Management of Super-obesity (Class IV and V Obesity) in Pregnancy

Author: Louise-Emma Shaw

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Contents

Introduction:
In 2023 61% of adults in Wales were overweight or Obese (defined as BMI over 25). Among women and birthing people obesity (BMI 30+) prevalence is more than 25% and is more than 30% in pregnancy. Not only are rates of obesity in pregnancy 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 (morbid obesity)
- Class IV for BMI 50-59.9 (super obesity)
- Class V for BMI >60. (super-super obesity)

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 clinical care. Ideally these women should engage with pre-conceptual counselling and lose weight before embarking on pregnancy. Women and pregnant people 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. Women and birthing people are more likely to need induction of labour or labour augmentation, with post maturity and macrosomia both twice as likely with a BMI over 50. The baby is more likely to be birthed via caesarean section, have low APGARs at 5 minutes, and babies born are 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 is directly associated with increasing risk).

Obese women in class IV and V

Early pregnancy
Women with class IV and V obesity should be under obstetric-led care in a specialist clinic for obesity, with multidisciplinary input. Attendance at specialist clinic improves outcomes with less stillbirths and small for gestational age fetuses; although induction of labour and caesarean section rates is 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 their medical problems.

Studies have shown these women will also have multiple nutritional deficiencies including calcium, magnesium, iron, copper, vitamin D and D, folate, vitamin K and iodine compared to women of normal BMI. 95% of obese women do not meet the need for the recommended nutritional intake for iron and folate. These deficiencies are associated with higher rates of fetal skeletal malformations, pre-eclampsia, preterm labour, and a small for gestational age fetus. Only 1 in 3 obese women take pre-conception folic acid, with less than 10% of those taking the higher dose. It is therefore recommended that women living with obesity 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 those living with super obesity should be discussed with them at booking. The risk of a neural tube defect increases by 20% above baseline for every 10kg of excess maternal weight. In addition, the quality assurance of ultrasound scans decreases (as adipose tissue absorbs the signal) meaning that the detection of abnormalities is reduced, especially cardiac and neurological defects.

Obesity is a known 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. It is recommended for women to have 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 those living with super obesity, 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 regarding the risks of obesity in pregnancy, along with methods to try and modify their risk. They should be given the 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 which have shown conflicting results. This is primarily due to poor engagement in the lifestyle modifications adopted by women. However, there have been no studies showing that weight loss is harmful during pregnancy, and other studies have even 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%. 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. Anti-obesity medication or weight loss drugs are not recommended in pregnancy due to a lack of safety data.

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

Women who are living with super obesity 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 birth occurs by caesarean section, there is an increased likelihood of developing hypercapnia and hypoxaemia, as well as higher rates of sepsis.
- 6% of super-obese women will require a 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 becoming dislodged.
- Intravenous access is likely to be more difficult in these women.

Accurate assessment of fetal growth via palpation is impossible within this BMI group, and hence serial growth scans should be recommended 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. Please ensure that you use the appropriately sized cuff for each mother.

Women living with obesity should have a thromboprophylaxis risk assessment undertaken. Super obese women are 40 times more likely to have a thrombotic event than those with a BMI <25. BMI of >50 should be considered to give 3 on the VTE scoring chart. Whilst LMWH reduces the risk of VTE, consideration should be given to the risks from thromboprophylaxis, especially the impact on neuraxial anaesthesia. An individualised approach to antenatal management should be taken, considering the risk factors for VTE, risk of needing neuraxial anaesthesia and her own preferences. The highest risk period for thromboembolism is the postpartum period.

There is an increased risk of stillbirth for women living with obesity, therefore maternal surveillance of fetal movements is important. The excess in adipose tissue reduces the amount of fetal movements felt by the mother. There should be a discussion

regarding limitations of tests for ensuring fetal wellbeing with monitoring by CTG not always possible. During labour this may be overcome by using a fetal scalp electrode. The extra difficulties associated with an operative birth means it may not be possible to expedite birth within 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 weeks of pregnancy 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 maternity records.

Induction of labour from 39 weeks of pregnancy may reduce the chance of caesarean birth when compared to expectant management, without increasing the risk of adverse outcomes such as assisted vaginal birth or neonatal respiratory distress syndrome.

SUMMARY FOR ANTENATAL CARE

- Rpt GTT at 26 -28/40 if first one normal
- VTE assessment
- Serial Growth Scans
- Anaesthetic Referral
- Manual Handling assessment
- Birth Plan at 36/40
- Discuss IOL from 39/40

Manual Handling and Equipment

It is imperative that the appropriate equipment is used during care for women living with obesity. The safe weight tolerance for commonly used equipment within maternity are in the table below. Women need to be advised when specialist equipment is being ordered, such as a bariatric bed, along with why this equipment is needed. This will avoid the embarrassment to the mother when presented with larger equipment.

Item	**Maximum weight 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
Pool on MLU / CDS	130kg

Wherever possible women living with obesity should move themselves, but where not possible e.g. post LSCS, then attention should be paid to the use of appropriate and safe manual handling practices, along with hoists where needed.

Women living with obesity are also at higher risk of pressure sores. Immobility, such as prolonged periods in bed , or situations of high moisture exposure (e.g. PPROM), place Women living with obesity at a greater risk of trauma and prolonged pressure in one area. Therefore, surveillance of pressure areas needs to be increased and completed within the maternity bundle.

Intrapartum and Postnatal Care

Superobese women should be advised to labour and birth in a obstetric unit, even if a multiparous, as they still have higher rates of emergency caesarean section (1.5 times higher than BMI 40). 50% of women with a BMI of >50 will have a caesarean section (60% in primiparous), and the risk of caesarean section increases by 7% for each BMI unit. Maternal morbidity increases 4-fold in an emergency caesarean during labour. Because the risk of caesarean is high, women living with obesity should be given regular antacids (omeprazole 20mg 12 hourly) and avoid eating. To keep the mother hydrated, high energy still drinks (such as Lucozade Sport) may be consumed. As an abdominal palpation may be 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 fetal surveillance via continuous CTG monitoring. However, if the maternal BMI results in intermittent auscultation being difficult or ineffective, then the use of a continuous CTG is recommended (and Fetal Scalp Electrode if needed).

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

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, consideration should be made that women living with obesity are at an increased risk of OSA, and that it cannot be used to provide anaesthesia for theatre.

For women living with obesity having a caesarean section, it is important that the appropriate weight-specific equipment is available. There needs to be particular attention to the positioning and pressure points during the surgery. Caesarean sections tend to take longer in this group, and clear communication within the multidisciplinary team is essential. In elective surgery consideration should be given to a combined spinal epidural, and because of the increased complexity, a consultant should be present at caesarean section.

Two anaesthetists should ideally be present for induction of general anaesthesia, including a consultant anaesthetist. An Oxford Hellp 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 those with super obesity 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. Randomised controlled trials on a high transverse or peri-umbilical incision is still lacking, but initial studies suggest no difference in operating time, APGARs, and NICU admission, but lower post operative pain scores and earlier mobilisation compared to Pfannenstial incisions.

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, due to a number of environmental, social and physiological factors. Extra support may be necessary to help with 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 are 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. 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 those living with super-obesity.

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
- Omeprazole 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
- Address post-natal contraception needs before discharge

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Maternity Services

Checklist for Clinical Guidelines being Submitted for Approval

Title of Guideline:	Management of Super-obesity (class IV and V Obesity) in Pregnancy
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