

THE MORBIDLY OBESE PARTURIENT

A. Definitions ¹

Obesity: Body Mass Index $>30\text{kg m}^{-2}$

Morbid Obesity: Body Mass Index $>40\text{kg m}^{-2}$

OR

Body Mass Index $>35\text{kg m}^{-2}$ with obesity related co-morbidity

B.BACKGROUND¹

WHO statistics show obesity and morbid obesity has reached pandemic status globally. Females of reproductive age (16-44years) with this status have more than doubled in the last fifteen years.²

Perinatal maternal and neonatal morbidity is known to be higher than in the Non-obese population. The morbidly obese parturient is a significant challenge to the anaesthetist. Obese women are statistically more likely to require anaesthesia during childbirth as the rates for operative delivery are at least double the baseline.

The most recent Confidential Enquiry into Maternal and Child Health (CEMACH) from 2003-2005 ³, highlights obesity as a factor in four of the eight anaesthesia related maternal deaths:

“Learning points: anaesthesia and obesity

All obstetric units should develop protocols for the management of morbidly obese women. These should include pre-assessment procedures, special community, ward and theatre equipment such as large sphygmomanometer cuffs, hoists, beds and operating tables and long regional block needles. Morbidly obese women should be referred for anaesthetic assessment and advice as part of their antenatal care. Management by consultant anaesthetists is essential and difficulties with airway management and intubation should be anticipated. Positioning the women requires skill

and sufficient manpower in the event of a requirement for induction of general anaesthesia.

Direct arterial pressure measurement may be useful in the morbidly obese women where sphygmomanometry is often inaccurate. All morbidly obese women in childbirth should be given prophylactic low molecular weight heparin and the duration of therapy need to be determined in view of the likely immobility. Thromboembolic stockings of appropriate size need to be available.”

Anticipation of complications (e.g.: initial failed epidural, subsequent failed epidural requiring replacement, inadvertent dural puncture, bloody tap, caesarean section with difficult intubating conditions under emergency circumstances) is the key to reducing their occurrence.⁴

C.PROBLEMS IN THE MORBIDLY OBESE PARTURIENT ¹

Respiratory

Obesity causes a reduction in functional residual capacity which leads to airway closure and desaturation in the supine position. This results in rapid desaturation which can become critical if difficulty is encountered intubating the trachea. Specific history taking should include questions regarding *dyspnoea, exercise tolerance and for obstructive sleep apnoea.*

Supine SpO₂ measurement can be used as a screening tool. Values < 96% on room air may indicate a need for further investigation. (spirometry, arterial blood gases, referral to a respiratory physician).

Airway assessment

Intubation may be more difficult because of a fat pad at the back of the neck, deposition of fat into the soft tissues of the neck, or large breasts. Acid reflux will also be a greater risk.

These factors mean that a senior, experienced anaesthetist should be involved with the case. All difficult intubation equipment should be to hand and antacid prophylaxis should be instituted.

Incidence of failed intubation in the combined states of pregnancy and obesity has been quoted as 33%. i.e. 1 in 3 compared to 1 in 300 for pregnant women and 1 in 3000 in the average population.

Sleep apnoea and obesity hypoventilation syndrome are a possibility. Consideration should be given to the use of non invasive ventilation, possibly commencing pre-operatively.

Cardiovascular disease

This is more common in obese patients and includes hypertension, hyperlipidaemia, ischaemic heart disease and heart failure.

History and examination will reveal some symptoms and signs, but could be limited by exercise tolerance.

Intraoperatively, invasive arterial pressure monitoring may be required if an upper arm cuff is difficult to place.

Metabolic disease

Obesity and pregnancy can predispose to the development of glucose intolerance or diabetes. Complications should be elicited.

Nutritional status may be compromised and this can be addressed pre or post-operatively.

Thromboprophylaxis

Obese and pregnant women are at significantly higher risk of venous and pulmonary thromboembolism.

Throughout pregnancy, perioperatively and peri-partum, there will be a significant number of women who are being treated with prophylactic anticoagulants. Co-ordination needs to be made with agreed guidelines, for regional anaesthesia and analgesia to be provided safely.

D.MANAGEMENT OF THE OBESE PARTURIENT¹

AIMS:

- Early assessment with regard to anaesthesia/analgesia for labour
- Early assessment with regard to airway management for general anaesthesia
- Early discussion with senior medical personnel in obstetrics, anaesthesia and the parturient regarding early epidural placement, and a plan for labour management including thromboprophylaxis
- Early recognition of potential failure/inadequacy of neuroaxial blockade
- Early recognition of logistical problems e.g.: requirement of appropriate equipment/monitoring

ANTENATAL/ PRE-OPERATIVE MANAGEMENT

The recent CEMACH report³ suggested “patient education tailored for the obese pregnant woman has the potential to improve both safety and maternal satisfaction with the childbirth experience”

It is imperative that all pregnant women with booking BMI of ≥ 40 are referred to an anaesthetist for assessment and discussion.

A leaflet is soon being made available which allows the patient to receive information as early as possible and for both medical teams to communicate well concerning appropriate plans of care.

It is impossible to ensure that the assessing doctor will be involved with the woman when she is in labour, so communication of the decisions made, will need to be highlighted by the current anaesthetic alert system.

Height and weight need to be recorded at booking: measured rather than patient reported/guessed values are important. Therefore BMI can be calculated and recorded.

The patient should be assessed in a multi-disciplinary clinic, with access to imaging, laboratories and specialist services such as cardiology and respiratory medicine. Interventions that can reduce risk may be triggered by assessment. E.g.: weight loss, exercise training and treatment of sleep apnoea.

INTRA-OPERATIVE CARE

Regional anaesthesia

Achieving neuroaxial blockade may be difficult and assessment of the blockade may not be straightforward. The important factor will be experience of the anaesthetist. Good pre-operative assessment is essential and alternative anaesthesia strategies must be discussed with the patient. Aortocaval compression can be extreme, and must be anticipated. It can be exaggerated when the panniculus is retracted. Venous thromboembolism prophylaxis needs to be instituted as per guidelines and this must be reviewed, in terms of timing for safe neuroaxial blockade.

General anaesthesia and airway management

It is clear from case reports that the most senior anaesthetists should be fully involved in these cases when morbidly obese patients are involved. This means that full advantage is taken of the experience of senior medical personnel and junior staff remains supported.

Previous anaesthesia related charts should be available for consultation. Any history of obstructive sleep apnoea will give a prediction of airway complications post induction of general anaesthesia. Antacid prophylaxis must be prescribed and administered to the women prior to anaesthesia. This includes ranitidine, metoclopramide and sodium citrate. Adequate manpower will be essential for turning the patient without delay in the event of any emergency. Anaesthetic assistants should be familiar with and prepare difficult airway equipment prior to induction. Reversed Trendelenberg position should be used for pre-oxygenation, to maintain the FRC and prolong the time before desaturation during apnoea.

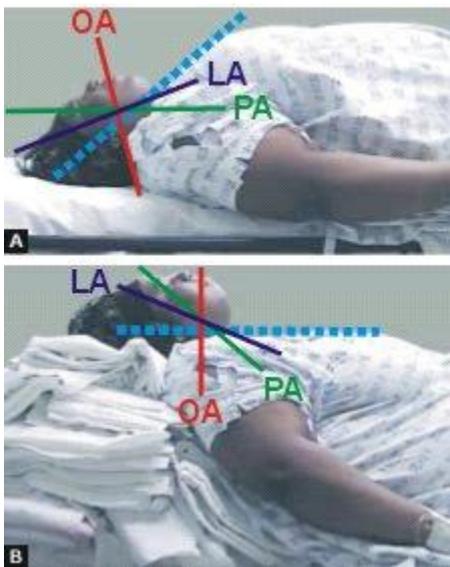
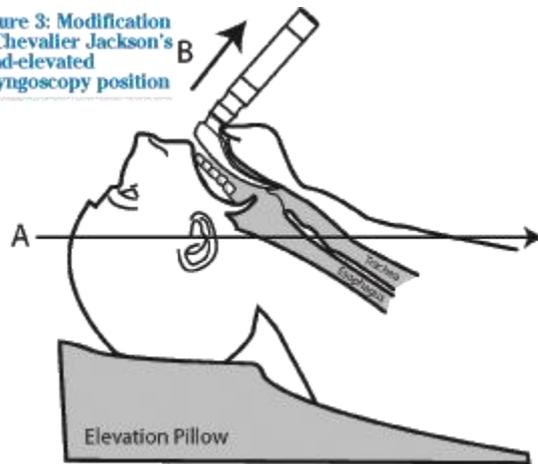
Some studies show that the "ramped" intubating position will give better laryngeal exposure than the traditional intubating position, in morbidly obese populations.

Traditional elevation of the occiput by 7cm is not always possible in these patients.

The head and neck can be elevated with pillows or towels until the external auditory meatus is inline with the level of the sternal notch, when assessing the patient from the side view. This allows the angle between the oral axis, and laryngeal axis to be reduced, and the larynx and pharynx to be relatively less

anterior to the laryngoscope. Intubation and bag/mask ventilation should therefore be easier.

Figure 3: Modification of Chevalier Jackson's head-elevated laryngoscopy position



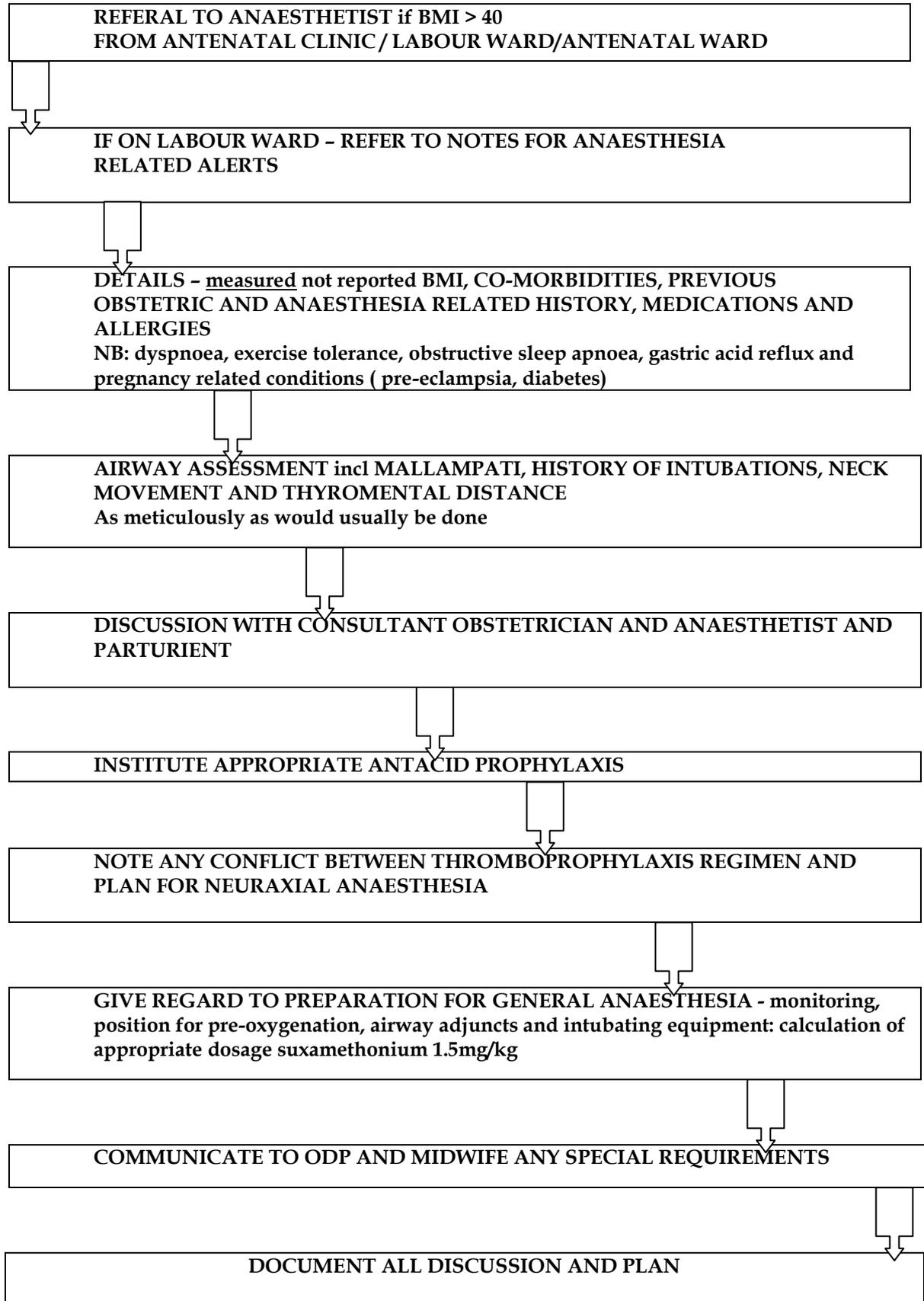
Collins, J.S. et al (2004) Laryngoscopy and Morbid Obesity: a Comparison of the "Sniff" and "Ramped" Positions. *Obesity Surgery* 14: 1171-1175

Some patients may require an awake intubation, for which the appropriate skills and equipment must be present.

POST OPERATIVE / POST PARTUM CARE

HDU care may be appropriate, or close monitoring in the labour ward especially if invasive monitoring has been instituted. Recovery staff need clear communication concerning potential airway and cardiovascular issues. Medical staff should be clear regarding instruction for monitoring and how they can be contacted for advice/review.

E.SUMMARY
MANAGEMENT OF THE MORBIDLY OBESE PARTURIENT



References

1. **Peri-operative management of the morbidly obese patient.** AAGBI June 2007.
2. Saravankumar K et al (2006), **Obesity and obstetric anaesthesia,** *Anaesthesia*, (61): 36-48
3. Cooper, G. M. and McClure, J. H. (2008), **Anaesthesia chapter from Saving Mothers' Lives; reviewing maternal deaths to make pregnancy safe,** *British Journal of Anaesthesia*.100 (1): 17-22 (2008)
4. Whitty et al (2007) **Complications of neuraxial anaesthesia in an extreme morbidly obese patient for caesarean section,** *Int J Obstet Anesth.* (16):139-144.