

Should Laparoscopy be Performed in the Morbidly Obese? An Expert Opinion Supporting Conventional Laparoscopy and Intraoperative Considerations for the Patient with Obesity with Benign Gynaecological Conditions

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INTRODUCTION

Obesity presents significant challenges in laparoscopic surgery. Traditionally, laparoscopic procedures are considered difficult for patients with obesity, with evidence indicating longer operating times, increased blood loss, extended recovery periods and higher rates of complications, including a greater likelihood of converting to laparotomy.¹⁻⁴ Consequently, patients with obesity are less frequently offered laparoscopic options.^{1 5 6}

Recent statistics reveal an alarming rise in obesity rates. The World Obesity Federation projects over one billion people worldwide will be affected by obesity, with 42% of adults in the USA currently classified as obese.^{7 8} While the WHO categorises obesity into class I (body mass index (BMI) >30), class II (≥35) and class III (≥40), the escalating rates of obesity are prompting the emergence of new categories such as super obesity (≥50) and super-super obesity (≥60) to address extreme cases.^{9 10}

Based on these trends, it is crucial for surgeons to reassess their approach for treating patients with obesity and strongly consider laparoscopic surgery as a viable option for the morbidly obese as overall risks are much lower than those for laparotomy.¹¹ In this editorial, we will explore key intraoperative considerations for traditional laparoscopy and evaluate the feasibility and benefits of performing laparoscopic procedures in patients with severe obesity.

INTRAOPERATIVE CONSIDERATIONS

Prophylaxis

Given wound infection and venous thromboembolism (VTE) are elevated risks in patients with obesity, appropriate prophylaxis is considered. The Caprini score evaluates the best mode of VTE prophylaxis per patient, and frequently patients with obesity have a higher score requiring chemoprophylaxis in addition to mechanical prophylaxis.¹²

Antibiotics are not typically indicated in patients undergoing conventional laparoscopy other than hysterectomy. However, history might indicate a prior surgical site infection, leaning a surgeon towards administering antibiotics. For appropriate antibiotic coverage during a laparoscopic hysterectomy, patient weight is factored. With a weight of >120 kg, 3 g of cefazolin should be administered, while 2 g suffice below this weight.³ Additional chlorhexidine scrubs may be applied for adequate coverage of all abdominal skin.

Positioning

Positioning for patients with obesity is key to success for any laparoscopic procedure. The patient should be positioned to optimise visualisation and limit any physical barriers while operating. The surgical table should be able to accommodate a patient's weight, such as a bariatric bed. After induction of anaesthesia, legs are placed in appropriately sized stirrups and additional padding placed to avoid nerve injuries.³ Each arm should be padded and tucked with a drawsheet at the side. Bedside

arm extenders are used if the patient's girth exceeds the width of the operating table.

Techniques to prevent patients from sliding in Trendelenburg position include gel or foam pad, surgical bean bag, Velcro straps or taping of the chest and shoulders.¹³ The patient's pannus should be evaluated both in and out of Trendelenburg to assess for port placement. Additional padding and tape can be applied to elevate the pannus and excess subcutaneous tissue within the mons to allow for optimal manipulator placement and manoeuvring. Step stools are often needed as the height of an obese abdomen can be significantly higher than a patient without obesity on the operating table.

Abdominal Entry and Port Placement

Abdominal entry and port placement are often arduous in the morbidly obese given the distribution of adipose tissue. In our practice, the left upper quadrant (LUQ) entry is preferred, regardless of BMI, as it is the safest abdominal entry location. As such, an orogastric tube is placed to decompress the stomach. LUQ is an imperative skill for all laparoscopists to master as it is necessary to perform in patients with surgical history or when insufflation with Veress needle fails. The initial intra-abdominal pressure is slightly higher in individuals with obesity, so operator experience with Veress needle placement or direct optical entry, if utilized, is crucial.^{13 14} If direct optical entry is performed, one needs to be well acquainted with the abdominal layers as the adipose tissue is thicker between layers in the obese. Abdominal insufflation should not exceed 25 mm Hg and often needs to be set to a lower pressure based on patient's tolerance or comorbidities.

When considering medial port placement, one should understand the effect of obesity on the anatomic umbilicus and its relationship to the aortic bifurcation. In the patient with obesity, the umbilicus is caudally displaced and lower than the aortic bifurcation. As such, the umbilical port should be placed superiorly to ensure an adequate operative field, keeping in mind proximity of critical vascular structures. Additional ports may be placed more cephalad, such as at the level of the medial port. A suprapubic port is helpful in challenging cases where visualisation is limited due to Trendelenburg positioning, minimal insufflation pressure or visual obstruction from bowel.

For BMI \geq 40, balloon trocars should be considered given the additional stability and decreased risk of displacement when introducing or removing laparoscopic instruments. If balloon trocars are not available, long trocars are an option. Additionally, 30° laparoscopes improve visualisation, especially when Trendelenburg positioning or insufflation is limited. Long laparoscopic instruments may be used to reach the depths of the pelvis.

Justification for Performing Laparoscopy in the Morbidly Obese

As minimally invasive gynaecological surgeons, we support the routine performance of laparoscopy in the obese and morbidly obese. In our practice, we perform total laparoscopic hysterectomies and other laparoscopic procedures in patients with varying degrees of obesity, including those classified as morbidly obese, super morbidly obese and super-super morbidly obese. In a recent 12-month period, our practice has conducted 296 laparoscopic procedures, comprising 160 operative laparoscopic procedures and 136 total laparoscopic hysterectomies. Of these, 154 patients (52%) had a BMI \geq 30, 48 (15%) had a BMI \geq 40 and 16 (5.4%) had a BMI categorised as super obese or super-super obese. Notably, 4 procedures were performed in the super-super obese, including 2 with a BMI \geq 70. Of note, most procedures performed in the obese (35.8%) were within the BMI range of 30–39.9.

The overall complication rate among our patients with obesity was 3.9%, with a total of 6 complications. Most of these complications occurred in patients with a BMI of 30–39.9 and included complicated urinary tract infection requiring hospital readmission, intraoperative cystotomy repair and a return to the operating room for intra-abdominal bleeding secondary to omental injury. In the BMI 40–49.9 group, complications included a subcutaneous haematoma and an umbilical hernia requiring surgical intervention. No complications were observed in patients with BMI of 50–69.9. For BMI \geq 70, only 1 complication occurred, a wound infection necessitating hospital readmission. Consequently, the complication rate for patients with morbid obesity (BMI \geq 40) was 6.2%, with a reoperation rate of 2% and overall favourable outcomes. Importantly, there were no conversions to laparotomy nor complications related to abdominal entry. This data collection is ongoing in a detailed retrospective study at our institution to further substantiate our position that laparoscopic surgery is safe and should be considered a viable option for patients with morbid obesity.

In support of our opinion, Le Neveu *et al* reported that obesity did not impact length of stay or adverse perioperative events in patients undergoing minimally invasive hysterectomy for benign conditions, though operating time and blood loss were increased.¹⁵ Similarly, Rajadurai *et al* found no increased complication rates associated with total laparoscopic hysterectomy in patients with obesity.¹⁶

A review of literature shows that high-volume gynaecological surgeons generally report better outcomes, fewer complications, increased utilisation of minimally invasive techniques and shorter operating times compared with their low-volume counterparts.^{17–20} Thus, surgeon volume is an essential consideration when operating in the obese, super obese and super-super obese.

CONCLUSION

Laparoscopy can be performed safely in patients with obesity when appropriate perioperative considerations

are applied. With appropriate training and experience, this surgical technique, along with other minimally invasive techniques, should be offered as a first-line option for surgical management. Future research should continue to investigate outcomes in laparoscopic surgery specifically in those with a BMI ≥ 40 , with a focus on those with super obesity and super-super obesity.

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