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## Answers

### Answers (Chap. 1)

1. Answer **D**. Overweight is defined as a 25–29.9 BMI.
2. Answer **C**. Women tend to have more adiposity than men in the same BMI group.
3. Answer **D**. Obesity can be affected by genetics, in utero environment, and ethnicity.
4. Answer **E**. Discrimination against the obese occurs in employment, at health-care facilities, at educational institutions, and in close interpersonal relationships.

### Answers (Chap. 2)

#### Part I

1. Answer: **D**. The genetic contribution to the obesity phenotype is estimated to be 70 %. Twin studies reliably and reproducibly demonstrate that approximately 70 % of the tendency toward a particular body habitus, lean or obese, is due to genetic influences.
2. Answer: **C**. Thermogenesis is increased with increased uncoupling protein activity. Thermogenesis occurs when mitochondrial oxidative phosphorylation is uncoupled from electron transport, converting energy to heat rather than ATP. Evidence suggests that obese subjects may have lesser propensity toward thermogenesis, i.e., are more efficient in converting calories into ATP rather than heat. Thermogenesis is increased with upregulation of uncoupling proteins, which uncouple oxidative phosphorylation from electron transport. Alternations in UCP activity and polymorphisms in UCP genes have been observed in obese animals and humans, suggesting a role for dysregulation of thermogenesis in the pathogenesis of obesity. Diet-induced thermogenesis describes the increase in thermogenesis in response to a meal that occurs in rodents, humans, and other mammals.
3. Answer: **C**. Leptin induces satiety and has primarily pro-inflammatory effects: Leptin is an adipokine secreted by

adipocytes in response to a meal. Leptin circulates through the bloodstream as a hormone and binds its receptors in the hypothalamus to induce satiety. Like many molecules that regulate energy metabolism, leptin has other pleiotropic effects, including proinflammatory effects, among others. Resistance to leptin's satiety effects is characteristic of human obesity, and obese humans thus have elevated serum leptin levels and are unresponsive to exogenous leptin. Recent data suggest that ER stress within the hypothalamus mediates leptin resistance, renewing interest in leptin as a therapeutic agent.

#### Part II

1. Answer: **A**. Endoplasmic reticulum stress results from excess nutrient delivery to cells as well as multiple other stimuli. Endoplasmic reticulum stress is a response universal to all cells that results from numerous stressors, including but not limited to nutrient excess. Reactive oxygen species are integral mediators of oxidative stress, although ER stress and oxidative stress are tightly linked. Leptin does not directly trigger ER stress, although data suggest that ER stress may be involved in hypothalamic leptin resistance. ER stress, along with oxidative stress and inflammation, evolves first in adipose tissue in early obesity in response to hypoxia and nutrient excess, but then progresses to involve in multiple tissues as metabolic disease progresses and becomes systemic.
2. Answer: **A**. Insulin resistance is selective with respect to lipid metabolism. Insulin resistance with respect to lipid metabolism in adipocytes is selective, with preservation of insulin's stimulatory effects on lipogenesis but resistance to insulin's inhibitory effects on lipolysis. This selectivity results in both increased adipocyte hypertrophy and increased free fatty acid release to liver and peripheral tissues, exacerbating metabolic disease. Similar selectivity with respect to insulin's effects on Akt and mTOR signaling in obesity contribute to vascular disease and cancer. The primary site of

peripheral insulin resistance is skeletal muscle. Insulin resistance is characterized by decreased IRS-1 activity. In early diabetes,  $\beta$ (beta)-cell mass and insulin secretion increase, leading to compensatory hyperinsulinemia which delays the onset of hyperglycemia. As obesity and insulin resistance progress, multiple insults, including lipotoxicity, glucotoxicity, ER and oxidative stress, and inflammation, lead to  $\beta$ (beta)-cell exhaustion and failure.

3. Answer: **B**. Adipose tissue overflow results from a failure of adipose tissue nutrient buffering capacity and underlies systemic metabolic disease: Adipose tissue overflow occurs when the storage capacity of adipocytes is overwhelmed, leading to overflow of free fatty acids, other metabolites, and inflammatory products to the liver and other tissues. Adipose tissue overflow induces widespread cellular stress in multiple tissues and thus underlies the pathogenesis of metabolic disease. The concept of adipose tissue overflow underscores an important role of adipose tissue in health, which is to protect other tissues from nutrient excess and lipotoxicity.

### Answers (Chap. 5)

1. Answer: **A**. GLP-1 is a peptide released by the L cells of the ileum and colon in response to the ingestion of meals. Overall it increases insulin secretion in response to oral glucose (*incretin effect*), suppresses glucagon secretion, and decreases gastric emptying and intestinal motility (*ileal brake*). Normally GLP-1 secretion is stimulated by the presence of nutrients in the distal ileum. The accelerated delivery of chyme to the distal ileum proper of the RYGB might explain the rapid (within days post procedure) and durable hormonal increase after the procedure.
2. Answer: **E**. *Leptin* is an adipocytokine secreted by the white adipose tissue, and its levels are directly related to the energy balance. Leptin has been associated with increased hunger, inhibition of lipogenesis, and increased lipolysis. The reduction of leptin has been reported in all the bariatric procedures (RYGB, LSG, LAGB), and it has been linked directly with weight loss.

### Answers (Chap. 6)

1. Answer: **D**. HIV infection is not considered a contraindication of bariatric surgery. Reported case series have demonstrated the safety and efficacy of metabolic and bariatric surgery in patients with well-controlled HIV infection.
2. Answer: **B**. Successful outcomes have been demonstrated in patients with bipolar disorder, stable schizophrenia, and binge-eating disorder. Bariatric surgery should be

postponed or delayed in patients with active psychosis or recent suicidal ideation for psychiatric treatment until the patient is deemed stable and cleared for surgery.

### Answers (Chap. 7)

1. Answer: **B**
2. Answer: **A**

### Answers (Chap. 8)

1. Correct answer: **F**. All of the above. (See section “Respiratory issues relevant to anesthesia management”).
2. Correct answer: **A**. True. The supine position, routinely used for induction of anesthesia in nonobese patients, is not appropriate for the morbidly obese patient. The supine position will decrease the functional residual capacity further and will increase the intra-abdominal pressure resulting in restriction of the diaphragmatic movement with respiration. (See section “Airway management”).

### Answers (Chap. 9)

1. Correct Answer: **D**. At least one surgeon, not all surgeons, should dedicate a significant amount of their practice to metabolic and bariatric surgery. All other items are correct.
2. Correct Answer: **A**. Chronic kidney disease and depression have not been identified in risk prediction models to be associated with increased risk in serious complications after bariatric surgery. Myocardial infarction within the last 6 months has been identified in one risk prediction model to be associated with an increased risk of complications after bariatric surgery. All other conditions listed have been identified in one or more risk prediction models. One risk prediction model did not identify increasing BMI as a significant risk factor.

### Answers (Chap. 10)

1. Answer: **A**. If considering PWL the data supports the notion that shorter-term preoperative diets of 2 weeks may also reduce liver volume and reduce operative time, without significant reduction in risk.
2. Answer: **B**. The ASMBS position statement concluded that there is a low level of evidence to support PWL and mandated PWL should be discouraged. It has been shown to delay care and cause frustration among bariatric surgery candidates.

**Answers (Chap. 11)**

1. Answer **D**. Failure to comply with any of these criteria may indicate poor quality and may not be reimbursed but they do not necessarily mean that negligence occurred.
2. Answer **B**. Checklists have been shown to decrease death and in-hospital morbidity after surgery
3. Answer **D**. The first three answers may indicate someone who may not be compliant but are not a contraindication to surgery. Patients can be educated and retested. Patients can also be reevaluated for bariatric surgery if their Axis I disorder is controlled and there is a clear plan to follow-up after surgery with a mental health professional.

**Answers (Chap. 12)**

1. Correct answer: **B**. Meta-analysis refers to a study in which the results of multiple different studies are combined in a systematic fashion to form a stronger conclusion. However, confounding that is present in the original studies will not be addressed via meta-analysis. Stratification, regression modeling/risk adjustment, and propensity matching are all valid methods of dealing with confounding. Stratification requires little statistical knowledge but is limited to small numbers of confounders. Propensity matching is more powerful but requires some expertise.
2. Correct answer: **D**. A case-control study is ideal for situations in which the outcome of interest is rare. Cases are identified by outcome rather than predictor and then matched to controls without the outcome. A randomized controlled trial is not feasible in this case because patients cannot be randomized to having hypertension or not. Furthermore, it is unlikely that an RCT would produce enough outcomes (fatal PEs) to permit meaningful statistical analysis. Similarly, a cohort study—either prospective or retrospective—would need to be exceedingly large to capture enough outcomes.
3. Correct answer: **A**. Alpha error refers to results that are interpreted as positive but are in fact the product of chance. Had the study reported a difference in leak rates without referencing a *p* value below the accepted threshold of 0.05, alpha error might indeed be at play. This study has a negative conclusion, but based on the low overall rates of anastomotic leak, the small difference that one would expect between two surgical techniques, and the small sample size, it is almost certainly underpowered. Confounding and bias are always possibilities in observational studies. Confounding in particular would be a concern in this study given that with only 50 patients in each study arm, it would be very difficult to control for an adequate number of confounders.

**Answers (Chap. 13)**

1. Correct Answer: **D**. The 2012 ASMBS position statement endorses sleeve gastrectomy as a primary and first-stage procedure as part of a risk management strategy for high-risk patients.
2. Correct Answer: **C**. The ASMBS recognizes patients' rights to pursue surgery at the facility of their choice. However, the position statement on global bariatric healthcare defines the risks associated with traveling long distances for bariatric procedures including the lack of preoperative counseling and education, delay in diagnosis of postoperative complications such as leaks and VTE, and lack of long-term follow-up. The ASMBS discourages extensive travel to undergo bariatric surgery and recommends that patients who do pursue this option return home with complete documentation and a follow-up plan with a local surgeon.
3. Correct Answer: **B**. There is no high-level evidence to support mandatory preoperative supervised diet periods or weight loss for all patients. The ASMBS position statement on this topic recognizes that this requirement imposed by many insurance companies is not evidence based and creates a barrier to care. Preoperative weight loss goals should be at the discretion of the bariatric surgery team based on an individual patient's risks for surgery.

**Answer (Chap. 14)**

1. Correct answer **D**. The data requires good documentation in the medical record, strict definitions of adverse events, and a trained third-party, objective reviewer, and abstractor. Surgeons are biased and, although occasional consultation is required to determine whether an adverse event has occurred, entering their own data distorts the quality of the data entered.

**Answers (Chap. 15)**

1. Answer: **C**. The original anastomotic technique described by Wittgrove and colleagues was the circular stapler technique with transoral placement of the anvil.
2. Answer: **D**. The most common cause of death after gastric bypass is pulmonary embolism.

**Answers (Chap. 16)**

1. Answer **C**. Perigastric technique was the first approach for laparoscopic band placement. The dissection was performed next to the stomach. One significant problem with

this dissection was the potential penetration and band placement through the lesser sac cavity just at the apex. It has been shown that the incidence of slippages is higher with this technique.

2. Answer **C**. Hiatal hernias need to be identified and repaired during band placement. Excision of fat pads might be needed to visualize the hiatus. Posterior cruropexy is indicated.
3. Answer **C**. Gastric banding technique has evolved from the original perigastric dissection to the pars flaccida approach. Placement of gastrogastic sutures is the most accepted way to establish anterior fixation of the band. If a large aberrant hepatic artery emanates from the left gastric artery, the “two-step” dissection can be used by creating an additional perigastric passage above the aberrant hepatic vessel and next to the lesser curvature.

### Answers (Chap. 17)

1. Answer: **C**. The most common site of leak is at the level of angle of His.
2. Answer: **B**. The recommended bougie size is 3–40 Fr.

### Answers (Chap. 18)

1. Answer: **C**. Blind intestinal limb. Both DS and BPD have biliopancreatic limbs that limit bacterial overgrowth, preventing complications seen in jejunoileal bypass.
2. Answer: **D**. Patients with severe gastroesophageal reflux. BPD/DS and sleeve gastrectomy may result in inducing or worsening reflux. The other groups all demonstrate added weight loss or resolution of comorbidities with DS.
3. Answer: **E**. All of the above should be employed along with routinely checking nutrient levels.

### Answers (Chap. 19)

1. Answer is **C**. Resection of the leak site with reconstruction is not an appropriate option for management of leaks in the acute setting. Management of acute leaks can range from conservative management with NPO and IV antibiotic to laparotomy with wide drainage and IV antibiotic. Esophageal stent is also an option in selected cases.
2. Answer is **D**. Tachycardia is often the first vital sign to be abnormal in patients with sepsis secondary to leaks.

### Answers (Chap. 20)

1. Answer **D**. While the other complications are possible, gastrojejunostomy stricture is the most common source of

obstruction in the first 2–3 months after surgery. It is diagnosed and treated with endoscopy with balloon dilatation.

2. Answer **D**. The patient’s presentation is strongly suggestive of internal hernia, which will not appear on ultrasound evaluation and is likely to be missed on CT. Early surgical exploration is indicated, with reduction of the internal hernia and closure of the hernia defect.
3. Answer **A**. Vertical appearance of a band on plain film suggests posterior gastric slippage. Although this patient will likely require surgically repositioning or removal of the band, the symptoms may be immediately improved by removing all fluid from the band. Placement of a nasogastric tube may worsen the situation.

### Answers (Chap. 21)

1. Answer: **D**. The correct answer is upper endoscopy. Patient should be made NPO and appropriate labs should be checked, and prompt IV resuscitation must be initiated right away. Other diagnostic modalities mentioned are important, but in this patient the likely diagnosis is an upper GI bleed and the best diagnostic modality is an endoscopy.
2. Answer: **E**. The correct answer is either double-balloon enteroscopy or laparoscopic-assisted transgastric endoscopy. The ability to perform a DBE depends on the institution and abilities of the gastroenterologists and staff and their comfort level of doing this complex procedure. A laparoscopic-assisted transgastric endoscopy is more invasive but is technically easier.

### Answers (Chap. 22)

1. Answer **E**. Lack of weight loss after gastric banding can be caused by many reasons. The most serious reason is if the band erodes through the stomach wall. The loss of compression by the band results in an increase in appetite and resultant weight gain. This is the most common sign of a band erosion. The most common reason for inadequate weight loss is having a suboptimally adjusted (or tightened) band that does not sufficiently control appetite and satiety. One reason for suboptimal band tightness is device malfunction due to a leak. Another common reason for inadequate weight loss is poor high-calorie food choices made by the patient or failure to change behaviors such as eating more slowly or mindfully, which would lead to regurgitation and maladaptive eating.
2. Answer **C**. A common presenting sign of band erosion is delayed cellulitis around the access port due to bacteria from the eroded band within the stomach. Such a presentation warrants an upper endoscopy.
3. Answer **D**. Gastroesophageal dilatation is most commonly a result of chronic obstruction of the proximal

stomach and esophagus from an overly tight band. Symptoms may be reflux or regurgitation and requires band deflation to loosen it.

### Answers (Chap. 23)

1. Answer: **D**. Gastric acid lowers the pH in the proximal duodenum, enhancing the solubility and uptake of iron; thus, a decrease in gastric acid substantially reduces iron absorption. Intake of iron-rich foods may be decreased after gastric bypass. Iron absorption occurs predominantly in the duodenum and upper jejunum.
2. Answer: **C**. Less sweets and simple carbohydrates, eating and drinking separately, eating small amounts more often, and *increasing* dietary fiber and protein may help with management of dumping.
3. Answer: **A**. Deficiencies of copper, vitamin B<sub>12</sub>, and thiamin have all been linked to APGARs neuropathy.
4. Answer: **C**. Obese patients are often deficient in vitamin D.

### Answers (Chap. 24)

1. Answer **E**. The indications for elective reoperative bariatric surgery include failure of weight loss, weight regain, and complications of the primary operation. Patient request is not considered an indication.
2. Answer **A**. Recurrent marginal ulcer can be caused by exposure of the small bowel mucosa to excessive acid produced in the gastric remnant. Taking down the fistula will often result in resolution of the ulcer. Other interventions include revision of the pouch and gastrojejunal anastomosis.
3. Answer **D**. Prior open surgery and presence of intra-abdominal mesh complicate the laparoscopic approach, but are not contraindications to it. Complications of LAGB are usually approached laparoscopically.

### Answers (Chap. 25)

1. Answer **E**. All of the above. Full history and physical examination is the first step in assessing potential causes of failed weight loss after adjustable gastric banding. Body composition analysis and resting energy expenditure may identify a low metabolic rate and sarcopenia, which may require treatment alongside revisional surgery. Contrast esophagogram is used to investigate the possibility of “band slip,” and upper GI endoscopy can diagnose intragastric band erosion.
2. Answer **A**. Laparoscopic removal of adjustable gastric band, which will usually result in regain of at least some

of the weight previously lost with adjustable gastric banding. All the other options are likely to result in weight stabilization or further weight loss.

3. Answer **D**. The scarring and edema encountered around the stomach when revising a laparoscopic adjustable gastric band results in increased thickness of the gastric wall. For this reason, surgeons typically advocate using a stapler with a *greater* closed staple height when forming the gastric pouch and constructing the gastrojejunostomy.

### Answers (Chap. 26)

1. Answer **B**. While patients with very high BMI (>50 kg/m<sup>2</sup>) have initial weight loss following sleeve gastrectomy, they tend to plateau and often benefit from a second procedure (duodenal switch or Roux-en-Y gastric bypass). They often tolerate these procedures better because of their weight loss with the sleeve. Patients with BMI <50 kg/m<sup>2</sup> are ideal candidates for sleeve gastrectomy.
2. Answer **D**. Nuclear medicine gastric emptying studies tend not to add further information if contrast studies and endoscopy are performed.
3. Answer **E**. This patient developed a stricture following her initial sleeve gastrectomy, which fits the clinical picture of initial successful weight loss, followed by weight regain coinciding with the development of reflux symptoms. More detailed history would likely reveal that she relieves her symptoms with noncompliant eating. Managing this will need to address both the stricture and the dilated fundus. Resection of the fundus and sleeve resizing would not address the stricture. Pneumatic dilatation may improve symptoms and help get the patient back on track, but this patient’s initial BMI of 52 make it likely that she will need a second procedure to obtain ideal weight loss. Proton-pump therapy would be inadequate to resolve her problems. Conversion to a Roux-en-Y can address both the stricture and the dilation and is the best option for this patient.

### Answers (Chap. 27)

1. Answer **C**. Whereas the length of the CL determines the degree of fat malabsorption, the total “active bowel” length (AL+CL) is responsible for protein and carbohydrate absorption.
2. Answer **C**. Always, because HH is a frequent cause of complications after LRYGB, including reflux and paraesophageal hernia.
3. Answer **A**. The left edge of the caudate lobe gives direct access to the right crus and allows safe dissection of the esophagus. It helps avoiding traumatizing the vena cava and the left gastric artery.

4. Answer **C**. Even though NGP appears to be much more frequent than previously thought, and despite the fact that the RY construction usually is responsible for the exaggerated insulenic response after an oral glucose challenge, in some cases, such as nesidioblastoma, reversal will not correct the NGP condition. Performing a gastrectomy can help avoid a useless quite invasive procedure (the reversal).

### Answers (Chap. 28)

1. Answer **D**. Metabolic surgery is defined as an operation on a normal organ to improve health. In each of the other cited procedures, the spleen, testicles, foregut, and fallopian tubes are normal yet their removal produces desirable health effects.
2. Answer **B**. The rate of remission of T2DM is greatest following the duodenal switch (93–98 %); RYGB (83 %) and GS (80 %) are almost the same, but the RYGB has a slight edge in the most current literature. AGB produces about a 50 % remission rate.
3. Answer **B**. The complex metabolic effects of the RYGB are due to multiple alterations in the functions of the gut including (1) reduction in food volume by the small gastric pouch (about 30 cc); (2) delayed gastric emptying due to the small gastroenterostomy (about 10 mm); (3) early “dumping” of undigested food into the upper jejunum; (4) partial injury to the vagus nerve supply to the stomach; (5) exclusion of food from the fundus, antrum, duodenum, and proximal jejunum; (6) rapid transit of food through the small bowel; (7) alterations in the microbiome (i.e., the microorganisms of the gut); and (8) changes in dietary intake.

In addition, there are (9) secondary effects such as weight loss with a reduction of adipose tissues and change in adipokines and (10) changes in signaling between the gut, liver, muscle, adipocytes, and each organ system—all in addition to multiple other, still-to-be-discovered pathways.

4. Answer **B**. While it is true that weight loss induced by the gastric band, an operation that acts primarily by the reduction of intake (but with some changes in the diet), produces a remission rate of T2DM in about 50 % of patients with improvements in the other comorbidities, the other three procedures that include resection and/or bypass of sections of the gut are far more effective. In fact, duodenojejunal bypasses in lean diabetic patients produce remission of T2DM without significant weight loss.
5. Answer **D**. The common denominator in the various expressions of the metabolic syndrome is hyperinsulinemia. In advanced T2DM, the levels may be nine times normal. High levels of insulin are also seen in hyperten-

sion, sleep apnea, polycystic ovary syndrome, and severe obesity. Whether the high levels of insulin are a cause of the metabolic syndrome remains unknown at this time.

### Answers (Chap. 29)

1. Answer **D**. Adequate glycemic control is not obtained in most diabetic obese patients with lifestyle modifications and pharmacotherapy (A). Several studies have shown that longer preoperative duration of T2DM and more severe disease at the time of surgery are associated with reduced efficacy of metabolic surgery. In addition, severely obese diabetic patients are often refractory to conventional therapies secondary to severe insulin resistance (B). Metabolic surgery would be an appropriate therapeutic alternative in carefully selected diabetic patients with a BMI between 30 and 35 kg/m<sup>2</sup> who do not respond to fully optimized medical therapy (C). Relapse of T2DM after initial remission does not occur in most of patients. Additionally, a prolonged period of normalization of glycemia has benefit even if there is eventual relapse (E).
2. Answer **A**. More extensive diversionary procedures, such as BPD and then RYGB, are generally associated with greater weight loss and more profound metabolic benefits in the long term, but at the cost of more surgical complications.
3. Answer **B**. In appropriate-risk patients with prediabetes or established T2DM, RYGB is the best overall option. LAGB and SG are the safest procedures but least effective in achieving glycemic control. BPD appears to be the most effective antidiabetic procedure but does carry a higher operative risk.

### Answers (Chap. 30)

1. Answer **D**. Increased incretin effect, mainly GLP-1 and PYY, is currently accepted as one of the main mechanisms for improvement in glucose metabolism. Better insulin response due to caloric deprivation is temporary and has little efficiency in reducing glucose blood levels. Renal glucose production only plays a significant role during acidosis and prolonged starvation. Increase in muscle glucose intake is usually observed after exercise, but is not related to bariatric surgery. Bariatric surgery results in long-term improvement in T2DM.
2. Answer **C**. Better glucose control following bariatric surgery is related to weight-independent mechanisms, such as enhanced incretin effect and increased insulin sensitivity. Several incretins, mainly GLP-1 and PYY, have been associated with glucose homeostasis following bariatric surgery. Diabetes control after bariatric surgery is usually seen before significant weight loss has occurred. There is

no sufficient evidence that bariatric surgery cures diabetes, and antidiabetic drugs are progressively withdrawn and may be discontinued in select cases, depending on the severity of the disease.

3. Answer **B**. Bariatric surgery improves metabolic diseases even in low-BMI patients and could be indicated in such cases. Patients with a high BMI may not have cardiovascular risk and diabetes if fat accumulates in peripheral locations, and bariatric surgery could be indicated in patients with lower BMI and metabolic diseases. Bariatric surgery in low-BMI patients is associated with low morbidity and mortality. BMI does not reflect body fat composition. To date, there is no sufficient data regarding bariatric surgery in patients with BMI <28 kg/m<sup>2</sup>.
4. Answer **E**. BMI does not reflect body fat composition. Dual-energy X-ray absorption is an accurate method for quantifying body fat. CT and MRI are accurate methods for assessing body fat composition. High waist-to-hip ratio is associated to central body fat phenotype; therefore, it can be used for estimating body fat composition.

### Answers (Chap. 31)

1. Answer: **B**. Patients who have an increased duration of T2DM, a higher preoperative HbA1c level, and a preoperative insulin usage are less likely to have remission of T2DM postoperatively after gastrointestinal surgery.
2. Answer: **C**. A possible mechanism of gastrointestinal surgery is to reduce inflammatory cytokines, especially IL-3 and TNF-alpha, which can result in an improvement of obstructive sleep apnea. This proposed mechanism works on the principle that visceral adipose tissue contains vast amounts of inflammatory cytokines and adipokines, both of which can potentially affect airway collapsibility through their effect on control of breathing. Gastrointestinal surgery has been demonstrated to reduce these inflammatory cytokines, which can therefore result in improved OSA. This is one of several mechanisms, as others can be related to anatomical changes by increasing the airway cross-sectional area, or neuromuscular changes. These effects are a consequence of surgical weight loss.

### Answers (Chap. 32)

1. Correct Answer: **False**. All rapid weight loss leads to increased gallstone formation
2. Correct Answer: **True**

### Answers (Chap. 33)

1. Answer **B** is the appropriate answer as it is now clear that the boundaries between the determinants of any specific obesity-related comorbidity is quite unclear. Any single comorbidity or obesity-related disease contains elements from all three areas: metabolic, physical, and psychological.
2. Answer **D** is correct as there is now a large range of obesity-related comorbidities that appear to have a nonlinear association between weight loss and improvement in the comorbidity. Modest weight loss is associated with significant improvement, but greater weight loss may provide limited additional benefit. Examples appear to include dyslipidemia, hypertension, obstructive sleep apnea, gastroesophageal reflux, and osteoarthritis.

### Answers (Chap. 34)

1. **A**. True
2. **D**. All of the above

### Answers (Chap. 35)

1. Answer: **B**. The prototype of the malabsorptive procedures was the jejunoileal (JI) bypass.
2. Answer: **C**. One of the most common scenarios where intraoperative endoscopy is of crucial importance is when doing revision surgery. The purpose of this is to identify previous staple lines and their location and avoid creating blind pouches or ischemic areas of stomach between adjacent staple lines.
3. Answer: **D**. Upper endoscopy and UGI.

### Answers (Chap. 36)

1. The answer is **A**, to perform collaborative clinical, epidemiologic, and behavioral research. Those involved with the formation of the Longitudinal Assessment of Bariatric Surgery consortium formation were seeking to understand the surgical mechanisms that lead to weight loss and comorbid condition improvement and to provide some answers to the knowledge gap that stemmed from the lack of standardized data collection methods, procedures, and outcome assessments.
2. The answer is **B**, evaluate short-term safety of bariatric surgery. Although this was a primary goal of LABS, this was the goal for the LABS-1 study, which was a short-term 30-day follow-up study. LABS-2 is aiming

to determine the long-term efficacy and long-term changes in patient baseline characteristics after bariatric surgery.

3. The answer is **D**, 0.3 %. Within 30 days of a bariatric surgery procedure, 0.3 % of the 4,776 participants died. Answer A, 4.3 %, is the percentage of participants who had at least one major adverse event within 30 days of surgery. Answer B, 0.2 %, is the percentage of the 2,975 participants who underwent a laparoscopic Roux-en-Y gastric bypass and died within 30 days postsurgery, and answer C, 2.1 %, is the percentage of the 437 participants who underwent an open Roux-en-Y gastric bypass and died within 30 days.

### Answers (Chap. 37)

1. Answer: **C**. With 17 % of the US pediatric and adolescent population being categorized as obese (BMI >95th percentile) and up to 4 % as extremely obese (BMI >99th percentile), the medical community is facing a concurrent increase in the number and severity of numerous obesity-related comorbid illnesses (i.e., hypertension, insulin resistance, type 2 diabetes mellitus, obstructive sleep apnea, polycystic ovary disease, dyslipidemia, fatty liver disease, etc.) that were previously believed to only affect the adult population.
2. Answer: **E**. BMI, comorbid diseases, emotional maturity, and physiological maturity are all important factors in selecting adolescents for bariatric surgery.
3. Answer: **D**. The use of both biliopancreatic diversion (BPD) and duodenal switch (DS) in adolescents has raised concerns regarding overall longitudinal safety due to significant rates of postoperative malabsorption and rates of reoperation that are much higher than any other series of adolescent bariatric cases to date.

### Answers (Chap. 38)

1. Answer: **D**. Sex hormone-binding globulin (SHBG). A decrease in SHBG contributes to polycystic ovarian syndrome in the context of obesity.
2. Answer: **A**. 0. No prospective, randomized trials have been completed on this topic. The current evidence is limited to small series and systematic reviews.

### Answers (Chap. 39)

1. Answer: **C**. The best time to operate on a massive-weight-loss patient is when they have stabilized their weight loss for at least 3 months. It is wrong to operate on patients while their weight is fluctuating up or down. Weight

changes that occur after body-contouring procedures will usually lead to worsening of the results.

2. Answer: **A**. Lower truncal deformities in massive-weight-loss patients are almost always circumferential in nature, are quite variable in presentation, and are most often associated with mons pubis ptosis. Rectus diastasis is almost always present.
3. Answer: **B**. Upper arm excess in the massive-weight-loss patient, and all patients, is located in the posterior arm fold of the arm and thus will most often span onto the lateral chest wall and in some cases past the elbow. It is the rare case where the excess is limited to the proximal third of the upper arm.

### Answers (Chap. 40)

1. Answer: **D**. Adjuvant therapy is not considered one of the potential indications for EBTs.
2. Answer: **A**. Digestive adaptation is based on the difference between the primitive and modern human diet. Initially, humans ingested a hypocaloric diet filled with indigestible fiber. This would require intake of a large volume of food to meet caloric needs; therefore, a large stomach and long intestine were necessary to achieve these goals. In the modern human diet, we ingest more refined nutrients with less fiber and residues that can be efficiently absorbed in the proximal small bowel.
3. Answer: **D**. Interruption of vagal conduction has no effect on cellular response to insulin.

### Answers (Chap. 41)

1. Answer: **B**.
2. Answer: **A**. Only Category 1 codes are assigned an RVU value.
3. Answer: **A**. Time
4. Answer: **True**

### Answers (Chap. 42)

1. Answer: **C**. A patient with a complaint is an opportunity to learn about issues, cement the patient relationship, and commence event management as necessary. Avoiding complaining patients, hoping they will simply “go away,” is not a good strategy. They will go away—usually to a lawyer.
2. Answer: **B**. Delay in diagnosis of complications is the leading cause of claims. Communication issues often underlie lawsuits and drive patients to lawyers in the first instance, but a delay in diagnosing a complication from surgery at a time where the repair is less complicated and the sequelae less severe continues to drive cases.

**Answers (Chap. 43)**

1. Answer: **C** is false. Haptic feedback is not currently built into the robotic system. Although initially criticized as a major weak point of the robotic system, and although bowel injury was attributed to a lack of tactile feedback in a prospective comparative study by Hubens and colleagues, users quickly develop visual cues to overcome the lack of haptic feedback, and most experienced robotic surgeons agree that the lack of haptic feedback is not a major issue.
2. Answer: **C** is false. Although a few studies, including a prospective randomized study by Sanchez and colleagues looking at fellows who were novel to both laparoscopic and robotic gastric bypass, found the robotic technique to be faster, most studies find the robotic times to be longer.

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