

ORIGINAL RESEARCH

A Clinical Study of Obstructive Jaundice Secondary to Choledocholithiasis

Mohammed Shazad Ahmed¹, Syed Mohammed Sajjad Husayni¹,
Mohammed Naqi Zain²

¹Assistant Professor, Department of General Surgery, Princes Esra Hospital, Deccan College of Medical Sciences, Hyderabad, Telangana, India.

²Senior Resident, Department of General Surgery, Princes Esra Hospital, Deccan College of Medical Sciences, Hyderabad, Telangana, India.

ABSTRACT

Background: Humans have long known about jaundice. Obstructive jaundice is common in general surgery. Intrahepatic or extrahepatic blockage can cause obstructive jaundice. Most patients with suspected biliary blockage start with an abdominal ultrasound. This study aims to determine the prevalence of obstructive jaundice owing to choledocholithiasis in my hospital, the role of ultrasound in detecting such cases, and the treatment options available at Princes Dusra Hospital Hyderabad.

Materials and Methods: Between June 2019 and June 2021, 24 patients with obstructive jaundice due to choledocholithiasis were studied at Princes Esra Hospital in Hyderabad. These patients received surgery. The proforma was used to assess these patients both pre- and post-operatively.

Results: Obstructive jaundice due to choledocholithiasis was 0.14 percent in hospitals. The patients were mostly female (16:4). Symptoms presented in decreasing order of frequency. 100% jaundice, 95% abdominal pain, 50% nausea/vomiting, 50% itching (35 percent), Fever with chills and rigours (25%) Steatorrhea (10%) and abdominal mass (5%). Ultrasound showed stones in 16 (80%) and dilated CBD in all 24 (100%) instances (100 percent). 11 patients had choledocholithiasis. Four instances had choledocholithiasis and cholelithiasis. The investigation found one incidence of choledocholithiasis with CBD stricture. The most common surgical technique was choledochoduodenostomy (50%) followed by choledochotomy with T-tube drainage (40%) One case each of choledocho-jejunostomy and transduodenal sphincter. All twenty instances had cholecystectomy. All cases were monitored for 1-6 months with no complaints.

Conclusion: Patients with obstructive jaundice are more susceptible to infections due to impaired liver function. It's also critical to identify specific risk factors in biliary tract surgery patients. Our study shows that ultrasound is the cheapest, safest, and most reliable diagnostic technique for postoperative jaundice. Despite the advent of laparoscopic CBD exploration, open, internal, and external biliary drainage procedures are still used successfully in areas lacking technology and experience.

Keywords: Jaundice; Preoperative/Postoperative; Cholecystectomy; Choledochoduodenostomy; Choledocho-jejunostomy; Transduodenal sphincterotomy; Laparoscopic and Ultrasound.

Corresponding Author: Dr. Mohammed Naqi Zain, Senior Resident, Department of General Surgery, Princes Esra Hospital, Deccan College of Medical Sciences, Hyderabad, Telangana, India.

INTRODUCTION

When the outflow of bile is inhibited anywhere from the intrahepatic biliary canaliculi up to the opening of the common bile duct at the ampulla of Vater, it is said to be surgical jaundice.^[1-4]

Obstructive jaundice is a condition that the general surgeon encounters on a regular basis. In a patient with obstructive jaundice, the cause can be either intrahepatic or extrahepatic blockage. Extra hepatic obstruction is a common complication of stone formation. Malignant jaundice, which is caused by growths clogging the common bile duct, is another possible cause of this condition. The management of surgical jaundice has taken a new direction as a result of recent advancements in imaging techniques and advancements in the field of anaesthesia. With advancements in procedures such as ERCP and MRCP, it is possible to manage a surgically jaundiced patient with greater confidence. Patients with obstructive jaundice caused by malignant growths always present a difficult surgical challenge to the surgeon, as the patient is frequently towards the end of his life.

Objectives

1. To know the incidence of obstructive jaundice secondary to choledocholithiasis in my hospital.
2. To study its clinical manifestations.
3. To study the role of ultrasound in this condition.
4. To study the various modalities of treatment at Princes Esra Hospital, Hyderabad.

MATERIALS & METHODS

Source of data

Patients admitted under various surgical units from June 2019 to June 2021, at Princes Esra Hospital, Hyderabad. Only the cases with surgical jaundice secondary to choledocholithiasis are studied in detail according to the proforma given.

A study was carried out on these jaundiced patients. The incidence of jaundice in total surgical admission of 14,529, i.e. 0.21%, 30 jaundice patients were admitted, out of which 24 patients with jaundice secondary to choledocholithiasis were studied in detail.

Method of Collection of data

This is a study of twenty (24) patients who presented with jaundice to the above hospitals between June 2019 to June 2021 who subsequently underwent surgical intervention. All these patients have been thoroughly assessed both preoperatively and postoperatively as per the proforma. All the patients have been investigated appropriately to rule out medical causes for the jaundice. Complications were documented. Photographic documentation has been done wherever possible. Where patients underwent surgical intervention, any tissue removed was subjected for histopathological examination.

RESULTS

Twenty patients were involved in this clinical study wherein surgical intervention was necessary to relieve the jaundice.

Table 1: Hospital based incidence of obstructive jaundice secondary to CBD stones

Detail	Number	Percentage
Period of study from June 2003 to June 2005	-	-
Total number of admissions in surgical wards	14,529	-

Total number of patients admitted with obstructive jaundice in surgical wards	30	0.21
Total number of patients admitted with obstructive jaundice secondary to choledocholithiasis	21	0.14
Number of patients of surgical jaundice secondary to choledocholithiasis studied	24	-

Age and Sex Distribution

The age varied from 18 years to 65 years. The age and sex-based analysis is given below.

Table 2: Age and sex distribution

Age (years)	Male	Female
10-20	1	-
21-30	2	4
31-40	-	4
41-50	-	3
51-60	2	3
61-70	-	5
Total	5	19

Incidence Of Presenting Symptoms

Jaundice: It was present in all twenty cases (100%).

Pain abdomen: It was present in 19 (75%) it was colicky in 9 cases. More commonly it was dull aching, continuous pain in epigastrium and right hypochondrium. Few had pain radiating to the back.

Mass abdomen: It was present in 1 (8.33%) case, which was a case of double impaction of stones, one at cystic duct and other at terminal CBD.

Itching: Present in 9 (37.5 %) cases.

Dyspepsia/Nausea/Vomiting: Present in 12 (50%) cases.

Fever with chills and rigours: Present in 7(29.16 %) cases.

Loss of appetite and weight: Present in 8 (3.34 %) cases.

Bowel habits: None of the cases had specific bowel complaints. On detailed enquiring 2 gave a history of diarrhea and rest had normal habits. Steatorrhoea was present in 2 (10%)cases.

Table 3: Symptoms distribution

Symptoms	Cases	Percentage
Jaundice	24	100
Pain abdomen	18	75
Mass abdomen	2	8.33
Itching	9	37.5
Dyspepsia/Nausea/Vomiting	12	50
Fever with chills and rigor	7	29.16
Loss of appetite and weight	8	33.34
Steatorrhoea	2	8.33

Past history: Two cases had previous attacks of jaundice, which was treated conservatively. One patient had undergone cholecystectomy, 3 patients had diabetes mellitus and 2 were hypertensive.

Personal history: Three male patients were habituated to smoking and alcohol consumption. Sleep was disturbed in 12 cases.

Family history: No relevant family history of jaundice, congenital disease, malignancy, etc. could be obtained from any of the patients.

General physical examination: Out of 24 cases, 2 were emaciated at the time of admission. All the 24 cases were jaundiced. Pallor was present in 10 cases.

Per abdomen: No organomegaly. Right hypochondrium tenderness was present in 17 cases and in epigastrium in 4 cases. Mass in the right hypochondrium was present in 2 (3x2 cm), smooth, globular, just below the costal margin. Free fluid was present in none.

Investigations

Hemoglobin varied between 5-13 gm%. Total count varied between 5000-11000. All the components in the differential count were within normal limits. ESR was raised in three cases. Serum bilirubin was elevated in all the cases. The total bilirubin was between 8-20 mg%, average being 13 mg%, the direct portion being the predominant one. Serum protein was within normal limits. Alkaline phosphatase was elevated in all cases. It varied from upper limit of normal to about 5 times the upper limit. SGOT and SGPT were moderately raised in three cases.

Radiological Studies

Abdominal ultrasound was the main diagnostic procedure in this study.

Ultrasound Findings

Table 4: Ultrasound findings

Findings	Number of cases	Percentage
Dilated CBD	24	100
IHBD	17	70.83
Stones in CBD	18	75
GB distension	2	8.33

All the cases had dilated common bile duct. In 18 cases stones in the common bile duct could be visualized. IHBD was present in 16 cases. Gall bladder was distended in 1 case. This was the case of double impaction of stones, one at cystic duct and the other at the lower 1/3rd of CBD.

Other investigations done were X-ray abdomen, ERCP, operative cholangiogram and CT. In one case X-ray showed multiple stones in the gall bladder and common bile duct. ERCP was done in 1 case and it showed stricture of liver 1/3rd of common bile duct with stones.

Diagnosis

Table 5: Diagnosis

Diagnosis	Number of cases
Cholelithiasis and choledocholithiasis	5
Choledocholithiasis	12
Choledocholithiasis with CBD stricture	1

Treatment Given

All the cases were prepared adequately for a period varying from 2-4 weeks before surgery. Vit. K was administered twice daily starting 3 days before surgery.

In the postoperative management, adequate intravenous fluids were given. Urine output was maintained adequately. T-tube was kept for 15-30 days. After doing a T-tube cholangiogram

to rule out missed stones the T-tube was removed. In our study there was no case of missed stones.

In all the cases aspirated bile was sent for culture and sensitivity. If it was positive then proper antibiotics were started.

Resected specimens were also sent for histopathological examination.

Operative Procedures Performed

Table 6: Operative procedures performed

Procedure	Number of cases
Cholecystectomy with choledochoduodenostomy	12
Cholecystectomy with choledochotomy and T-tube drainage	6
Cholecystectomy with choledochojejunostomy	2
Cholecystectomy with trans duodenal sphincterotomy and stone retrieval	1

12 (50%) cases of choledocholithiasis were treated with cholecystectomy with choledochoduodenostomy. Eight (40%) cases of cholethiasis and choledocholithiasis were treated with cholecystectomy and choledochotomy and T-tube drainage. For one case of common bile duct stricture with CBD stones, cholecystectomy with choledochojejunostomy was done. Two (10%) cases had wound sepsis, which was treated with change of antibiotics after doing culture and sensitivity.

All the cases have been followed up for varying period from 1-6 months with no complaints.

DISCUSSION

We have compared our study with studies done by Agrawal et al, Nadkarni et al and M.H.K. Crumplin et al, which has been summarized as follows.^[6-8]

As can be seen from the table jaundice was the main presenting symptom in all the studies. In the study of Agrawal et al. and Nadkarni et al. dyspepsia/nausea/ vomiting was the other major presenting symptom. In our study it was pain abdomen, dyspepsia/nausea/vomiting and itching.

The Ultrasonic Diagnosis of Choledocholithiasis

Surgical jaundice is one of the most prevalent disorders seen in general surgery. Between June 2019 and June 2021, a total of 14,529 patients were admitted to the surgical wards of Princes Esra Hospital in Hyderabad. Thirty patients were diagnosed with jaundice due to a variety of factors. The hospital incidence rate is 0.21 percent. There were 21 jaundiced individuals due to choledocholithiasis. The hospital incidence rate is 0.14 percent. Out of these, 24 instances of choledocholithiasis-related obstructive jaundice were explored in depth, including their symptoms, the usefulness of ultrasound in detecting such cases, and the various treatment options available at Prince Esra Hospital in Hyderabad.

Jaundice is almost seldom a surgical emergency. As a result, once the doctor has finished the initial examination of the jaundiced patient, the proper diagnosis may be clear from the findings or may be such that a definite diagnosis cannot be made. If the diagnosis is unclear, and there is no cholangitis, unrelenting fever, or toxic response, it is prudent to use a period of observation. During this time, the history, physical findings, and liver function tests should be examined on a regular basis in order to arrive at the correct diagnosis. Antibiotics should not be taken unless there is a clear indication. Serum alkaline phosphatase and bilirubin levels will be elevated in all cases with obstructive jaundice, as they were in all of ours.

Prolonged prothrombin time with return to normal following 3 days of vitamin K 10 mg therapy demonstrates the existence of obstructive jaundice.

When dealing with a case of surgical jaundice, the surgeon should be well-versed on the architecture of the biliary tree, the physiology of bile metabolism, and the pathophysiological changes that occur in the liver as a result of obstruction.

When we compared our findings to other authors' work, we discovered that obstructive jaundice caused by common bile duct obstruction owing to gall stones is still the most common cause. So, in our study, we examined several techniques of dealing with obstruction caused by gallstones.

Though numerous procedures have been tried to treat gallstones in the common bile duct, choledochotomy with T-tube drainage remains the safest method with the least morbidity, followed by choledochoduodenostomy.

All of the participants in our study were followed for a duration ranging from 1-6 months. Patients who had common bile duct obstruction owing to gall stones and had common bile duct exploration were doing well postoperatively, with no postoperative sequelae such as stricture or recurrent stone formation.

The role of ultrasound in diagnosis of choledocholithiasis in jaundiced patients, when compared with the series of MesterenkoIuA et al.^[9]

As seen from the table that ultrasound scan picked up 86% and 80% of cases of jaundice with choledocholithiasis in MesterenkoIuA et al. study and present study respectively.

So it is suggested that it is obligatory to perform ultrasound examination in diseases of extrahepatic biliary ducts.

The main procedures for benign conditions causing jaundice are cholecystectomy with choledochotomy and T-tube drainage, and cholecystectomy with choledochotomy and choledochoduodenostomy. Supra duodenal duct exploration and transduodenal sphincter procedure was carried out in one patient with CBD stone at the ampula of Vater, as against 40 cases in M.H.K. Crumplin et al. series. One patient underwent cholecystectomy with duct exploration and choledochojunostomy. Bile duct surgery was accompanied by significant morbidity and mortality, with recent advances in supportive care, the numbers are decreasing.

CONCLUSION

The most prevalent cause of obstructive jaundice is gallstones in the common bile duct. Individual risk factors must also be identified in all patients undergoing biliary tract surgery. Over the last decade, there have been several technical advancements in imaging and diagnostic methods that have radically altered the approach to surgical jaundice therapy. According to our findings, ultrasonography is still the cheapest, safest, and most reliable diagnostic technique in the treatment of postoperative jaundice. Even in this era of laparoscopic CBD exploration, where the latest technology and expertise are not accessible, open procedures are still a safe, practical, and single-stage option for the therapy of CBD stones with favorable morbidity and mortality outcomes.

Acknowledgement

The author is thankful to Department of General Surgery for providing all the facilities to carry out this work.

REFERENCES

1. Abou Bakr, S., Elessawy, H., Ghaly, S., Elezz, M. A., Farahat, A., &Zaghloul, M. S. Diagnostic accuracy of endoscopic ultrasound in evaluation of patients with obstructive jaundice: single-center experience. *Egyptian Liver Journal*,2022. 12(1), 1-6.
2. Vagholkar, Ketan. "Obstructive jaundice: understanding the pathophysiology." *International Journal of Surgery and Medicine* 6.4 (2020):

3. Garrison FH. Introduction to the history of medicine. Edn. 4. Philadelphia: WB Saunders and Co;1929.
4. Halsted WS. Surgical papers. Baltimore: The Johns Hopkins Press 1924;427-462.
5. Osler W. Principles and practice of medicine. Edn. 5. New York: D. Appleton and Co 1902;569.
6. Agrawal JB, Patel RA. Surgical management of obstructive jaundice. J Ind Med Ass June 1974;62(12):414-416.
7. Nadkarni KM, Jahagirdar RR, Kagzi RS, Pinto AC, Bhale Rao RA. Surgical obstructive jaundice – A study of 26 cases. J Postgraduate Medicine 1981; 27(1):33-39.
8. Crumplin MKH, Jenkinson LR Kassab, Whitaker CM, Al-Boutiahi FH. Management of gall stones in a district general hospital. Br Jr of Surgery June 1985; 72:428-432.
9. Mesterenko IVA, Shapovaliants SG, Mikkailusov SV, Drozdov GE. The ultrasonic diagnosis of choledocholithiasis. Khirurgiia (Mosk) January 1993; 1:37-43.