

Biliary Issues in the Bariatric Population

Brandon T. Grover, DO, Shanu N. Kothari, MD*

KEYWORDS

• Bariatric surgery • Obesity • Cholelithiasis • Biliary tract • Ursodeoxycholic acid
• Cholangiography • Endoscopy • Laparoscopic-assisted percutaneous transgastric endoscopic retrograde cholangiopancreatography

KEY POINTS

- Biliary disease is common in the obese population and increases after bariatric surgery.
- Management of the gallbladder at the time of bariatric surgery remains controversial. It is reasonable to remove the gallbladder in conjunction with bariatric surgery only if patients have symptoms and a documented disorder on imaging.
- Transabdominal imaging for biliary disease has limitations in the morbidly obese patient, and may underestimate gallbladder disease.
- The use of ursodeoxycholic acid has been shown to be effective in decreasing the risk of formation of gallstones and gallbladder sludge if used during the rapid weight loss phase after bariatric surgery.
- After Roux-en-Y gastric bypass, access to the biliopancreatic ducts by standard endoscopic retrograde cholangiopancreatography (ERCP) is compromised. The use of laparoscopic-assisted percutaneous transgastric ERCP is highly successful in providing access to the duodenum, to the bile, and to the pancreatic ducts.

INTRODUCTION

Bariatric surgery has recently become the most common elective operation in the United States.¹ Cholecystectomy is one of the most common operations performed by general surgeons.² Some bariatric operations, including Roux-en-Y gastric bypass (RYGBP), alter the normal foregut and midgut anatomy, making subsequent management of biliary tract disease more challenging. In addition, morbidly obese patients and patients who have had bariatric surgery have a higher incidence of biliary disease. All general surgeons should be familiar with the post-RYGBP anatomy and the potential for subsequent biliary tract disorder. As in the general population, many

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Department of General and Vascular Surgery, Gunderson Health System, 1900 South Avenue, C05-001, La Crosse, WI 54601, USA

* Corresponding author.

E-mail address: snkothar@gundersenhealth.org

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stone-related complications can occur, including biliary colic (symptomatic cholelithiasis), acute and chronic cholecystitis, biliary pancreatitis, and choledocholithiasis.

CHOLELITHIASIS

The incidence of cholelithiasis in the general population found by ultrasonography ranges from 2% to 15%.³⁻⁷ Obesity, female gender, age more than 40 years, white ethnicity, and premenopausal state have been shown to increase the incidence of cholelithiasis.⁵ Other risk factors include rapid weight gain or weight loss (as seen after bariatric surgery), pregnancy, use of oral contraceptives, estrogen replacement, diabetes, and family history.⁸⁻¹⁰

Among the various types of gallstones, cholesterol stones are the most common. Cholesterol stone formation is multifactorial. Regardless of the associated causes, lithogenesis is related to supersaturation of bile with cholesterol. Other contributing factors that can occur within the gallbladder include bile stasis, decreased concentration of bile salts, infection, and increased glycoprotein secretion.¹¹

Many patients considering bariatric surgery have multiple preoperative risk factors. Following cholecystectomy, the prevalence of any gallbladder disorder in the morbidly obese population has been reported to be as high as 87% to 97%.¹²⁻¹⁶ Patients with a body mass index (BMI) more than 40 kg/m² have been shown to have a risk of having gallstones 8 times higher than those with lower BMI.¹⁷ Rapid weight loss after surgery increases the chance of developing cholelithiasis if not already present. The reported incidence of cholelithiasis after RYGBP ranges from 6.7% to 52.8%,^{17,18} with most studies showing rates around 30%.^{12,19-22} Multiple physiologic changes occur after bariatric surgery that contribute to gallstone formation, including hypersaturation of bile with cholesterol, increased mucin production acting to decrease nucleation time,²³ and gallbladder hypomotility.²⁴ Significant decrease in gallbladder emptying after RYGBP contributes to biliary sludge and/or gallstone formation.²²

In the early days of open bariatric surgery, it was common practice to perform a cholecystectomy at the time of weight loss surgery.^{15,25-27} Because of the high incidence of gallbladder disease after biliopancreatic diversion, cholecystectomy is routinely performed as a component of this operation.²⁸ In the current era of laparoscopic bariatric surgery, most surgeons do not routinely perform a cholecystectomy at the time of weight loss surgery.²⁹

To date, there is no consensus on the management of the gallbladder at the time of bariatric surgery, leaving the decision for concomitant cholecystectomy to the discretion of the surgeon. Many factors must be considered.

Some surgeons advocate routine prophylactic cholecystectomy at the time of bariatric surgery. This approach may be reasonable given the high incidence of gallbladder disorders seen in this patient population; the challenging management of stone-related complications in the anatomically altered patient; and the potential for avoiding a second operation, which is a benefit from the perspectives of both patient recovery and cost.

Some bariatric surgeons perform a cholecystectomy if a disorder is identified on preoperative imaging or intraoperatively via imaging or palpation. This strategy assumes that, if a disorder is present before surgery, the likelihood of developing symptoms or of the worsening of disease in the postoperative period is high.³⁰⁻³² It also precludes the difficulty in addressing the common bile duct with Roux-en-Y anatomy, should a subsequent stone disorder arise.

Other surgeons perform a cholecystectomy at the time of bariatric surgery only for patients with both pathology and symptoms consistent with biliary disease. Reasons for this approach include shorter operative times, avoiding complications related to

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