

Cholelithiasis Care Guideline



Inclusion Criteria: Children 2- 21 yrs old with RUQ abdominal pain or epigastric pain and evidence of cholelithiasis on ultrasound

Exclusion Criteria: History of trauma, pregnant, previous abdominal surgery, concern for tumor/abdominal mass, concerns for cholangitis, sepsis, concern for necrotizing pancreatitis; acalculous cholecystitis

Assessment

History: Inquire specifically about onset and intensity of symptoms, location of pain, nausea/vomiting, jaundice, fever, association with meals, radiation of pain, family history of gallbladder disease

Clinical Examination: Localized tenderness to RUQ of abdomen or epigastrium pain, Murphy's sign, jaundice, +/- obesity

Interventions

- CBC w/ diff, CRP, CMP, lipase, HCG if Female > 10 yrs old
- Acetaminophen PRN pain (Mild 1-3) – PO (IV while NPO)
 - **≤ 50 kg:** 15 mg/kg/dose every 6 hours or 12.5 mg/kg/dose every 4 hours; Max Single Dose: 15 mg/kg up to 750 mg; Max Daily Dose: 75 mg/kg/day not to exceed 3,750 mg/day
 - **> 50 kg:** 1,000 mg every 6 hours or 650 mg every 4 hours; Max Single Dose: 1,000 mg; Max Daily Dose: 4,000 mg/day
- Morphine 0.1mg/kg IV q3h PRN pain (Severe 7-10); Max: 4 mg/dose
- Ondansetron IV q8h PRN nausea or vomiting
 - **≤ 40 kg:** 0.1 mg/kg/dose as a single dose; Max: 4 mg/dose
 - **> 40 kg:** 4 mg/dose as a single dose
- US abdomen limited liver, gallbladder

Recommendations/ Considerations

The gallbladder is an organ under the liver on the right side of the abdomen, which stores bile. Bile is ejected from the gallbladder into the intestine to help digest the fat in food.

Cholecystitis: acute inflammation of the gallbladder

Cholelithiasis: presence of gallstones in the gallbladder

Choledocholithiasis: gallstones present in the common bile duct (CBD), an obstruction, which can cause jaundice, liver damage & pancreatitis

Gallstone Pancreatitis: gallstones block the pancreatic duct, which prevents pancreatic enzymes from draining into the small intestine, causing pancreatitis

Biliary dyskinesia: poor gallbladder contractility and emptying, causing pain

Laboratory Findings: leukocytosis, elevated CRP (cholecystitis), elevated liver enzymes and T&D bilirubin (choledocholithiasis), elevated lipase (gallstone pancreatitis)

- Patients who have sickle cell, hemolytic anemia or are TPN dependent are more prone to gallstones.

- Consider refraining from the use of NSAIDs prior to surgery. (Grade IV, B)

Criteria for Admission

- US with concern for CBD dilation, gallbladder wall thickening or elevated Total bilirubin, Lipase on labs (see page 2)
- History of multiple visits to the ED for discomfort/pain related to cholelithiasis
- Intolerance of PO
- Uncontrolled pain with PO analgesics

If cholelithiasis without cholecystitis, choledocholithiasis or pancreatitis

- May d/c from ED if meets discharge criteria
 - Have patient follow up with PCP to obtain authorization for specialist appointment with surgery to plan for future cholecystectomy
 - Include surgery office phone number on discharge paperwork and instruct family to contact the office to schedule follow-up

Discharge Criteria

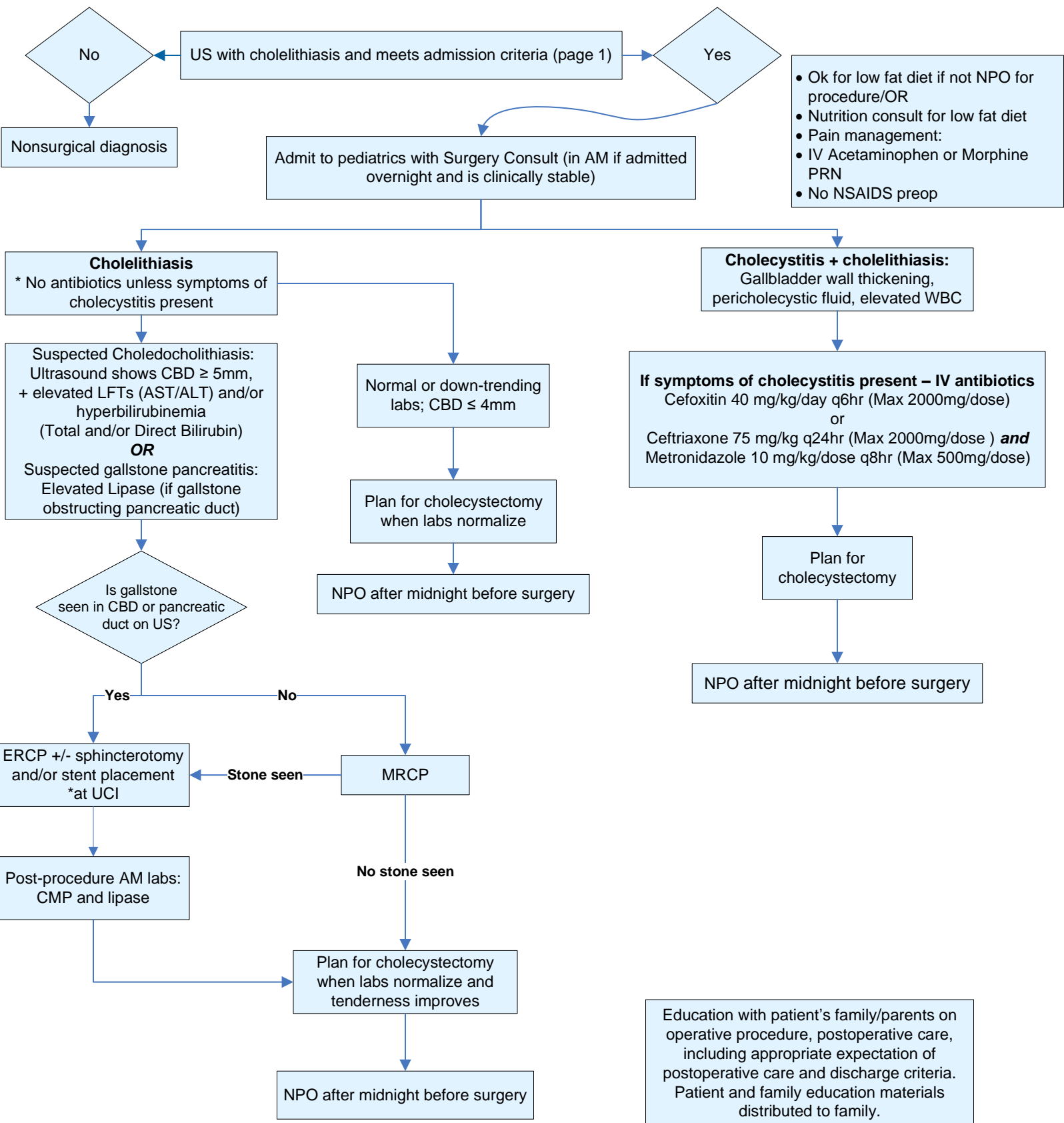
- Tolerating low fat diet
- Able to ambulate
- Pain managed by oral medications
- Normal Labs

Patients who need antibiotic therapy:

- Radiologic findings of gallbladder wall thickening and/or elevated WBC in the setting of concern for cholecystitis
- Has fever
- Toxic appearance

Patient Education

- Cerner instructions as appropriate for diagnosis - Cholecystectomy, Pain Management, Constipation, Low Fat Diet



When NPO:
Maintenance IV fluids: (D5NS + 20meq KCL)

Postoperative utilizing ERAS: Minimize NPO time, when applicable; advance diet as tolerated as soon as awake postop; pain and nausea management; early ambulation.

Education with patient's family/parents on operative procedure, postoperative care, including appropriate expectation of postoperative care and discharge criteria. Patient and family education materials distributed to family.

Developed By:
Rebecca John, MSN, CPNP
Dr. Minkkwan Wungwattana
Dr. Rachel Marano
Dr. Theodore Heyming
Juleah Walsh, RN, MSN, PCNS-BC, CPAN
Dr. Christine Yang
Allison Jun, Pharm. D.

References Cholecystectomy Care Guideline

- Bencini, L., Tommasi, C., Manetti, R., & Farsi, M. (2014). Modern approach to cholecysto-choledocholithiasis. *World Journal of Gastrointestinal Endoscopy*, 6(2), 32-40. <https://doi.org/10.4253/wjge.v6.i2.32> **(Level I)**
- Duncan, C. B., & Riall, T. S. (2012). Evidence-Based Current Surgical Practice: Calculous Gallbladder Disease. *Journal of Gastrointestinal Surgery*(16), 2011-2025. <https://doi.org/10.1007/s11605-012-2024-1> **(Level I)**
- Fishman, D. S., Chumpitazi, B. P., Rajman, I., Tsai, C. M., Smith, E. O., Mazziotti, M. V., & Gilger, M. A. (2016). Endoscopic retrograde cholangiography for pediatric choledocholithiasis: Assessing the need for endoscopic intervention. *World Journal of Gastrointestinal Endoscopy*, 8(11), 425-432. <https://doi.org/10.4253/wjge.v8.i11.425> **(Level III)**
- Kingston, P., Lascano, D., Ourshalimian, S., Russell, C. J., Kim, E., & Kelley-Quon, L. I. (2022). Ketorolac use and risk of bleeding after appendectomy in children with perforated appendicitis. *Journal of Pediatric Surgery*, 57(8), 1487-1493. <https://doi.org/10.1016/j.jpedsurg.2021.11.019> **(Level III)**
- Society of American Gastrointestinal and Endoscopic Surgeons. (2010). Guidelines for the Clinical Application of Laparoscopic Biliary Tract Surgery. Retrieved from <https://www.sages.org/publications/guidelines/guidelines-for-the-clinical-application-of-laparoscopic-biliary-tract-surgery/> **(Level I)**
- Williams, K., Baumann, L., Abdullah, F., St. Peter, S. D., & Oyetunji, T. A. (2018). Variation in prophylactic antibiotic use for laparoscopic cholecystectomy: need for better stewardship in pediatric surgery. *Journal of Pediatric Surgery*, 53(1), 48-51. <https://doi.org/10.1016/j.jpedsurg.2017.10.012> **(Level III)**
- Yamashita, Y., Takada, T., Strasberg, S. M., Pitt, H. A., Gouma, D. J., Garden, O. J., . . . Supe, A. N. (2013). TG13 surgical management of acute cholecystitis. *Journal of Hepato-Biliary-Pancreatic Sciences*, 20, 89-96. <https://doi.org/10.1007/s00534-012-0567-x> **(Level I)**