

## Minimally Invasive Surgery: Review Questions

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### QUESTIONS

Choose the single best answer for each question.

1. Which of the following statements regarding surgery for morbid obesity is correct?

- (A) Average 30-day mortality ranges from 0.1% to 1.1%
- (B) Among major comorbidities that are resolved or improved by surgery, obstructive sleep apnea is least frequently affected
- (C) Compared with an open approach, laparoscopic gastric bypass is associated with lower incidence of incisional hernias and higher excess weight loss achieved after 3 years
- (D) Biliopancreatic diversion is associated with significant postoperative morbidity and mortality and should be reserved for patients who fail to achieve weight loss with restrictive operations
- (E) Adjustable gastric banding results in 60% to 70% excess weight loss and is an effective alternative to gastric bypass

2. All of the following statements regarding laparoscopic inguinal hernia repair are correct EXCEPT

- (A) Systemic antibiotic prophylaxis given within 60 minutes of incision does not significantly reduce the incidence of surgical site infection (SSI) postsurgery
- (B) Postsurgical complications correlate with surgeon's level of frustration during surgery but not with the level of satisfaction at completion of surgery
- (C) Laparoscopic repair as compared with open repair is associated with a higher recurrence rate after 2 years regardless of the surgeon's age

- (D) Surgeon inexperience is an independent risk factor for recurrence of hernia
- (E) As compared with transabdominal preperitoneal (TAPP) repair, totally extraperitoneal (TEP) repair is associated with lower rates of port-site hernias and visceral injuries

3. Which of the following statements regarding laparoscopic-assisted colectomy is correct?

- (A) Quality-of-life outcomes measured 2 months postsurgery are improved as compared with open colectomy
- (B) Although the average number of lymph nodes dissected with the laparoscopic approach is lower than that of open colectomy, survival at 3 years is similar between the 2 approaches
- (C) The rate of cancer recurrence in surgical wounds is similar to that of the open approach
- (D) Although many outcomes are similar, the cost of surgery and the total cost to society are higher for the laparoscopic-assisted versus the open approach
- (E) Operating times are similar for laparoscopic-assisted and open colectomy

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## ANSWERS AND EXPLANATIONS

- (A) Average 30-day mortality ranges from 0.1% to 1.1%.** Surgeries for morbid obesity are rapidly increasing in the United States as the prevalence of obesity increases and surgical outcomes improve due to laparoscopy. In a recent meta-analysis, the 30-day mortality rate was found to range from 0.1% for purely restrictive operations to 1.1% for biliopancreatic diversion or duodenal switch.<sup>1</sup> Most comorbid conditions associated with morbid obesity, including obstructive sleep apnea, were either improved or resolved after surgery.<sup>1</sup> Although many case series have supported the effectiveness of laparoscopic gastric bypass, only a few prospective randomized studies have compared it with the open approach. At 3-year follow-up, Puzifferri et al<sup>2</sup> found a higher rate of postoperative incisional hernia after open surgery as compared with the laparoscopic approach (39% versus 5%;  $P < 0.01$ ), but no differences were observed in the percentage of weight loss between the 2 groups (77% for laparoscopic versus 67% for open). Although biliopancreatic diversion is associated with a higher postoperative complication rate than purely restrictive operations, the associated 1.1% average postoperative mortality rate is considered acceptable in exchange for a highly effective treatment in patients with body mass indices exceeding 50 kg/m<sup>2</sup>. Adjustable gastric banding is a safe alternative to the more complex bariatric operations but is associated with excess weight loss exceeding 50% in only 50% to 60% of patients.<sup>3</sup>
- (C) Laparoscopic repair as compared with open repair is associated with a higher recurrence rate after 2 years regardless of the surgeon's age.** In clean contaminated cases, systemic antibiotic prophylaxis given prior to surgical incision has been shown to reduce the incidence of SSI.<sup>4</sup> Trials evaluating the effectiveness of preoperative antibiotics in preventing SSI in abdominal wall hernia and inguinal hernia repairs (including laparoscopic repairs) have had mixed results. A recent meta-analysis revealed no benefit with the use of systemic antibiotics in preventing SSI after groin hernia surgery.<sup>4</sup> In a multicenter randomized trial, Neumayer et al<sup>5</sup> found that surgeon inexperience (< 250 procedures) was an independent risk factor for recurrence of inguinal hernia after laparoscopic repair; an ad-hoc analysis<sup>6</sup> revealed that surgeon's age of 45 years and older was also an independent risk factor for recurrence. The odds of recurrence for an inexperienced surgeon aged 45 years or older were 1.72 times that of a younger inexperienced surgeon.<sup>6</sup> The surgeon's

level of frustration while performing surgery but not the surgeon's satisfaction at completion of surgery was associated with a higher complication rate after laparoscopic inguinal hernia repair. The TAPP and TEP approaches are laparoscopic techniques used for inguinal hernia repair. Although evidence favoring one approach over the other is lacking, the TEP approach has been found to be associated with lower rates of port-site hernias and visceral injuries and higher rates of conversion than TAPP in non-randomized studies.

- (C) The rate of cancer recurrence in surgical wounds is similar to that of the open approach.** Quality-of-life outcomes were found to be superior 2 weeks' postsurgery in patients who had undergone laparoscopic-assisted versus open colectomy, as evidenced by reduced pain perception and decreased need for intravenous and oral analgesics.<sup>7</sup> However, no significant differences existed in quality-of-life outcomes 2 months postsurgery between the 2 groups.<sup>7</sup> The Clinical Outcomes of Surgical Therapy (COST) trial<sup>8</sup> showed that the extent of resection was similar in both laparoscopic-assisted and open colectomy and that the median number of lymph nodes dissected in each group was 12. At 3 years, rates of local recurrence, survival, and recurrence in surgical wounds were similar between the 2 groups.<sup>8</sup> The COLon cancer Laparoscopic or Open Resection (COLOR) trial<sup>9</sup> further supported the use of the laparoscopic approach for treatment of colon cancer. Cost analysis revealed that the total costs to society measured within 12 weeks of surgery did not differ significantly between laparoscopic and open colectomy, although the costs of operation and first admission were higher for the laparoscopic group. The operating times in both the COST and COLOR trials were significantly longer (by 30–55 min) with the laparoscopic approach.

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