Ashford and St. Peter's Hospitals NHS
NHS Foundation Trust

WOMEN'S HEALTH
MATERNITY UNIT

Guideline for the management of pregnant women who have previously undergone bariatric surgery

In Consultation with: Maternity Guidelines Group
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Ratified by: December 2015

Review date: December 2022

History

Issue	Date Issued	Brief Summary of Change	Author
1	July 2019	Complete guideline refresh	V Minas
2			

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Policy Author	Theresa Spink Dr Sam Soltanifar Dr David Cartwright Dr Tokunbo Adeoye Dr Janaka Jayasinghe Mr Vasileios Minas
Department/Directorate	Women's Health
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Ratified by	Women's health Clinical Governance Group
Audience	Health care professionals working in the maternity services

Executive summary

This guideline is to inform midwives, obstetricians and anaesthetist the correct care pathway for women who are pregnant that have undergone gastric bypass surgery.

See also: Any relevant trust policies/guidelines or procedures

1. Introduction

National Institute for Health and Care Excellence (NICE) guidelines20 recommend that bariatric surgery be considered when the BMI is 40 kg/m2 or more, or for those with a BMI between 35 and 40 kg/m2 in the presence of other comorbidities and where other nonsurgical methods have proven unsuccessful.

The first 12 months after bariatric surgery represent an active catabolic state due to rapid weight loss, with gradual stabilization of the body's nutritional state in the following months. For this reason women are generally advised to avoid pregnancy for 12–24 months after bariatric surgery [24, 25]. This aims to reduce the potential risk of intrauterine growth retardation during this period whilst allowing the woman to attain the full therapeutic benefit of the procedure [10, 26]. Pre-conception counselling in this period should include consideration of non-oral contraceptives as the efficacy of oral contraceptive pills may be compromised by unreliable absorption following bariatric surgery

2. Type of Bariatric Surgery

The main bariatric procedures undertaken on women in the UK are gastric bands or sleeve gastrectomies and gastric bypass, the latter of which accounts for 2/3 of NHS bariatric procedures.

Bariatric surgery may be restrictive, aiming to reduce calorie intake by reducing gastric capacity, and/or malabsorptive. Restrictive procedures include laparoscopic adjustable gastric banding (LAGB), silastic ring gastroplasty (SRG), vertical banded gastroplasty (VBG) and sleeve gastrectomy (SG). An example of a malabsorptive bariatric procedure is biliopancreatic diversion (BPD); Roux-en-Y gastric bypass (RYGB) is both a restrictive and malabsorptive procedure. Gastric bypass involves detaching a small pouch of the stomach and then reattaching to the lower part of small bowel thereby bypassing a major part of the stomach.

Box 1. Types of bariatric surgery with their potential complications

Type	Technique	Potential complications
Restrictive: aims to reduce caloric intake by reducing gastric capacity.	Laparoscopic adjustable gastric banding (LAGB); silastic ring (SRG); vertical-banded gastroplasty (VBG)	Band adjustment used to regulate weight gain. Complications: gastric prolapse, stomal obstruction, pouch dilatation, gastric erosion and necrosis.
	Sleeve gastrectomy	Irreversible. Involves removing most of the stomach leaving a sleeve-shaped cylinder of stomach with reduced capacity.
Malabsorptive: includes malabsorptive procedures. Iron, calcium, folate, thiamine, B12 and fat-soluble vitamin deficiencies can occur leading to malnutrition.	Biliopancreatic diversion (BPD) Jejunoileal bypass	Produces more extreme malabsorption than other procedures. High morbidity and mortality. Hepatic and renal failure.
Mixed: combining food restriction with malabsorption by shortening the length of the intestinal tract.	Roux-en-Y gastric bypass (RYGB)	Dumping syndrome experienced by ingestion of large quantities of carbohydrates or the standard 75 or 50 g glucose challenge test. Complications: stomal stenosis, icers, intestinal hernias and nutrient deficiencies.

Nutrition related problems

Protein, iron, folate, calcium, and vitamins B_{12} and D are the most common nutrient deficiencies after gastric bypass surgery. A broad evaluation for deficiencies in micro-nutrients should be considered at the beginning of pregnancy in women who have had bariatric surgery, and treatment should be initiated if any deficits are present.
Calorie malabsorption does not appear to be a symptom of LAGB, SG and RYGB, whereas BPD and biliopancreatic diversion with duodenal switch (DS) are malabsorptive procedures which reduce nutrient absorption by bypassing a large portion of the small intestine

Gastric bypass, the most common type of mixed restrictive and malabsorptive bariatric surgery worldwide, may be associated with deficiencies of iron, vitamin B_{12}, calcium, vitamin D and other fat soluble vitamins, and trace elements.
Sleeve gastrectomy, a predominantly restrictive procedure, is associated with the above deficiencies to a lesser extent.

The less common duodenal switch and biliopancreatic diversion procedures are associated with significant malabsorption of macronutrients including protein and fat, and micronutrients and vitamins such as vitamins A, D and B_{12}, calcium, iron, selenium, zinc and copper.
Other complications of BPD and DS include steatorrhoea and protein malnutrition.

3. Scope

2.1 To whom the policy applies and where and when it should be applied, i.e. “This guidance is relevant to: Midwives, obstetricians and anaesthetists’

3 . Duties and responsibilities

Booking antenatal appointment

All women with previous bariatric surgery are high risk and should have consultant led ANC.

Antenatal patients that have undergone bariatric surgery must be asked the following questions by the booking midwife, and the answers documented in their notes;

1. What type of bariatric surgery has been performed?
   Gastric band/sleeve gastrectomy OR gastric bypass?
2. Further details - Year performed/Name of surgeon/Name of centre
3. Does the woman have her discharge paperwork from her weight reduction surgery
   If the woman does not have a copy of her discharge paperwork (indicating the details of her surgery) she should be asked to get a copy from her bariatric team and should bring this to the first consultant Antenatal clinic and to all appointments in the metabolic clinic. Have they attended follow up and is it still ongoing
4. Who is current follow-up with;
   Bariatric team/Tier3 clinic or GP or metabolic/endocrine clinic

All these details must be on the antenatal summary sheet which should be sent to the Antenatal Clinic Team Leader**.**

Regular follow-ups to detect nutritional deficiencies before pregnancy and during pregnancy at least every trimester are recommended

Women with gastric banding should have individualized care regarding gastric band adjustments during pregnancy

The booking midwife must put the pregnancy care pathway for women who have previously undergone bariatric surgery (Appendix 1) with the woman's hand held notes.

Stakeholder Engagement and Patients with bariatic surgery must be referred to a consultant antenatal clinic **AND** to Dr. Cartwright's metabolic clinic (this referral will be arranged as a 'consultant to consultant' referral by the Antenatal Clinic Team Leader. See Appendix 2, referral proforma).

If at the first consultant antenatal appointment, the team have not seen written confirmation of the type of bariatric surgery that the woman has undergone, the doctor who reviews her must contact her bariatric Appendix 3 below) asking them to send the required details. This must be documented in the woman's notes.

Close interdisciplinary care with dietician, endocrinologist, internal specialist, surgeons and obstetrician and other disciplines should be applied where necessary.

Blood tests

All patients with a history of bariatric surgery must have the following blood tests done at booking (extra blood bottles required: 2 x purple, 2 x gold, 1 x red):

BAR 1 bloods to be written on the blood form (Bariatric profile 1);
These include;

FBC	Bone profile	Zinc	Lipid profile	Selenium
Total protein	PTH	Albumin	U+E	Ferritin
LFTs	Vitamin D			

Examinations also include blood sampling which should be performed at least once per trimester and include full blood count ,clinical chemistry, coagulation, vitamins A,D,E,K,B12, iron status, folic acid, parathyroid hormone and protein, albumin, A1c, glucose, and TSH

Vitamin A, E,K, B12 & Folate and TSH must also be requested in addition to the BAR 1 bloods.

These should be **repeated at 28 weeks and 34 weeks gestation** and reviewed in the Consultant antenatal clinic. Any tests ordered from the metabolic clinic will be reviewed in that clinic.
There should be individualized care of patient with 2-4weeks appointment if nutritional deficiencies need to be corrected

Supplementation

All these patients should be taking pregnancy multivitamins (including vitamin D). If they were taking 'other' multivitamins prior to conception these should be changed to pregnancy specific preparations which do not contain vitamin A.

Women are also advised to continue taking calcium/vitamin D/iron supplements if they were on these prior to pregnancy.

In a case of persisting vomiting, intravenous supplementation of vitamins and/or trace elements together with fluid replacement needs to be considered. In particular, vitamin B1 (thiamine) deficiency needs to be considered as patients after RYG Band BPD-DS are at higher risk, and in pregnancy, hyperemesis gravidarum might aggravate this condition. Symptoms of thiamine deficiency are Wernicke encephalopathy, oculomotor dysfunction, and gait ataxia.

In case of thiamine deficiency, intravenous thiamine infusion with 100mg thiamine followed by consecutive intramuscular injection (100mg/day for 5days) and oral maintenance (50–100mg/day) should be applied.

USS Surveillance

Additional antenatal growth ultrasound scans should be carried out for patients with previous gastric bypass surgery at **28 and 34 weeks'** gestation, regardless of BMI.

Growth retardation may be a greater risk if the woman had her weight loss procedure < 2 years ago: these women should therefore have **4 weekly growth scans from 24 weeks.**

Anaesthetic Review

All women who have undergone **ANY TYPE** of bariatric surgery irrespective of booking BMI should be referred for an anaesthetic assessment in the third trimester.

Screening for gestational diabetes

Women requiring screening for gestational diabetes with a history of bariatric surgery are selected based on the same criteria as the normal antenatal population.

Screening for gestational diabetes in patients who have undergone **gastric bypass** require special consideration. To avoid inducing dumping syndrome, they should NOT have the glucose tolerance test. Instead, such patients should be screened by carrying out blood glucose profiles for a week between 26-28 weeks' gestation. This should include a pre-meal and 1hr post prandial blood glucose level to be carried out with every meal for one week.

The patient will have these profiles reviewed in Consultant antenatal clinic and a diagnosis of gestational diabetes made if the 1 hour post prandial glucose is >7.8mmol/L. These patients will then be managed regarding their gestational diabetes via the diabetic antenatal clinic.

Dumping Syndrome

Dumping syndrome can occur after ingestion of refined sugars and high-glycaemic carbohydrates in patients who have had gastric bypass surgery. Early dumping occurs due to osmotic fluid shifts resulting from rapid gastrointestinal food transit, whilst late dumping is characterized by a hyperinsulinemic response to rapid absorption of simple carbohydrates.
Symptoms include abdominal cramping, bloating, nausea, vomiting, and diarrhoea. Hyperinsulinemia and hypo-glycemia can occur later, resulting in tachycardia, palpitations, anxiety, and diaphoresis. Women with dumping syndrome may not tolerate OGTT test for gestational diabetes. **Alternative screening methods, home glucose monitoring, should be used in patients who have undergone restrictive/malabsorptive surgery**.

Antenatal Admissions

The main potential complications of bariatric surgery to be familiar with are listed below, they are uncommon, but can be serious:

Gastric band – Band migration, Band slippage, gastric prolapse, stomal obstruction, pouch dilatation, gastric erosion and necrosis.
Gastric bypass – intestinal hernia (8% in pregnancy), intestinal obstruction, perforation and death.
Any patient presenting with abdominal pain and/or vomiting with a history of bariatric surgery, should be managed with extreme caution. Obstetric consultant review within the first 24hrs of admission is mandatory. Urgent surgical referral will reduce the chance of misdiagnosis.

Complications

Because of the risk of delayed postoperative complications, gastrointestinal problems that are common in pregnancy (e.g., nausea, vomiting, abdominal pain) require thorough evaluation in women who have undergone bariatric surgery. Early consultation with a bariatric surgeon is critical to determine whether the symptoms are related to the surgery.
A high clinical index of suspicion is required for early diagnosis of surgical complications of prior weight loss procedures during pregnancy, including small bowel obstruction, internal hernias, gastric band erosion or migration and cholelithiasis.
The generally mild signs and symptoms may be mistaken for common and benign pregnancy-related complaints.
Thus, the patient's surgical history of bariatric surgery and high clinical index of suspicion are required for early detection of small bowel obstruction. Tachycardia, abdominal distension, and elevated white blood cell counts, liver enzymes, amylase or lipase levels should raise concerns of bowel necrosis or perforation

Labour and Delivery

There is no medical reason that pregnant women with previous bariatric surgery require different management with induction, labour or delivery.

Women with BMI >30 kg/m2 should be managed in line with their individualised needs.

Postnatal care of the mother:

- No special diet is required.
- Early mobilisation.
- Encourage breast feeding.
- Thromboprohylaxis as indicated according to the VTE risk assessment.

Labour and Delivery

Bariatric surgery should not affect the management of labor and delivery. Although rates of cesarean delivery are higher in women who have had bariatric surgery, it is not an indication for cesarean delivery. If a patient has had extensive and complicated abdominal surgery from weight-loss procedures, pre-labour consultation with a bariatric surgeon should be considered.

Baby:

- The baby should stay with the mother unless extra neonatal care is required.
- Significant malabsorption in the mother can lead to altered energy content of breast milk, so specialist support and advice from the infant feeding advisors will be required.

REFERENCES

[1] NICE Guidance. Obesity: identification, assessment and management of overweight and obesity in children, young people and adults. November 2014.
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4. Document Control and Archiving

4.1.Detail the process for uploading new, approved versions of the policy onto the intranet, and archiving arrangements.

5. Monitoring compliance with this Policy

Measurable Policy Objective	Monitoring/ Audit method	Frequency of monitoring	Responsibility for performing the monitoring	Monitoring reported to which groups/ committees, inc responsibility for reviewing action plans
e.g. All policies will be reviewed by their authors at least annually to ensure that they remain valid and in date	Compliance audit of sample of policies (including Review History)	Annual	Associate Director of Quality	Management Executive

Supporting References / Evidence Base REFERENCES

1. NICE Guidance. Obesity: identification, assessment and management of overweight and obesity in children, young people and adults. November 2014.
2. TOG Article. Pregnancy outcome following bariatric surgery. R. Khan, B. Dawlatly, O. Chappatte. 2013;15;37-43.
3. NICE guideline Weight management before, during and after pregnancy PH27 July 2010
4. National Bariatric surgery Register, BOMSS
5. Bariatric surgery in Women of Reproductive Age: Special concerns for Pregnancy

6. Management of women with obesity in pregnancy RCOG guidelines 2018,
7. Management of Pregnant women after bariatric surgery (review article) Journal of Obesity volume 2018 Article ID 4587064
8. Pregnancy after bariatric surgery: a narrative literature review and discussion of impact on pregnancy management and outcome. BMC pregnancy and childbirth 2018, 18:507
9. Pregnancy after weight loss surgery: a commentary BJOG 2015, 123 (2)
10. The role of Bariatric surgery in improving Reproductive health RCOG Scientific paper No 17 Oct 2015

Appendix 1

Ashford and St. Peter's Hospitals NHS
NHS Trust

WOMEN'S HEALTH
MATERNITY UNIT

Date:
Consultant to Consultant Referral

Dear. Dr. Cartwright,
RE:

EDD:
This patient is currently /40 pregnant and has undergone a weight loss procedure prior to pregnancy.

Date of bariatric op: ……..

Type of operation: gastric band
Sleeve gastrectomy
Gastric bypass
Not known (only refer to Dr Cartwright if op < 2 years ago)

Bar 1 bloods, B12 and folate levels have been taken. She is due to be seen by a consultant in Antenatal clinic on ……..

We would be grateful for your review clinic.

Regards,

Consultant Obstetrician
(Please record the name of the obstetric consultant the woman is due to see in ANC)

Ashford and St. Peter's Hospitals NHS
NHS Foundation Trust

St Peter's Hospital
Guildford Road
Chertsey
Surrey
KT16 0PZ

Appendix 2

Date:

Dear …….

RE:

This woman is currently ……weeks pregnant and has undergone a weight loss procedure in your centre prior to pregnancy. I would be obliged if you could furnish me with the details of her previous surgery, especially:

Date of bariatric op: ……..

Type of operation: gastric band
Sleeve gastrectomy
Gastric bypass
Other (with details)

Weight and BMI prior to surgery:

Regards,

Consultant Obstetrician/Midwifery Team Leader

Please send reply via Antenatal Clinic at the above address.

APPENDIX 3: EQUALITY IMPACT ASSESSMENT

Equality Impact Assessment Summary

Name and title: Guideline for the management of pregnant women who have previously undergone bariatric surgery
Policy:

Background • Who was involved in the Equality Impact Assessment
Clinical midwifery manager Supervisor of midwives Consultant obstetrician
Methodology • A brief account of how the likely effects of the policy was assessed (to include race and ethnic origin, disability, gender, culture, religion or belief, sexual orientation, age) • The data sources and any other information used • The consultation that was carried out (who, why and how?)
This guideline will be applied to all women who are pregnant having previously had bariatric surgery. The guideline was informed by NICE guidance, research articles and National Bariatric surgery Register, BOMSS The guideline was reviewed by the multidisciplinary team including gastric surgeons. Anaesthetists and obstetricians.
Key Findings • Describe the results of the assessment • Identify if there is adverse or a potentially adverse impacts for any equalities groups
This guidance ensures that any woman who is pregnant has clear plan for her maternity pathway including those with BMI < 30 and more than >30.

Conclusion

- Provide a summary of the overall conclusions

This guideline will ensure that all pregnant women who previously have undergone gastric bypass surgery follow a detail plan of care including when to and who to refer to.

Recommendations

- State recommended changes to the proposed policy as a result of the impact assessment
- Where it has not been possible to amend the policy, provide the detail of any actions that have been identified
- Describe the plans for reviewing the assessment

The guidance should be updated three yearly or as when new evidence is discovered

APPENDIX 2: CHECKLIST FOR THE REVIEW AND APPROVAL OF DOCUMENTS

To be completed (electronically) and attached to any document which guides practice when submitted to the appropriate committee for approval or ratification.
Title of the document:
Policy (document) Author:
Executive Director:

		Yes/No/ Unsure/ NA	Comments
1.	**Title**		
	Is the title clear and unambiguous?	**yes**	
	Is it clear whether the document is a guideline, policy, protocol or standard?	**yes**	
2.	**Scope/Purpose**		
	Is the target population clear and unambiguous?	**yes**	
	Is the purpose of the document clear?	**yes**	
	Are the intended outcomes described?	**yes**	
	Are the statements clear and unambiguous?	**yes**	
3.	**Development Process**		
	Is there evidence of engagement with stakeholders and users?	**yes**	
	Who was engaged in a review of the document (list committees/ individuals)?	**yes**	
	Has the policy template been followed (i.e. is the format correct)?	**yes**	
4.	**Evidence Base**		
	Is the type of evidence to support the document identified explicitly?	**yes**	

		Yes/No/ Unsure/ NA	Comments
	Are local/organisational supporting documents referenced?	**yes**	
5.	**Approval**		
	Does the document identify which committee/group will approve/ratify it?	**yes**	
	If appropriate, have the joint human resources/staff side committee (or equivalent) approved the document?	**yes**	
6.	**Dissemination and Implementation**		
	Is there an outline/plan to identify how this will be done?	**yes**	
	Does the plan include the necessary training/support to ensure compliance?	**yes**	
7.	**Process for Monitoring Compliance**		
	Are there measurable standards or KPIs to support monitoring compliance of the document?	**yes**	
8.	**Review Date**		
	Is the review date identified and is this acceptable?	**yes**	
9.	**Overall Responsibility for the Document**		
	Is it clear who will be responsible for coordinating the dissemination, implementation and review of the documentation?	**yes**	
10.	**Equality Impact Assessment (EIA)**		
	Has a suitable EIA been completed?	**yes**	

Committee Approval (insert name of Committee)			
If the committee is happy to approve this document, please complete the section below, date it and return it to the Policy (document) Owner			
Name of Chair	**Sandra Newbold**	**Date**	**7/12/15**
Ratification by Management Executive (if appropriate)			
If the Management Executive is happy to ratify this document, please complete the date of ratification below and advise the Policy (document) Owner			
Date: n/a			