Treatmentandoutcomeofcholedochalcyst,ourexperienceinSheikh RusselNationalGastroliverInstituteand Hospital, MohakhaliDhaka, Bangladesh

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 Gastroliver 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.

Introduction

Choledochal cysts are congenital dilationsof the biliary system, includes extrahepatic and/or intrahepatic biliary [1]. Butcholedochal cysts can happen to people of any race, even though they are more common in Asian communities [1]. If the bilesystem 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 disagreementaboutthe bestwaytodoit.

This study retrospectively examined the clinical characteristics, treatment, and results of patients with choledochal cysts whounderwent surgical intervention at a specialized hepatobiliary center. The study aimed to examine demographic data, clinicalcharacteristics 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 andexamined [3]. The surgeries conducted were either radical cholecystectomy with Roux-en-Y hepaticojejunostomy or partialhepatectomy.Todanicategorizationmethodprecisely classifies choledochalcystsaccordingtotheirlocation,extent,andform[4]. The majority of instances feature cystic or fusiform dilatation of the common bile duct, known as Type I cysts. Type IIcystsareoutgrowthsresemblingdiverticulathatoccurinthecommonbileduct.TypeIIIcysts,whichareoftenreferredtoas

choledochoceles,arecysticenlargementsofthesectionofthecommonbileductthatislocated withintheduodenum[5].TypeIVcystsareclassifiedintotwosubtypes:IVa,characterisedbythepresenceofseveralcystsintheextrahepaticbileducts,andIVb, which involves both the intrahepatic and extrahepatic bile ducts. Caroli's disease, sometimes referred to as Type V cysts,are distinguishedbythe presenceofoneormore cystswithinthebiliaryductsoftheliver[5]. Studyingcholedochalcystsabouttheirappearance,investigations,therapy,andoutcomesmightenhanceour understandingofthe condition in our community [6]. We might also use it to compare the outcomes and potential issues of various surgicalmethods. This might aid in developing an effective management regimen for these individuals. The constraint was the limitedsamplesizeand brieffollow-up period.Thisstudyofferspreliminaryinsightsoncholedochalcystillnessinourenvironment.

Figure 1:Radiological configurationofCholedocalcyst

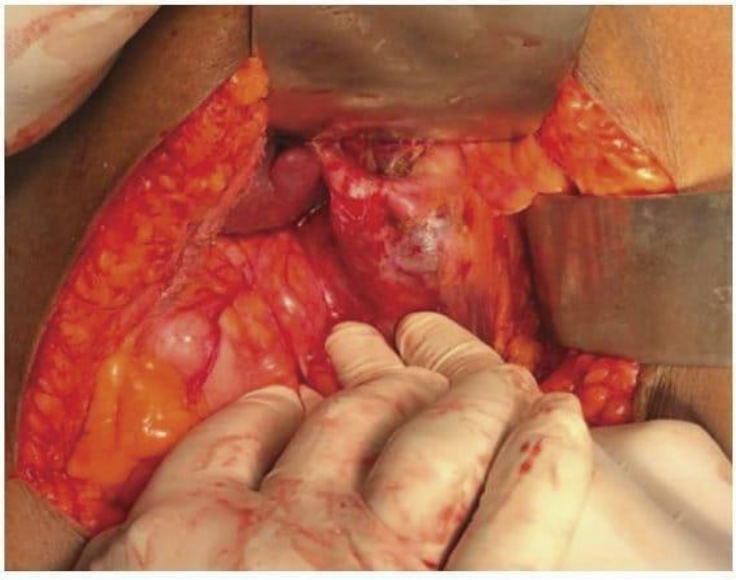

Figure2:Intra operativeconfigurationofCholedochalcysts

Methodology

The study was a retrospective analysis done at the Department of Hepatobiliary Pancreatic Surgery at Sheikh Russel NationalGastroliverInstituteandHospitalinDhaka,Bangladesh.
Studyperiod:1 January,2022,to1 January,2024
Inclusioncriteriaincluded:Patientsyoungerthan16yearsold,thosewhodidnothavecoexistingacutepancreatitis,cholangitisorpulmonarydisease,andthosewhohavenotundergoneanymajorcardiacsurgeries.Themedicalandsurgicalrecordsofthe36patientswereassessed.RadicalcystremovalwithRoux-en-Yhepaticojejunostomyorpartialhepatectomywasthesurgeriesthat were done. After surgery, the patients were followed for 6 months. The data that was gathered included demographicinformation, clinical characteristics, diagnostic tests, surgeries, and , postoperative complications. SPSS version 23 was usedto assessthe data. For numerical data, the mean and standard deviation were calculated. For categorical data, the frequency andratioswereused.Apvalueoflessthan0.05indicatedstatisticalsignificance.

Results

By looking at the information in the tables, we can see a number of important facts about how choledochal cysts are treatedand howwelltheydo atthe Sheikh RusselNationalGastroliver InstituteandHospitalinMohakhali,Dhaka.
The patients' ages, genders, and other characteristics are shown in Table 1. Thirty of the patients (30 out of 36) had a radicalcystectomy with Roux-en-Y hepaticojejunostomy. The other six patients had a partial hepatectomy. There was a slight biastowardguysinbothtreatment groups,butthe numberofwomenandmenwasaboutequal.Peopleinthestudywereanywherefrom1to16yearsold,withameanage ofabout9yearsinbothgroups.

Table1:Distribution ofthepatients according demographic(N=36)(n=numberofpatientsinthestudygroup)

Variable	**Radical Cystectomy with Roux-en Y-Hepaticojejunostomy (N=30)**	**Partial Heptectomy (N=6)**
Gender	n(%)	n(%)
Male	18(60.0)	3(50.0)
Female	12(40.0)	3(50.0)
Agegroup		
1-5yrs	8(26.7)	2(33.3)
6-10yrs	9(30.0)	1(16.7)
11-16yrs	13(43.3)	3(50.0)
AgeyrsMean±S	9.58±4.62	9.17±5.19

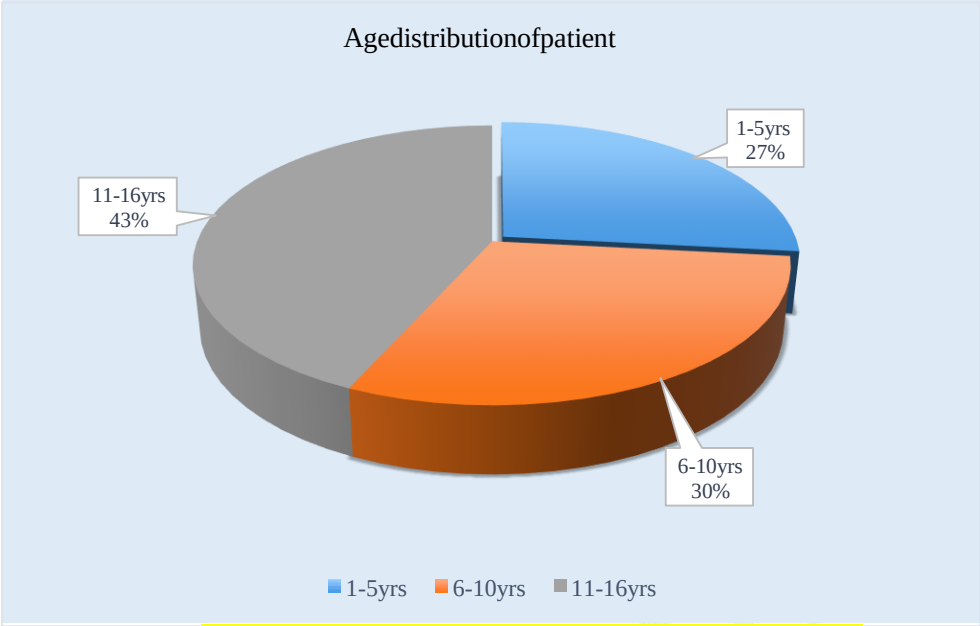

Figure3:piechartdepictedthedistributionofpatientsbasedontheirage(N=36)

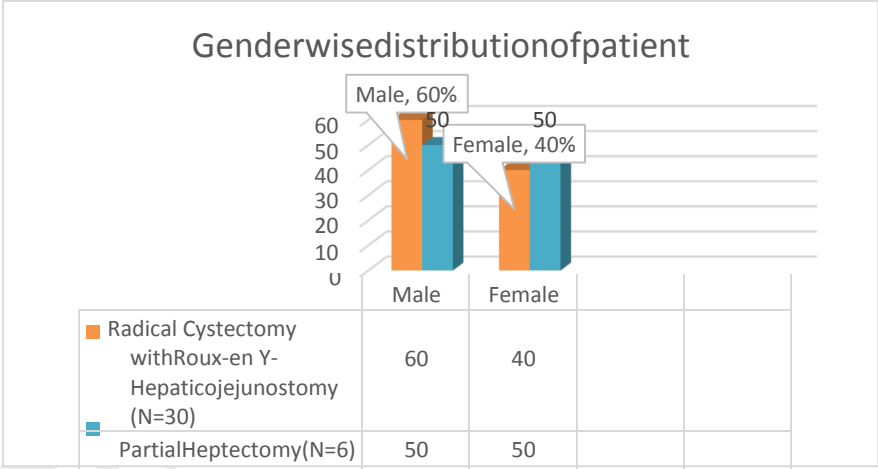

Figure4:Berchartshowedgenderwisedistribution(N=36)

Table2:Distributionofthepatientsaccordingtodifferentanomaly(N=36)(n= numberofpatientsinthe studygroup)

Variable	Radical Cystectomywith Roux-en Y-Hepatico jejunostomy(N=30)	PartialHeptectomy(N=6)	Pvalue
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 gallstone			

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 portalhypertension			
Yes	8(26.7)	3(50.0)	0.0001
No	22(73.3)	3(50.0)	
Post-operativeHospital stay (Days)**Mean±SD**	11.83±2.10	10.17±1.17	0.0001

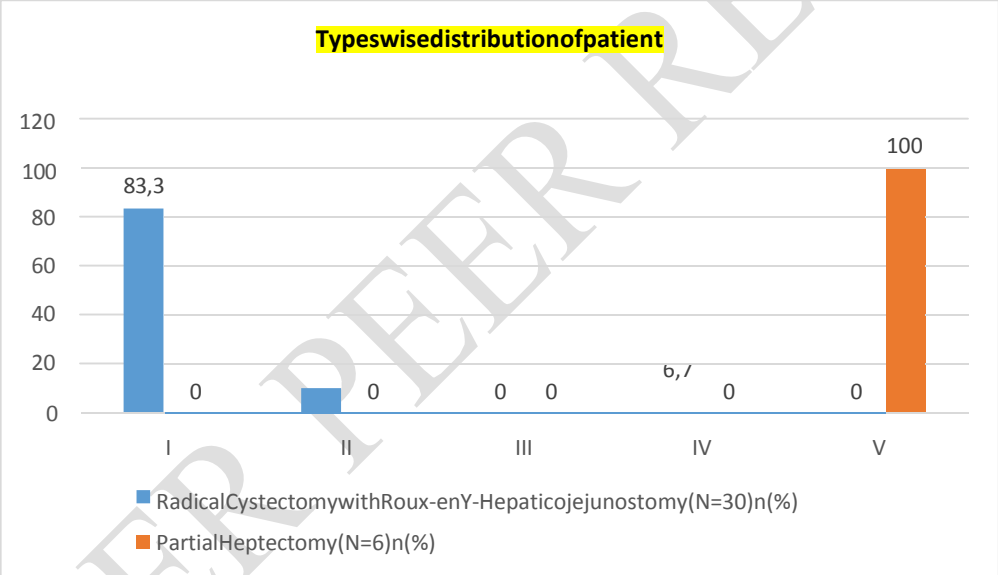

Figure5:columnchartshowedTypeswisedistribution(N=36)

Thetypesofcholedochalcysts,thediseasestheycancause,andthelengthofhospitalstayaftersurgeryareallshowninTable2.Notably,mostofthepatients whohadradicalcystectomyhadTypeIcholedochalcysts(83.3%), whilethepatientswhohadpartial hepatectomy had Type V (100%) cysts. Patients who were going to have a partial hepatectomy were more likely to havegallstonesbutanabnormalpancreaticbiliaryductjunction(APBDJ)wereless.Thegroupthathadthepartialhepatectomyalsohadmorecasesofotherproblemsthatwerelinkedtoit,likehydrocephalusandportalhypertension.Theaveragelengthofstayin the hospital after surgery was a little longer for the radical cystectomy group (11.83 ± 2.10 days) than for the partialhepatectomygroup(10.17±1.17days).

Table3:DistributionofthepatientsaccordingClinicalfeatures(N=36)

Features	Radical Cystectomy with Roux-en Y-Hepaticojejunostomy(N=30)	Partial Heptectomy (N=6)
	n(%)	n(%)
Pain	26(86.7)	2(33.3)
Jaundice	25(83.3)	2(33.3)
Abdominalmass	22(73.3)	3(50.0)
Recurrentepisodesoffever	22(73.3)	4(66.7)
PaleStool	5(16.7)	2(33.3)
Generalizeditching	3(10.0)	1(16.7)
Vomiting	8(26.7)	2(33.3)
Non-specific	5(16.7)	1(16.7)

Figure6:Abdominalmass

TheclinicalfeaturesofthecasesareshowninTable3.Inbothgroups,themostcommonpresentingsignswerepain,jaundice,anabdominal mass, and recurrent episodes of fever. In figure 3 depicts what appears to be a medical examination or procedureinvolving an exposed abdominal mass with markings drawn on it. But these signs happened more often in the group that had aradicalcystectomythaninthegroupthathadapartial hepatectomy.InTable4,youcanseealistoftheproblemsthatpatientshadafter surgery. Postoperative complications were more common in the radical cystectomy group, with excess postoperative pain(56.7%),minorbileleakage(16.7%),andminorwoundinfection(10%)beingthemostfrequent.Inthepartialhepatectomygroup,exce ss postoperative pain (50%), postoperative bleeding (16.7%), and persistent vomiting (16.7%) were the most commoncomplications.

Table4:DistributionofthepatientsaccordingPost-operativecomplications(N=36)

Complications	RadicalCystectomywithRoux-en Y-Hepaticojejunostomy(N=30)	PartialHeptectomy (N=6)
	n(%)	n(%)
AcutePostoperativepain	17(56.7)	3(50.0)
Minorwoundinfection	3(10.0)	1(16.7)
Post-operativeBleeding	1(3.3)	1(16.7)
Minorbileleakage	5(16.7)	1(16.7)
Nill	1(3.3)	0(0.0)

Persistantvomiting	2(6.7)	1(16.7)

Table5:Distributionofthepatientsaccording6months'follow-upcomplications(N=17)

Follow-upcomplications	**RadicalCystectomywith Roux-en Y-Hepaticojejunostomy(N=13)**	**Partial Heptectomy (N=4)**	**Pvalue**
	n(%)	n(%)	
Scarpain	1(7.7)	2(50.0)	0.379
Hypertrophicscar	4(30.7)	1(25.0)	
Abdominalmass	1(7.7)	0(0.0)	
Persistentfever	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)	
Hypertropicscar	3(23.1)	1(25.0)	

Table 5showsasummary oftheproblemsthatwereseenin17ofthe36patientswhowerefollowedupafter6months.Themostcommonsideeffectsinbothtreatmentgroups wereproblems withscars,likepainand scarsgettingbigger.Theradical

cystectomygrouphadotherproblems,likeanabdominallump,feverthatwouldn'tgoaway,jaundice,ascites,andahernia,butthepartialhepatectomygroupdidn't.

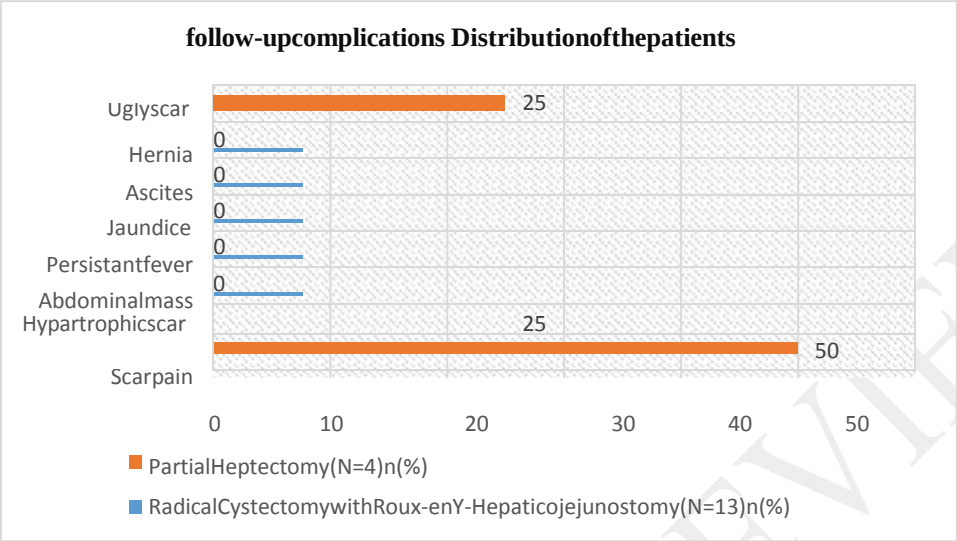

Figure:7ALinechartshowedFollowupcomplicationswisedistribution(N=36)

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 9.58years,whichwasconsistentwiththeresultsofearlierstudies.Theprimarysymptomsdocumentedintheliteraturewereabdominalpain, icterus,andapalpablemassintheabdomen.RadicalcystectomywithRoux-en-Yhepaticojejunostomyorpartialhepatectomy was chosen for surgery [7]. This is in line with what other studies have found to be usually good practice. The bestway to treat choledochal cysts is to cut out the whole extrahepatic bile tree [8]. Either a major cystectomy or liver resection canbeusedtodothis.Itworksbestinthelongrunandmakesitlesslikelythatthecystwillturnintocancer.Thisstudy'scholedochalcystsshowedup withstomachpain,redness,alumpthatcouldbefeltinthestomach,andfeversthatcameandwent.Thisissimilarto what other studies have found. The most common signs of choledochal cysts in childs were abdominal pain, jaundice, and a lumpthatcouldbefeltinthebelly[9].Thepostoperativecomplicationsobservedinthisstudy,suchasexcesspostoperativepain,minorbile leakage, wound infection, and postoperative bleeding, are commonly reported in the study. These are problems that have beenstudiedbefore.Aftercholedochalcystremoval,problemslikebileleakage,woundinfections,andabdominalpainwasacommonoccurrence.(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 aperiod of six months. These problems have also been seen in other long-term follow-up studies. When a choledochal cyst wastaken 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 toremoveacholedochalcyst[13].

Otherstudieshavealsodemonstratedtheneedofmeticulouslypreparingthepatientpriortosurgery,ensuringthe smoothexecutionofthesurgicalprocedure,and exercisingutmostcautionthroughouttheoperationtoachieveoptimaloutcomesandpreventcomplications.Additionally,theresearchemphasizedtheimportanceofutilisingimagingtestspriortosurgery.[14].Thisinformation canhelpthedoctorplanthesurgeryandmakeitgobetter. Overall,theresultsofthisstudyattheSheikhRusselNational Gastroliver Institute and Hospital in Mohakhali, Dhaka, are mostly in line with what other research has said about howto 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 andavoidingproblems whenmanagingthiscomplicated disease.

Conclusion

The retrospective study at the Sheikh Russel National Gastroliver Institute and Hospital in Dhaka, Bangladesh, analyzed theclinical characteristics, treatment, and outcomes of 36 patients who underwent surgical intervention for choledochal cysts. ThemajorityofpatientsunderwentradicalcystectomywithRoux-en-YhepaticojejunostomyforTypeIcysts,whilepartialhepatectomy was performed for Type V (Caroli's disease) cysts. The study found that radical cystectomy was associated with ahigher incidence of postoperative complications, such as excessive pain, minor bile leakage, and wound infection. However,duringthe6-monthfollow-up,bothsurgicalapproachesexhibitedsimilarcomplications,includingscar-relatedissues,abdominalmass, persistent fever, and jaundice. The study highlights the importance of careful preoperative evaluation, meticulous surgicalplanning,andcautiousexecutiontooptimizeoutcomesandminimizecomplicationsinthemanagementofthiscomplexcondition.

Consent

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

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