

## A clinical study of obstructive jaundice secondary to choledocholithiasis

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### Publication History

Received: 21 March 2014

Accepted: 7 May 2014

Published: 14 May 2014

### Citation

Nageeruddin Shaik, Syed Salman Ahmed, Vamshi Krishna K, Chandramala, Sabir Ali, Satish Kumar D, Harish Reddy, Nabeel Alam Q. A clinical study of obstructive jaundice secondary to choledocholithiasis. *Medical Science*, 2014, 8(29), 32-38

### ABSTRACT

This is a study of 20 patients of obstructive jaundice secondary to choledocholithiasis who presented to Shadan Institute of Medical Sciences and Research Centre, Hyderabad, between October 2011 to February 2014. These patients subsequently underwent surgical interventions. All these patients have been thoroughly assessed both pre-operatively and post-operatively as per the proforma. The hospital based incidence of obstructive jaundice secondary to choledocholithiasis was 0.14%. Most of the patients were females with ratio of 16:4. Patients presented with following symptoms in decreasing order of frequency. Jaundice (100%), pain abdomen (95%), dyspepsia/nausea/vomiting (50%), itching (35%), loss of appetite and weight (30%), fever with chills and

rigors (25%), steatorrhea (10%) and mass abdomen (5%) of the cases. The ultrasound detected stones in CBD 16 cases (80%) and dilated CBD in all 20 cases (100%). Choledocholithiasis was found in 11 cases. Choledocholithiasis and cholelithiasis was present in four cases. While one case of choledocholithiasis with CBD stricture was encountered during the study. In all twenty cases cholecystectomy was performed. All the cases were followed up for a varying period from 1-6 months with no complaints.

**Keywords:** Jaundice, Choledocholithiasis, Cholecystectomy

## 1. INTRODUCTION

Surgical jaundice is defined as a condition where the outflow of bile is obstructed anywhere from the intrahepatic biliary canaliculi up to the opening of common bile duct at ampulla of Vater. The general surgeon frequently encounters obstructive jaundice. Obstructive jaundice in a patient can be due to intrahepatic or extrahepatic obstruction. Extra hepatic obstruction is commonly due to stones. It also could be due to growths obstructing the common bile duct commonly referred to as malignant jaundice. Recent advances in imaging techniques and with improvement in the field of anaesthesia, management of surgical jaundice has taken a new turn. With advances in procedures like ERCP (Seigel et al., 1992) and MRCP a surgical jaundiced patient can be managed more confidently. Obstructive jaundice due to malignant growths always poses a challenge to the surgeon as the patient is usually in his terminal stages.

## 2. MATERIALS AND METHODS

### 2.1. Source of data

Patients admitted under various surgical units from October 2011 to February 2014, at Shadan Institute of Medical Sciences and Research Centre, 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 14,526, i.e. 0.21%, 30 jaundice patients were admitted, out of which 20 patients with jaundice secondary to choledocholithiasis were studied in detail.

### 2.2. Method of collection of data

This is a study of twenty (20) patients who presented with jaundice to the above hospital between October 2011 to February 2014 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.

## 3. RESULTS

Twenty patients were involved in this clinical study wherein surgical intervention was necessary to relieve the jaundice (Table 1).

### Age and sex distribution

The age varied from 18 years to 65 years. The age and sex based analysis is given in Table 2.

### Incidence of presenting symptoms

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

**Pain abdomen:** It was present in 19 (95%) 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 (Rubin et al., 1983)

**Mass abdomen:** It was present in 1 (5%) case, which was a case of double impaction of stones, one at cystic duct and other at terminal CBD.

**Itching:** Present in 7 (35%) cases.

**Dyspepsia/Nausea/Vomiting:** Present in 10 (50%) cases.

**Fever with chills and rigors:** Present in 5 (25%) cases.

**Loss of appetite and weight:** Present in 6 (30%) cases.

**Table 1**  
Hospital based incidence of obstructive jaundice secondary to CBD Stones

Detail	Number	Percentage
Period of study from October 2011 to February 2014	-	-
Total number of admissions in surgical wards	14,526	
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	20	-

**Table 2**  
Age and sex distribution

Age (years)	Male	Female
10-20	1	-
21-30	2	3
31-40	-	3
41-50	-	3
51-60	1	3
61-70	-	4
Total	4	16

**Table 3**  
Symptoms distribution

Symptoms	Cases	Percentage
Jaundice	20	100
Pain abdomen	19	95
Mass abdomen	1	5
Itching	7	35
Dyspepsia/Nausea/Vomiting	10	50
Fever with chills and rigor	5	25
Loss of appetite and weight	6	30
Steatorrhoea	2	10

**Table 4**  
Ultrasound findings

Findings	Number of cases	Percentage
Dilated CBD	20	100
IHBD	16	80
Stones in CBD	16	80
GB distension	1	5

**Table 5**  
Diagnosis

Diagnosis	Number of cases
Cholelithiasis and choledocholithiasis	4
Choledocholithiasis	15
Choledocholithiasis with CBD stricture	1

**Bowel habits:** None of the cases had specific bowel complaints. On detailed enquiring 2 gave history of diarrhea and rest had normal habits. Steatorrhoea was present in 2 (10%) cases (Table 3).

**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 20 cases, 2 were emaciated at the time of admission. All the 20 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 3 cases. Mass in the right hypochondrium was present in 1 (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 (Michel H Reid et al., 1981).

### Ultrasound Findings

All the cases had dilated common bile duct. In 16 cases stones in the common bile duct could be visualized. IHBD was present in 16 cases (Table 4). 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 1/3<sup>rd</sup> of common bile duct with stones.

### Diagnosis & Treatment Given

All the cases were prepared adequately for a period varying from 2-4 weeks before surgery (Table 5).

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

Ten (50%) cases of choledocholithiasis were treated with cholecystectomy with choledochoduodenostomy. Eight (40%) cases of cholelithiasis and choledocholithiasis were treated with cholecystectomy and choledochotomy and T-tube drainage (Table 6). 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.

## 4. DISCUSSION

Surgical jaundice is one of the commonest conditions encountered by general surgery. A total number of 14,526 patients were admitted to the surgical wards of Shadan Institute of Medical Sciences and Research Centre, Hyderabad, between October 2011 to February 2014. Thirty patients presented with jaundice due to various causes. The hospital based incidence being 0.21%. The jaundiced patients secondary to choledocholithiasis were 21. The hospital based incidence being 0.14%. Out of these, 20 cases of obstructive jaundice secondary to choledocholithiasis were studied in detail, regarding their manifestations, the role of ultrasound in diagnosing such cases and the various

**Table 6**  
Operative procedures performed

Procedure	Number of cases
Cholecystectomy with choledochoduodenostomy	10
Cholecystectomy with choledochotomy and T-tube drainage	8
Cholecystectomy with choledochojunostomy	1
Cholecystectomy with trans duodenal sphincterotomy and stone retrieval	1

**Table 7**  
Presenting symptoms and signs

Symptoms	Agrawal and Patel, (1974)	Nadkarni et al., (1981)	Present study
Jaundice	100	100	100
Pain abdomen	79.1	53.8	95
Mass abdomen	58	92.3	5
Itching	50	73.1	35
Dyspepsia/Nausea/Vomiting	70.9	88.5	50
Fever with chills and rigor	12.5	53.8	25
Loss of appetite and weight	66.7	19.2	30
Steatorrhoea	41.7	92.3	10

**Table 8**  
Ultrasonic diagnosis

	Mesterenko et al. (1993)	Present study
Total number of cases studied	162	20
Ultrasound visualization of CBD stones	139(86%)	16(80%)

**Table 9**  
Surgical procedures performed

Procedure (along with cholecystectomy)	Crumplin et al. (1985)	Present study
Supradeudenal duct exploration and T-tube drainage	57 (36%)	8 (40%)
Choledochodeudenostomy	2 (1.25%)	6 (30%)
Supradeudenal duct exploration and transdeudenal sphincter procedures	40 (25%)	1 (5%)
Transdeudenal sphincter procedures	2 (1.25%)	0
Supradeudenal duct exploration and choledochodeudenostomy	57 (36%)	4 (20%)
Other combinations	2 (1.25%)	1 (5%)

modalities of treatments offered at Shadan Institute of Medical Sciences and Research Centre, Hyderabad, Jaundice is rarely a surgical emergency. So, when the clinician has completed the initial examination of the jaundiced patient, the correct diagnosis may be obvious of the findings or may be such that a definite diagnosis cannot be established. If the diagnosis is doubtful and in the absence of cholangitis, with unremitting fever and toxic reaction, it is wise to employ a period of observation. During this time the history, physical findings and liver function tests should be frequently reviewed in an attempt to establish the correct diagnosis. Unless, there is a clear cut indication, antibiotics, should not be used. Serum alkaline phosphatase and bilirubin will be raised in all obstructive jaundice cases and so it was in all our cases.

Prolong prothrombin time with reversal to normal after the administration of Vitamin K 10 mg for 3 days proves the presence of obstructive jaundice. In dealing with a case of surgical jaundice the surgeon should have good knowledge of anatomy of the biliary tree, physiology of bile metabolism and pathophysiological changes occurring in

liver secondary to obstruction. In our study as compared to other work done by various authors we have found that obstructive jaundice secondary to common bile duct obstruction due to gall stones remains the commonest cause. So in our study we have analysed various methods of dealing with obstruction secondary to gallstones. Though several methods have been attempted in dealing with the gallstones in the common bile duct, choledochotomy with T-tube drainage remains the safest method in dealing with common bile duct stones with less morbidity, followed by choledochoduodenostomy. All the patients in our study were followed up for varying period from 1-6 months. Patients with common bile duct obstruction due to gall stones and who had common bile duct exploration done were doing fairly well without any postoperative complications like stricture and recurrent stone formation. We have compared our study with studies done by Agrawal and Patel, (1974); Nadkarni et al., (1981); and Crumplin et al., (1985) which has been summarized as follows.

### Presenting symptoms and clinical signs

As can be seen from the table jaundice was the main presenting symptom in all the studies. In the study of Agrawal and Patel et al., (1974), and Nadkarni et al., (1981) dyspepsia/nausea/vomiting was the other major presenting symptom. In our study, it was pain abdomen, dyspepsia/nausea/vomiting and itching (Table 7).

### The ultrasonic diagnosis of choledocholithiasis

The role of ultrasound in the diagnosis of choledocholithiasis in jaundiced, when compared with the series of Mesterenko et al., (1993). We got the results which are mentioned in Table 8. As seen from the table that ultrasound scan picked up 86% and 80% of cases of jaundice with choledocholithiasis in Mesterenko et al., (1993) study and present study respectively. So it is suggested that it is obligatory to perform ultrasound examination in diseases of extrahepatic biliary ducts.

### Surgical procedures performed

The main procedures for benign conditions causing jaundice are cholecystectomy with choledochotomy and T-tube drainage, and cholecystectomy with choledochotomy and choledochoduodenostomy. Supraduodenal duct exploration and transduodenal sphincter procedure was carried out in one patient with CBD stone at the ampula of vator, as against 40 cases in Crumplin et al., (1985) series. One patient underwent cholecystectomy with duct exploration and choledochojejunostomy (Table 9).

## 5. CONCLUSION

1. Bile duct surgery was accompanied by significant morbidity and mortality, with recent advances in supportive care, the numbers are decreasing.
2. Obstructive jaundice secondary to gallstones in the common bile duct is the commonest cause.
3. In dealing with obstructive jaundice one should also not forget other less but dangerous causes like malignancy.
4. As most of these patients present with jaundice as the predominant symptom, it is important to assess clinically whether it is a case of medical jaundice or a case of surgical jaundice.
5. A detailed history as to the onset of jaundice, its progress and whether it is associated with itching is important.
6. In case of surgical jaundice that is progressive it is very important to decompress the biliary tree as soon as possible because it may seriously affect the liver function and renal function.
7. Obstructive jaundice patients who are being taken up for surgery have to be thoroughly assessed preoperatively regarding their nutritional status and also improve liver function by infusing glucose and also correct any bleeding abnormalities by giving Vitamin K injections (Butt et al., 1938).
8. Obstructive jaundice patients are also prone for infections because of poor liver function, which can affect immunity. It is also important to identify individual risk factors in all the patients undergoing biliary tract surgery (Pitt et al., 1981).
9. Over the past decade there have been many technological armamentarium of imaging and diagnostic procedures, which have radically changed the approach to the management of surgical jaundice. As we have seen from our study ultrasound remains the cheapest, safest and the most reliable diagnostic tool in the management of surgical jaundice.
10. Even in this era of laparoscopic CBD exploration, places where latest technology and expertise are not available, open procedures are still safe, feasible and single stage option for the management of CBD stones with good results in terms of morbidity and mortality.

## ACKNOWLEDGEMENTS

I would like to thank Dr. Chandramala, Professor and Head of Department of Surgery, Shadan Institute of Medical Sciences and Research Centre, for professional guidance and valuable support, her advice in keeping my progress on schedule.

I would like to express my appreciation to Dr Sarib Rasool Khan, Managing Director, Shadan Institute of Medical Sciences and Research Centre, for his support during the planning and development of this research work.

I would like to thank Dr. Syed Salman Ahmed, Junior Resident, Shadan Institute of Medical Sciences and Research Centre, for his help and support throughout the research work.

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