Management of Super-obesity (Class IV and V Obesity) and women with previous Bariatric Surgery in Pregnancy

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Contents

Introduction:

Obesity rates are rising with 63% of women being overweight or obese in 2019. Not only are rates of obesity increasing but also the degree of obesity, with super-obese numbers increasing five times faster than other obesity classes. Obesity is defined on the BMI (Body Mass Index) which is calculated as the weight (KG) divided by height (metres squared).

There are now 5 classes of obesity:

- Class I if BMI is 30-34.9
- Class II if BMI 35-39.9
- Class III if 40-49.9
- Class IV for BMI 50-59.9
- Class V for BMI >60.

Obesity is associated with higher rates of maternal and fetal complications, especially those in class IV and V, as well as posing technical challenges for staff and organisations. Ideally these women should engage with pre-conceptual counselling and lose weight before embarking on pregnancy. Women with a BMI over 40 are 3 times more likely to have a fetal anomaly, 24 times more likely to develop gestational diabetes, and 10 times more likely to develop pre-eclampsia than someone with a normal BMI. The baby is more likely to be delivered by caesarean section, have low APGARs at 5 minutes, and is twice as likely to have neonatal hypoglycaemia. Even post birth the maternal BMI impacts on the child's health with higher rates of childhood obesity, cancer, Coronary Heart Disease, Stroke, Diabetes and death (increasing BMI associated with increasing risk).

Obese women in class IV and V

Early pregnancy

These women should be under consultant led care, in a specialist clinic for obesity with multidisciplinary input (Currently based at Singleton Hospital). Attendance improves outcomes with less stillbirths and small for gestational age fetuses, although induction of labour and caesarean section rates are higher. These women are more likely to have pre-pregnancy medical problems including hypertension, diabetes, gall bladder disease, asthma, obstructive sleep apnoea (OSA), cerebrovascular accident or have underlying cardiac dysfunction, which may require their care to be under a specialist medical or diabetes clinic, but aspects regarding their obesity still require management alongside that of their medical problems.

Studies have shown these women have multiple nutritional deficiencies including calcium, magnesium, iron, copper, vitamin D and D, folate, vitamin K and iodine compared to women of normal BMI. In particular, 95% of obese women do not meet the recommended nutritional intake for iron and folate. These deficiencies are associated with higher rates of skeletal malformations, pre-eclampsia, preterm labour, and a small for gestational age fetus. Only 1 in 3 obese women take pre-conception folic acid and less than 10% of those take the higher dose. It is therefore recommended that women should take 5mg folic acid and vitamin D supplements as

soon as possible in the pregnancy. Women in class IV and V may benefit from continuing folic acid throughout their pregnancy.

The limitations of screening for the superobese should be discussed. The risk of a neural tube defect increases by 20% above baseline for every 10kg of excess maternal weight. In addition, the quality of scans decreases (as adipose tissue absorbs the signal) meaning that detection of abnormalities is reduced, especially cardiac and neurological defects.

Obesity is a risk factor for pre-eclampsia, with the risk doubling for each 5 BMI units. Studies have demonstrated that risks of pre-eclampsia can be reduced by taking Aspirin, and the risk reduction is related to dose of Aspirin. Currently it is common to use 75mg Aspirin daily, but SBUHB guidance recommends 150mg Aspirin daily to start before 16 weeks' gestation (doing this would half the risk of developing pre-eclampsia).

Given the higher risk of developing gestations diabetes, and the higher incidence of undiagnosed type 2 diabetes in the superobese, a glucose tolerance test should be offered at 16/40, and if negative again at 26-28 weeks' gestation.

It is important that women are counselled about the risks of obesity in pregnancy and methods to try and modify their risk, and should be given the patient information leaflet associated with this guideline for women with a BMI over 50. There have been several studies looking at lifestyle modification and risk for pregnancy with conflicting results, primarily due to poor engagement by the patients. However, there have been no studies showing that weight loss is harmful, and other studies have suggested that weight loss can reduce risks association with obesity, especially those of pre-eclampsia, macrosomia and delivery by caesarean section, without increasing risk of a small for gestational age fetus. One trial showed that monthly self-weighing reduced the amount of weight gain in overweight women. Early physical activity improves insulin sensitivity as well as reducing blood glucose levels (35 minutes of moderate activity lowers glucose by 1mmol/L) and reduced the risk of gestational diabetes by 25%, and physical activity towards term reduced childhood obesity. A combination of dietary changes and exercise reduces the risk of fetal macrosomia. If women have not exercised before it is advised that they start with 10 minutes a day and build up to a target of 150 minutes per week. Moderate activity is classed as activity that makes them slightly breathless.

SUMMARY FOR EARLY PREGNANCY

- Book into BMI ANC in addition to Medical Clinic if Needed
- 5mg Folic Acid to continue through pregnancy
- 150mg Aspirin to continue through pregnancy
- GTT at 16/40
- Patient Information leaflet for women with BMI over 50
- Encourage to start weight management strategies including 10 minutes exercise per day

Antenatal care

These women must have an outpatient consultant anaesthetic review during their pregnancy for several reasons:

- Up to 80% of super-obese women will have OSA. Having OSA doubles the risk of cardiac arrest and acute respiratory failure. If these women have a caesarean section they are more likely to have hypercapnia and hypoxaemia, as well as higher rates of sepsis.
- 6% of super-obese women will require general anaesthetic for any operative procedure (compared to 1% in the non-obese). These women are at greater risk of anaesthetic complications, including failed intubation, rapid desaturation, aspiration of gastric contents, and difficult bag mask ventilation.
- 75% of women will need more than one attempt at siting an epidural if required, with 15% requiring more than 3 attempts. There are also higher rates of the epidural catheter being dislodged.
- Intravenous access is likely to be more difficult in these women.

Accurate palpation of fetal growth is impossible within this BMI group, and hence serial growth scans should be undertaken to monitor fetal growth and detect the small for gestational age fetus.

Blood pressure must be measured with a correctly sized cuff. Using a blood pressure cuff that is too small will falsely elevate the blood pressure. The bladder of the cuff should cover 80% of the circumference of the upper arm.

These women should have an assessment for thromboprophylaxis, with a low threshold for starting antenatal low molecular weight heparin. Superobese women are 40 times more likely to have a thrombosis event that those with a BMI <25. BMI of >50 should be considered to give 3 on the VTE scoring chart.

There is an increased risk of still birth so maternal surveillance of fetal movements is important. At the same time the excess in adipose tissues reduces the amount of fetal movements felt by the mother. There also needs to be a discussion regarding limitations of ensuring fetal wellbeing. Monitoring by CTG may not always be possible. Within labour this may be overcome by using a fetal scalp electrode, but because of the extra difficulties with operative delivery it may not be possible to expedite delivery in the same time scales as other women, and delay may lead to harm - babies of women in class IV and V obesity are 3.5 times more likely to have low APGAR scores and be admitted to the neonatal unit. They are also twice as likely to have a neonatal death.

Around 36/40 women should be reweighed and a manual handling assessment made (see below). A birth plan including plans if a caesarean is needed should be documented in the woman's hand held notes.

SUMMARY FOR ANTENATAL CARE

- Rpt GTT at 28/40 if first one normal
- VTE assessment
- Serial Growth Scans
- Anaesthetic Referral
- Manual Handling assessment
- Birth Plan at 36/40

Manual Handling and Equipment

It is important that appropriate equipment is used to care for these women. The safe weight tolerance for commonly used equipment within maternity are in the table below. Women need to be told when specialist equipment is being ordered, such as a bariatric bed, and why it is needed to avoid embarrassment to the patient when presented with larger equipment.

ITEM	MAXIMUM WT LIMIT (KG)
Waiting room chairs	Approx. 115kg (dependent on style and make)
Examination couches	160kg
Toilet (floor attached)	450kg
Toilet (wall attached)	225kg
Wheelchair	190Kg
Ward Bed with standard mattress	140kg
Ward bed frame	267kg
Labour delivery Bed	225kg
Labour delivery bed foot end	180kg
Operating table	300kg
Operating table lithotomy	150kg
Back up theatre lithotomy	135kg
Pool evacuation net	250kg

Where ever possible these women should move themselves, but where not possible e.g. post LSCS, then attention should be paid to minimise the burden on staff by using safe manual handling practices, and hoists where needed.

These women are also at higher risk of pressure sores. Care should be taken when patients are in bed for a period of time, particularly if in damp situations (e.g. PPROM), to avoid trauma and prolonged pressure in one area.

Intrapartum and Postnatal Care

Super-obese women should deliver in a consultant led unit, even if a multiparous as they still have higher rates of emergency caesarean section (1.5 times higher than BMI 40). Indeed 50% of women with a BMI of >50 will have a caesarean section (60% in primiparous women), and the risk of caesarean section increases by 7% for each BMI unit. Maternal morbidity increase 4 times in an emergency caesarean following labour. Because the risk of caesarean is high these women should have regular ranitidine (150mg 6 hourly in labour), and avoid eating. To keep the mother hydrated high energy still drinks (such as Lucozade sport) may be consumed. As abdominal palpation is difficult, there should be a low threshold for performing a presentation scan. Women admitted for induction of labour should have a presentation scan before starting the induction process.

Obesity by itself is NOT an indication for continuous CTG monitoring. However, if the maternal BMI results in intermittent auscultation being difficult or ineffective then continuous CTG is recommended (and FSE if needed).

Women should be reviewed by the on-call anaesthetist on delivery suite promptly after their arrival. Wide bore intravenous access should be sited as soon as possible, as these women are at a higher risk of post-partum haemorrhage (Odds ratio 1.4). As such these women should be advised to have active management of the third stage.

Pain relief options should be discussed early. It should be emphasised that it may be easier to site an epidural in early labour, before labour pain has become too severe. Remifentanil PCA is an option for analgesia, it should be borne in mind however that these women are at an increased risk of OSA and that it cannot be used to provide anaesthesia for theatre.

For women having a caesarean section it is important that equipment is available to safely manage these women. There needs to be particular attention to patient positioning and pressure points during the surgery. Caesarean sections tend to take longer in this group. Because of the increased complexity a consultant should be present for these women having a caesarean section.

Two anaesthetists should ideally be present for induction of general anaesthesia, including a consultant anaesthetist. An Oxford Help pillow should be used to optimise patient positioning. Patients should receive antacid prophylaxis prior to induction. Patients should be pre-oxygenated with High Flow Nasal Oxygen +/- tight fitting facemask for at least 3 minutes. Consideration should be given to appropriate drug doses in the super obese, with drugs being based on either lean or adjusted body weight. A full range of airway equipment should be readily available, including a video laryngoscope and fibre optic scope. The DAS obstetric airway guidelines should be followed in the event of a failed intubation.

The type of skin incision most suitable for caesarean section in the super obese is not clear. Pfannenstial incisions have been shown to be associated with adverse outcomes in the neonate including low APGARs, NICU admission, skull and long bone fractures when compared to a vertical incision. Data on a high transverse or peri-umbilical incision is still lacking.

The Alexis O retractor is advised regardless of incision type and has been shown to reduce operative times and reduce the need for post op analgesia.

As intra-abdominal pressure is increased consideration should be given to the appropriate suture for closure of the sheath. Loop PDS may be used to close the sheath in place of vicryl.
Subcutaneous tissues should be closed to reduce the incidence of haematomas and seromas. The use of drains does not reduce the rate of complications, and may increase the risk of complications (non-significant increase).

Skin closure should be with a continuous subcuticular suture such as monocryl. Staples reduce operative time but are associated with high rates of wound complication and wound separation.

Vacuum dressing should be used to reduce the risk of wound infection. These remain in place for a week. They are also associated with a reduction in postoperative analgesia. Risk of wound infection is twice that of normal BMI.

Following a General Anaesthetic careful consideration and planning of the process of wake up and extubation should take place. Patients should be extubated wide awake and breathing spontaneously, to lower the risk of post extubation airway complications.

All super-obese women should have VTE prophylaxis post-nataly for 6 weeks. The risk of a VTE event in this group is around 0.5% (4 times higher than obese women in lower classes of obesity).

Initiation and continuation rates of breast feeding are lower in obese women, through a number of environmental, social and physiological factors. Extra support may be necessary to help women with their feeding choices.

It is important that super-obese women reduce their weight before embarking on another pregnancy, and weight management support should continue in the postnatal period. It is therefore necessary to address contraception early in the postnatal period. The only contra-indicated contraception is the combined hormonal methods (combined pill, patch or ring). If there are further risk factors for cardiovascular disease (such as smoking) then it is also advised to avoid depot contraception. The coils, implant and progesterone only pill can be used with no effect on efficacy because of the BMI (no need to double dose the progesterone only pill because of obesity). However, it is necessary to consider the practical aspects of inserting and removing a coil (for example can you see the cervix with a speculum) in the super-obese.

SUMMARY FOR INTRAPARTUM AND POSTPARTUM CARE

- Presentation Scan before starting Induction.
- Continuous CTG is not indicated for obesity
- On call anaesthetic review and IV access assessment
- Ranitidine intrapartum
- If Caesarean Section 2 anaesthetists including consultant, and Obstetric Consultant to be present
- Use Alexis O ring retractor at caesarean section
- Consider PDS for closure of sheath. Subcuticular sutures for skin.
- Avoid drains in the subcutaneous tissue
- Use PICO vacuum dressing
- 6 weeks post partum LMWH

Women with previous Bariatric Surgery

In 2013 66% of women having bariatric surgery were under the age of 50 and at risk of subsequent pregnancy. There are several types of bariatric surgery including Biliopancreatic diversion, gastric bypass, gastric sleeve and gastric band. Regardless of the type of surgery pregnancy is best avoided for 12-18 months following surgery.

Having undergone bariatric surgery these women can NOT undergo the standard glucose tolerance test due to dumping syndrome. Early dumping syndrome occurs 1-60 minutes after food and presents with abdominal pain, bloating, nausea, diarrhoea, flushing, palpitations, tachycardia and hypotension. Late dumping syndrome occurs 1-3 hours post food and produces hypoglycaemia. Therefore, women should have BM monitoring either throughout the pregnancy daily, or pre and post meals for 1 week between 24 and 28 weeks' gestation. Dumping syndrome can occur after any high carbohydrate input.

Having undergone bariatric surgery and lost weight pregnancy outcomes are better with lower rates of gestational diabetes, PIH and pre-eclampsia, and macrosomia. There are however both macro and micro nutrient deficiencies (in particular iron, vitamin B12, vitamin D and calcium), and higher rates of preterm labour. There may also be higher rates of small for gestational age fetus especially in those who had biliopancreatic diversion, or within 2 years of surgery.

Women presenting with abdominal pain in pregnancy following bariatric surgery should have a high index of suspicion for small bowel obstruction, internal hernias, cholelithiasis, and gastric erosion or migration, with early input from the surgeons.

Oral contraception may have reduced efficacy and so non-oral methods of contraception should be advised postnataly.

Key Points

- Need serial growth scans
- Not suitable for GTT
- Early involvement of surgeons if present with abdominal pain
- Non-oral contraception

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Maternity Services

Checklist for Clinical Guidelines being Submitted for Approval

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