Surgical Treatment for Asymptomatic Cholelithiasis

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Clinical Inquiries provides answers to questions submitted by practicing family physicians to the Family Physicians Inquiries Network (FPIN). Members of the network select questions based on their relevance to family medicine. Answers are drawn from an approved set of evidence-based resources and undergo peer review. The strength of recommendations and the level of evidence for individual studies are rated using criteria developed by the Evidence-Based Medicine Working Group (http://www.cebm.net/?o=1025).

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Clinical Question

When is surgery indicated in patients with asymptomatic cholelithiasis?

Evidence-Based Answer

Surgery should not be offered to patients with asymptomatic cholelithiasis. (Strength of Recommendation [SOR]: C, based on decision analysis, observational studies, and expert opinion.) Cholecystectomy may be beneficial for patients who are at high risk of biliary cancer, infection, or other complications, including younger patients and those with choledocholithiasis, sickle cell disease, gallstones larger than 3 cm, or significant immunosuppression. (SOR: C, based on cohort studies, observational studies, and expert opinion.)

Evidence Summary

Most patients with gallstones (50% to 70%) have asymptomatic cholelithiasis, defined as the detection of gallstones without related symptoms or sequelae such as colic, cholecystitis, cholangitis, or pancreatitis.[1] There are no randomized clinical trials of surgical treatment of asymptomatic cholelithiasis. Family physicians should balance the risks of surgery with those of expectant management, which are derived from observational studies.[2]

A prospective study followed 298 patients with asymptomatic or minimally symptomatic (occasional transient pain or nausea) cholelithiasis in a large health maintenance organization for 25 years.[3] Patients developed symptoms at a rate of approximately 1% to 2% per year. Complications were rare (approximately 4% over 25 years) except when preceded by biliary colic. Complications typically include acute cholecystitis (0.3% per year), obstructive jaundice (0.2% per year), acute pancreatitis (0.04% to 1.5% per year), and gallstone ileus (rare).[4] A study of 1,274 patients from Scandinavia with asymptomatic gallstones followed participants for 24 years and confirmed that monitoring without surgery is a reasonable option.[5]

Case reports and cohort studies show mortality rates from laparoscopic cholecystectomy of 0.14% to 0.5%, depending on patients' age and fitness.[1] Compared with emergent cholecystectomy, elective laparoscopic cholecystectomy has lower rates of complications and conversion to open cholecystectomy. Case series and cohort studies indicate that complications of laparoscopic cholecystectomy—although rare—include potentially severe bleeding (0.11% to 1.97%), abscess (0.14% to 0.3%), bile leak (0.3% to 0.9%), common bile duct injury (0.26% to 0.6%), and bowel injury (0.14% to 0.35%).[6,7]

A decision analysis using operative mortality rates and cost data from 12 studies was performed to compare prophylactic surgery with expectant management in patients with asymptomatic cholelithiasis.[8] It predicted higher costs and increased mortality across all adult age groups and in both sexes with prophylactic surgery. For example, the prophylactic surgery strategy predicted a mortality rate of 540 per 100,000 men 50 years of age vs. 383 for expectant management. The cost of prophylactic surgery was four times that of watchful waiting. Sensitivity analyses indicated only minor differences in outcomes across a variety of probability assumptions, supporting these results. In other words, changing the underlying assumptions and probabilities in the predictive model did not substantially alter the outcome. ▶

Patients who are at high risk of biliary cancer and other operative or disease-related complications may be offered prophylactic cholecystectomy if the benefits of surgery outweigh the risks of observation *(Table 1)*.[1,5,9] Patients with asymptomatic choledocholithiasis have a much higher risk of severe complications (up to 50%) and should be offered prophylactic cholecystectomy.[1] All patients should be counseled about the symptoms of biliary colic, because most severe gallstone-related complications are preceded by these symptoms.[1]

Recommendations from Others

A 1992 consensus statement from the National Institutes of Health,[9] updated by the Society of American Gastrointestinal and Endoscopic Surgeons in 2010,[10] recommends that almost no asymptomatic patients undergo cholecystectomy. Those at high risk of gallbladder cancer, myocardial infarction, and other complications—especially patients with sickle cell disease or hereditary spherocytosis, children, and those receiving immunosuppressive therapy or undergoing transplant—may benefit from surgery.

Table 1. Indications for Consideration of Prophylactic Cholecystectomy

Risk factors for carcinoma
Anomalous pancreatic–biliary ductal junctions[5]
Choledochal cysts[5]
Gallbladder adenomas[5]
Native North or South American background[1]
Porcelain gallbladder[5]
Solitary gallbladder polyp larger than 1 cm[1]
Other indications
Choledocholithiasis[1]
Gallstones larger than 3 cm[1]
Patient lives in remote location from health care facility[1]
Sickle cell disease/spherocytosis[5]
Transplant or immunosuppressant therapy[1]
Young age[9]

Information from references 1, 5, and 9.

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REFERENCES

1. Sakorafas GH, Milingos D, Peros G. Asymptomatic cholelithiasis: is cholecystectomy really needed? A critical reappraisal 15 years after the introduction of laparoscopic cholecystectomy. *Dig Dis Sci.* 2007;52(5):1313-1325.
2. Gurusamy KS, Samraj K. Cholecystectomy versus no cholecystectomy in patients with silent gallstones. *Cochrane Database Syst Rev.* 2007;(1):CD006230.
3. Friedman GD, Raviola CA, Fireman B. Prognosis of gallstones with mild or no symptoms: 25 years of follow-up in a health maintenance organization. *J Clin Epidemiol.* 1989;42(2):127-136.
4. Venneman NG, van Erpecum KJ. Gallstone disease: primary and secondary prevention. *Best Pract Res Clin Gastroenterol.* 2006;20(6):1063-1073.
5. Schmidt M, Hausken T, Glambek I, Schleer C, Eide GE, Søndenaa K. A 24-year controlled follow-up of patients with silent gallstones showed no long-term risk of symptoms or adverse events leading to cholecystectomy. *Scand J Gastroenterol.* 2011;46(7-8):949-954.
6. Avgerinos C, Kelgiorgi D, Touloumis Z, Baltatzi L, Dervenis C. One thousand laparoscopic cholecystectomies in a single surgical unit using the "critical view of safety" technique. *J Gastrointest Surg.* 2009;13(3):498-503.
7. Hobbs MS, Mai Q, Knuiman MW, Fletcher DR, Ridout SC. Surgeon experience and trends in intraoperative complications in laparoscopic cholecystectomy. *Br J Surg.* 2006;93(7):844-853.
8. Ransohoff DF, Gracie WA, Wolfenson LB, Neuhauser D. Prophylactic cholecystectomy or expectant management for silent gallstones. A decision analysis to assess survival. *Ann Intern Med.* 1983;99(2):199-204.
9. NIH Consensus conference. Gallstones and laparoscopic cholecystectomy. *JAMA.* 1993;269(8):1018-1024.
10. Overby DW, Apelgren KN, Richardson W, Fanelli R; Society of American Gastrointestinal and Endoscopic Surgeons. SAGES guidelines for the clinical application of laparoscopic biliary tract surgery. *Surg Endosc.* 2010;24(10):2368-2386. ■