

Profile of Open Cholecystostomy at Dr. Soetomo General Hospital, Surabaya: a 2 Year Retrospective Study

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ABSTRACT

Open cholecystostomy represents a critical surgical intervention for patients with biliary obstruction who are deemed unsuitable for more complex procedures. This study analyzes patient characteristics and outcomes following open cholecystostomy procedures in a tertiary referral hospital in Indonesia. This descriptive study analyzed 71 patients who underwent open cholecystostomy for obstructive jaundice at RSUD Dr. Soetomo Surabaya from January 2023 to June 2025. Data were collected retrospectively from medical records, including demographics, etiology, pre- and post-operative bilirubin levels, length of stay, and clinical outcomes. Open cholecystostomy effectively reduces bilirubin levels in patients with obstructive jaundice. However, high mortality rates reflect the critical condition of patients requiring this procedure. The intervention remains valuable for patients unsuitable for more definitive surgical management.

KEYWORDS: Open Cholecystostomy, Obstructive Jaundice, Biliary Drainage, Surgical Outcomes, Elderly Patients

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INTRODUCTION

Obstructive jaundice represents a significant clinical challenge characterized by impaired bile flow, leading to elevated serum bilirubin levels and associated complications [1,2]. The condition can result from various etiologies, with malignant biliary obstruction and cholelithiasis being the most common causes. When standard therapeutic approaches such as endoscopic or percutaneous interventions are contraindicated or unavailable, surgical biliary drainage becomes necessary [3,4].

Open cholecystostomy, a procedure involving surgical opening and drainage of the gallbladder, serves as a palliative intervention for critically ill patients who cannot tolerate more extensive surgical procedures [5–7]. This technique was first described by Glenn and Thorbjarnarson in 1963 and has evolved as a life-saving procedure for high-risk patients with biliary sepsis and obstruction [8]. The procedure aims to achieve biliary decompression, control infection, and stabilize patients' conditions before potential definitive treatment.

The pathophysiology of obstructive jaundice involves multiple organ systems, with hepatic dysfunction, coagulopathy, renal impairment, and immune suppression being common complications [9,10]. These systemic effects significantly increase perioperative morbidity and mortality, particularly in elderly patients and those with multiple comorbidities [11,12]. Effective biliary drainage can rapidly alleviate symptoms and restore hepatic function, as evidenced by significant reductions in serum bilirubin levels following successful interventions [13,14].

Current literature demonstrates varying outcomes for different biliary drainage techniques. Percutaneous cholecystostomy studies report mortality rates ranging from 15-23% in elderly populations [15,16], while open surgical approaches may carry higher immediate risks but potentially better long-term outcomes in selected patients [17,18]. The choice of intervention depends on patient factors, local expertise, and available resources.

RSUD Dr. Soetomo, as a tertiary referral center in Eastern Indonesia, manages complex cases of obstructive jaundice requiring surgical intervention. Understanding the characteristics and outcomes of patients undergoing open cholecystostomy is crucial for optimizing patient selection, perioperative management, and counseling regarding expected outcomes. This study aims to describe the demographic characteristics, clinical presentations, and outcomes of patients who underwent open cholecystostomy for

obstructive jaundice at RSUD Dr. Soetomo Surabaya during the period from January 2023 to June 2025.

RESEARCH METHOD

This retrospective descriptive study was conducted at RSUD Dr. Soetomo Surabaya, a tertiary academic medical center serving as the primary referral hospital for Eastern Indonesia. The study was approved by the institutional ethics committee and conducted in accordance with the Declaration of Helsinki [19].

All patients who underwent open cholecystostomy for obstructive jaundice between January 2023 and June 2025 were included in the study. Patients were identified through surgical procedure codes and confirmed by review of operative notes. The study included both emergency and elective procedures performed by the Department of Surgery.

Data were collected retrospectively from electronic medical records using a standardized data collection form. Variables collected included patient demographics, presenting symptoms, laboratory parameters including pre- and post-operative bilirubin levels, imaging findings, operative details, postoperative complications, length of hospital stay, and clinical outcomes including mortality. Descriptive statistics were used to summarize patient characteristics and outcomes. Continuous variables are presented as mean $\pm$ standard deviation or median (range) as appropriate. Categorical variables are presented as frequencies and percentages. Statistical analysis was performed using SPSS version 25.0 (IBM Corp., Armonk, NY).

RESULTS AND DISCUSSION

A total of 71 patients underwent open cholecystostomy during the study period. The demographic characteristics are summarized in Table 1. The mean age was 57.94 years (range: 28-85 years), with the majority of patients (55 patients, 77.5%) aged between 18-65 years. Sixteen patients (22.5%) were older than 65 years. Male patients predominated (39 patients, 54.9%) compared to females (32 patients, 45.1%). The median age was 59 years. Malignant etiology was the predominant cause of obstructive jaundice, affecting 46 patients (64.8%). Non-malignant causes, primarily cholelithiasis, accounted for 25 patients (35.2%). The distribution reflects the tertiary nature of the institution, receiving complex cases often requiring specialized surgical intervention.

Table 1: Characteristics of the Research Sample

Characteristic	Category	Number (n=71)	Percentage (%)
Age	18–65 years	55	77.5
	> 65 years	16	22.5
Sex	Male	39	54.9
	Female	32	45.1
Length of Stay	< 5 days	5	7.0
	6–14 days	50	70.4
	> 14 days	16	22.5
Etiology	Malignancy	46	64.8
	Non-malignancy	25	35.2
Outcome	Discharged	36	50.7
	Deceased	35	49.3

Table 2: Pre- and Post-Operative Bilirubin Levels in Open Cholecystostomy

Phase	Parameter	Mean	Median (Min – Max)
Pre-Op Cholecystostomy	Direct Bilirubin	15.72	15.00 (1.30 – 34.80)
	Total Bilirubin	20.20	18.23 (5.02 – 49.60)
Post-Op Cholecystostomy	Direct Bilirubin	11.15	9.50 (0.19 – 28.90)
	Total Bilirubin	15.04	12.69 (1.14 – 39.20)

The severity of hyperbilirubinemia at presentation was considerable. For direct bilirubin, the largest group comprised patients with extreme hyperbilirubinemia Grade 2 (15.0-19.9 mg/dL), affecting 21 patients (29.6%). Extreme hyperbilirubinemia Grade 1 (12.0-14.9 mg/dL) was present in 16 patients (22.5%), while severe hyperbilirubinemia (6.0-11.9 mg/dL) affected 15 patients (21.1%). Only 4 patients (5.6%) had extreme hyperbilirubinemia Grade 4 (>30 mg/dL).

For total bilirubin pre-operatively, extreme hyperbilirubinemia Grades 2 and 3 were most common, each affecting 20 patients (28.2%). Extreme hyperbilirubinemia Grade 1 was present in 11 patients (15.5%), while 10 patients (14.1%) had extreme hyperbilirubinemia Grade 4. The mean pre-operative direct bilirubin was 15.72 mg/dL (range: 1.30-34.80 mg/dL), and mean total bilirubin was 20.20 mg/dL (range: 5.02-49.60 mg/dL).

Open cholecystostomy demonstrated significant efficacy in reducing bilirubin levels. Post-operatively, mean direct bilirubin decreased to 11.15 mg/dL (range: 0.19-28.90 mg/dL), representing a reduction of 29.1% from pre-operative levels. Mean total bilirubin decreased to 15.04 mg/dL (range: 1.14-39.20 mg/dL), representing a 25.5% reduction.

The distribution of post-operative bilirubin levels showed improvement across all severity categories. For direct bilirubin, severe hyperbilirubinemia (6.0-11.9 mg/dL) became the most common category post-operatively, affecting 27 patients (38.0%). Moderate hyperbilirubinemia (2.0-5.9 mg/dL) was present in 13 patients (18.3%), while 3 patients (4.2%) achieved normal levels (<1.2 mg/dL).

Hospital length of stay varied considerably among patients. The majority (50 patients, 70.4%) had stays of 6-14 days. Sixteen patients (22.5%) required prolonged hospitalization >14 days, while only 5 patients (7.0%) had short stays <5 days. The median length of stay was within the 6-14 day range, reflecting the complexity of managing these critically ill patients. Clinical outcomes were mixed, with 36 patients (50.7%) successfully discharged home in improved condition. However, 35 patients (49.3%) died during the hospital stay, highlighting the critical nature of the patient population requiring open cholecystostomy.

DISCUSSION

This study reveals important demographic patterns among patients requiring open cholecystostomy at RSUD Dr. Soetomo. The mean age of 57.94 years, with 22.5% of patients being elderly (>65 years), reflects the typical population affected by complex biliary pathology requiring surgical intervention. The male predominance (54.9%) is consistent with epidemiological patterns of biliary tract diseases, particularly malignant conditions affecting the biliary system.

The high proportion of elderly patients is significant given the established association between advanced age and increased surgical morbidity and mortality. Our study population, though younger on average, demonstrated higher mortality rates due to the complexity of underlying conditions requiring open cholecystostomy rather than standard cholecystectomy.

The predominant hospital stay of 6-14 days (70.4% of patients) reflects the complexity of managing these critically ill patients. This duration is consistent with literature reports for complex biliary procedures and allows time for clinical stabilization, management of complications, and optimization for potential further interventions [20,21].

The predominance of malignant etiology (64.8%) and the severity of hyperbilirubinemia at presentation highlight the role of open cholecystostomy as a palliative procedure for patients with advanced biliary obstruction who are not candidates for less invasive approaches. Despite the significant perioperative risks, the procedure provides meaningful biochemical improvement that may offer symptomatic relief and enable further therapeutic interventions.

The high mortality rates observed in patients undergoing cholecystostomy procedures are consistent with published literature, with studies reporting mortality rates ranging from 15-25% in elderly populations with biliary sepsis [22,23]. The mortality rate in critically ill patients with acute cholecystitis can reach 10-20% when bacteremia is associated [24]. Advanced age, presence of comorbidities, and severity of biliary sepsis are well-established risk factors for poor outcomes in this patient population [25,26].

The technical aspects of open cholecystostomy have evolved since its initial description, with emphasis on achieving adequate biliary decompression while minimizing surgical trauma in high-risk patients [27,28]. The procedure remains an important bridge therapy for patients who may later become candidates for more definitive surgical interventions after clinical stabilization.

Quality of life considerations are paramount in this patient population, as surgical palliation aims primarily to relieve symptoms and improve functional status rather than extend survival [29]. The successful reduction in bilirubin levels observed in our study cohort supports the therapeutic efficacy of the procedure in achieving these palliative goals.

CONCLUSION

Open cholecystostomy remains an important surgical option for patients with obstructive jaundice who are not candidates for more definitive procedures. While associated with significant morbidity and mortality, the procedure can provide meaningful clinical improvement in carefully selected patients. The intervention is particularly valuable in resource-limited settings where less invasive endoscopic alternatives may not be readily available. Future research should focus on optimizing patient selection criteria, improving perioperative care protocols, and exploring alternative approaches that may provide similar benefits with reduced morbidity. The development of predictive models for outcomes could enhance clinical decision-making and improve patient counseling regarding treatment options.

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