OBG MANAGEMENT

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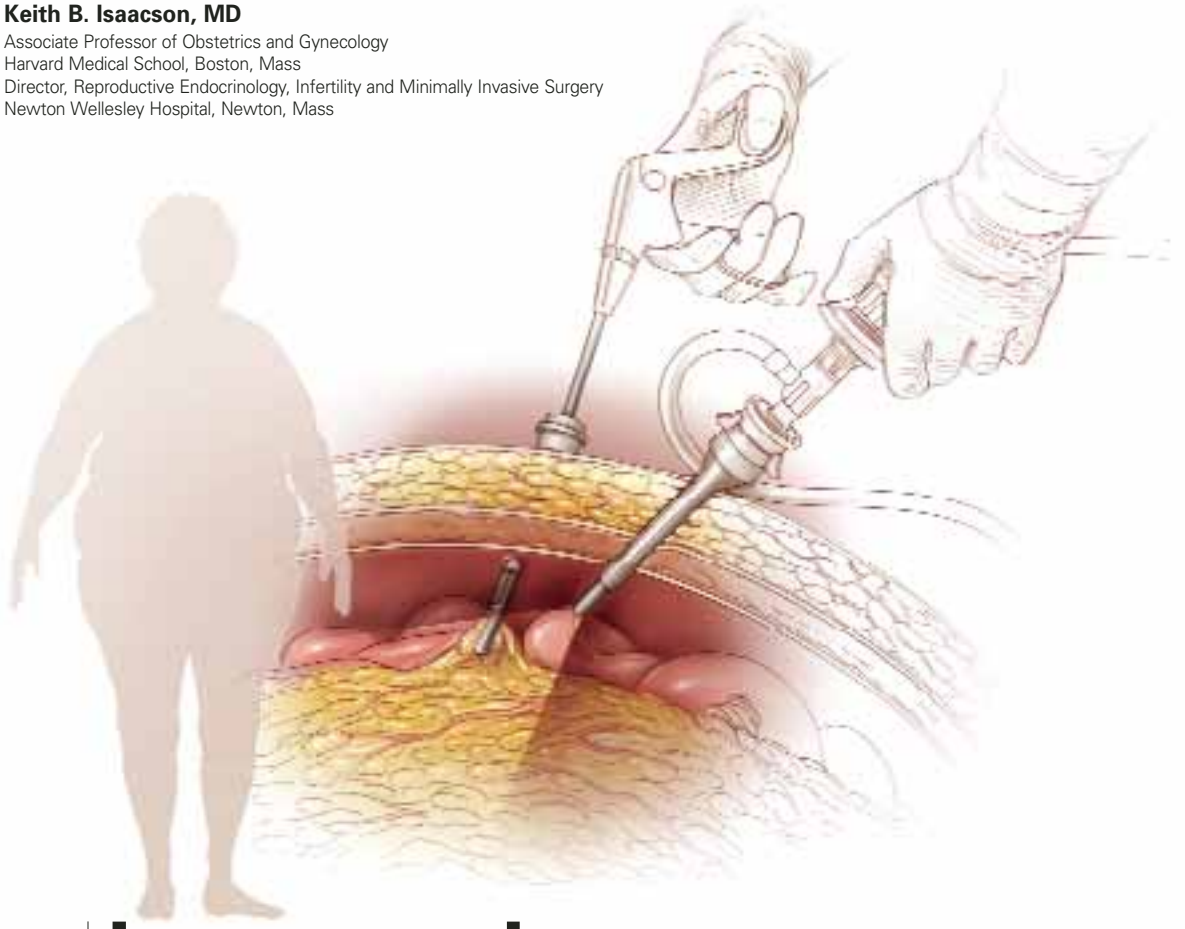

IMAGE: JENNIFER FAIRMAN

IN THIS ARTICLE

Laparoscopic surgery in the obese: Safe techniques

Increases in atelectasis, wound infection, and other risks after laparotomy point to laparoscopy as the safer route.

Gynecologic laparoscopy in the obese? What was once the purview of the very talented or the foolhardy may now be the preferred surgical approach.

Obese women who undergo laparoscopy recover faster, with less pain, fewer wound infections, and shorter hospital stays than with laparotomy. Though it is true that obesity increases operative time and the risk for conversion to laparotomy, little evidence supports the theory that a body mass index (BMI) of 30 kg/m^2 or higher should exclude laparoscopy.

Preoperative management

Unique elements of the physical

It is important to identify central obesity, which is more difficult to accommodate than distribution around the hips. Unfortunately, the roughly 40 million obese Americans tend to have central fat distribution.[1,2]

In central obesity, the subcutaneous tissue is thick, often requiring extra long ports to attain peritoneal access.

The relationship of the umbilicus to the underlying aortic bifurcation also shifts more caudally. This relationship should be

noted and planned for before going to the operating room (**FIGURE**, page 69).

Abdominal obesity in particular confers additional risks during all types of surgery: higher rates of atelectasis, thromboembolism, cardiovascular dysfunction, and wound infection.

Closely inspect the skin and panniculus after a routine examination. Obesity predisposes patients to dark, moist, anoxic spaces beneath folds of skin that need to be identified and inspected for evidence of fungal or bacterial infection. To optimize postoperative wound healing, treat any preexisting infections before surgery.

Cigarette smoking further burdens pulmonary mechanics and oxygenation during surgery, so it is important to encourage smokers to kick the habit at least 8 weeks before elective surgery.[3]

In general, use the history and physical examination to focus on the recognized risk factors of obesity, with specific emphasis on hypertension, coronary artery disease, arrhythmia, pulmonary obstructive disease, peripheral vascular disease, diabetes, gastric reflux, and arthritis.[4]

Special tests and laboratory studies

EKG and chest x-ray. In morbidly obese patients (BMI >40), preoperative evaluation includes an electrocardiogram (EKG) and chest x-ray to identify any cardiomegaly, arrhythmias, and occult ischemia or conduction blockage.

Arterial blood gas sampling. Given the higher risk of postoperative thrombotic events in obese patients, it can be helpful to assess preoperative oxygenation and ventilation/perfusion status via arterial blood gas sampling. The obese may have elevated baseline Aa gradients, which, if not noted prior to surgery, can confuse later management of suspected pulmonary emboli.

During testing, assess venous access and counsel the patient if central venous line placement may be possible at surgery. Though central line placement is not routinely recommended, it may be warranted in patients with particularly difficult peripheral venous access.

Skip pulmonary function testing because the results rarely change surgical management. We consider its routine use to be wasteful.

Laboratory evaluation should include beta-human chorionic gonadotropin (in premenopausal patients), complete blood count, electrolytes, glucose, renal function, and type and screen.

Spell out risks at informed consent

The preoperative appointment is your chance to answer questions the patient may have and clearly delineate the risks and benefits of surgery. During this discussion, spell out the increased risks of conversion to laparotomy, prolonged anesthesia, postoperative thrombosis, wound infection, and pulmonary complications, and make sure all are listed on the written consent form.

Operative management

Prophylactic measures

Complete bowel preparation is recommended the evening prior to surgery, since intraabdominal visualization can be difficult and conversion to laparotomy may be necessary. Bowel prep decompresses the lumen, improving visualization and the outcome of any bowel injury.

Preoperative histamine receptor blockade is recommended for optimal results, since higher body mass can lead to increases in low pH gastric volume and difficulties with intubation.[5] A typical regimen is 50 mg intravenous (IV) ranitidine 20 minutes prior to surgery.

Beta blockade. All patients with hypertension or a history of coronary artery disease should receive preoperative beta blockade, assuming there are no contraindications such as reactive airway disease or cardiac conduction block. Atenolol 10 mg IV 20 minutes prior to surgery is a standard initial dose. All patients already taking beta blockers should simply continue their home regimen through the day of surgery with small sips of water.

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FAST TRACK

To prevent wound infection, give 1–2 g of a 1st- or 2nd-generation cephalosporin intravenously 20–30 minutes before anesthesia

INTEGRATING EVIDENCE AND EXPERIENCE

Zeroing in on pneumoperitoneum

What are the effects of pneumoperitoneum and posture in obese women undergoing gynecologic laparoscopy? A recent study[13] compared 8 morbidly obese patients with 9 normal-weight controls and confirmed previous evidence that morbidly obese, supine, anesthetized patients have a 68% increase in inspiratory resistance and a 30% decrease in static pulmonary compliance, compared with controls. Pneumoperitoneum further increases this resistance and diminishes compliance.

Oxygenation is not affected

Somewhat surprisingly, this study did not detect significant changes in respiratory mechanics with head down or up positioning, and despite the exacerbation of pulmonary mechanics with pneumoperitoneum, there was no significant change in oxygenation.

The conclusion: While pneumoperitoneum impairs respiratory mechanics during anesthesia in the obese, body mass is the only variable that significantly affects oxygenation. If an obese patient can tolerate anesthesia and supine positioning—necessary for both laparoscopy and laparotomy—she is likely to tolerate changes in position and pneumoperitoneum as well.

These findings also hold true in patients undergoing bariatric surgery,[14] with no significant differences in respiratory mechanics or arterial oxygenation during either laparoscopic or laparotomic surgery.

Virtually all procedures are safe

In gynecology alone, practically all of the procedures commonly performed in women of normal weight have been studied and found to be safe in obese patients. They include adnexal surgery, myomectomy, total laparoscopic hysterectomy,[15-18] management of tubal ectopic pregnancy,[19] endometrial cancer,[20] and pelvic/periaortic lymph node dissection.[20,21]

Two ways of comparing outcomes

Well-designed studies tend to fall into 2 camps: those that compare laparoscopy in obese patients with laparoscopy in nonobese patients, and those that compare laparoscopy in obese patients with laparotomy in obese patients.

1. A review of the gynecologic literature in the first camp[15-18,22-24] reveals little to no difference between cohorts with respect to estimated blood loss, operative and postoperative complications, and hospital stay. The nongynecologic literature on laparoscopy in obese versus nonobese patients tends to corroborate these findings, with an overall trend toward increased operating times and conversion rates.[25-30]

2. In comparing laparoscopy with laparotomy, researchers found that total operative time tends to rise with laparoscopy.[20,21,31] Otherwise, laparoscopy confers benefit or no difference with respect to hospital stay, postoperative pain, estimated blood loss, lymph node counts, postoperative complications (fever, ileus, wound infection), convalescence, and total medical cost.[32,33]

Antibiotics. The high rate of postoperative wound infection in obese patients makes preoperative antibiotic treatment logical. Although we were unable to find any studies demonstrating the benefit of routine antibiotic prophylaxis in obese patients undergoing laparoscopy, data do show a benefit when laparotomy is performed.

If no allergies or contraindications exist, give 1 to 2 g of a first- or second-generation cephalosporin intravenously 20 to 30 minutes prior to anesthesia induction.

Sequential compression devices. Since both obesity and gynecologic surgery are risk factors for deep venous thrombosis, use large sequential compression devices on the lower extremities, beginning before induction of anesthesia.

Position the patient for optimal access

Only 1 recent publication explores this issue in obese laparoscopy patients. Lamvu et al[5] advocate the arms-tucked ("military"), low lithotomy position, with liberal

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padding on the legs and arms and a gel pad under the lower back. They also recommend stationary shoulder blocks to help maintain positioning in the Trendelenburg (head down) position, and they use clamps, gauze, weights, and tape to maintain the panniculus in its caudad position.

Novel technique realigns umbilical axis. We, too, use padding liberally on all pressure points, but do not weight the panniculus. In fact, we prefer its cephalad migration in the Trendelenburg position. Pelosi and Pelosi[6] describe a useful technique to realign the umbilical axis cephalad before placing the first trocar (**FIGURE**). Once the Trendelenburg position is attained (after initial trocar placement), this cephalad position eases ancillary port placement.

Tucking 1 arm facilitates surgery, anesthesia access. Tucking both arms is ideal but not always feasible. It is especially problematic when adipose tissue surrounding the biceps makes the military position impossible. Further, anesthesiologists may be unwilling to abandon access to the peripheral intravenous site, since placement and emergency replacement can be difficult.

Central venous access is always an option but is not without risk and should be avoided, if possible. A creative alternative: Tuck the nonaccessed arm at the patient's side and place the other arm over the chest. Maintain this position by tucking a sheet over the chest. This gives the anesthesia team access to 1 arm while facilitating ideal surgeon positioning.

Do not use shoulder blocks when the patient's arms are extended, as this increases the risk of brachial plexus injury should the patient slide.

Success hinges on port placement, pneumoperitoneum

The success or failure of most laparoscopic surgeries is determined in the initial minutes during placement of the operative ports. This is especially true in obese patients. No single variable is more important to successful laparoscopy in obese patients than the establishment of pneumoperitoneum.

Entry variables of 3 body types. Obesity increases the distance between skin and fascia, and can increase the distance between fascia and peritoneum. The difficulty of placing the Veress needle or trocar into the peritoneal cavity increases with this distance. Preperitoneal insufflation of gas exacerbates the problem. In addition, dissection to the level of the fascia for an open (Hasson) approach sometimes requires incision extension and increases the risk of postoperative wound infection.

Obesity also changes the relationship of the umbilicus to the aortic bifurcation. Utilizing computed tomography, Hurd et al[7] demonstrated that the umbilicus migrates caudally in relation to the aortic bifurcation as the BMI increases. In nonobese patients (BMI <25), the umbilicus had a median location 0.4 cm caudal to the bifurcation, but in 33% of patients the umbilicus was actually cephalad to the aortic bifurcation. In overweight (BMI 25 to 30) and obese (BMI >30) patients, the umbilicus had a median location 2.4 and 2.9 cm caudal to the aortic bifurcation, respectively. However, in both groups, the umbilicus was directly over the aortic bifurcation in 30% of patients.

The same group of researchers, again using computed tomography, demonstrated that the distance between the umbilicus and peritoneum at a 45° angle from the umbilicus into the pelvis, in both nonobese and overweight patients, was only 2 cm. In obese patients, this distance increased to a median of 12 cm. Hurd et al[8] also noted that the distance between the umbilicus and the underlying vessels was only 6 cm at a 90° angle in nonobese patients, but averaged 13 cm in obese patients.

To optimize intraperitoneal Veress needle and trocar placement while minimizing risk to the underlying vasculature, Hurd and colleagues recommend a 45° angle from the umbilicus toward the pelvis in nonobese patients and a 90° approach in obese patients. In overweight patients, the approach should range between 45° and 90° (**TABLE 1**).

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FAST TRACK

If an obese patient can tolerate anesthesia and supine positioning, she is also likely to tolerate pneumoperitoneum and changes in position

TABLE 1

Instrument placement in laparoscopy: Anatomic distances and suggested angles

GROUP	DISTANCE FROM THE UMBILICUS (CM)			RECOMMENDED PLACEMENT ANGLE
	TO BIFURCATION	TO PERITONEUM	TO VESSELS AT 90°	
Nonobese (BMI <25)	0.4 ± 1.6	2 ± 2	6 ± 3	45°
Overweight (BMI 25–30)	2.4 ± 1.9	2 ± 1	10 ± 2	45–90°
Obese (BMI >30)	2.9 ± 2.5	12 (median)	13 ± 4	90°

Data are presented as mean ± standard deviation, median, or degrees from horizontal
Source: Hurd WW, et al[7]

FAST TRACK

Realigning the umbilical axis prior to entry reduces the depth of open dissection and prevents piercing both sides of the panniculus

Gaining intraperitoneal access: Which approach is best?

A number of studies and case series have explored the fundamental difficulty of gaining intraperitoneal access. Pasic et al[9] retrospectively analyzed outcomes in separate cohorts of obese and nonobese patients, focusing on 4 entry approaches:

- transumbilical open,
- transumbilical Veress needle placement,
- subcostal Veress needle placement in the midclavicular line of the left upper quadrant, and
- transuterine Veress needle placement.

The only group that demonstrated a significantly higher failure rate for obese patients was the open approach. Ultimately, the authors recommended using the Veress needle in the left upper quadrant or via the uterus for obese patients.

In contrast, the Pelosi case series of 67 consecutive obese patients[6] reported no failures with a transumbilical open approach after realignment of the umbilical access. This entailed assessing the position of the umbilicus in relation to a line drawn between the 2 anterior superior iliac spines. The umbilicus then was repositioned 8 cm above this line in its "anatomical" position prior to initiating open dissection (**FIGURE**).

After the open trocar was inserted through the fascia and peritoneum and the patient was placed in the Trendelenburg position, the panniculus maintained its orientation. Pelosi and Pelosi concluded that this realignment of the umbilical axis decreases the depth of open dissection and avoids inadvertent placement of a trocar through both sides of the panniculus.

A prospective, randomized study[10] comparing transumbilical and transuterine Veress needle placement in obese patients found the latter approach useful, but recorded a single case of postoperative chlamydial pelvic inflammatory disease. Thus, preoperative testing for sexually transmitted disease is recommended for this approach.

Avoid dogmatic reliance on a single approach

These studies demonstrate a fundamental surgical truism: Sound physiologic and anatomic knowledge, combined with versatility and a grasp of multiple approaches to any problem, are ultimately more successful than unyielding reliance on a single approach. Aim for prudent use of open or closed laparoscopy in a variety of locations, taking into account the patient's surgical history, distribution of fat, and umbilical displacement.

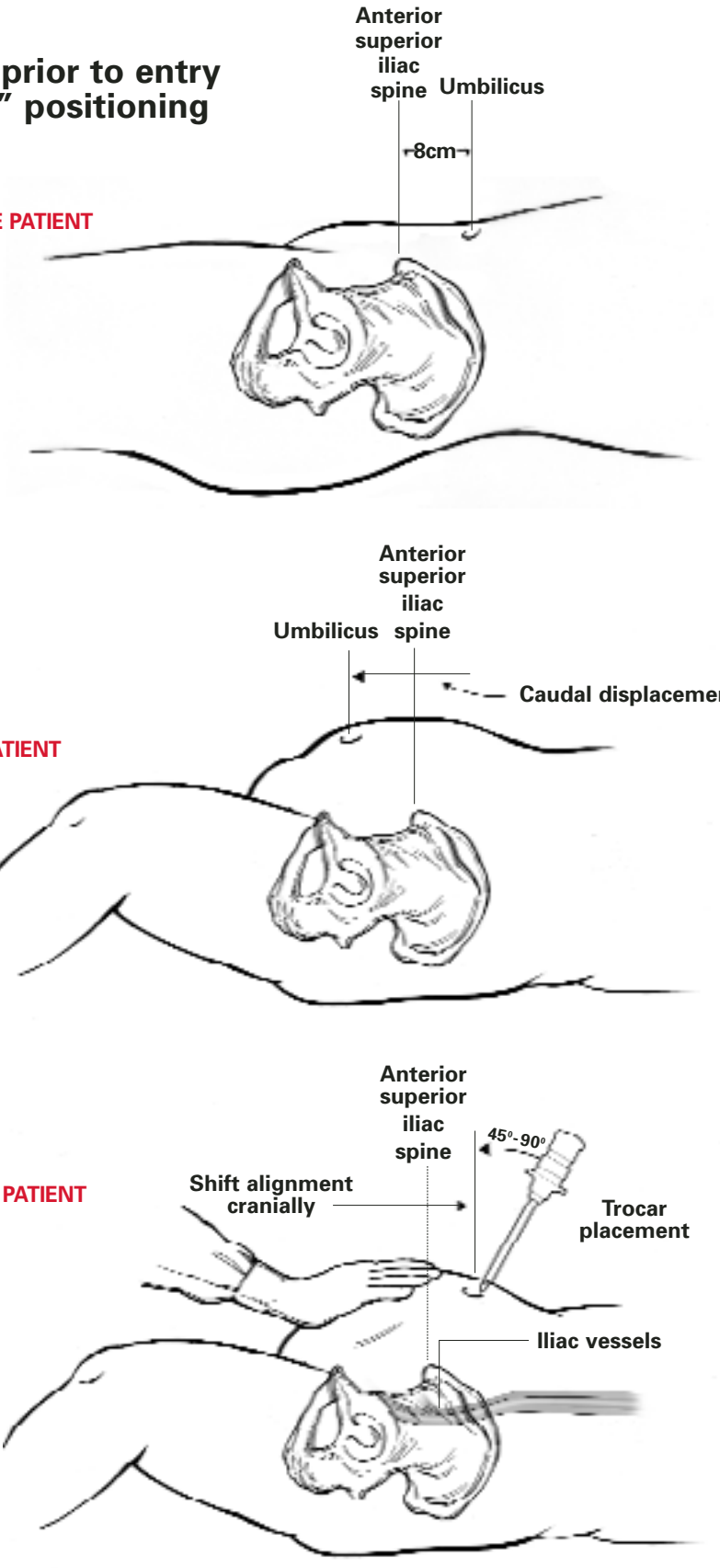
After achieving pneumoperitoneum

Place a saline-filled spinal needle into the peritoneal cavity on suction to establish abdominal wall thickness. In this way, trocars of appropriate length can be selected.

Some authorities advocate insufflation to a high intraperitoneal pressure (25 to 30

FIGURE

Realign the umbilicus prior to entry to regain "anatomical" positioning



NORMAL POSITIONING, NONOBESE PATIENT

In the nonobese patient, the umbilicus lies 8 cm cephalad to a horizontal line between the 2 anterior superior iliac spines. This is "normal" anatomical positioning

CAUDAL DISPLACEMENT, OBESE PATIENT

In central obesity, the umbilicus shifts caudally and can end up well below the iliac spines, skewing the relationship between it and other landmarks

CEPHALAD REPOSITIONING, OBESE PATIENT

Realign the umbilicus prior to laparoscopy, so that it assumes its "anatomical" position 8 cm cephalad to the iliac spines. In this position, it lies directly over the aortic bifurcation. Depending on the distances involved, trocar entry should be at a 45° to 90° angle

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mm Hg) prior to placing the initial umbilical trocar if a closed technique is being used.[11] This further elevates the abdominal wall and decreases the risk of preperitoneal trocar placement. After successful trocar placement, immediately reduce intraabdominal pressure to 15 mm Hg to avoid pulmonary compromise, excessive catecholamine release, and subcutaneous emphysema.

Techniques to enhance visualization

Excess adipose tissue occupies the pericolic, omental, mesenteric, and retroperitoneal spaces in obese patients, obscuring visualization of intraperitoneal and retroperitoneal structures.

Preoperative mechanical bowel preparation can deflate the bowel and enhance visualization (**TABLE 2**). At times, an extra ancillary trocar for placement of a bowel retractor also can improve visualization.

In the morbidly obese, insufflation pressure of 15 mm Hg will sometimes produce poor visualization. Obese patients generally tolerate this pressure reasonably well, but increasing it to improve visualization can make adequate oxygenation impossible.

Gasless laparoscopy—in which a mechanical retractor is attached from the table to the patient's anterior abdominal wall—may help improve pulmonary mechanical parameters. Unfortunately, this technique often produces poorer visualization than insufflation at normal pressure.

A new technique that combines approaches may help avoid the need to convert to laparotomy.[12] In this "Foley lap lift," a 14-French Foley catheter is passed through the anterior abdominal wall, and the balloon is inflated. The catheter then is elevated and clamped to a retractor holder attached to the angled foot of the bed. This upward traction with continuous gas flow at normal pressure improves visualization without pulmonary compromise.

Close port sites at the fascial level

The risk of bowel herniation through a trocar site is higher in obese patients than the general population because of the greater intraabdominal pressures. Increases in atelectasis from diminished functional residual capacity also predispose the obese patient to postoperative pulmonary complications and can lead to recurrent Valsalva (cough) and subsequent bowel herniation.

Given these risks, it is imperative that all port sites 10 mm or larger be closed at the fascial level. Unfortunately, the distance from the anterior abdominal wall to the fascia underlying these sites makes direct visualization and closure almost impossible.

Fortunately, several fascial closure devices are available and are reasonably inexpensive and easy to use. When using them, be sure to maintain the other port sites, as closure requires direct visualization and a second instrument.

FAST TRACK

To reduce the risk of bowel herniation close all port sites 10 mm or larger at the fascial level

Postoperative strategies

Successful postoperative care builds on preoperative and intraoperative tactics.

Perform aggressive pulmonary toilet

With intraoperative decreases in functional residual capacity, postoperative atelectasis is likely to be profound, with a potential for ventilation/perfusion mismatch and hypoxemia.

Aggressive pulmonary toilet including regular incentive spirometry and deep breathing and coughing exercises is important to reinflate dependent lung regions. Pulse oximetry with sufficient supplementary oxygen also is important to maintain adequate saturation.

Encourage early ambulation

This requires adequate but not oversedating analgesia, early catheter removal, and a motivated nursing staff.

Early ambulation is associated with fewer episodes of deep venous thrombosis, pulmonary complications, and ileus, and also eases pain management.

Continue thrombosis prophylaxis with sequential compression devices, subcutaneous heparin, or both, until the patient is spending most of her time out of bed. ■

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TABLE 2

Techniques to enhance visualization

- Preoperative mechanical bowel preparation
- Ancillary trocar for placement of bowel retractor
- Gasless laparoscopy*
- Foley lap lift*

*See page 70 for details

REFERENCES

1. Mokdad AH, Bowman BA, Ford ES, et al. The continuing epidemics of obesity and diabetes in the United States. JAMA. 2001;286:1195–1200.
2. Ford ES, Mokdad AH, et al. Trends in waist circumference among US adults. Obes Res. 2003;11:1223–1231.
3. Bluman LG, Mosca L, Newman N, Simon DG. Preoperative smoking habits and postoperative pulmonary complications. Chest. 1998;113:883–889.
4. Mokdad AH, Ford ES, Bowman BA, et al. Prevalence of obesity, diabetes, and obesity-related health risk factors, 2001. JAMA. 2003;289:76–79.
5. Lamvu G, Zolnoun D, Boggess J, Steege JF. Obesity: physiologic changes and challenges during laparoscopy. Am J Obstet Gynecol. 2004;191:669–674.
6. Pelosi MA 3rd, Pelosi MA. Alignment of the umbilical axis: an effective maneuver for laparoscopic entry in the obese patient. Obstet Gynecol. 1998;92:869–872.
7. Hurd WW, et al. The relationship of the umbilicus to the aortic bifurcation: implications for laparoscopic technique. Obstet Gynecol. 1992;80:48–51.
8. Hurd WH, Bude RO, et al. Abdominal wall characterization with magnetic resonance imaging and computed tomography. The effect of obesity on the laparoscopic approach. J Reprod Med 1991;36:473–476.
9. Pasic R, Levine RL, Wolf WM Jr. Laparoscopy in morbidly obese patients. J Am Assoc Gynecol Laparosc. 1999;6:307–312.
10. Santala M, Jarvela I, Kauppila A. Transfundal insertion of a Veress needle in laparoscopy of obese subjects: a practical alternative. Hum Reprod. 1999;14:2277–2278.
11. Vilos GA, Vilos AG. Safe laparoscopic entry guided by Veress needle CO2 insufflation pressure. J Am Assoc Gynecol Laparosc. 2003;10:415–420.
12. Stany MP, Winter WE 3rd, Dainty L, Lockrow E, Carlson JW. Laparoscopic exposure in obese high-risk patients with mechanical displacement of the abdominal wall. Obstet Gynecol. 2004;103:383–386.
13. Sprung J, Whalley DG, Falcone T, et al. The impact of morbid obesity, pneumoperitoneum, and posture on respiratory system mechanics and oxygenation during laparoscopy. Anesth Analg. 2002;94:1345–1350.
14. Demiroluk S, Salihoglu Z, et al. The effects of pneumoperitoneum on respiratory mechanics during bariatric surgery. Obes Surg. 2002;12:376–379.
15. Heinberg EM, Crawford BL 3rd, Weitzen SH, Bonilla DJ. Total laparoscopic hysterectomy in obese versus nonobese patients. Obstet Gynecol. 2004;103:674–680.
16. O'Hanlan KA, Lopez L, Dibble SL, et al. Total laparoscopic hysterectomy: body mass index and outcomes. Obstet Gynecol. 2003;102:1384–1392.
17. Holub Z, Jabor A, Kliment L, Fischlova D, Wagnerova M. Laparoscopic hysterectomy in obese women: a clinical prospective study. Eur J Obstet Gynecol Reprod Biol. 2001;98:77–82.
18. Ostrzenski A. Laparoscopic total abdominal hysterectomy in morbidly obese women. A pilot-phase report. J Reprod Med. 1999;44:853–858.
19. Loffer FD, Pent D. Laparoscopy in the obese patient. Am J Obstet Gynecol. 1976;125:104–107.
20. Eltabbakh GH, Shamonki MI, et al. Hysterectomy for obese women with endometrial cancer: laparoscopy or laparotomy? Gynecol Oncol. 2000;78:329–335.
21. Scribner DR Jr, Walker JL, Johnson GA, et al. Laparoscopic pelvic and paraaortic lymph node dissection in the obese. Gynecol Oncol. 2002;84:426–430.
22. Bai SW, Lim JH, Kim JY, Chung KA, Kim SK, Park KH. Relationship between obesity and the risk of gynecologic laparoscopy in Korean women. J Am Assoc Gynecol Laparosc. 2002;9:165–169.
23. Eltabbakh GH, Piver MS, Hempling RE, Recio FO. Laparoscopic surgery in obese women. Obstet Gynecol. 1999;94:704–708.
24. Hsu S, Mitwally MF, Aly A, Al-Saleh M, Batt RE, Yeh J. Laparoscopic management of tubal ectopic pregnancy in obese women. Fertil Steril. 2004;81:198–202.
25. Fugita OE, Chan DY, Roberts WW, Kavoussi LR, Jarrett TW. Laparoscopic radical nephrectomy in obese patients: outcomes and technical considerations. Urology. 2004;63:247–252; discussion 252.
26. Senagore AJ, Delaney CP, Madboulay K, et al. Laparoscopic colectomy in obese and nonobese patients. J Gastrointest Surg. 2003;7:558–561.
27. Pikarsky AJ, Saida Y, Yamaguchi T, et al. Is obesity a high-risk factor for laparoscopic colorectal surgery? Surg Endosc. 2002;16:855–858.
28. Tuech JJ, Regenet N, Hennekinne S, et al. [Impact of obesity on postoperative results of elective laparoscopic colectomy in sigmoid diverticulitis: a prospective study]. Ann Chir. 2001;126:996–1000.
29. Fraser J, Watson DI, O'Boyle CJ, Jamieson GG. Obesity and its effect on outcome of laparoscopic Nissen fundoplication. Dis Esophagus. 2001;14:50–53.
30. Birgisson G, Park AE, Mastrangelo MJ Jr, Witzke DB, Chu UB. Obesity and laparoscopic repair of ventral hernias. Surg Endosc. 2001;15:1419–1422.
31. Enochsson L, Hellberg A, Rudberg C, et al. Laparoscopic vs open appendectomy in overweight patients. Surg Endosc. 2001;15:387–392.
32. Fried M, Peskova M, Kasalicky M. The role of laparoscopy in the treatment of morbid obesity. Obes Surg. 1998;8:520–523.
33. Fazeli-Matin S, Gill IS, Hsu TH, Sung GT, Novick AC. Laparoscopic renal and adrenal surgery in obese patients: comparison to open surgery. J Urol. 1999;162:665–669.

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Early ambulation eases pain and reduces the risk of deep venous thrombosis, pulmonary complications, and ileus