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Case Report: Percutaneous Cholecystostomy as the Beginning of Recovery

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Abstract. *Background.* Acute cholecystitis is one of the most frequent urgent diseases in elderly patients. Usually, the management of acute cholecystitis is through laparoscopic surgery, however, for critically ill patients it might be a dangerous invasive procedure. Therefore, percutaneous cholecystostomy is used. Hence, wordwise the role of percutaneous cholecystostomy for acute cholecystitis is controversial. *Case presentation.* We report the case of a 78-year-old man who was diagnosed with acute calculous cholecystitis. The patient was admitted in poor condition and over 3 days it became worse. Due to the patient's high comorbidity index a percutaneous cholecystostomy was performed. In the postoperative course, it is complicated with subcapsular hematoma and tube dislocation. Four months later, laparoscopic cholecystectomy was performed. The postoperative period was uneventful and outcomes were excellent.*Conclusion.* In conclusion, percutaneous cholecystostomy can be successful and a valuable option in the short-term treatment of critically ill patients. Although, we believe that these patient's management decision is based on the surgeon's clinical judgment and should be individual.

Keywords: percutaneous cholecystostomy, acute cholecystitis, cholecystectomy.

Klinikinis atvejis: perkutaninė cholecistostoma kaip sveikimo pradžia

Santrauka. *Įvadas.* Ūminis cholecistitas – viena dažniausių senyvo amžiaus pacientų ligų. Įprastai pagrindinis gydymas yra laparoskopinė cholecistektomija, tačiau didelės rizikos pacientams šis invazyvus gydymo būdas gali būti pavojingas. Minėtais atvejais taikytinas alternatyvus gydymas – perkutaninė cholecistostoma. Vis dėlto pasaulyje jos efektyvumas prieštaringas. *Klinikinis atvejis.* Straipsnyje pristatomas 78 m. vyro, kuriam diagnozuotas ūmus kalkuliozinis cholecistitas, klinikinis atvejis. Pacientas paguldytas į ligoninę labai prastos būklės, per tris paras būklė dar labiau pablogėjo. Dėl didelės gretutinių ligų įvairovės pacientui atlikta perkutaninė cholecistostoma, kuri pooperaciniu laikotarpiu komplikavosi į subkapsulinę hematomą, pasireiškė cholecistostomos vamzdelio disfunkcija. Praėjus keturiems mėnesiams, atlikta laparoskopinė cholecistektomija. Pooperacinis laikotarpis buvo sklandus, komplikacijų nenustatyta. *Išvados.* Apibendrinant galima teigti, kad perkutaninė cholecistostomija gali būti sėkminga ir vertinga trumpalaikio kritinės būklės pacientų gydymo galimybė. Vis dėlto šių pacientų gydymo galimybės turėtų būtų individualios ir pagrįstos chirurgo klinikiniu sprendimu.

Reikšminiai žodžiai: perkutaninė cholecistostoma, ūmus cholecistitas, cholecistektomija.

Introduction

Acute cholecystitis (AC) is a common clinical problem of urgent hospitalization and ranges between 50% and 70% among elderly patients [1]. Currently, laparoscopic cholecystectomy is a time-tested invasive method as a treatment for AC [2–8]. However, multiple comorbidities in patients, severe AC, and old age are the main factors determining laparoscopic or open cholecystectomy as a contraindication [7, 9]. For this reason, an al-

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ternative life-saving and less-invasive treatment is chosen – percutaneous cholecystostomy catheter placement. This procedure allows quick relief of the patient's obstructive symptoms and to be discharged to home care [1, 8, 10]. Yet, there is no clear consensus in the literature on this procedure application [3, 4, 6, 7, 9–11].

The primary aim of our article is to demonstrate how tough is the practicality drainage of the gallbladder and management in elderly, high-risk patients. We believe this is an interesting case due to circumstances and findings.

Case description

A 78-year-old male was admitted to the emergency department complaining of severe pain in the epigastrium and nausea with no other significant symptoms present. There was no history of fever or jaundice. According to the hospital records, the patient underwent two heart attacks (2011, 2012) and has primary hypertension, stage B heart failure, hypertensive cardiomyopathy, and dyslipidemia.

During the admission chest computed tomography angiography (CTA) was performed and showed an infrarenal aortic aneurysm (10x15 cm) and atherosclerotic plaque detachment in coronary vessels. Coronary angioplasty was inserted. An abdominal ultrasound was also performed and revealed gallstones, and thickening of the gallbladder wall, however, data for acute cholecystitis were insufficient.

After a few days, the patient had felt the same pain in the epigastrium aria. The diagnosis of acute calculous cholecystitis was established and the decision to perform a percutaneous cholecystostomy was taken. In the early postoperative course, the patient's blood investigations revealed high inflammatory indicators and anemia, so an abdominal ultrasound was repeated. The cholecystostomy catheter was dislocated and the subcapsular hematoma (40x45x125 mm) of the liver was found and managed conservatively. Nevertheless, the cholecystostomy drain wasn't functioning, so the procedure had to be repeated after seven days.

When the inflammation of the gallbladder due to the infrarenal aortic aneurysm subsided, an aortic stent graft was placed in the patient. However, a few weeks later the patient was readmitted with similar symptoms, fever, and cough. COVID-19 was diagnosed. The patient was managed conservatively and discharged home.

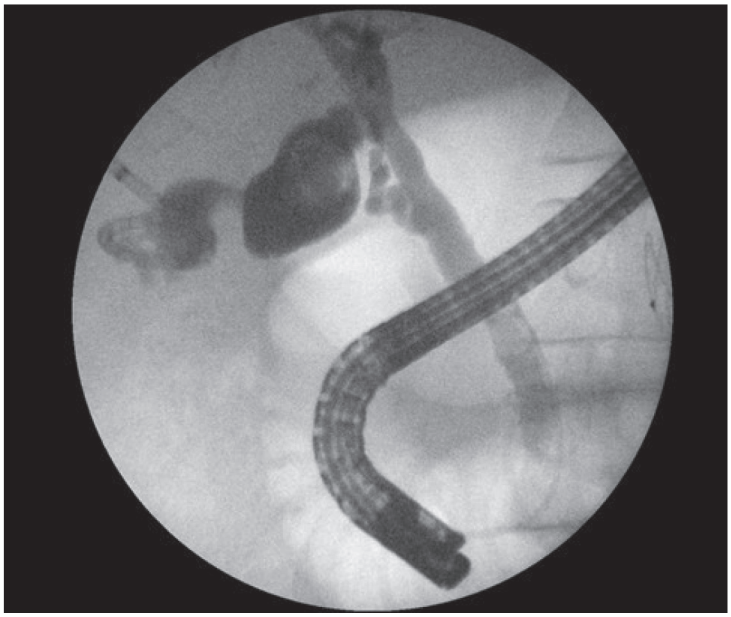

Figure 1. Endoscopic retrograde cholangiography demonstrates (A) an obstructed and dilated common bile duct with three about 1 cm gallstones, (B) a contrast-filled gallbladder with another large gallstone, and (C) a cholecystostomy drain

Four months later, the patient arrived as scheduled for operative treatment. At admission, cholangiography was performed through a cholecystostomy tube. During the procedure, gallstones were detected in the common bile duct. For this reason, it was decided to do endoscopic retrograde cholangiography and litectomy the next day (Figure 1).

The treatment options for this patient were discussed at the multidisciplinary medical committee and the laparoscopic cholecystectomy with indocyanine green (ICG) fluoroscopy was chosen (Figure 2). Four trocars were placed in the abdominal cavity. During the surgery, the cystic duct was noticed, dissected separately from the cystic artery, and both separately clipped. The gallbladder was dissected, the subhepatic space was washed and the drain was left. The aponeurosis was sutured with three stitches of Monofilament. The post-operative period was uneventful, and the patient was discharged from the hospital.

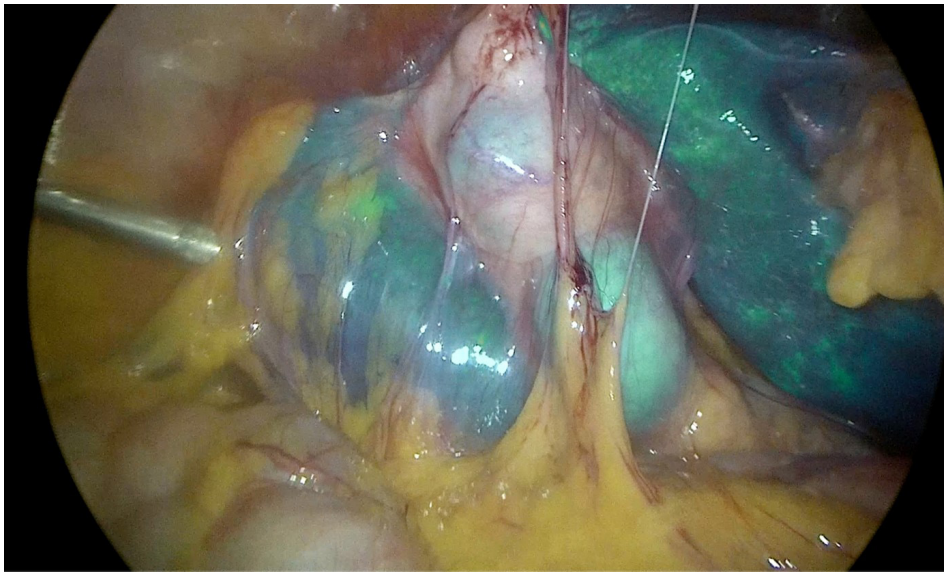

Figure 2. Laparoscopic cholecystectomy with indocyanine green (ICG) fluoroscopy

Discussion

Since ancient Greek and Egyptian times, biliary tract diseases have been a remarkable challenge for surgeons [12]. One of those diseases is acute cholecystitis. Important dates in the history of cholecystitis management include 1867 when John Stough Bobbs performed the first cholecystostomy on a 30-year-old woman with an ovarian cyst and a 4-year history of biliary colic [2]. The popularity of percutaneous cholecystostomy has grown and continued into the laparoscopic era. However, when cholecystectomy became the gold standard for acute cholecystitis surgical treatment, cholecystostomy remained an attractive alternative in situations where the patient has significant comorbidity or intraoperative risk, usually as a bridge to open or laparoscopic cholecystectomy [2, 12]. Nevertheless, with the increasingly strong development of the minimally invasive and robotic surgery industry, this ancient treatment method is being forgotten and its effectiveness is questioned [5, 8, 9, 11, 13]. The advent of antibiotics also brought a lot of confusion in acute cholecystitis management. According to Tokyo guidelines (TG 2018), there are three types of treatment scenarios for mild (grade I), moderate (grade II), and severe (grade III) AC [3, 14, 15]. Nevertheless, in agreement with the older edition of Tokyo guidelines (TG 2013) and due to increasing bacterial resistance to antibiotics, they are no longer recommended for milder forms of acute cholecystitis [15, 16]. Furthermore, Dijk et al. [17] systematic review showed that the role of antibiotic treatment is uncertain and should not be included

in acute calculous cholecystitis management. Despite that, World Society of Emergency Surgery Guideline supports the treatment of severe cholecystitis, as suggested by TG 2018 [18].

If medical treatment is uneventful, percutaneous biliary drainage has been used to manage acute cholecystitis symptoms. Although, it is not a completely safe procedure. According to the latest literature, percutaneous cholecystostomy complications vary from 5.6% to 26.3% [5]. Patients may have a wide spectrum of adverse events, such as bleeding, bile leakage, catheter displacement, infection, and, rarely, organ perforation or duodenal fistula [6, 7, 16, 19]. In our case, we observed several complications – catheter dislocation, bleeding, and infection. Nevertheless, Hung et al. [10] reported that the most frequent complication is catheter displacement. Percutaneous cholecystostomy tube placement also has an impact on adverse events. Martino et al. and Hung et al. in their retrospective cohort studies reported that the transperitoneal route has been related to a lower risk of bleeding or hemobilia and the transhepatic route with a possible higher risk of biliary leakage [6, 8, 19]. Moreover, the thirty-day mortality rate in the patients treated with percutaneous cholecystostomy is 12% and one-year mortality – 22% [7]. Equally, current literature implies that the main cause of death is sepsis, complex comorbidities, or procedure-related complications [7, 11, 19, 20].

Currently, the present literature does not present a crystal concensus on the optimal timing of removal of the percutaneous cholecystostomy catheter in high-risk patients [8, 19]. Nevertheless, most authors recommend maintaining the drain for 4–6 weeks [8, 16, 19]. Moreover, European Association for the Study of the Liver (EASL) [21] suggests performing cholangiography before removal of the cholecystostomy tube because up to 20% of calculi are found in the bile ducts, as in our clinical cases. Also, recurrence due to mucosal and bacterial translocation through the catheter after percutaneous cholecystostomy tube removal is possible. Hasbahceci et al. [8] cohort study showed a recurrence rate from 4% to 22%.

Likewise, there is no equal description of selection criteria in the studies that report AC management in critically ill patients. Some studies prove that only laparoscopic cholecystectomy is a gold standard method. However, other authors demonstrate percutaneous drainage as a cost-effective, safe, and alternative treatment approach, especially in patients with several critical conditions [5, 8, 11].

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Conflicts of Interest. The authors declare no conflict of interest.

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