Acute Cholecystitis Management

PRESENTATION

Patient presents to the Acute Cancer Care Center (ACCC) with one or more of the following symptoms:

- Pain (typically associated with fatty or spicy meal)
- Nausea/vomiting
- Epigastric pain
- Right shoulder/back pain
- Jaundice
- Dark urine
- Pale stool

INITIAL ASSESSMENT AND EVALUATION

- History and physical exam
- Initiate NPO status
- Establish IV access
- Ultrasound gallbladder or CT abdomen/pelvis with contrast
- CBC with differential, liver function tests (LFT)
  - Consider amylase, lipase, aPTT, PT with INR, as clinically indicated

- Diagnosis of acute cholecystitis (AC) confirmed
- Consult Surgical Oncology within 24-48 hours
- Discuss inpatient admission with Primary Team and Surgical Oncology

INITIAL TREATMENT

- Initiate empiric IV antibiotic therapy using the institutional acute cholecystitis ordering tool
- IV hydration as clinically indicated

For Primary Team and Surgical Oncology Assessment and Evaluation, see Page 2

NPO = nothing by mouth

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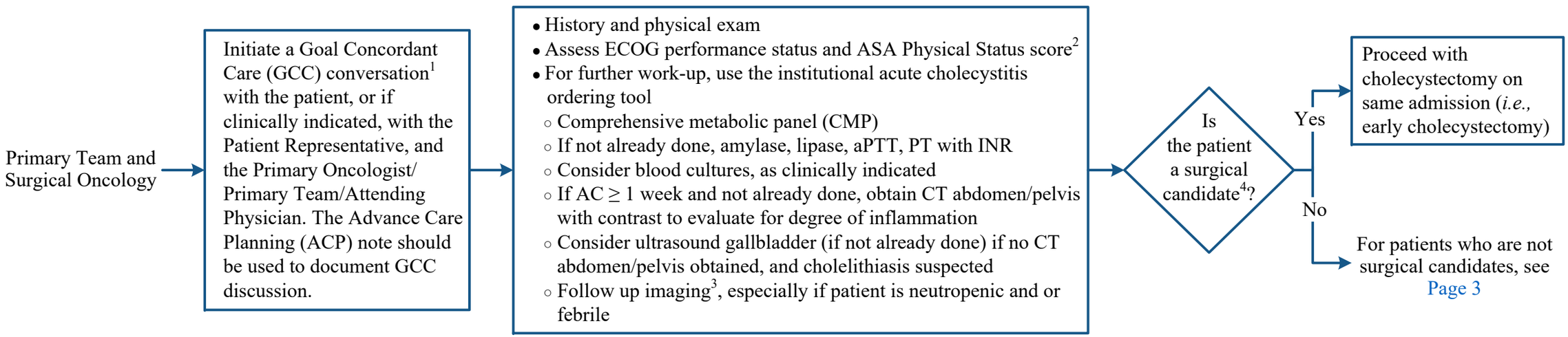
ASSESSMENT **EVALUATION**



ASA = American Society of Anesthesiologists
ECOG = Eastern Cooperative Oncology Group
MRI = magnetic resonance imaging
MRCP = magnetic resonance cholangiopancreatography

[1] Refer to GCC home page (for internal use only)
[2] Refer to Appendix A for American Society of Anesthesiologists Physical Status (ASAPS) Classification System
[3] Hepatobiliary iminodiacetic acid (HIDA) scan is indicated when the ultrasound and/or CT imaging is equivocal for the diagnosis of acute cholecystitis and for documenting the diagnosis of chronic cholecystitis. MRI abdomen with and without contrast or MRCP is indicated when there is suspicion of stones/lesions outside cystic duct and gallbladder such as common bile duct or intrahepatic biliary duct.
[4] Patient with minimal inflammation around the gallbladder, non-hostile abdomen (abdomen is operatively accessible), ANC ≥ 1 K/microliter, ECOG ≤ 3, and ASA ≤ 3

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Acute Cholecystitis Management

Disclaimer: *This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. This algorithm should not be used to treat pregnant women.*

TREATMENT **EVALUATION** **DISPOSITION**

Not a surgical candidate

- Continue empiric IV antibiotic therapy for 24-48 hours until temperature < 38.3°C and ANC ≥ 1 K/microliter (for neutropenic patients)
- Consult Infectious Diseases

Has pain resolved?

Yes
- Advance diet as tolerated
- Consider Nutrition consult

→
- Discharge patient
- Outpatient referral to General Surgery within 2 weeks for outpatient cholecystectomy (*i.e.,* interval cholecystectomy)

No

Platelets > 50 K/microliter **and** INR ≤ 1.5

Yes
- Interventional Radiology:
  - Percutaneous cholecystostomy tube (PCT) placement
- Advance diet as tolerated
- Consider Nutrition consult

→
- Discharge patient
- Interventional Radiology:
  - Outpatient cholangiogram at 6 weeks post PCT placement

Cholelithiasis and/or cystic duct occlusion?

Yes
- Outpatient referral to General Surgery within 2 weeks for outpatient cholecystectomy (*i.e.,* interval cholecystectomy)
- Initiate a GCC conversation[1] with the patient or if clinically indicated, with the Patient Representative and the Primary Oncologist/ Primary Team/Attending Physician. The Advance Care Planning (ACP) note should be used to document GCC discussion.

No
- Interventional Radiology:
  - Consider capping trial or
  - Removal of PCT[2]

No

Correct coagulopathy. Refer to Peri-Procedure Management of Anticoagulants algorithm.

Coagulopathy corrected?

Yes → Interventional Radiology: Percutaneous cholecystostomy tube (PCT) placement

No
- Consider additional supportive measures per Primary Oncologist/Primary Team[3]
- Initiate a GCC conversation[1] with the patient or if clinically indicated, with the Patient Representative and the Primary Oncologist/Primary Team/Attending Physician. The Advance Care Planning (ACP) note should be used to document GCC discussion.
- Consult Palliative/Supportive Care as indicated

G-CSF = granulocyte-colony stimulating factor

[1] Refer to GCC home page (for internal use only)

[2] For removal of PCT all of the following criteria must be met:
- Imaging evidence of cholelithiasis absence **and**
- PCT in place at least 4-6 weeks for tract maturity **and**
- Cholangiogram confirming patency of the cystic duct and common bile duct **and**
- Successful completion of capping trial (1-2 weeks)

Note: In select cases sinogram over wire may be needed at the discretion of IR faculty

[3] Additional supportive measures that can be considered include the administration of G-CSF or granulocyte transfusions, the latter which has low-grade evidence in the management of select refractory neutropenic infections in patients with prolonged granulocytic aplasia

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APPENDIX A: American Society of Anesthesiologists Physical Status (ASAPS) Classification System

Classification	Description
ASA 1	A normal healthy patient. Example: Fit, non-obese (BMI under 30), a nonsmoking patient with good exercise tolerance
ASA 2	A patient with mild systemic disease. Example: Patient with no functional limitations and a well-controlled disease (*e.g.*, treated hypertension or diabetes), obesity with BMI under 35, frequent social alcohol drinker, or current cigarette smoker.
ASA 3	A patient with a severe systemic disease that is not life-threatening. Example: Patient with some functional limitations due to disease (*e.g.*, poorly treated hypertension or diabetes, morbid obesity, chronic renal failure, a bronchospastic disease with intermittent exacerbation, stable angina, implanted pacemaker).
ASA 4	A patient with a severe systemic disease that is a constant threat to life. Example: Patient with functional limitation from severe, life-threatening disease (*e.g.*, unstable angina, poorly controlled COPD, symptomatic CHF, recent (< three months ago) myocardial infarction or stroke.
ASA 5	A moribund patient who is not expected to survive without the operation. The patient is not expected to survive beyond the next 24 hours without surgery. Example: Patient with a ruptured abdominal aortic aneurysm, massive trauma, or extensive intracranial hemorrhage with mass effect.
ASA 6	A brain-dead patient whose organs are being removed with the intention of transplanting them into another patient

BMI = body mass index
CHF = congestive heart failure
COPD = chronic obstructive pulmonary disease

SUGGESTED READINGS

Bagley, S. J., Sehgal, A. R., Gill, S., Frey, N. V., Hexner, E. O., Loren, A. W., . . . Luger, S. M. (2015). Acute cholecystitis is a common complication after allogeneic stem cell transplantation and is associated with the use of total parenteral nutrition. *Biology of Blood and Marrow Transplantation, 21*(4), 768-771. https://doi.org/10.1016/j.bbmt.2014.12.005

Bourgouin, S., Monchal, T., Julien, C., d'Argouges, F., & Balandraud, P. (2021). Early versus delayed cholecystectomy for cholecystitis at high risk of operative difficulties: A propensity score-matching analysis. *The American Journal of Surgery, 221*(5), 1061-1068. https://doi.org/10.1016/j.amjsurg.2020.09.019

Dollhopf, M., Larghi, A., Will, U., Rimbas, M., Anderloni, A., Sanchez-Yague, A., . . . Kunda, R. (2017). EUS-guided gallbladder drainage in patients with acute cholecystitis and high surgical risk using an electrocautery-enhanced lumen-apposing metal stent device. *Gastrointestinal Endoscopy, 86*(4), 636-643. https://doi.org/10.1016/j.gie.2017.02.027

Fagenson, A. M., Powers, B. D., Zorbas, K. A., Karhadkar, S., Karachristos, A., Di Carlo, A., & Lau, K. N. (2021). Frailty predicts morbidity and mortality after laparoscopic cholecystectomy for acute cholecystitis: An ACS-NSQIP cohort analysis. *Journal of Gastrointestinal Surgery, 25*(4), 932-940. https://doi.org/10.1007/s11605-020-04570-1

Gorschluter, M., Mey, U., Strehl, J., Schepke, M., Lamberti, C., Sauerbruch, T., & Glasmacher, A. (2006). Cholecystitis in neutropenic patients: Retrospective study and systematic review. *Leukemia Research, 30*(5), 521-528. https://doi.org/10.1016/j.leukres.2005.08.029

Gurusamy, K. S., Davidson, C., Gluud, C., & Davidson, B. R. (2013). Early versus delayed laparoscopic cholecystectomy for people with acute cholecystitis. *Cochrane Database of Systematic Reviews, 2013*(6), CD005440. https://doi.org/10.1002/14651858.CD005440.pub3

Gurusamy, K. S., Rossi, M., & Davidson, B. R. (2013). Percutaneous cholecystostomy for high-risk surgical patients with acute calculous cholecystitis. *Cochrane Database of Systematic Reviews, 2013*(8), CD007088. https://doi.org/10.1002/14651858.CD007088.pub2

Gutt, C. N., Encke, J., Koninger, J., Harnoss, J.-C., Weigand, K., Kipfmuller, K., . . . Buchler, M. W. (2013). Acute cholecystitis: Early versus delayed cholecystectomy, a multicenter randomized trial (ACDC study, NCT00447304). *Annals of Surgery, 258*(3), 385-393. https://doi.org/10.1097/SLA.0b013e3182a1599b

Huang, H., Zhang, H., Yang, D., Wang, W., & Zhang, X. (2021). Percutaneous cholecystostomy versus emergency cholecystectomy for the treatment of acute calculous cholecystitis in high-risk surgical patients: A meta-analysis and systematic review. *Updates in Surgery, 74*(1), 55-64. https://doi.org/10.1007/s13304-021-01081-9

Irani, S., Ngamruengphong, S., Teoh, A., Will, U., Nieto, J., Abu Dayyeh, B. K., . . . Khashab, M. A. (2017). Similar efficacies of endoscopic ultrasound gallbladder drainage with a lumen-apposing metal stent versus percutaneous transhepatic gallbladder drainage for acute cholecystitis. *Clinical Gastroenterology and Hepatology, 15*(5), 738-745. https://doi.org/10.1016/j.cgh.2016.12.021

Jang, J. W., Lee, S. S., Song, T. J., Hyun, Y. S., Park, D. H., Seo, D. W., . . . Yun, S. C. (2012). Endoscopic ultrasound-guided transmural and percutaneous transhepatic gallbladder drainage are comparable for acute cholecystitis. *Gastroenterology, 142*(4), 805-811. https://doi.org/10.1053/j.gastro.2011.12.051

Kim, S. H., Jung, D., Ahn, J.-H., & Kim, K. S. (2017). Differentiation between gallbladder cancer with acute cholecystitis: Considerations for surgeons during emergency cholecystectomy, a cohort study. *International Journal of Surgery, 45*, 1-7. https://doi.org/10.1016/j.ijsu.2017.07.046

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SUGGESTED READINGS - continued

McGregor, H., Woodhead, G., Patel, M., Khan, A., Hannallah, J., Ruiz, D., . . . Hennemeyer, C. (2020). Gallbladder cryoablation for chronic cholecystitis in high-risk surgical patients: 1-year clinical experience with imaging follow-up. *Journal of Vascular and Interventional Radiology, 31*(5), 801-807. https://doi.org/10.1016/j.jvir.2020.01.007

MD Anderson Institutional Policy #CLN1202 - Advance Care Planning Policy
Advance Care Planning (ACP) Conversation Workflow (ATT1925)

Ozkardes, A. B., Tokac, M., Dumlu, E. G., Bozkurt, B., Ciftci, A. B., Yetisir, F., & Kilic, M. (2014). Early versus delayed laparoscopic cholecystectomy for acute cholecystitis: A prospective, randomized study. *International Surgery, 99*(1), 56-61. https://doi.org/10.9738/INTSURG-D-13-00068.1

Peterson, C. M., McNamara, M. M., Kamel, I. R., Al-Refaie, W. B., Arif-Tiwari, H., Cash, B. D., . . . Carucci, L. R. (2019). ACR Appropriateness Criteria® right upper quadrant pain. *Journal of the American College of Radiology, 16*(5), S235-S243. https://doi.org/10.1016/j.jacr.2019.02.013

Ridtitid, W., Luangsukrerk, T., Piyachaturawat, P., Teeratorn, N., Angsuwatcharakon, P., Kongkam, P., & Rerknimitr, R. (2022). Ultimate outcomes of three modalities for non-surgical gallbladder drainage in acute cholecystitis with or without concomitant common bile duct stones. *Annals of Hepato-Biliary-Pancreatic Surgery, 26*(1), 104-112. https://doi.org/10.14701/ahbps.21-098

Santos, D., Ledet, C. R., Limmer, A., Gibson, H., & Badgwell, B. (2020). Use of non-operative treatment and interval cholecystectomy for cholecystitis in patients with cancer. *Trauma Surgery & Acute Care Open, 5*(1), e000439-e000445. https://doi.org/10.1136/tsaco-2020-000439

Teoh, A. Y. B., Kitano, M., Itoi, T., Pérez-Miranda, M., Ogura, T., Chan, S. M., . . . Lau, J. Y. W. (2020). Endosonography-guided gallbladder drainage versus percutaneous cholecystostomy in very high-risk surgical patients with acute cholecystitis: An international randomised multicentre controlled superiority trial (DRAC 1). *Gut, 69*(6), 1085-1091. https://doi.org/10.1136/gutjnl-2019-319996

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