

## A Prospective Study on Clinical Profile and Management of Obstructive Jaundice

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### Abstract

**Background:** There are various causes of obstructive jaundice, choledocholithiasis is the commonest. Patients with obstructive jaundice usually present with complain of yellow skin and eyes, pale stools, dark coloured urine, jaundice, and pruritus. A correct pre-operative diagnosis is almost always possible today because of advances in imaging techniques over the decades. The objectives of the study were to study the clinical profile and management of patients with obstructive jaundice. **Methods:** This was institution based, interventional, prospective, randomised, analytical study/prospective and observational study. Study was conducted at Burdwan Medical College & Hospital, West Bengal from March 2018 to August 2019 including 80 patients. Thorough history taking and clinical examination was done. Patients undergone for various laboratory investigations, and radiological evaluation. Template was generated in MS excel sheet and analysis was done on SPSS software. **Results:** Among 80 Obstructive Jaundice patients, 37 (46.25%) were male and 43 (53.75%) were female. The majority of patients (53.75%) were 31-50 yrs of age. Jaundice as per history in benign conditions was in 38 patients (73.08%) and in malignant condition 26 patients (92.87%). **Conclusion:** In the present study the occurrence of obstructive jaundice was maximum in the 31-70 year age group. Open exploration of CBD under experienced hands was a good treatment modality in the management of obstructive jaundice

**Keywords:** Obstructive jaundice, Management, Clinical profile

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### Introduction

Jaundice is a yellow discoloration of skin and mucous membranes due to increased serum bilirubin level caused by the obstruction to the normal outflow of the bile (normal serum bilirubin level is 17µmol/litre or 0.2-0.8 mg/dl). It is also called as surgical jaundice. The biliary caliculi empty into larger ducts, the hepatic duct and common bile duct and then to duodenum or the gallbladder through cystic duct[1]. Obstructive jaundice is strictly defined as due to block in the pathway between the site of conjugation of the bile in the liver cells and the entry of bile into the duodenum through the ampulla.

An accurate diagnosis can usually be made with standard diagnostic techniques such as history, physical examination and biochemical tests and when appropriate cholangiography and liver biopsy and observation of the patients course[2]. Transabdominal ultrasound is a sensitive in expensive reliable and reproducible test to evaluate most of the biliary tree being able to separate patients with medical jaundice from those with surgical jaundice. Therefore, this modality is seen as the study of choice for the initial evaluation of jaundice or symptoms of biliary disease[3]. Treatment of malignant obstructive jaundice is specially challenging. Surgical treatment ranges from definite surgical procedures to palliative procedures. Non operative management includes endoscopic stenting and interventional radiological procedures like PTBD.

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All these are specially challenging to the surgeon because of relative inaccessibility of the extra hepatic biliary tree and pancreas. To diagnose the cause, site of obstruction and management of obstructive jaundice is of paramount importance in the appropriate management of these patients.

There are varied causes of obstructive jaundice, but it is most commonly due to choledocholithiasis (also called bile duct stones or gallstones in the bile duct) – presence of a gallstone in the common bile duct[4].

Other causes like, malignancies such as cholangiocarcinoma, periampullary and pancreatic cancers, and benign stricture including chronic pancreatitis have become increasingly prevalent[5-7]. There is also rise in iatrogenic causes of obstructive jaundice, like injury of biliary tract and cholangitis with the increase of invasive procedures performed on the biliary tract [8,9]. Biliary tract disorders can be significantly found in worldwide population, and the quite majority of cases are attributable to choledocholithiasis. 20% of persons older than 65 years in USA have gallstones and around 1 million newly diagnosed cases of choledocholithiasis are reported every year[10]. Patients with obstructive jaundice usually present with complain of yellow skin and eyes, pale stools, dark coloured urine, jaundice, and pruritus. Abdominal pain often misleading for diagnosis – some patients with choledocholithiasis have painless jaundice, whereas some patients with hepatitis have distressing pain in the right upper quadrant. Malignancy often associated with the absence of pain and tenderness during the physical examination. Patients with obstructive jaundice have tendency to develop nutritional deficits, infectious complications, acute renal failure, and impairment of

cardiovascular function. Other adverse events such as coagulopathy, hypovolemia, and endotoxemia can be insidious and significantly increase mortality and morbidity[11]. Hence, present study was undertaken study the clinical profile of patients with obstructive jaundice.

### Objectives

The objective of the study is

1. To study the clinical profile of the of the patients of Obstructive Jaundice attending department of general surgery, BMCH, Burdwan.
2. To study the various causes and sites of obstruction of the biliary tree.
3. To study the investigation procedures for the patients of Obstructive Jaundice.
4. To study the treatment modalities for these patients.

### Method and Materials

- **Study Area:** Burdwan Medical College & Hospital.
- **Study Population:** Patients admitted in the department of general surgery emergency and outpatients department.
- **Study Period:** March 2018 to August 2019.
- **Study Design:** Institution based, interventional, prospective, randomized, analytical study.
- **Sample Design:** 80 cases of obstructive jaundice.
- **Sample Design:** Patients fulfilling inclusion criteria is allotted in any study group and those who are not fulfilling the criteria is excluded in this group.

### Inclusion Criteria

- Age: More than 12 years.
- Patients proved to have obstructive jaundice by any investigation modality during the study period.

### Exclusion Criteria

- Age less than 12 years.
- Medical jaundice.
- Cases of obstructive jaundice who are unfit for interventional treatment.

### Parameters Noted

- History & physical examination.
- Routine blood investigation like Hb%, TLC, DLC, Random blood, sugar, urea, creatine, serum Na<sup>+</sup>, K<sup>+</sup>, LFT, PT, INR, Serum Amylase, Lipase.
- Chest X ray.

- Straight XRAY abdomen in erect posture.
- USG of whole abdomen.
- CECT Abdomen.
- MRCP
- Operative notes & anaesthesia notes.
- Post operative monitoring of vital pulse, blood pressure, etc. intake output charts, wound site infections and other complications.

### Study Tools

- Patients informed & consent.
- Out patient department (OPD) & Emergency tickets, Bed head tickets (BHT), For relevant history taking and clinical examination.
- Routine haematological, biochemical & Radiological investigations from respective department.
- Tabulation of data.
- Statistical analytical table.

### Method of Collection of Data

The prospective descriptive study was done at Department of General Surgery, Burdwan Medical College and Hospital, West Bengal. The period of study is from March 2018 to August 2019. This is a prospective study. Study population has been selected after applying the necessary exclusion criteria. The study was approved by institutional ethics committee. Informed consent was taken from all the patients. A random selection of 80 patients admitted in surgical wards has been done.

After admission to the hospital, data was collected from the patient's records regarding the clinical features and investigations based on the results they were diagnosed to have either surgical jaundice or medical jaundice. Those patients diagnosed to have surgical jaundice were assessed preoperatively and later subjected to or palliative procedure depending on the need. Postoperatively, patient's conditions assessed and complications were documented. Patient's were followed up for mean period of 4 months where patients underwent surgical intervention/ERCP. Any tissue removed was subjected for histopathological examination. The statistical operations were done through GraphPad InStat (© 2013 GraphPad Software Inc.) and SPSS (Statistical Presentation System Software) for Windows, version 20.00 (SPSS, 2011. SPSS Inc: New York) to find out the descriptive parameters.)

### Results

**Table 1: Gender and age distribution**

Age in Years	Male (n = 37)		Female (n = 43)		Total (n = 80)	
	No.	%	No.	%	No.	%
<30	4	10.81	3	6.98	7	8.75
31-50	20	54.05	23	53.49	43	53.75
51-70	10	27.02	15	34.88	25	31.25
>70	3	8.11	2	4.65	5	6.25

Table 1 shows analysis of sex and age distribution. The peak age was 31 to 70 years (85%). The age varied from 21 years to 80 years. The number of male patients were 37 (46.25%) and number of female patients 43(53.75%).

**Table 2: Association of Symptoms and Signs with Diagnosis**

Clinical features	Benign n = 52 (%)	Malignant n = 28 (%)	Total n = 80 (%)	Significance (p value)
Pain abdomen	42 (80.77)	16 (57.14)	58 (72.5)	.023971
Jaundice as per history	38 (73.08)	26 (92.86)	64 (80)	.034945
Itching	20 (38.46)	16 (57.14)	36 (45)	0.10938
High-coloured urine	24 (46.15)	22 (78.57)	46(57.5)	.005158
Clay-coloured Stools	22 (42.31)	18 (64.28)	40 (50)	.06093
Nausea/Vomiting	18 (34.61)	14 (50)	32 (40)	0.18025
Fever	10 (19.23)	2 (7.14)	12 (15)	< .00001
Loss of appetite	16 (30.77)	24 (85.71)	40 (50)	< .00001
Loss of weight	20 (38.46)	26 (92.86)	46 (57.5)	< .00001

Melaena	-	8 (28.57)	8 (10)	< .00001
Pallor	16 (30.77)	24 (85.71)	40 (50)	< .00001
Icterus	48 (92.31)	28 (100)	76 (95)	0.13232
Palpable Gallbladder	6 (11.54)	14 (50)	20 (25)	0.00015
Abdominal tenderness	20 (38.46)	12 (42.86)	32 (40)	.70172

Red coloured: Non- significant, Blue coloured: Significant

Table 2 shows the incidence of presenting symptoms and signs.

- Jaundice as per history in benign conditions was in 38 patients (73.08%) and in malignant condition 26 patients (92.87%) with significant difference of p value of 0.034945.
- High-coloured urine and clay-coloured stools also were present significantly in malignant conditions.
- Loss of appetite was present in 40 patients. In benign condition, it was 30.77%, and in malignant condition, it was 85.71% showing significant p value of 0.00001.
- Loss of weight was present in 46 patients. In benign condition, it was 38.46%, and in malignant condition, it was 92.86% showing significant p value of 0.00001.

- Melena was present in 8 patients in malignant condition (28.57%).
- Pallor was present in 40 (50%) patients with benign condition (30.77%), and in malignant condition, it was 85.71% with significant p value of 0.00001.
- Icterus was present in maximum patients i.e. 76 (95%) who were diagnosed as surgical jaundice.
- Gallbladder was palpable in 20 patients (25%), in patients with benign condition 11.54% and malignant condition 50% with a p value of 0.00015 which is statistically significant for malignant aetiology.

**Table 3: Laboratory Investigations in Comparison of Benign and Malignant Conditions**

Lab Parameters	Benign(n=52) Mean ± SD	Malignant(n=28) Mean ± SD	Total(n=80) Mean ± SD	P value
Haemoglobin (gm %)	10.72 ± 1.31	8.51 ± 1.68	9.92 ± 1.69	< 0.00001
Total bilirubin (mg/dL)	9.7 ± 2.61	10.26 ± 2.13	9.90 ± 2.45	.3011
Direct bilirubin (mg/dL)	5.02 ± 1.62	5.99 ± 1.96	5.37 ± 1.80	0.25747
Alkaline phosphatase IU	523.29 ± 125.18	541.10 ± 138.16	529.75 ± 129.45	.575479
Albumin (mg/dL)	3.56 ± 0.78	3.68 ± 0.87	3.60 ± 0.81	.548506
Prothrombin time (seconds)	15.48 ± 2.28	16.35 ± 1.93	15.79 ± 2.19	0.71861
Blood urea (mg/dL)	25.11 ± 5.85	25.11 ± 6.92	25.53 ± 6.24	1
Serum Creatinine (mg/dL)	1.36 ± 0.56	26.27 ± 0.46	1.27 ± 0.53	< 0.00001

Table 3 shows,

- Mean haemoglobin in Benign was 10.72 mg/Dl with SD 1.31 and 8.51 mg/dL with 1.68 in malignant condition with p-value of <0.00001 with significant difference
- Mean total bilirubin in benign condition is 9.70mg/dL with SD 2.61 and 10.26 ng/dL with 2.13 in malignant condition with no significant difference of p-value(0.25747).

- Mean Alkaline phosphatase is benign condition is 523.29 IU with SD 125.18 and 541.10 IU with 138.16 in malignant condition with no significant difference of p-value(.575479).
- Mean total Serum creatinine in benign conditions is 1.36 mg/dL with D 0.56 and 26.27 mg/dL with 0.46 in malignant conditions with significant difference of p-value(<0.00001).

**Table 4: Comparison of Ultrasonography and Final Diagnosis**

Cause of Obstruction	Ultrasound		Final diagnosis		Sensitivity
	Number	% of total USG	Number	% of total Diagnosis	
CBD stones	45	59.21	49	61.25	91.84
CBD benign strictures	2	2.63	2	2.5	100
Mirizzi's syndrome	1	1.31	1	1.25	100
Malignancy	28	36.84	28	35	100
Total	76		80		95

In the radiological studies, the role of ultrasound to know the cause of obstruction, which was used as the main diagnostic procedure. In this study, 59.21% of patients had common bile duct calculi, 36.84% of patients were diagnosed as malignant, 2.63% of patients with common bile duct benign stricture, and 1.31% of patients with Mirizzi's syndrome. In the final diagnosis, CBD calculi was present in 61.25% patients, benign stricture in 2.50% malignancy in 35%, and Mirizzi's syndrome in 1.25% of patients with USG showing no significant difference to the final diagnosis. The other investigations done was ERCP, which was done in 4 patients to confirm diagnosis of USG (Table 4).

#### Discussion

Several studies have been done on obstructive jaundice worldwide, till date. This study was done in Burdwan, West Bengal. Many significant findings were observed in our study. Present study was compared with those of other authors. It has been summarised below: In this study, the peak incidence of surgical jaundice was seen in age group of 31 to 70 years with male: female ratio of M:F : 46.25 : 53.75%.

In Sharma MP et al[12] mean age was 62.5. In this study, the mean age of patients was 48.34, which corresponds to studies like Siddique et al[13] and Talpur et al[14] with mean age of 49.5 and 47.15. In Lawal D et al[15], mean age was 42.

In this study of 80 cases of obstructive jaundice, there was a slight female at 1:1.16, which intermediate between studies like Talpur et al[14] at 1:2.32 and studies male preponderance like Lawal D et al[15] at 1:0.78 and Sharma et al[12] at 1:0.87.

In this study, common bile duct stone was the main aetiology for jaundice when compared to Nadkarni et al[16], Kar et al[17] and Phillip Chalya et al[18] in which malignancies were more common. This study is comparable with Talpur et al[14] and Siddique et al[13] where benign cause of obstruction were more common. In this study, malignancy was 35% with other categories being benign stricture and Mirizzi's syndrome. As per the above foregoing, jaundice was the main presenting symptom/ sign in the study of Agarwal et al[19] and Nadkarni et al[16] which is comparable to our present study. Nausea /vomiting and pain abdomen were the other major presenting symptoms. In the present study, it is pain abdomen followed by loss of weight, itching, and clay coloured stools. There were significantly

higher values of haemoglobin, direct bilirubin, and serum creatinine in malignant conditions. This is comparable to Pellegrini et al[20] who reported that average bilirubin values are higher in patient with biliary obstruction caused by malignant disease. Pellegrini et al[20] also reported that alkaline phosphatase more than 5 times or clinical jaundice present for longer than 1 month are uncommon manifestation of CBD stones. Ultrasonography was successfully used as the cheapest noninvasive tool to know the cause and level of obstruction in nearly 95% of the patients. Admassie D et al[21] in a study of 49 patients of obstructive jaundice found that ultrasonography should be the first and best initial imaging procedure in patients who have obstructive jaundice and show reasonable sensitivity and specificity to identify cause of obstruction in obstructive jaundice. Out of patients with obstructive jaundice due to CBD calculi, most underwent cholecystectomy with CBD exploration with T-tube drainage or choledochoduodenostomy. Three patients had residual calculi postoperatively and underwent reexploration of CBD calculi. For obstructive jaundice due to malignancy, 25 underwent palliative procedure and three patients underwent definitive procedure (Whipple's procedure). The outcome of palliative procedures was good. Patients were free from jaundice.

#### Conclusion and Recommendations

The occurrence of obstructive jaundice was maximum in the 31-70 year age group. Common presentation of obstructive jaundice is jaundice. Ultrasonography was the cheapest and also non-invasive investigation used for the diagnosis of surgical jaundice. Most common cause of obstruction was CBD calculi followed by malignancy most common of which was carcinoma head of pancreas then CBD benign stricture and Mirizzi's syndrome. Pain abdomen and jaundice were common in benign condition whereas jaundice, clay coloured stools, high-coloured urine, and itching was more common in malignancy. Anaemia and loss of weight was common in malignancy. Palpable GB indicates the aetiology to be malignant. High values of serum bilirubin and alkaline phosphatase and decreased levels of albumin and derangement of coagulation profile was common in malignancy. Open exploration of CBD under experienced hands was a good treatment modality in the management of obstructive jaundice. Early and precise detection of etiology of obstructive jaundice can help surgeons to accurately manage such patients and thus will improve quality of life of patient and improving the survival rates. Better understanding of the clinical profile in these patients will facilitate appropriate management and lead to improved survival.

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