



Treatment and Outcome of Choledochal Cyst, our Experience in Sheikh Russel National Gastro Liver Institute and Hospital, Mohakhali Dhaka, Bangladesh

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Objectives: The aim of the study was to evaluate the demographic information, clinical features, surgical methods, postoperative complications, and outcomes at 6 months for patients with choledochal cysts who were treated at the Sheikh Russel National Gastroenterology Institute and Hospital. The goal was to assess the outcomes of radical cystectomy versus partial hepatectomy in the treatment of choledochal cysts. **Methods:** This was a retrospective analysis of 36 patients who had choledochal cysts and were treated with either a total cystectomy (n=30) or partial hepatectomy (n=6). **Results:** The groups that underwent radical cystectomy and partial hepatectomy had similar age ranges, sex distributions, and types of cysts. The majority of the cysts were type I (83.3% of the total cystectomy group) and type V (100% of the partial hepatectomy group). Other associations included: gallstones (26.7% vs. 83.3%) and Abnormal pancreatic biliary duct junction (APBDJ) (36.7% vs. 16.7%). An increased frequency of post-operative pain, jaundice, upper abdominal swelling, and fever was noted in the group that had a radical cystectomy. Minimal post-operative complications were seen in both groups. At 6 months, the rates of complications were similar, with hypertrophic scars being the most common (30.7% for radical cystectomy and 25% for partial hepatectomy). **Conclusion:** The groups that had radical cystectomy and partial hepatectomy were of similar demographics, cyst types, abnormalities, clinical traits, and complication rates post surgery and at 6 months. Both procedures are still good ways to treat choledochal cysts, and this small group doesn't clearly show which is better. To get a better idea of differences in long-term results, bigger studies are needed.

Keywords: choledochal cysts; cystectomy hepatectomy; gallstones; pediatrics.

1. INTRODUCTION

Choledochal cysts are congenital dilations of the biliary system, includes extrahepatic and/or intrahepatic biliary [1]. But choledochal cysts can happen to people of any race, even though they are more common in Asian communities [1]. If the bile system gets blocked, the symptoms can range from having no symptoms at all to having problems like upper abdominal pain, jaundice, pancreatitis, and cholangitis [2]. Even though surgery is the most common treatment choice, there is still disagreement about the best way to do it.

This study retrospectively examined the clinical characteristics, treatment, and results of patients with choledochal cysts who underwent surgical intervention at a specialized hepatobiliary center. The study aimed to examine demographic data, clinical characteristics at presentation, types of choledochal cysts, surgical techniques, postoperative complications, and follow-up. Information from 36 individuals who underwent surgery for choledochal cyst over a 6 month timeframe was gathered and examined [3]. The surgeries conducted were either radical cholecystectomy with Roux-en-Y hepaticojejunostomy or partial hepatectomy. Todani categorization method precisely classifies

choledochal cysts according to their location, extent, and form [4]. The majority of instances feature cystic or fusiform dilatation of the common bile duct, known as Type I cysts. Type II cysts are outgrowths resembling diverticula that occur in the common bile duct. Type III cysts, which are often referred to as choledochoceles, are cystic enlargements of the section of the common bile duct that is located within the duodenum [5]. Type IV cysts are classified into two subtypes: IVa, characterised by the presence of several cysts in the extrahepatic bile ducts, and IVb, which involves both the intrahepatic and extrahepatic bile ducts. Caroli's disease, sometimes referred to as Type V cysts, are distinguished by the presence of one or more cysts within the biliary ducts of the liver [5].

Studying choledochal cysts about their appearance, investigations, therapy, and outcomes might enhance our understanding of the condition in our community [6]. We might also use it to compare the outcomes and potential issues of various surgical methods. This might aid in developing an effective management regimen for these individuals. The constraint was the limited sample size and brief follow-up period. This study offers preliminary insights on choledochal cyst illness in our environment.



Fig. 1. Radiological configuration of Choledochal cyst Type I

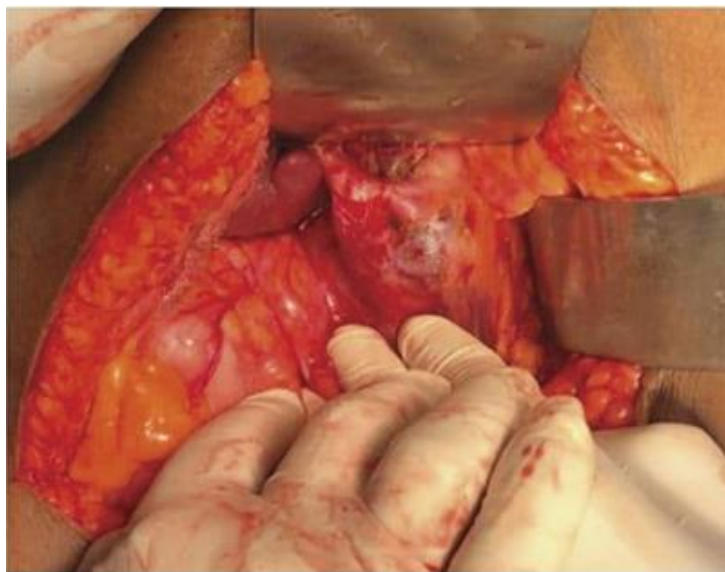


Fig. 2. Intra operative configuration of Choledochal cysts

2. METHODOLOGY

The study was a retrospective analysis done at the Department of Hepatobiliary Pancreatic Surgery at Sheikh Russel National Gastro Liver Institute and Hospital in Dhaka, Bangladesh.

Study period: 1 January, 2022, to 1 January, 2024

Inclusion criteria included: Patients younger than 16 years old, those who did not have coexisting acute pancreatitis, cholangitis or pulmonary disease, and those who have not undergone any major cardiac surgeries. The medical and

surgical records of the 36 patients were assessed. Radical cyst removal with Roux-en-Y hepaticojejunostomy or partial hepatectomy was the surgeries that were done. After surgery, the patients were followed for 6 months. The data that was gathered included demographic information, clinical characteristics, diagnostic tests, surgeries, and, postoperative complications. SPSS version 23 was used to assess the data. For numerical data, the mean and standard deviation were calculated. For categorical data, the frequency and ratios were used. A p value of less than 0.05 indicated statistical significance.

3. RESULTS

By looking at the information in the tables, we can see a number of important facts about how choledochal cysts are treated and how well they do at the Sheikh Russel National Gastroenterology Institute and Hospital in Mohakhali, Dhaka.

The patients' ages, genders, and other characteristics are shown in Table 1. Thirty of the patients (30 out of 36) had a radical cystectomy with Roux-en-Y hepaticojejunostomy. The other six patients had a partial hepatectomy. There was a slight bias toward guys in both treatment groups, but the number of women and men was about equal. People in the study were anywhere from 1 to 16 years old, with a mean age of about 9 years in both groups.

The types of choledochal cysts, the diseases they can cause, and the length of hospital stay after surgery are all shown in Table 2. Notably, most of the patients who had radical cystectomy had Type I choledochal cysts (83.3%), while the patients who had partial hepatectomy had Type V (100%) cysts. Patients who were going to have a partial hepatectomy were more likely to have gallstones but an abnormal pancreatic biliary duct junction (APBDJ) were less. The group that had the partial hepatectomy also had more cases of other problems that were linked to it, like hydrocephalus and portal hypertension. The average length of stay in the hospital after surgery was a little longer for the radical cystectomy group (11.83 ± 2.10 days) than for the partial hepatectomy group (10.17 ± 1.17 days).

Table 1. Distribution of the patients according demographic (N=36) (n= number of patients in the study group)

Variable	Radical Cystectomy with Roux-en Y-Hepatico jejunostomy (N=30)	Partial Hepatectomy (N=6)
Gender	n (%)	n(%)
Male	18 (60.0)	3 (50.0)
Female	12 (40.0)	3 (50.0)
Age group		
1-5 yrs	8 (26.7)	2 (33.3)
6-10 yrs	9 (30.0)	1 (16.7)
11-16 yrs	13 (43.3)	3 (50.0)
Age yrs Mean \pm S	9.58 \pm 4.62	9.17 \pm 5.19

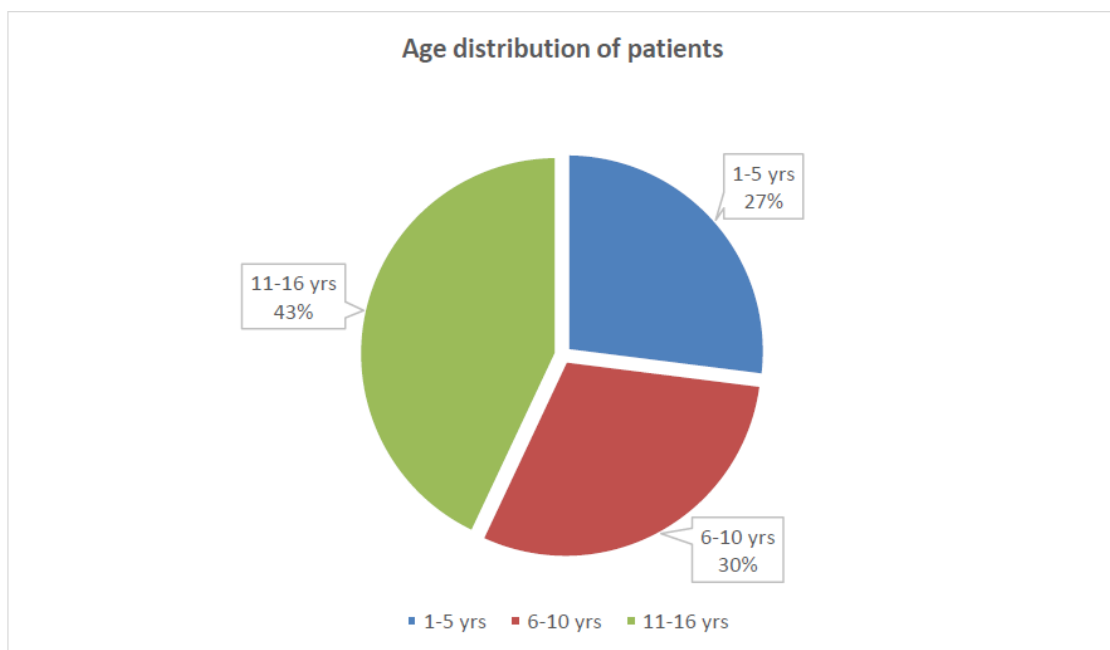


Fig. 3. Pie chart depicted the distribution of patients based on their age (N=36)

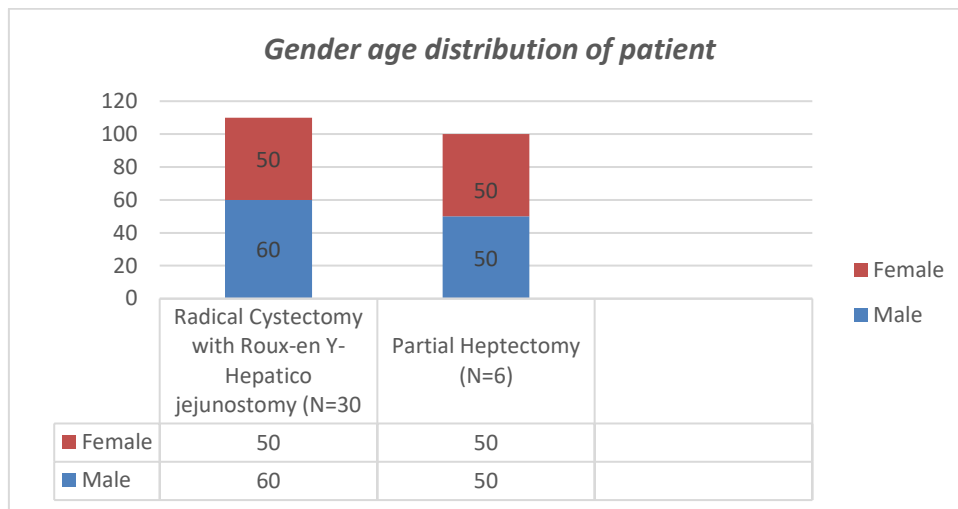


Fig. 4. Berchart showed gender wise distribution(N=36)

Table 2. Distribution of the patients according to different anomaly(N=36) (n= number of patients in the study group)

Variable	Radical Cystectomy with Roux-en Y- Hepatico jejunostomy (N=30)	Partial Hepatectomy (N=6)	P value
Type	n (%)	n (%)	
I	25 (83.3)	0 (0.0)	0.0070
II	3 (10.0)	0 (0.0)	
III	0 (0.0)	0 (0.0)	
IV	2 (6.7)	0 (0.0)	
V	0 (0.0)	6 (100.0)	
Associated gall stone			
Yes	8 (26.7)	5 (83.3)	0.0001
No	22 (73.3)	1 (16.7)	
APBDJ			
Yes	11 (36.7)	1(16.7)	0.357
No	19 (63.3)	5(83.3)	
Other anomaly			
Hydrocephalus	2 (6.7)	2 (33.3)	0.0001
No	28 (93.3)	4 (66.7)	
Associated portal hyper tension			
Yes	8 (26.7)	3 (50.0)	0.0001
No	22 (73.3)	3 (50.0)	
Post-operative Hospital stay (Days) Mean ± SD	11.83±2.10	10.17±1.17	0.0001

The clinical features of the cases are shown in Table 3. In both groups, the most common presenting signs were pain, jaundice, an abdominal mass, and recurrent episodes of fever. In Fig. 3 depicts what appears to be a medical examination or procedure involving an exposed abdominal mass with markings drawn on it. But these signs happened more often in the

group that had a radical cystectomy than in the group that had a partial hepatectomy. In Table 4, you can see a list of the problems that patients had after surgery. Postoperative complications were more common in the radical cystectomy group, with excess postoperative pain (56.7%), minor bile leakage (16.7%), and minor wound infection (10%) being the most frequent.

In the partial hepatectomy group, excess postoperative pain (50%), postoperative bleeding (16.7%), and persistent vomiting (16.7%) were the most common complications.

Table 5 shows a summary of the problems that were seen in 17 of the 36 patients who were

followed up after 6 months. The most common side effects in both treatment groups were problems with scars, like pain and scars getting bigger. The radical cystectomy group had other problems, like an abdominal lump, fever that wouldn't go away, jaundice, ascites, and a hernia, but the partial hepatectomy group didn't.

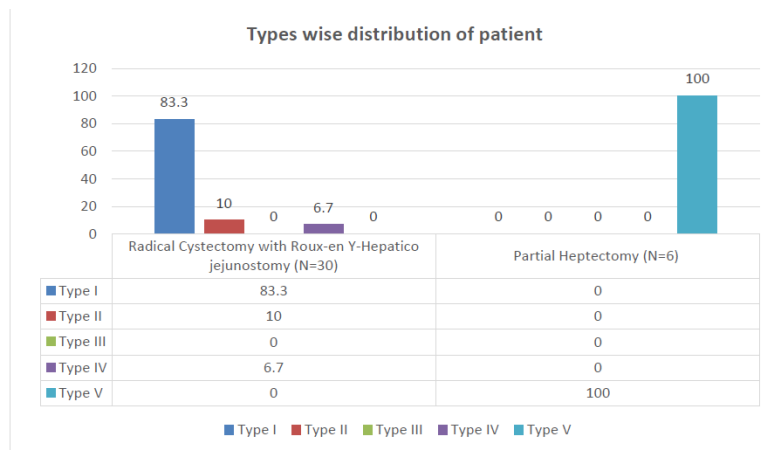


Fig. 5. Column chart showed Types wise distribution(N=36)

Table 3. Distribution of the patients according Clinical features (N=36)

Features	Radical Cystectomy with Roux-en Y-Hepatico jejunostomy (N=30) n (%)	Partial Hepatectomy (N=6) n (%)
Pain	26 (86.7)	2 (33.3)
Jaundice	25 (83.3)	2 (33.3)
Abdominal mass	22 (73.3)	3 (50.0)
Recurrent episodes of fever	22 (73.3)	4 (66.7)
Pale Stool	5 (16.7)	2 (33.3)
Generalized itching	3 (10.0)	1 (16.7)
Vomiting	8 (26.7)	2 (33.3)
Non-specific	5 (16.7)	1 (16.7)



Fig. 6. Abdominal mass

Table 4. Distribution of the patients according Post-operative complications

Complications	Radical Cystectomy with Roux-en Y- Hepatico jejunostomy (N=30)	Partial Heptectomy (N=6)
	n (%)	n (%)
Acute Post operative pain	17 (56.7)	3 (50.0)
Minor wound infection	3 (10.0)	1 (16.7)
Post-operative Bleeding	1 (3.3)	1 (16.7)
Minor bile leakage	5 (16.7)	1 (16.7)
Nil	1 (3.3)	0 (0.0)
Persistant vomiting	2 (6.7)	1 (16.7)

Table 5. Distribution of the patients according 6 months' follow-up complications

Follow-up complications	Radical Cystectomy with Roux-en Y-Hepatico jejunostomy (N=13)	Partial Heptectomy (N=4)	P value
	n (%)	n (%)	
Scar pain	1 (7.7)	2 (50.0)	0.379
Hypertrophic scar	4 (30.7)	1 (25.0)	
Abdominal mass	1 (7.7)	0 (0.0)	
Persistent fever	1 (7.7)	0 (0.0)	
Jaundice	1 (7.7)	0 (0.0)	
Ascites	1 (7.7)	0 (0.0)	
Hernia	1 (7.7)	0 (0.0)	
Hypertrophic scar	3 (23.1)	1 (25.0)	

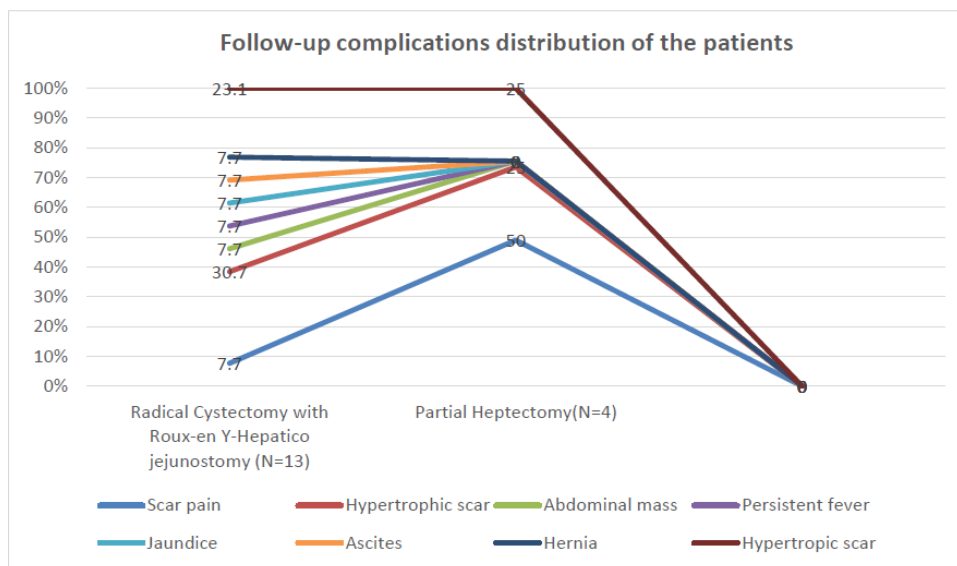


Fig. 7. A line chart showed Follow up complications wise distribution (N=36)

4. DISCUSSION

The results of our study indicated a greater proportion of males in comparison to females, with a male-to-female ratio of 1.2:0.8, which aligns with findings from previous research conducted in India and Asia [7]. The mean age of onset in our study was 9.58 years, which was

consistent with the results of earlier studies. The primary symptoms documented in the literature were abdominal pain, icterus, and a palpable mass in the abdomen. Radical cystectomy with Roux-en-Y hepaticojejunostomy or partial hepatectomy was chosen for surgery [7]. This is in line with what other studies have found to be usually good practice. The best way to treat

choledochal cysts is to cut out the whole extrahepatic bile tree [8]. Either a major cystectomy or liver resection can be used to do this. It works best in the long run and makes it less likely that the cyst will turn into cancer. This study's choledochal cysts showed up with stomach pain, redness, a lump that could be felt in the stomach, and fevers that came and went. This is similar to what other studies have found. The most common signs of choledochal cysts in children were abdominal pain, jaundice, and a lump that could be felt in the belly [9]. The postoperative complications observed in this study, such as excess postoperative pain, minor bile leakage, wound infection, and postoperative bleeding, are commonly reported in the study. These are problems that have been studied before. After choledochal cyst removal, problems like bile leakage, wound infections, and abdominal pain was a common occurrence (about 20% of the time) [10]. These findings align with previous research conducted on proficient surgical teams, which also observed comparable issues such as scars, an abdominal lump, persistent fevers, jaundice, ascites, and hernias after a period of six months. These problems have also been seen in other long-term follow-up studies. When a choledochal cyst was taken out, it could lead to long-term issues like choledochitis, pancreatitis, and bile strictures [11]. This could show up as fevers, redness, and a lump in the abdomen [12]. An incisional hernia was more likely to happen in people who had open surgery to remove a choledochal cyst [13]. Other studies have also demonstrated the need of meticulously preparing the patient prior to surgery, ensuring the smooth execution of the surgical procedure, and exercising utmost caution throughout the operation to achieve optimal outcomes and prevent complications. Additionally, the research emphasized the importance of utilising imaging tests prior to surgery [14]. This information can help the doctor plan the surgery and make it go better. Overall, the results of this study at the Sheikh Russel National Gastroenterology Institute and Hospital in Mohakhali, Dhaka, are mostly in line with what other research has said about how to treat choledochal cysts and how well they do. The study shows how important it is to do a thorough evaluation before surgery, plan the surgery correctly, and be very careful during the surgery. These are all very important for getting the best results and avoiding problems when managing this complicated disease.

5. CONCLUSION

The retrospective study at the Sheikh Russel National Gastroenterology Institute and Hospital in Dhaka, Bangladesh, analyzed the clinical characteristics, treatment, and outcomes of 36 patients who underwent surgical intervention for choledochal cysts. The majority of patients underwent radical cystectomy with Roux-en-Y hepaticojejunostomy for Type I cysts, while partial hepatectomy was performed for Type V (Caroli's disease) cysts. The study found that radical cystectomy was associated with a higher incidence of postoperative complications, such as excessive pain, minor bile leakage, and wound infection. However, during the 6-month follow-up, both surgical approaches exhibited similar complications, including scar-related issues, abdominal mass, persistent fever, and jaundice. The study highlights the importance of careful preoperative evaluation, meticulous surgical planning, and cautious execution to optimize outcomes and minimize complications in the management of this complex condition.

CONSENT

As per international standards, parental written consent has been collected and preserved by the author (s).

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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