Review Surgical risk from obesity in gynaecology

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Key content:
• Obesity is common among women attending gynaecology clinics.
• Many gynaecological conditions previously managed with major surgery can be managed in alternative ways with less risk.
• When surgery is indicated, strategies are available to assess risk and reduce complications.

Learning objectives:
• To understand the problems associated with surgery in the presence of obesity.
• To plan appropriate assessment and management when surgery is considered in the presence of obesity.

Ethical issues:
• Can surgeons refuse surgery if they deem the risk too high?
• Advice from a colleague should always be considered in difficult clinical situations.

Keywords anaesthesia / body mass index / laparoscopic surgery / preoperative preparation / surgical incision / thromboprophylaxis
Introduction

Obesity (excess body fat) is now regarded as a global epidemic by the World Health Organization. In the UK, a House of Commons Health Committee report has predicted that obesity is likely to overtake smoking as the country’s leading health problem. The overall incidence of obesity is rising and the incidence rises with age. Women have higher rates of obesity but they still have a longer life expectancy than men.

Obesity is typically measured by body mass index (BMI) — weight in kg/height in m² — although other measures of obesity, such as waist:hip ratio, are used in epidemiological studies and may be a more accurate predictor of risk. A BMI > 30 indicates obesity and increases the risk of surgical complications. In isolation, a BMI > 30 is a poor predictor of risk and the presence of comorbidity is more important. However, the principal concern in surgical practice is for people with a BMI > 40 (morbid obesity), as this has additional risks in itself. Individuals with a BMI > 35 and comorbidity should be managed as for those with a BMI > 40.

Indications for surgery

The first consideration is to ensure that surgery is appropriately indicated, particularly if an anaesthetic is proposed (see Box 1). Many gynaecological conditions can be treated without surgery and weight loss alone will improve conditions such as stress incontinence. Clinical examination of the obese person can be limited and skilled ultrasonography is helpful. Obese women should receive careful counselling about the increased risk of complications and technical difficulties that may be encountered during surgery. They should be weighed and assessed and a weight loss programme should be offered, providing they are willing to change. Weight loss and exercise are, clearly, useful options, but they take time and motivation. Conservative therapies, such as the levonorgestrel-releasing intratruerine system for menstrual dysfunction; bladder retraining and physiotherapy for urinary problems; and pessaries for prolapse, should readily be considered for women who are obese.

Communication

Appropriate terminology should be used when counselling obese women, as many are embarrassed by their obesity and have tried hard to lose weight. The discussion about risks may be distressing to them, but it is clearly the doctor’s duty to help them understand the problem from a medical point of view and grasp how the doctor is working to reduce the risks as far as is possible. If a weight loss programme fails, there may be a case for considering bariatric surgery. Failed conservative treatment, a BMI > 35 and the presence of severe comorbidities may indicate surgery, although availability on the National Health Service is variable. Women with gynaecological malignancies or conditions such as pelvic mass need urgent evaluation before being advised about any such weight loss regimen.

Preoperative preparation

The best way to ensure a safe and successful procedure is adequate preoperative evaluation, preparation and counselling. In each case, weight and height should be recorded and the BMI calculated and clearly documented in the notes. Preoperative evaluation should include a cardiovascular and respiratory history and relevant examination. The nature of the proposed procedure needs to be considered, as abdominal procedures are more of an issue than vaginal surgery. Women with morbid obesity should be reviewed in an anaesthetic review clinic.

Obesity is associated with conditions such as diabetes mellitus, hypertension and ischaemic heart disease. Morbid obesity is associated with left ventricular enlargement and systolic and diastolic dysfunction, even in the absence of overt cardiac disease. The risk of atrial fibrillation is similarly increased. A further issue with the obese population is obstructive sleep apnoea, a condition associated with sudden death during sleep from myocardial infarction or arrhythmia. There is no correlation of BMI with the severity of obstructive sleep apnoea and specialist investigations will be required if the condition is suspected from a history of daytime somnolence, morning headaches and nocturnal wakening. Partner reports of loud snoring and apnoic episodes during sleep should

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**Box 1**
Considerations regarding gynaecological surgery in obese women

<table>
<thead>
<tr>
<th>Alternative treatments</th>
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<tbody>
<tr>
<td>Weight loss (food intake, exercise, support, medication, bariatric surgery)</td>
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<tr>
<td>Levonorgestrel-releasing intratruerine system for bleeding problems</td>
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<tr>
<td>Gonadotrophin-releasing hormones for pelvic pain</td>
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<td>Bladder retraining and physiotherapy for urinary problems</td>
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<td>Vaginal pessaries for prolapse</td>
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<tr>
<th>Risks from surgery</th>
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<tr>
<td>Infection</td>
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<tr>
<td>Thromboembolism</td>
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<tr>
<td>Surgical difficulty</td>
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<td>Failure to complete surgery</td>
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<td>Bleeding</td>
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<td>Organ damage</td>
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<th>Anaesthetic problems</th>
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<td>Cannulation</td>
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<tr>
<td>Airway and ventilation</td>
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<tr>
<td>Lifting and moving the woman</td>
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<tr>
<td>Analgesia</td>
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<td>Nausea and vomiting</td>
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be noted. Room air pulse oximetry can be a useful screening test and a saturation of <96% on air is an indication for more intensive investigations.

The anaesthetist will consider whether tracheal intubation and airway management will be difficult due to adipose tissue in the neck and limited neck/cervical spine movement. The use of regional anaesthesia is to be encouraged: as well as the anaesthetic benefits, this helps with postoperative analgesia and reduces the risk of thromboembolism by half. In practice, regional anaesthesia may prove difficult or even impossible, but the availability of an experienced anaesthetist will minimise technical failure.

Thromboprophylaxis
It is well recognised that the risk of perioperative deep vein thrombosis and pulmonary embolism is higher among obese people than among those of normal weight. Venous stasis is more pronounced and postoperative mobility reduced. Obesity is also associated with increased levels of fibrinogen and factor VIII. Although rarely used in obese women, hormone replacement therapy and contraceptives containing estrogen should be stopped 4 weeks before surgery. Appropriately sized antithromboemolic stockings should be used and mechanical devices such as intermittent pneumatic compression are recommended. Low molecular weight heparin, such as enoxaparin 40 mg daily, starting a minimum of 2 hours postoperatively, is advised unless there is a risk of bleeding. This should be continued throughout the hospital stay and for 1 week after surgery. Treatment should be extended to 4 weeks in cases of pelvic surgery for malignancy. If appropriate, hormone treatment can be restarted once the additional risk of thrombosis has passed after 4 weeks.

Equipment and general considerations
Clear and early communication is needed between staff involved in the management of these women, as time is needed to plan personnel and the availability of resources such as equipment. All staff should undergo appropriate manual handling training to protect both themselves and patients. Every operating table, trolley and bed should be labelled with its maximum weight capacity. Special hospital beds should be available that can accommodate the weight and enable movement of the patient without manual handling. A standard operating table can usually support a body weight of 130–160 kg and most theatres have tables available for supporting a body weight of up to 300 kg. Width extensions can be used on some tables to prevent the patient’s body overhanging the edges of the table. It may be more appropriate to perform procedures on the patient’s bed, as they are at significant risk when being moved from the operating table to a bed. However, beds are significantly wider than operating tables, leading to difficulties for anaesthetic and surgical teams. All equipment should be electronically operated. Many issues arise out of hours, therefore, if surgery cannot be delayed, it is recommended by the Royal College of Anaesthetists in the UK that there are ‘obesity packs’ with specific equipment and guidelines. Obese people are at risk of slipping off the table during position changes and, therefore, they must be well secured to the table. All pressure points should be well padded, as there is a risk of nerve injury and of rhabdomyolysis of the gluteal muscles leading to renal failure among the morbidly obese.

Anaesthetic considerations
Induction of anaesthesia and preparation for surgery will take extra time. Even peripheral venous cannulation can be difficult; central venous access may be required. Ultrasonography may be useful in identifying structures. Arterial monitoring is advocated for many people with morbid obesity, particularly for prolonged procedures. Endotracheal intubation can be challenging even for the most experienced anaesthetist and there can be difficulty with ventilation during the procedure.

Laparoscopic surgery
Obesity used to be considered a relative contraindication to laparoscopic surgery because of a higher rate of failed entry, hindered manipulation and poor views. Excessive weight on the thorax can cause difficulty in ventilation, particularly in steep head-down positions. Recently it has become clear that in skilled hands laparoscopic surgery has additional benefits for the obese: they have less postoperative ileus, fewer wound infections and they mobilise more quickly than those undergoing laparotomy. It is now accepted that, in the hands of experienced surgeons, obesity is not a contraindication to laparoscopy and may be a positive indication. When indicated, bariatric surgery is also performed laparoscopically, usually to insert an adjustable band around the upper part of the stomach to reduce food intake.

Laparoscopic entry can be a challenge and a number of factors need to be considered. The abdominal wall anatomy is distorted by the overhanging skin and fat (usually referred to as the pannus or panniculus). As a result, the umbilicus hangs low and is caudal to its normal position. The pannus may be soft and mobile, allowing repositioning, but this is not always possible. Identification of the ischial spines, xiphoid process, costovertebral edge and bifurcation of the aorta in relation to the umbilicus is important. A consensus view document states that, to reduce intraoperative problems, the abdomen should not be elevated by traction before insertion of the Verres needle. Elevation is associated with a higher rate of failed entry, according to a trial conducted.
by Briel et al. When inserting the Verres needle in obese individuals, the incision should be made right at the base of the umbilicus and the needle inserted vertically into the peritoneum. This means that standard Verres needles should be sufficient. Nevertheless, the Royal College of Obstetricians and Gynaecologists recommends the open (Hasson) technique or entry at the Palmer’s point for morbidly obese women.

Open surgery: abdominal wounds

Obesity presents problems with incision placement and closure. Adequate wound antisepsis is necessary, as obese women are at increased risk of wound infection and wound failure. Possible aetiologies include: decreased oxygen tension; immune impairment; and tension and secondary ischaemia along suture lines. It is important to take special care with cleaning under the pannus and in the groin area. Although it is tempting to use an incision below the pannus, where there is less adipose tissue, such wounds are at increased risk of infection because of the anaerobic moist environment of the subpannicular fold. However, transverse incisions higher on the abdominal wall require division of the rectus muscle and tend to be more vascular. Antibiotics are an essential part of any strategy for reducing wound infection, but the lowest infection rates are associated with antibiotic administration before the incision is made.

As the umbilicus is displaced, it is not useful in positioning the incision as the position relative to the pubis changes. Thus the pubis has to be considered as a landmark to decide where to perform the incision. A midline incision in the extremely obese person gives ease of access and the pannus can be retracted caudally to enable such an incision to be made. The sheath can then be incised down to the symphysis without incising the pannus itself.

At laparotomy, access to the pelvis can be challenging and there is a higher incidence of intraoperative complications due to problems with access or distorted anatomy. Difficulty with haemostasis, particularly among women when removing the cervix and suturing the vaginal vault, requires experience to manage. Subtotal hysterectomy is an acceptable procedure in the absence of malignancy and with a satisfactory smear history. Good assistance, retraction and lighting are essential. Flexible illuminators are available which can provide good light in deep cavities and long instruments are all helpful.

Panniculectomy has been reported in these situations and can help exposure for surgery, but this requires the presence of a plastic surgeon and significantly prolongs operating time. Reports confirm an increase in operative time, transfusion requirement and pulmonary embolism among these patients, but also high patient satisfaction at 24-month follow up. Panniculectomy should not be regarded as a cosmetic procedure in these circumstances, but is not widely practised in the UK.

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prolapse. Doctors should act in the best interests of their patients and that may mean refusing surgery when the risk is assessed as too high. The General Medical Council states that a doctor “should provide effective care based on the best available evidence” and patients do not have an automatic right to treatments on demand. Most people will accept a specialist’s advice, particularly when appropriate written information is provided. However, they do have a right to a second opinion and, similarly, doctors should ‘consult and take advice from colleagues, where appropriate’.

Conclusion

All gynaecologists involved in surgery for obese women should be aware of the potential problems and individual units should have a clear pathway of care and guidelines for their management. Doctors should consider the need for a particular procedure and the likely benefits and risks. They should have a frank discussion with the woman and involve her in decision making. A second opinion from a colleague may be desirable and asking a colleague to accept a specialist’s advice, particularly when evidence’.

Important changes to CPD Questions in TOG

- The answers to the CPD questions will not be published in the future.
- There is no longer a deadline for submission of answers to CPD questions.
- From 1 June 2010, you can claim two CPD credits for each set of questions (70% of answers correctly answered).
- You can self-select the articles but these should fit your clinical profile and should be discussed through the appraisal process.
- You are no longer restricted to submitting answers to a maximum of five articles per issue.

References

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