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Research Article

# Clinical Study of Obstructive Jaundice at Basaveshwar Teaching and General Hospital, Gulbarga

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**Abstract:** Obstructive jaundice is a surgical problem that occurs when there is an obstruction to the passage of bile from the liver cells to the intestine [1]. It contributes significantly to morbidity and mortality [2]. Early diagnosis of the cause is very important especially in malignant cases as curative resection is only possible in the early stages [3,4]. This study attempts to analyze the age, sex distribution, various causes, clinical features, derangements of liver function tests, ultrasound abdomen findings and the treatment modalities for treatment of extrahepatic obstructive jaundice. 30 patients with obstructive jaundice were studied. The following conclusions can be drawn from this study: Malignant diseases are the common cause of obstructive jaundice, age group most affected is 55-74 years, sex ratio shows slight male predominance, carcinoma head of the pancreas and choledocholithiasis are the most common malignant and benign causes of obstructive jaundice respectively. Jaundice is the commonest clinical feature in such patients; US abdomen is an effective modality for diagnosis. Serum bilirubin and alkaline phosphatase levels are commonly deranged in these cases. A majority of the patients with malignant obstructive jaundice undergo palliative surgery and only a few were eligible for curative resection.
**Keywords:** obstructive jaundice, extrahepatic bile duct obstruction, cholestasis, carcinoma head of pancreas, choledocholihiasis

## INTRODUCTION

Obstructive Jaundice is a common surgical problem that occurs when there is an obstruction to the passage of conjugated bilirubin from liver cells to intestine. Jaundice due to biliary obstruction may be caused by a heterogeneous group of diseases that include both benign and malignant conditions. The common etiologies of obstructive jaundice have been reported to vary from one centre to another and from one individual to another.

Thus obstructive jaundice is not a definitive diagnosis and early investigation to elucidate the precise etiology is of great importance because pathological changes (e.g. secondary biliary cirrhosis) can occur if obstruction is unrelieved.

The management of obstructive jaundice poses diagnostic and therapeutic challenges to general surgeons practising in resource-limited countries. Late presentation of the disease coupled with lack of modern diagnostic and therapeutic facilities are among the hallmarks of the disease in developing countries. The mortality and morbidity of biliary obstruction are dependent on the cause of the obstruction, and the assessment of any factors which influence the morbidity and mortality in patients with obstructive jaundice in each society is necessary. Understanding factors responsible for increased morbidity and mortality in these patients will better guide appropriate management and lead to improved survival. There is paucity of information regarding the management of obstructive jaundice in our environment as there is no local study which has been done in our setting.

This study is being undertaken to describe our own experiences in the management of obstructive jaundice, outlining the etiological spectrum, investigation findings and treatment modalities available in our hospital.

Sharma M.P., Ahuja V [4] in a study conducted on 429 patients diagnosed as having obstructive jaundice on imaging investigations, reported that the most common cause of biliary obstruction was malignancy.

Lawal D *et al.* [5] in a 5-year review of 50 patients operated for obstructive jaundice reported that the most common malignant and benign causes of obstructive jaundice were pancreatic carcinoma and choledocholithiasis respectively.

Bekele Z, Yifru A [6] in a study involving 49 patients with obstructive jaundice showed that choledocholithiasis and malignant conditions were the two important causes of obstructive jaundice.

Admassie D, H/Yesus A, Denke A [7] in a study of 49 patients of obstructive jaundice found that ultrasonography shows reasonable sensitivity and specificity to identify causes of obstruction in obstructive jaundice.

Ambreen M *et al.* [8] in a study involving 35 patients who underwent open choledochotomy, found that Primary Common Bile Duct closure is a safe and cost effective alternative to routine T-tube drainage after open choledochotomy.

## MATERIALS AMD METHODS

Source of data: A cross sectional observational study of patients with obstructive jaundice admitted to Basaveshwar Teaching and General Hospital, attached to M.R. Medical College, Gulbarga was undertaken from August 2013 to August 2015

30 patients positively diagnosed as extrahepatic obstructive jaundice were included in this study.

### Method of collection of data

All the patients were subjected to detailed history, clinical examination, laboratory investigations which included liver function tests for total bilirubin, conjugated bilirubin, alkaline phosphatase, hepatic trans aminases SGOT and SGPT, total serum proteins and serum albumin.

Other laboratory investigations included hemoglobin estimation, total leucocyte count, differential leucocyte count, platelet count, Prothrombin Time, International Normalized Ratio (INR), blood urea, serum creatinine, serum electrolytes.

Abdominal Ultrasound was the only diagnostic imaging done in all patients to look for the abnormality of intra and extra-hepatic biliary channels, the common bile duct and presence of causative factors like gall stones, tumors, lymph nodes, worms or any abdominal mass.

Advanced diagnostic imaging like endoscopic retrograde cholangiopancreaticography, percutaneous cholangiography, magnetic resonance cholangiopancreaticography were not included in this study as these are not routinely done in our hospital.

The patients were assessed preoperatively, intraoperatively and postoperatively, and the findings were recorded according to the proforma. Details recorded were patients' biodata, duration of jaundice, cause of obstructive jaundice, laboratory findings, ultra-sonographic findings, treatment modalities, intraoperative findings, post-operative complications, length of hospital stay and mortality.

Pre-operative preparations included maintaining good hydration and administration of antibiotics. In anemic patient’s blood transfusion was also carried out. The nature of surgical procedure carried out depended upon the cause and the findings at the time of surgery.

Follow up period of upto 6 months following surgical procedure.

Written well informed consent was taken from the patients included in this study.

### Inclusion criteria

Patients admitted and positively diagnosed as obstructive jaundice by clinical history and examination, investigations like liver function test and ultrasound abdomen were included in the study.

### Exclusion criteria

The following type of patients will be excluded from this study:

- Patients below 15 years of age.
- Patients with jaundice due to causes other than obstructive pathology like hemolytic or hepatocellular jaundice.

## RESULTS

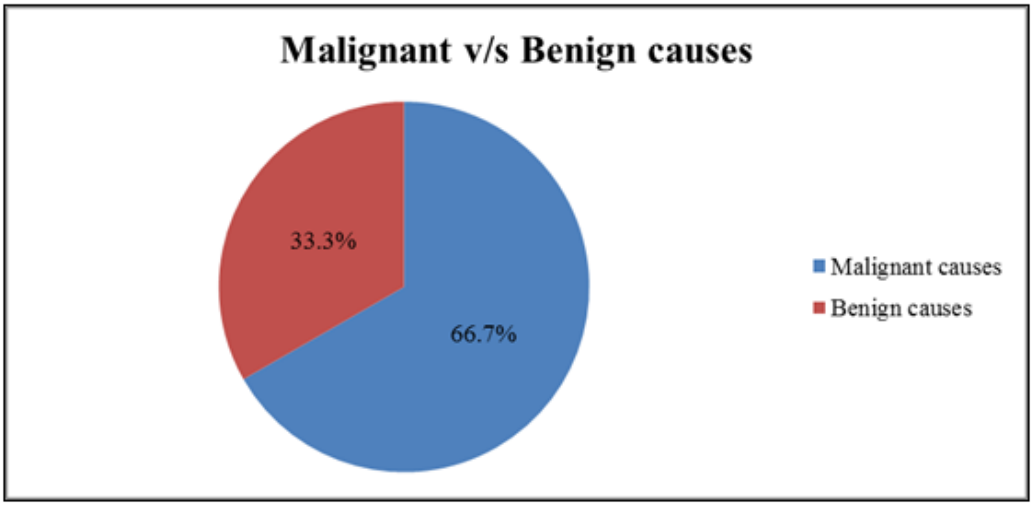
The results obtained in the present study were analyzed as follows, 30 patients with obstructive jaundice were studied.

**Table-1: Malignant v/s Benign causes of obstructive jaundice:**

| | No. of patients | Percentage |
|---|---|---|
| Malignant causes | 20 | 66.7% |
| Benign causes | 10 | 33.3% |

**Interpretation**

In this study out of a total of 30 patients included, 20 (66.7%) patients had a malignant cause of obstructive jaundice and 10 (33.3%) patients had a benign cause of obstructive jaundice thus malignant causes of obstructive jaundice were more common than benign causes of obstructive jaundice among the patients included in the study.



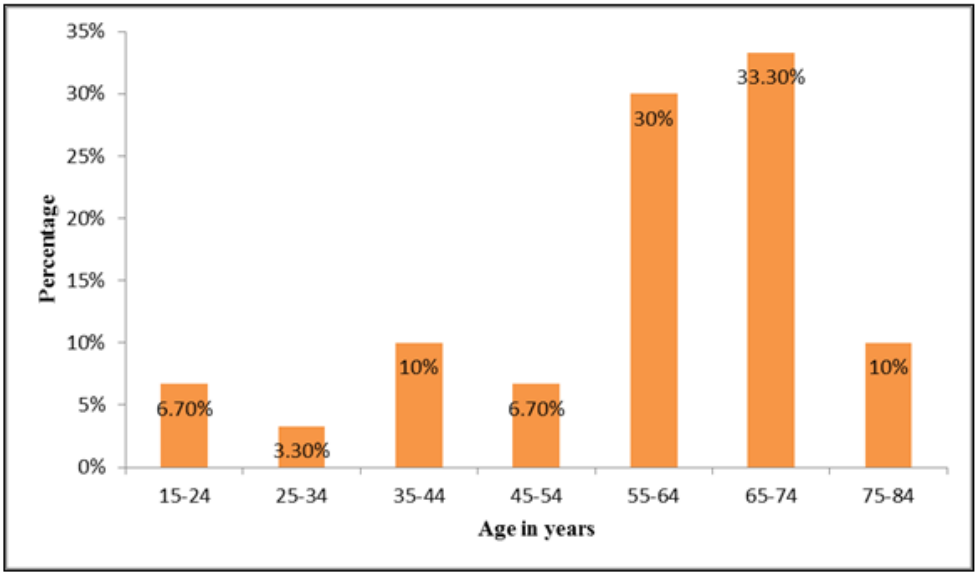

**Graph-1: Malignant v/s Benign causes of obstructive jaundice**

**Table-2: Age distribution among the obstructive jaundice cases:**

| Age in years | Number of patients | Percentage |
|---|---|---|
| 15-24 | 2 | 6.7% |
| 25-34 | 1 | 3.3% |
| 35-44 | 3 | 10% |
| 45-54 | 2 | 6.7% |
| 55-64 | 9 | 30% |
| 65-74 | 10 | 33.3% |
| 75-84 | 3 | 10% |

**Interpretation**

The age of the patients varied from 15 years to 80 years, the average age was 58.23 years, 63.3% of patients were between the age group of 55 – 74 years.




**Graph-2: Age distribution among the obstructive jaundice cases**

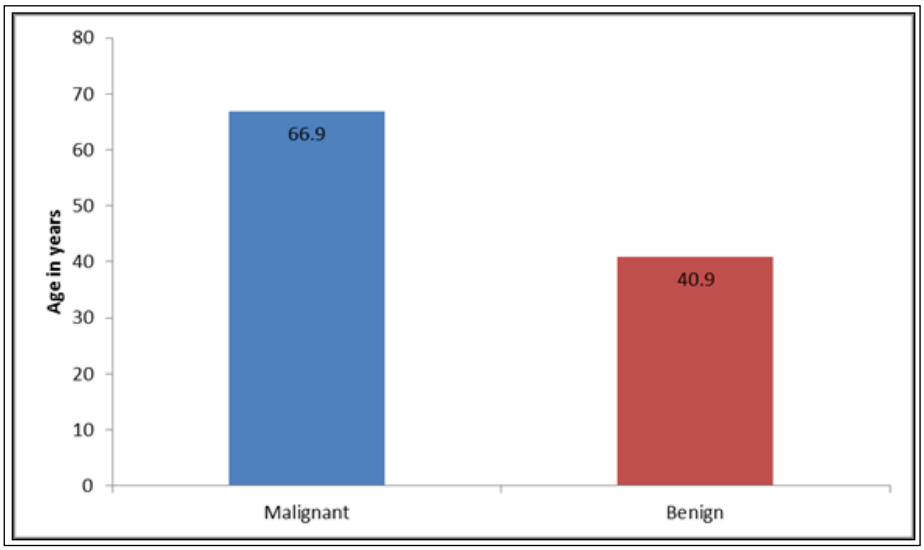
**Table-3: Mean age of patients with malignant v/s benign causes of obstructive jaundice:**

| | Mean age (years) |
|---|---|
| Malignant cases | 66.9 |
| Benign cases | 40.9 |

**Interpretation**

In this study there were 20 patients with malignant causes of obstructive jaundice in whom the mean age was 66.9 years.

10 patients with benign causes of obstructive jaundice were included in this study and the mean age of patients with benign disease was 40.9 years.



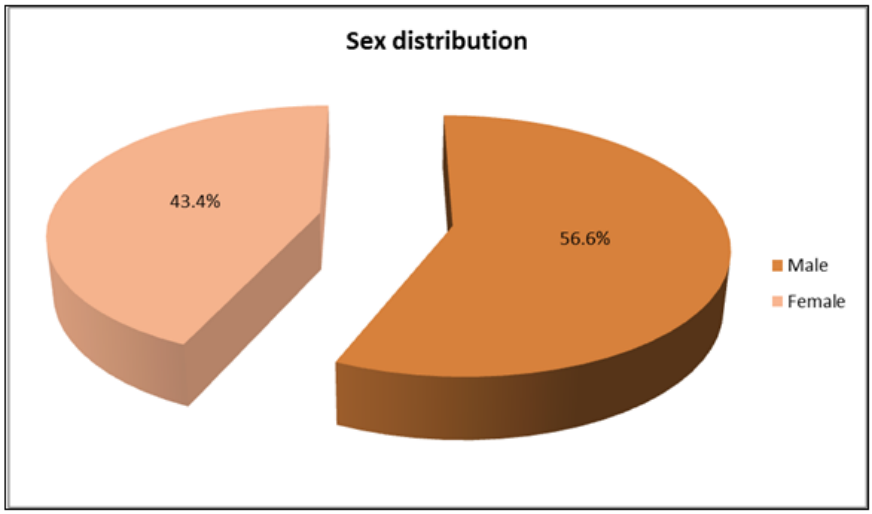

**Graph-3: Mean age of patients with malignant v/s benign causes of obstructive jaundice**

**Table-4: Sex distribution among the obstructive jaundice cases**

| Sex | No. of patients | Percentage |
|---|---|---|
| Male | 17 | 56.6% |
| Female | 13 | 43.4% |

**Interpretation**

There were 17 (56.6%) male and 13 (43.4%) female in our study with slight male predominance.




**Graph-4: Sex distribution among the obstructive jaundice cases**

**Causes of obstructive jaundice**

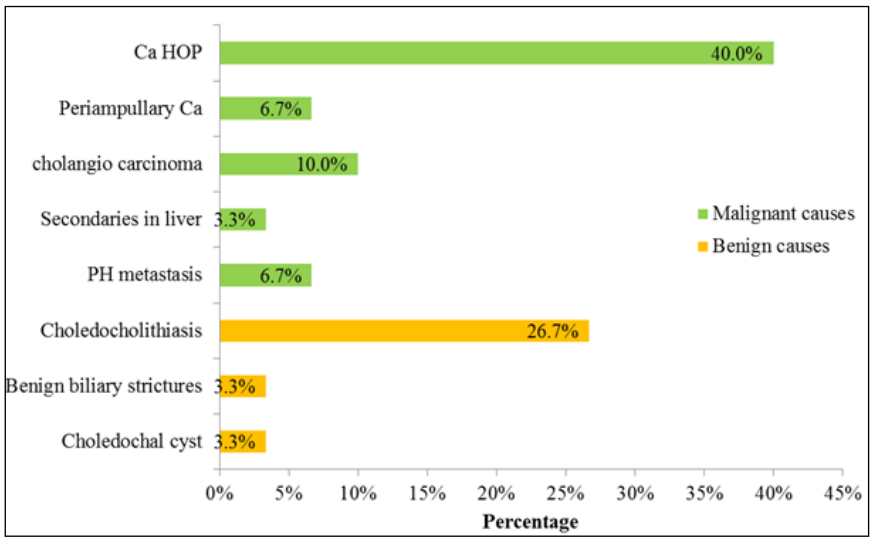
The various causes of obstructive jaundice noted in the patients of this study are as follows:

**Table-5: Causes of obstructive jaundice cases**

| | Number of patients | Percentage |
|---|---|---|
| A. Malignant cause | 20 | 66.7% |
| 1. Cancer head of pancreas | 12 | 40% |
| 2. Periampullary carcinoma | 2 | 6.67% |
| 3. Cholangiocarcinoma | 3 | 10% |
| 4. Secondaries in liver | 1 | 3.33% |
| 5. Porta hepatic metastasis | 2 | 6.67% |
| B. Benign causes | 10 | 33.3% |
| 1. Choledocholithiasis | 8 | 26.67% |
| 2. Benign biliary strictures | 1 | 3.33% |
| 3. Choledochal cyst | 1 | 3.33% |
| Total | 30 | 100% |

**Interpretation**

Of the 30 cases in these study 20 patients presented with malignant causes (66.7%), out of which carcinoma head of pancreas was commonest in 12 (40%) cases, and out of 10 cases (33.3%) of benign causes of surgical jaundice, the commonest cause was choledocholithiasis in 8 cases (26.7%).




**Graph-5: Causes of obstructive jaundice cases**

**Table-6: Clinical presentation in obstructive jaundice causes**

| | Total cases | Jaundice | Pain abdomen | Itching | Fever with chills | Loss of appetite | Loss of weight | Steatorrhea | Dark urine | Mass per abdomen |
|---|---|---|---|---|---|---|---|---|---|---|
| Malignant | 20 | 20 (100%) | 15 (75%) | 12 (60%) | 4 (20%) | 18 (90%) | 18 (90%) | 15 (75%) | 16 (80%) | 16 (80%) |
| Benign | 10 | 9 (90%) | 8 (80%) | 6 (60%) | 8 (80%) | 6 (60%) | 6 (60%) | 6 (60%) | 7 (70%) | 1 (10%) |
| Total | 30 | 29 (96.67%) | 23 (76.7%) | 18 (60%) | 12 (40%) | 24 (80%) | 24 (80%) | 21 (70%) | 23 (76.7%) | 17 (56.7%) |

**Interpretation**

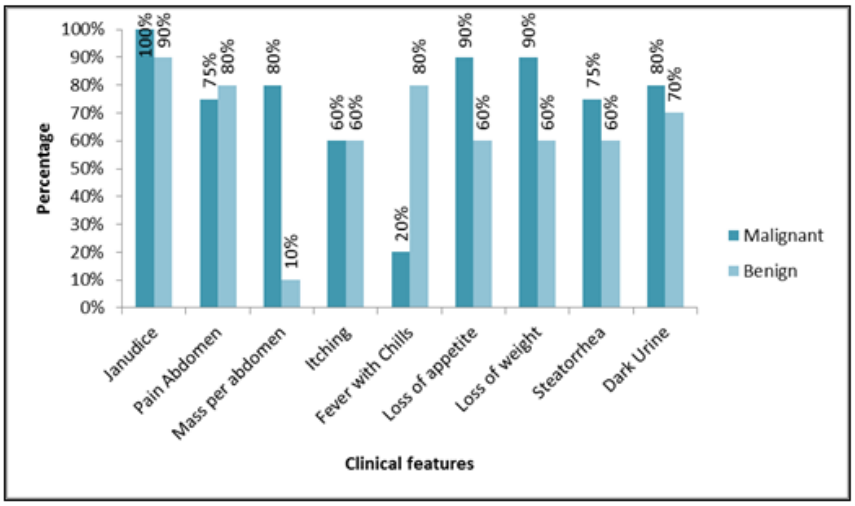
In malignant disease the most common symptom was jaundice in 100% patients followed by loss of appetite and weight in 90% patients.

In benign obstructive jaundice the commonest symptom was again jaundice 90%, followed by pain abdomen 80%, fever with chills 80%.

Overall jaundice was seen in 29 patients (96.7%), the duration of jaundice varied from 5 days to 2 months and in 16 patients (53.3%) jaundice was of less than 1 month duration.

Pain abdomen was present in 23 cases (76.7%). The pain was of continuous dull aching type, felt in the right hypochondrium with radiation to the epigastrium in 14 cases (46.7%). Pain was intermittent with pain free intervals of 1-3 days in 10 cases (33.3%)

and continuous with minor fluctuations in intensity in 12 cases (40%). Itching was complained of by 18 (60%) patients overall and present over the trunk and the extremities. History of fever with chills was present in 12 (40%) patients. Loss of appetite and weight was reported in 24 cases (80%). Pale coloured stool was seen in 21 cases (70%). Dark urine was seen in 23 cases (76.7%). and mass per abdomen was palpable in 17 cases (56.7%).




**Graph-6: Clinical presentation in benign and malignant obstructive jaundice**

**Table-7: Mean and range of values of liver function test in obstructive jaundice cases**

| | Total cases | Total bilirubin (mg/dl) | Direct bilirubin (mg/dl) | Indirect bilirubin (mg/dl) | Alkaline phosphatase (I.U/L) | SGOT (I.U/L) | SGPT (I.U/L) |
|---|---|---|---|---|---|---|---|
| Malignant jaundice | 20 | 21.73 ± 5.74 (8.53-28.32) | 19.07 ± 5.8 (10.8-26.3) | 2.38 ± 1.09 (1.5-5.35) | 291.75 ± 128 (126-586) | 150.8 ± 55.73 (87-296) | 184.8 ± 76.43 (76-335) |
| Benign surgical jaundice | 10 | 7.98 ± 3.46 (2.6-12.5) | 6.14 ± 3.10 (1.8-10.5) | 1.89 ± 0.59 (0.8-2.8) | 241.8 ± 87.39 (65-371) | 134.3 ± 59.7 (42-230) | 153.3 ± 69.02 (33-239) |
| | 30 | 14.85 (2.6-28.32) | 12.6 (1.8-26.3) | 2.135 (0.8-5.35) | 266.78 (65-586) | 142.55 (42-296) | 169.05 (33-335) |

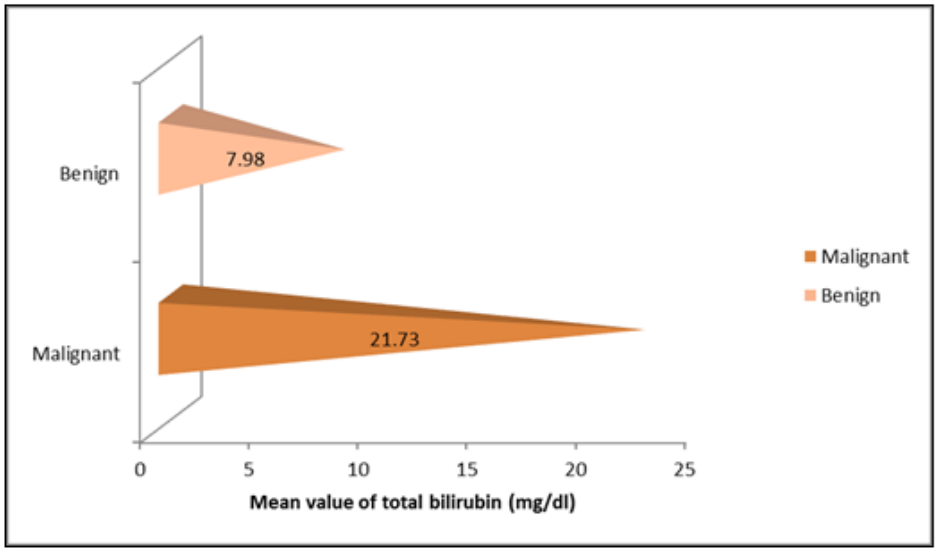
**Interpretation**

In this study the mean total bilirubin in malignant jaundice was 21.73 ± 5.74 mg/dl

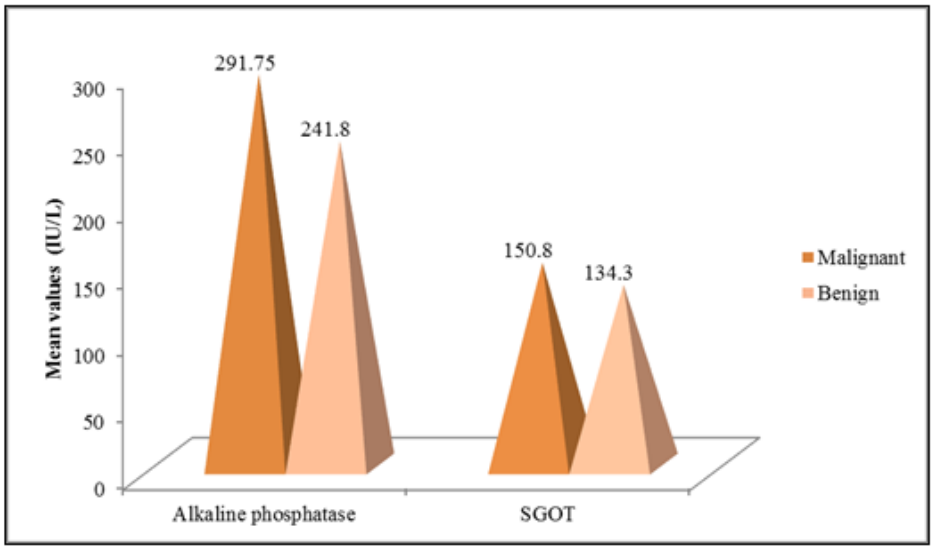
Mean alkaline phosphatase in malignant jaundice was 291.75 ±128 IU/L.

**Investigation Table 7**

- Serum Bilirubin
- Serum bilirubin was elevated all 30 patients. Highest level of total bilirubin recorded was 28.3 mg/dl and the direct fraction was the predominant one, the mean total bilirubin was 14.85 mg/dl, the level varied from 2.6 to 28.3mg/dl, and mean direct bilirubin was 12.6mg/dl varied from 1.8 to 26.3mg/dl.
- Alkaline phosphatase was elevated in 29 patients (96.7%). The level varied from 65 IU/L to 586 IU/L the mean level was 266.8 IU/L.
- SGOT and SGPT were elevated in 29 patients (96.7%). The level varied from 42 IU/L and 33 IU/L to 296 IU/L and 335 IU/L respectively the average level of SGOT was 142.5 IU/L and SGPT was 169 IU/L.
- The urine examination for bile salts and bile pigment were positive in all 20 malignant jaundice cases and out of benign obstruction it was positive in 8 cases (80%).




**Graph-7: Mean value of total bilirubin in benign and malignant obstructive jaundice**



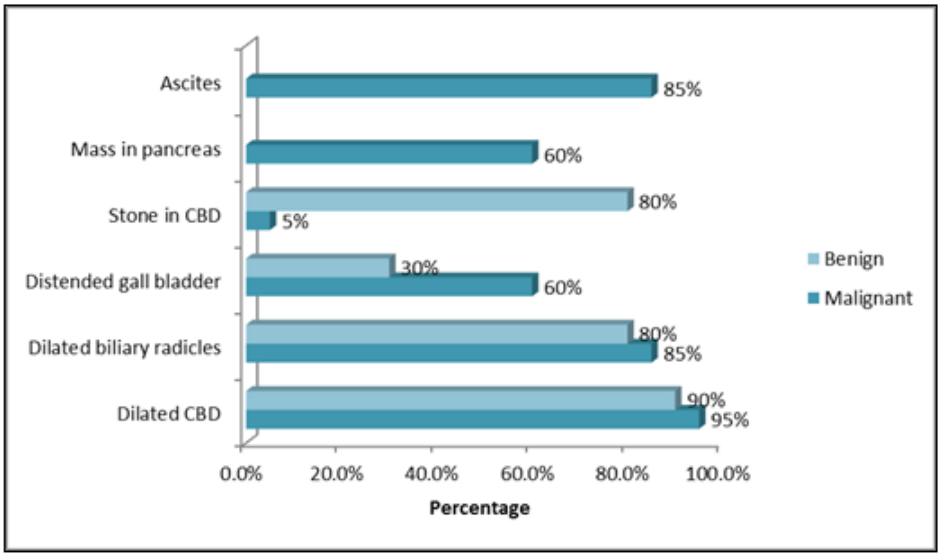

**Graph-8: Mean value of alkaline phosphatase and SGOT in benign and malignant obstructive jaundice**

**Table-8: Ultrasonographic findings in cases of obstructive jaundice**

| | Total cases | Dilated CBD | Dilated biliary radicles | Distended gall bladder | Stone in CBD | Mass in pancreas | Ascites |
|---|---|---|---|---|---|---|---|
| Malignant jaundice | 20 | 19 (95%) | 17 (85%) | 12 (60%) | 1 (5%) | 12 (60%) | 17 (85%) |
| Benign surgical jaundice | 10 | 9 (90%) | 8 (80%) | 3 (30%) | 8 (80%) | - | - |
| Total | 30 | 28 (93.3%) | 25 (83.3%) | 15 (50%) | 9 (30%) | 12 (40%) | 17 (56.6%) |

**Interpretation Table 8**

Ultrasonography done on all the cases showed dilated common bile duct overall in 28 cases (93.3%), and dilated intra hepatic biliary radicles in 25 cases (83.3%), ascites was seen in 17 (56.6%) cases, distended gall bladder was observed in 15 (50%) cases, mass in the pancreas was seen in 12 (40%) cases, calculi in the CBD was present in 9 (30%) cases.




**Graph-9: Ultrasonographic findings in benign and malignant obstructive jaundice**

**Table-9: Various treatment modalities in obstructive jaundice cases**

| | Total cases | Whipple's pancreaticoduodenectomy | Cholecysto jejunostomy with jejunojejunostomy | Cyst excision with roux-en-y hepaticojejunostomy | Choledochotomy with extraction of stone | Referred to cancer center | Post operative mortality | Mortality during Follow up |
|---|---|---|---|---|---|---|---|---|
| Carcinoma head of pancreas | 12 | | 9 | | | 3 | 1 | |
| Periampullary carcinoma | 2 | 1 | 1 | | | | | 1 |
| Cholangio carcinoma | 3 | 1 | | | | 2 | | |
| Secondaries in liver | 1 | | 1 | | | | | |
| Porta hepatic metastasis | 2 | | 2 | | | | | 1 |
| | 20 | 2 (10%) | 13 (65%) | | | 5 (25%) | 1 (5%) | 2 (10%) |
| Choledocholithasis | 8 | | | | 8 | | | |
| Benign biliary stricture | 1 | | 1 | | | | 1 | |
| Choledochal cyst | 1 | | | 1 | | | | |
| | 10 | | 1 (1%) | 1 (1%) | 8 (80%) | | 1 (1%) | |
| Total | 30 | 2 (6.7%) | 14 (46.7%) | 2 (6.7%) | 8 (26.7%) | 5 (16.7 %) | 2 (6.7%) | 2 (6.7%) |

**Interpretation**

**Treatment given Table 9**

**Malignant causes of surgical jaundice**

- Cholecysto jejunostomy and jejunojejunostomy was performed on 13 cases (65%).
- Whipple's pancreaticoduodenectomy(PD) was performed on 2 patients out of 20 malignant cases (10%) and was followed up to 6 months one patient had mild intra abdominal collection for which per cutaneous aspiration was done under ultrasound guidance.

**Benign cause of surgical jaundice**

- CBD exploration and stone extraction was done on all 8 cases of choledocholithiasis.
- Cholecysto Jejunostomy with Jejunojenostomy was performed on the sole case of benign biliary stricture.

- Choledochal cyst excision with roux-en-y hepatico jejunostomy was done in sole case of choledochal cyst.

**Referral to cancer centres**

5 cases (16.7%) of the total cases were not fit for any surgical procedures due to hepatic metastases, old age and emaciation which were referred to cancer centers.

**Mortality**

All the patients were followed up to 6 months. One patient died during 7th postoperative day following cholecystojejunostomy with jejunojejunostomy for Ca head of pancreas due to pancreatic fistulae and a patient each of periampullary carcinoma and porta hepatis metastasis both of whom underwent cholecystojejunostomy with jejunojejunostomy died during follow up within 3 months due to extensive metastasis of malignancy.

One patient of benign biliary stricture who underwent cholecystojejunostomy with jejunojejunostomy died on 5th postoperative day due to septicemia.

**DISCUSSION**

In this clinical study of 30 cases of obstructive jaundice were included.

**Malignant v/s Benign cause of obstruction**

There were a total of 30 patients out of which 20 (66.7%) patients had malignant causes of obstructive jaundice and 10 (33.3%) patients had benign causes of obstructive jaundice. This correlates with similar studies undertaken previously.

Sharma MP et al. [4] in a study of 429 patients of obstructive jaundice found that 75.3% had malignant causes and 24.7% had benign causes of obstructive jaundice

Siddique K *et al.* [9] in a study of 60 patients of obstructive jaundice reported that there were 34 (56.6%) patients with malignant causes of obstruction and 26 (43.3%) patients with benign causes of obstructive jaundice.

**Table-10: Malignant v/s Benign causes in various studies of obstructive jaundice**

| | Sharma MP *et al.* [4] | Siddique K *et al.*[9] | Present study (2015) |
|---|---|---|---|
| Malignant causes | 75.3% | 56.6% | 66.7% |
| Benign causes | 24.7% | 43.3% | 33.3% |

**Age distribution in obstructive jaundice**

In this study the age distribution was between 15 – 80 years. The youngest patient was 15 years old with choledochal cyst and oldest was 80 years with cholangiocarcinoma. The mean age was 58.23 years.

Lawal D *et al*. [5] in a study of 50 patients of obstructive jaundice reported the mean age as 42 years.

In another study by Sharma MP *et al.* [4] of 429 patients of obstructive jaundice the mean age was found to be 62.5 ± 34.2 years.

Siddique K *et al.* [9] in a study of 60 patients of obstructive jaundice reported the mean age to be 49.50 years.

**Table-11: Mean age of patients in various studies of obstructive jaundice**

| Name of study | Mean age of patients |
|---|---|
| Lawal D *et al.* [5] | 42 years |
| Sharma MP *et al*. [4] | 62.5 years |
| Siddique K *et al.* [9] | 49.50 years |
| Present study (2015) | 58.23 years |

The age range for patients with malignant disease was between 55 – 80 years, means age was 66.9 years, with 55% of cases were between the age group of 60-70 years.

For patients with benign disease the age range was between 15 – 71 years with mean age of 40.9 years.

Thus in this study the mean age of patients with malignant causes of obstructive jaundice was higher than that of patients with benign causes of obstructive jaundice. This correlates with similar studies undertaken previously.

In similar studies by Lawal D *et al.* [5] of 50 cases and Phillipo Chalya *et al.* [10] of 60 cases of obstructive jaundice it was seen that the patients with malignant causes of obstructive jaundice were older than the patients with benign causes of obstruction.

**Sex distribution in obstructive jaundice**

In this study there were 17 male patients (56.7%), and 13 female patients (43.3%). The results obtained were compared with previously conducted study.

**Table-12: Sex ratio in various studies of obstructive jaundice**

| | Total cases | M | F | M: F |
|---|---|---|---|---|
| d) Lawal D *et al.* [5] (1998) | 50 | 28 | 22 | 1 : 0.78 |
| e) Sharma MP *et al.* [4] (1999) | 429 | 229 | 200 | 1 : 0.87 |
| f) Siddique K *et al.* [9] (2008) | 60 | 40 | 20 | 1 : 0.5 |
| d) Present study (2015) | 30 | 17 | 13 | 1: 0.76 |

**Interpretation**

In this study of 30 cases of obstructive jaundice there was slight male predominance at sex ratio 1:0.76 which correlates with similar studies by Lawal D *et al.* [5] at 1 :0.78, Sharma MP *et al*. [4] at 1 : 0.87, Siddique K *et al.* [9] at 1: 0.5.

**Causes of obstructive jaundice**

In this study carcinoma head of pancreas constituted 40% of total cases and was the most common cause of malignant obstructive jaundice, choledocholithiasis was seen in 26.7% and was the most common cause of benign obstructive jaundice. These results correlate with previous similar studies.

Bekele Z *et al.* [6] in a study of 49 patients of obstructive jaundice reported choledocholithiasis as the most common benign cause of obstructive jaundice.

Khurram S *et al.* [11] in a study of 60 patients of obstructive jaundice reported that cancer head of pancreas as the commonest malignant cause while choledocholithiasis as the commonest benign cause of obstruction.

Syed N *et al.* [12] in a study of 71 patients of obstructive jaundice found Carcinoma head of the pancreas as the most common malignant cause and choledocholithiasis as the most common benign cause.

Rahman GA *et al.* [13] in a study of 64 patients of obstructive jaundice found that Carcinoma head of pancreas is the commonest cause of obstructive jaundice

Another study by Phillipo Chalya *et al.* [10] of 116 cases of obstructive jaundice Ca head of pancreas constituted 37.9% cases, choledocholithiasis 25.8%.

**Table-13: Causes of obstructive jaundice in various studies**

| Sl. No. | | Sharma MP *et al.* [4] 429 cases | Siddique K *et al.* [9] (2008) 60 cases | Lawal D *et al.* [5] 50 cases | Phillipo Chalya *et al.* [10] (2011) 116 cases | Present study (2015) 30 cases |
|---|---|---|---|---|---|---|
| 1 | Ca head of pancreas | 26.5% | 18 (30%) | 28% | 44 (37.9%) | 12 (40%) |
| 2 | Periampullary Ca | 9.8% | 1 (1.66%) | - | 6 (5.1%) | 2 (6.67%) |
| 3 | Choledocholithiasis stones | 12.4% | 21 (35%) | 24% | 30 (25.8%) | 8 (26.7%) |
| 4 | Cholangio carcinoma | 10.8% | 7 (11.6%) | 10% | 8 (6.8%) | 3 (10%) |
| 5 | Benign biliary stricture | 10.8% | 3 (5%) | - | 12 (10.3%) | 1 (3.3%) |
| 6 | Choledochal cyst | - | - | - | - | 1 (3.3%) |
| 7 | Secondaries in liver | - | - | - | - | 1 (3.3%) |
| 8 | Porta hepatis metastases | - | - | - | 4 (3.4%) | 2 (6.7%) |
| 9 | Others | 28.7% | - | - | 14 (3.4%0 | - |

**Interpretation**

**Malignant causes of jaundice**

In the present study there were 20 cases of malignant jaundice, which includes carcinoma head of pancreas (12), periampullary carcinoma (2), cholangio carcinoma (3), secondaries in liver (1); and porta hepatis metastases (2).

**Benign causes of jaundice**

Of the 10 cases of Benign extra hepatic biliary tract disease which included choledocholithiasis (8), benign biliary stricture (1), choledochal cyst (1).

This correlates with results of similar studies done previously.

**Clinical presentation in various studies of obstructive jaundice**

**Malignant cases**

In this study the clinical presentation in malignant disease were jaundice in 100% cases, abdominal pain in 75%, loss of weight and appetite in 90%, pruritus and mass per abdomen in 60%, fever with chills 20%. This result correlates with study conducted by Warren *et al.* [14] who studied 191 patients and reported that the presenting symptoms in malignant jaundice as abdominal pain in 82.8%, loss of weight in 90%, pruritus in 41.3%, fever in 4.9%, mass per abdomen in 64.4%. Van Wagensveld BA *et al.* [15] who studied 126 patients and reported jaundice as a presenting symptom in 90%, loss of weight in 82%.

In a similar study Phillipo Chalya *et al.* [10] of 116 patients of obstructive jaundice the most common presenting feature of malignant obstructive jaundice was jaundice in 58.6% patients, loss of weight and appetite in 56.9% patients, mass per abdomen in 50.9% patients, pruritus in 43.1% patients and abdominal pain in 17.2% patients.

**Table-14: Presentation in malignant jaundice various studies**

| | | Warren *et al.* [14] | Van Wagensveld *et al.* [15] | Siddique K *et al.* [9] | Phillipo Chalya *et al.* [10] | Present study (2015) |
|---|---|---|---|---|---|---|
| 1 | Jaundice | 145 (75.9%) | 113 (90%) | - | 68 (58.6%) | 100% |
| 2 | Abdominal pain | 157 (82.8%) | 60 (48%) | - | 20 (17.2%) | 75%) |
| 3 | Loss of weight/appetite | 172 (90%) | 103 (82) | - | 66 (56.9%) | 90% |
| 4 | Pruritus | 79 (41.3%) | | - | 50 (43.1%) | 60% |
| 5 | Fever; cholangitis | 9 (4.9% | | - | - | 20% |
| 6 | Steatorrhea | | | 75% | | 75% |
| 7 | Mass per abdomen | 123 (64.4%) | | | 59 (50.9%) | 66.7% |

**Interpretation**

**Malignant cases**

The commonest presentation in malignant cases is jaundice and loss of weight.

**Benign cases**

In this study clinical presentation in Benign causes of obstructive jaundice were jaundice in 90%, pain abdomen in 80%, fever with chills in 80%, pale coloured stools in 60%, darkening of urine in 70%, and itching in 60%.

**Investigation**

In this study the value of total bilirubin in malignant obstruction varied from 8.53 mg/dl to 28.32mg/dl with the mean value at 21.73 ± 5.74 mg/dl. Of the 20 cases malignant obstruction the value of alkaline phosphatase varied from 126 IU/L to 586 IU/L with mean value of 291.75 ± 128IU/L. The value of SGOT varied from 87-296 IU/L with mean value of 150.8 ± 55.73 IU/L. The value of SGPT varied from 76-335IU/L with a mean value of 184.8 ± 76.43IU/L.

Steer ML in Sabiston textbook of surgery [16] has stated that the highest elevations in serum bilirubin are usually found in the patient with malignant obstruction was more than 20 mg/dl.

Pellegrini *et al.* [17] has reported that average bilirubin values are higher in patient with biliary obstruction caused by malignant disease. Warren *et al.* [14] studied the laboratory values on 191 patients of carcinoma pancreas and reported that the mean values of total bilirubin was 8-9 mg/dl, alkaline phosphatase 269.1 IU/L, SGOT 111.5 IU/L.

In this study, among the 8 cases of choledocholithiasis the value of total bilirubin varied from 3.89mg/dl to 12.5 mg/dl with mean value of 9.24 mg/dl.

Ahrendt SA, Pitt HA in Sabiston textbook of surgery [16] has stated that CBD stone is associated with moderate increase in serum bilirubin at 10 – 12 mg/dl.

Pellegrini *et al.* [17] has reported that serum bilirubin value >14 mg/dl are not usually caused by CBD stones. In this study, among the 8 cases of choledocholithiasis the value of alkaline phosphatase ranged from 65 IU/L to 371 IU/L the mean value was 256.87 IU/L.

Pellegrini *et al.* [17] reported that alkaline phosphatase more than 5 times or clinical jaundice present for longer than 1month are uncommon manifestation of CBD stones.

In this study ultrasound examination of abdomen was done in all the patients and dilated CBD was noted in 95% of malignant disease, and 90% in benign cases, distended gall bladder was noted in 60% of malignant cases and in 30% of benign cases, pancreatic mass was noted in 60% of malignant jaundice, ascites was noted in 85% of malignant jaundice.

**Table 15: USG findings of obstructive jaundice in various studies**

| | Dilated biliary radicles | Dilated CBD | CBD calculi | Mass abdomen |
|---|---|---|---|---|
| Phillipo Chalya *et al.* [10] | 56.2% | 78.9% | 58.1% | 72.4% |
| Current study (2015) | 83% | 93% | 30% | 40% |

Galati P *et al.* [18] concluded that sonographic finding characteristic of periampullary tumor are intrahepatic ductal dilatation, dilated CBD and hypoechoeic mass in ampullary region and distended gall bladder seen in more than 50% of the patients.

Admassie D *et al.* [7] 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 shows reasonable sensitivity and specificity to identify causes of obstruction in obstructive jaundice.

**Treatment**

**Malignant jaundice**

- **Curative treatment**

In this study curative resection of malignant disease was done in 2 cases (10%). Whipple's pancreatico duodenectomy was done in one case of periampullary carcinoma and another case of cholangiocarcinoma.

Singh SM and Reber HA [19] reported that only 10-15% of patients with pancreatic cancer have disease suitable for resection and possible cure by the time the diagnosis is made.

- **Palliative treatment**

In this study palliative cholecysto-jejunostomy and jejuno-jejunostomy bypass procedure was done in 13 cases of 20 malignant jaundice (65%) of which 9 cases were of carcinoma head of pancreas, 2 cases of porta hepatis metastases, 1case each of periampullary carcinoma and secondaries in liver. 5 cases presented in the late stage and were not fit for any surgical procedure and were referred to cancer center this included 3 patients of carcinoma head of pancreas and 2 patients of cholangio carcinoma.

Singh SM and Reber HA [19] reported that 85 - 90% of patients with malignant jaundice require some form of palliation.

- **Mortality**

In this study 3 (15%) patients died out of 20 malignant jaundice patients. One patient of Ca head of pancreas who underwent cholecysto jejunostomy with jejunojejunostomy died on the 7$^{th}$ post operative day due to pancreatic fistulae and one patient each of periampullary carcinoma and porta hepatis metastasis died within 3 months of follow up due to extensive metastasis of malignancy.

Van Wagensveld BA *et al.* [15] reported that in obstructive jaundice postoperative mortality ranges from 2.5 – 19%.

- **Survival**

In our study both patient who underwent Whipple's procedure were followed till 6 months without mortality.

Fisher WE, Andersen DK, Bell RH, Saluja AK, and Brunicardi FC in Schwartz textbook of surgery [20] has stated that mean survival after Whipple's procedure was about 12 – 15 months.

Steer ML in Sabiston textbook of surgery [16] has stated that the mean survival for patient with stage III tumor range from 8 – 12 months and patient with stage IV tumor is 3 – 6 months.

**Benign extra hepatic surgical jaundice**

In our study choledocholithotomy and T tube drainage was successfully done in all the 8 choledocholithiasis patients with recurrence in 1 case (12.5%).

Ahrendt SA, Pitt HA Sabiston textbook of surgery [16] has stated that open CBD exploration is associated with low operative mortality in 0 - 2%, and operative morbidity 8% - 16%.

Uchiyama *et al. [*21] reported the recurrence rates in choledocholithiasis following choledochotomy and T tube drainage as 10.3%.

Although choledochotomy followed by T-tube has long been a standard surgical treatment for choledocholithiasis Ambreen M *et al.* [8] in a study of 35 patients of choledocholithiasis found that Primary Common Bile Duct closure is a safe and cost effective alternative to routine T-tube drainage after open choledochotomy.

**Table-16: Prognosis of after treatment of patient with choledocholithiasis**

| | Uchiyama *et al.* [21] 2003 | Present study 20015 |
|---|---|---|
| Patients | 87 | 8 |
| Mean Age | 64.5 ± 13.3 | 46.4 ± 11.8 |
| Gender male : Female | 41 : 46 (1:1.12) | 3:5 (1:1.66) |
| Recurrence rate | 10.3% | 12.5% |

**Interpretation**

The sex ratio in patients with choledocholithasis was 1:1.6 and recurrence was seen in 1 patient (12.5%).

In our study the lone case of choledochal cyst was treated surgically with cyst excision with roux en-y hepatico- jejunostomy, during follow up patient was healthy with no attacks of fever, chills or jaundice.

Lipsett PA [22] has stated that current treatment of choldedochal cyst is excision of the cyst with hepatico-jejunostomy with roux en-y reconstruction of the biliary tree.

**Mortality**

One patient of benign biliary stricture who underwent cholecystojejunostomy with jejunojejunostomy died on 5$^{th}$ postoperative day due to septicemia.

**CONCLUSION**

From this study of 30 cases of obstructive jaundice the following can be concluded:

- Majority of the patients of obstructive jaundice had malignant disease.
- Most common age group seen is between 55-74 years and the sex ratio shows slight male predominance.
- Mean age of patients with malignant disease was higher than that of the patients with benign causes of obstructive jaundice.
- Most common causes of obstructive jaundice are carcinoma head of pancreas and choledocholithiasis among malignant and benign conditions respectively.
- Jaundice is the most common presentation of obstructive jaundice followed by pain abdomen, dark urine, pale stool and loss of weight.
- Ultrasound of the abdomen is an effective imaging modality to elucidate the causes of obstructive jaundice.
- Most patients with malignant disease presented at a late stage and curative surgical resection was possible only in a minority of the patients, palliative procedures were required for the rest.
- Among the patients with choledocholithiasis surgery in the form of choledocholithotomy and T tube drainage was an effective modality of treatment with a low rate of recurrence.

**REFERENCES**


1. Mohamed S, Syed AI; Management of obstructive jaundice: Experience in a tertiary care surgical unit, Pakistan Journal of Surgery, 2007; 23: 23-25.
2. Ahmad I, Jan AU, Ahmad R; Obstructive Jaundice, J Postgrad Med Inst, 2001: 15: 194-198.
3. Briggs CD, Peterson M. Investigations and management of obstructive jaundice Surgey 2007; 25: 74-80
4. Sharma MP, Ahuja V; Aetiological spectrum of Obstructive Jaundice and the diagnostic ability of Ultrasonography: A clinician's perspective Trop Gastroenterol, 1999; 20:167-169.
5. Lawal D, Oluwole S, Makanjuola D, Adekunle M; Diagnosis, management and prognosis of obstructive jaundice in Ile-Ife, Nigeria. West African Journal of Medicine, 1998; 17(4):255-260
6. Bekele Z, Yifru A; Obstructive jaundice in adult Ethiopians in a referral hospital. Ethiopian Medical Journal, 2000;38(4):267-75
7. Admassie D, Yesus AH, Denke A; Validity of ultrasonography in diagnosing obstructive jaundice. East African Medical Journal, 2005;82(7):379-381.
8. Ambreen M, Shaikh AR, Jamal A, Qureishi JN, Dalwani AG, Memon MM; Primary closure versus T-tube drainage after open choledochotomy. Asian Journal of Surgery, 2009; 32(1): 21-25
9. Siddique K, Ali Q, Mirza S, Jamil A, Ehsan A, Latif S, Malik AZ; J Ayub Med Coll Abbottabad. 2008; 20(4): 62-66.
10. Phillipo LC, Emmanuel SK, Mabula M; Published online, 2011.
11. Khurram S, Qasim A, Shirin M, Aiza J, Aisha E, Sarmad L, Asif ZM; Evaluation of the aetiological spectrum of obstructive jaundice. Journal of Ayub Medical College, Abbottabad; 2008; 20(4): 62-66.
12. Syed N, Mohammad SA, Umair UI, Shafiq UR; Etiological spectrum of obstructive jaundice. Medical channel 2010, 16:299-301
13. Rahman GA, Yusuf IF, Faniyi AO, Etonyeaku AC; Management of patients with obstructive jaundice: experience in a developing country. Nigierian Quarterly Journal of Hospital Medicine, 2011; 21(1):75-79.

14. Warren KW, Christophil C, Armedariz R, Basu S; Current trends in the diagnosis and treatment of carcinoma of the pancreas. Am J Surg, 1983;145: 813-818.
15. Van Wagensveld BA, Coene, Van Gulik TM, Obertop RH, Gouma DJ; Outcome of palliative biliary and gastric bypass surgery for pancreatic head carcinoma in 126 patients. Br J Surg, 1997; 84:1402-1406
16. Abrendt SA, Pitt HA. Biliary tract. Angelica MD, Fong Y; The liver. In: Townsend CM, Beachamp RD, Evers BM, Mattox KL. Sabiston textbook of surgery. The biological basis of modern surgical practice, 17th ed. Saunders, Pennsylvania USA, 2004; 1597:1561-1562.
17. Pellegrini C, Thomas MJ, Way LW; Bilirubin and alkaline phosphatase values before and after surgery for biliary obstruction. Am J Surg 1982;143: 67-73.
18. Gulati P, Chowdhury V, Mishra SP, Kumar N, Kakkar A, Singh S; Sonographic evaluation of periampullary carcinoma. Indian J Surg 1994; 56(3):119-121.
19. Singh SM, Reber HA; Surgical palliation for pancreatic cancer. Surg Clin North Am, 1989; 69(3): 599-603
20. Oddsdottir M, Hunter JG; Gall bladder and the extrahepatic bilary system. Fishner WE, Andersen DK, Bell RH, Satya AK, Burnicardi FC, Pancreas. In: Brunicardi FC, editor-in-chief. Schwartz's principle of surgery 8th ed: McGraw Hill, USA, 2005;1211-1283.
21. Uchiyama K, Onishi H, Tam M, Kinoshita H, Kawai M, Cleno M, *et al*.; Long term prognosis after treatment of patients with choledocholithiasis. Ann Surg, 2003; 238(1): 97-102
22. Lipsett PA, Pitt HA, Colombani PM, Boitnott JK, Cameron JL. Choledochal cyst disease. A changing pattern of presentation. Ann Surg, 1994; 220(5): 644-652.