifying these high-risk women include:
  - Inadequate options within the NIMATS system
  - Use of BMI during risk assessment, which fails to consider women with prior BS who have a normal BMI

Recommendations

- Change the NIMATS 'Gastric banding' option to 'Bariatric surgery' and create sub-choices for LAGB, RYGB, SG and Gastric Balloon.
- All women with prior BS irrespective of their BMI should attend a dedicated antenatal clinic to receive senior obstetric and dietetic care.
- In order to ensure consistent and appropriate care, a trust/ regional clinical guideline on management of pregnant patients with prior BS which includes guidance on screening and diagnosis of GDM, should be developed

Aim

1. a. Determine the prevalence of women with prior BS delivering in Royal Jubilee Maternity Hospital (RJMH)
   b. Review outcomes for these pregnancies.
2. Determine if and how these women were screened for Gestational Diabetes (GDM).
3. Assess how care provided compares to that recommended by Consensus recommendations (Shawe et al., 2019).
4. Establish recommendations to improve quality and uniformity of care.

Method

- Single-centre, retrospective audit of women with prior BS who delivered in the RJMH between January 2018 and October 2020.
- The Northern Ireland Regional Maternity System (NIMATS) was used to identify women with prior BS delivering between the above dates. Based on the limited options available within NIMATS, 'gastric banding' was used to detect patients with prior BS.
- Relevant clinical information was extracted from Northern Ireland Electronic Care Record (NIECR).

Consensus Recommendations

- Pregnant women with prior BS should routinely be screened for GDM.
- First Trimester:
  - If there is a personal history of diabetes or other RF are present – offer early screening to exclude pre-diabetes
    - Treat as T2DM if HbA1c ≥6.5% and/or FPG ≥7.0mmol/L
- Second Trimester:
  - LAGB – OGTT at 24-28 W
  - Other BS e.g. RYGB, SG, BPD – Seven-point CBG profiles or CGM for 1 week 24-28 W. OGTT is inappropriate due to the risk of dumping syndrome
  - Repeat HbA1c if there is a personal history of diabetes.
- Third Trimester:
  - Repeat screening if clinical suspicion of diabetes.

RJMH

- How many pregnant women with prior BS were routinely screened for GDM?
  - 22/28 (78.6%)
- How many with a personal history of GDM or other RF were offered early screening to exclude pre-diabetes?
  - 11/21 (52%)
- Was the appropriate method of testing used?
  - 13/28 (46%) were screened appropriately
    - 10/15 of those with LAGB were offered the OGTT
    - 3/13 of those with an alternative form of BS were offered 7 point CBG profiles.

BS, bariatric surgery; GDM, gestational diabetes; RF, risk factors; T2DM, type 2 diabetes mellitus; LAGB, laparoscopic adjustable gastric band; OGTT, oral glucose tolerance test; RYGB, Roux-en-Y Gastric Bypass; SG, sleeve gastrectomy; BPD, Biliopancreatic Diversion; CBG, capillary blood glucose; CGM, continuous glucose monitoring

- Attend for booking and refer all to Friday morning BMI clinic.
- Senior obstetrician review for risk assessment and plan.
- Dietetic team initial assessment from 12-16 weeks and regular review throughout pregnancy
- Send appropriate bloods: Full screen at booking then each Trimester
- If BMI >30 prescribe 5mg Folic Acid until 12 weeks
- Risk assess for VTE/ Aspirin 150mg
- GDM screening for all women. Test depends on type of BS: LAGB – OGTT; RYGB, SG or BPD – 7 point CBG testing for 7 days between 24-28 W
- Serial growth assessments for all women from 26-28 W
- Monitor gestational weight gain and screen for/ manage obesity related complications if necessary.

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