

# Obstructive Jaundice; A Diagnostic Challenge

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## ABSTRACT

**Objectives:** To ascertain causes of surgical jaundice and investigation modalities required for the diagnosis in our patients.

**Study Design:** Retrospective analysis for etiologies and investigation modalities.

**Place and Duration of Study:** This study was conducted at the Department of Surgery, Allama Iqbal Memorial Teaching Hospital of Government Khawaja Muhammad Safdar Medical College, Sialkot from June 2013 to February 2016.

**Materials and Methods:** Patients who were admitted having obstructive jaundice due to any etiology were enrolled for this study. Ninety-two patients who fulfilled inclusion criteria, patients of all age groups from any gender were included. Patients presenting in outpatients department and after being investigations were admitted for further investigations and treatment. Patients who refused admission for further investigations and surgery were excluded. Data collected using a proforma and analysis done with SPSS v 22 program.

**Results:** Out of 132 patients reporting in surgical outpatients, 112 patients were admitted for investigations and management of obstructive jaundice. Females patients were more in number than males with a ratio of 1:1.3. Subjects having malignant lesions were elderly than those of nonmalignant cases. Pancreatic head carcinoma being at the top in cancers and choledocholithiasis being the leading cause in benign group. The sonographic scan of the abdomen was the basic imaging performed in every patient which showed dilatation of biliary ducts both intra and extra-hepatic level, ductal stones or tumours in 55.20%, 71.90%, 48.10% and 69.6% of the patients respectively. Computed Tomographic scan of the abdomen was done to stage and assess resectability in malignant cases and strictures. Magnetic resonance imaging was carried in 23 cases. A total of 92 (100%) patients got operated and the rest of 6 (5.2%) admitted patients who were not fit for surgery or anesthesia. The rate of morbidity remained 22.4%, leading was infective complications.

**Conclusions:** The early diagnosis has prime importance in the outcome in obstructive jaundice patients: ultrasonography a baseline imaging being done in every patient and even repeated in the same patients. Other investigations like PTC, ERCP, CT scan and MRCP are to be done for definite diagnosis and respectability of malignant causes. Blood chemistry has done repeatedly to monitor the progress of the disease and follow-up. Malignant lesions are in lead as compared to the benign reasons.

**Key Words:** Choledocholithiasis, Klatskin Tumour, Cholangiocarcinoma, Obstructive jaundice, Percutaneous transhepatic cholangiography, Endoscopic Retrograde cholangiopancreatography,

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## INTRODUCTION

Obstructive jaundice is one of the challenging diagnosis', to make in developing countries. It requires resources and skill to manage these patients. Obstructive jaundice is one of the common surgical encounters, in a surgery ward.

There is considerable morbidity and mortality related with the different etiologies; and investigations and therapeutic modalities cost is high regardless of its benign or malignant nature<sup>1,2</sup>. The early diagnosis carries much importance particularly in malignant causes, for surgical resection is only option in early stages. Obstructive jaundice is caused by diverse causes of benign and malignant origin. As etiological factors vary from center to center as well as to different individuals; so it is necessary to ascertain the exact etiology of the disease; because serious pathologies like Secondary Biliary Cirrhosis, may ensue if obstruction is not relieved<sup>3,4</sup>. A range of invasive and minimal invasive diagnostic modalities are carried for diagnosis and to ascertain the cause of obstructive jaundice. Grave complications like cholangitis and pancreatitis are associated with some invasive investigations and costly imaging modalities like computerized tomographic or CT scan, Percutaneous transhepatic

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cholangio-pancreaticography i.e.PTC, ERCP endoscopic retrograde cholangiopancreatography and MRCP i.e. magnetic resonance cholangio-pancreatography; and these may not be at hand in many hospitals of 3rd world

i.e. developing countries, and so ultrasonography becomes basic diagnostic modality at hand<sup>5,6</sup>. The definitive management of obstructive jaundice also poses a great challenge to the Surgeons working in developing countries. Delay in presentation along with lack of modern investigations are among the main hurdles in management. Surgical procedures in obstructive jaundice carries higher risk of operative and postoperative morbidity in comparison that in surgery in non-jaundiced patients<sup>7,8</sup>. Common postoperative complications are sepsis (e.g Anastomotic Leakage, cholangitis, and abscess formation), bleeding, renal compromise (hepatorenal syndrome) and delayed wound healing. Non-availability of advanced technology tools and therapeutic facilities are key factors which determine the outcome of treatment of obstructive jaundice in our settings<sup>9,10</sup>.

There is also lack of awareness and knowledge about diagnostic and therapeutic procedures for obstructive jaundice in our society. We planned this study to share our experience in the managing obstructive jaundice, highlighting the etiologies encountered and the different modes of investigations in order to get an acceptable treatment outcome regarding morbidity and mortality in our patients at Allama Iqbal Memorial Teaching Hospital affiliated with Khawaja Muhammad Safdar Medical College, Sialkot.

## MATERIALS AND METHODS

We enlisted all the patients presenting with obstructive jaundice and were admitted to the surgical wards. Informed consent for inclusion in our study was obtained and the patients were randomly included. Those confirmed on investigations not having surgical causes of jaundice were excluded. A comprehensive history of the patients was taken, examination, laboratory tests including Liver Function tests for bilirubin level, alkaline phosphatase level, ALT & AST were carried. Other investigations as Haemoglobin, WBC count, Packed RBC volume, Prothrombin Time, serum creatinine and albumin were also done. Abdominal Ultrasound was the main diagnostic imaging done in all patients to look for the abnormality of intra and extra-hepatic biliary channels, the common bile duct, and the presence of obstructive factors like gallstones, tumors, lymph nodes, worms or any abdominal mass. Advanced diagnostic imaging such as CT scan abdomen, ERCP, PTC, and MRCP was done in selected patients.

Assessment at three stages preoperatively, intraoperatively and postoperatively, and the findings were recorded in Proforma. Variables that were recorded included patients' biodata, duration of

jaundice, the cause of obstructive jaundice, laboratory findings, ultrasonographic findings, treatment modalities, intraoperative findings, postoperative complications, the length of hospital stay and mortality. Pre-operative preparations included maintaining good hydration and administration of antibiotics, intravenous dextrose (10%) solution and Vitamin K injections. In anemic patients, blood transfusion was also carried out. Immediately before surgery; intravenous Mannitol was infused in all the patients. preoperative biliary drainage (PBD) was introduced as means of reversing the pathophysiological disturbance seen in jaundiced patients and has been advocated before curative tumor resection The type of surgery carried out depend upon the cause and the findings at the time of the procedure. Patients were followed up for minimum 3 months after discharge or until death.

This was a descriptive prospective study which was conducted at Department of Surgery, Allama Iqbal Memorial Teaching Hospital which has a bed capacity of 500. Approximately 3 million population is dependent on this hospital for health care. This hospital is affiliated with Khawaja Muhammad Safdar Medical College, Sialkot. The study included patients from June 2013 to August 2016. Data were collected using a performa and analyzed using SPSS v 22. Results were reported as percentages for categorical variables.

## RESULTS

**Table No.1: General Data**

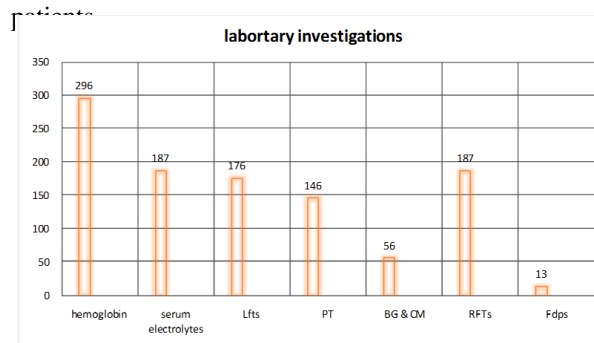
Total no of patients in Study	92	100%
Age	0-65 years	Mean age 45.23 years
Gender	M:F	33:59 ( 1: 78)
Benign causes	24	(26.09)
Malignant causes	68	(73.91%)

**Table No.2: shows the investigation modalities.**

Investigations .n=354 (100%)		
Ultrasonography	156	44.06%
CT SCAN	78	22.03%
Magnetic Resonance Cholangiopancreatography	23	6.49%
Percutaneous TranshepaticCholangiopancreatography	13	3.67%
Preoperative biliary drainage	9	2.54%
Endoscopic Retrograde Cholangiopancreatography	25	7.06%
Exploratory Laparotomy	38	10.73%
T tube cholangiography	12	3.38%

Graph I shows number or investigations as haemoglobin. Serum electrolytes, LFTs (liver function tests), PT (prothrombin time), Blood grouping and cross match (BG & CM), Renal function tests and FDPs

(fibrin degradation products), CA 19-9 was done in 7



Graph No.I: Laboratory investigations done in patients.

Table No.3: Clinical presentation in no of patients

Right upper abdominal pain	78	84.78%
Clay coloured stools	82	89.13%
Weight loss	69	75%
Pruritis	53	57.60%
Scratch marks	41	44.56%
Palpable abdominal mass	32	34.78%

Table No.4: causes of obstructive jaundice n=92 (100%)

Biliary ductal stones	15	16.30%
Carcinoma Head of Pancreas	28	30.43%
Cholangiocarcinoma- Klatskintumour	9	9.78%
Middle part	5	5.43%
Distal/ampulla of Vater	5	5.43%
Carcinoma Gall Bladder	7	7.60%
Post Cholecystectomy(open/lap)	9	9.78%
Benign Stricture		
Miscellaneous (lymph nodes, worms, cysts)	14	15.21%

## DISCUSSION

Obstructive jaundice is a challenge in developing countries like Pakistan where late presentation and difficulty in approach to modern tools as of diagnostic (e.g. CT scan, PTC, ERCP, and MRCP) and therapeutic facilities are the main problems. This study was conducted in our local set up to describe the management of this disease; this problem not previously studied at our center.

Most of the patients in our study had malignant obstructive jaundice which is in comparison with other studies by Ahmad et al<sup>11</sup>, Ghaffar et al<sup>12</sup>, Kassa et al<sup>13</sup>, and Van der Gaag et al<sup>14</sup>, Sharma & Ahuja<sup>15</sup> reported carcinoma of the gall bladder as the most common cause of malignant obstructive jaundice.

Also, Ascariases Lumbricoides to be associated with disease of biliary tract causes in obstruction, as in the study by Van der Gaag<sup>14</sup>. We experienced only 1 patient with such infestation.

Bekele et al.<sup>16</sup> in Ethiopia who reported benign obstructive jaundice (Biliary ductal stones) as the most

common cause of obstructive jaundice. In our study, the modality which causes the most in the aspect of malignancy is the carcinoma of the head of the pancreas while Biliary ductal stones were the commonest benign cause. Similar observation was also noted by others Ghaffar et al<sup>12</sup>, and Kassa et al<sup>13</sup>.

In this study, benign and malignant obstructive jaundice were more common in females than in males, which is in acquiescence with the results of Ghaffaret al<sup>12</sup>, Kassa et al<sup>13</sup> and Ahmad et al<sup>11</sup>. Female preponderance in both the benign and malignant obstructive jaundice is explained as to the high prevalence of gallstones that is a risk factor for many benign and malignant conditions causing biliary obstruction, Ahmad et al<sup>11</sup>, and Ambreen et al<sup>17</sup>.

Most of the patients with benign obstructive jaundice in our study were in younger age group while malignant causes were in elder age group. It comparable to studies by Mehrdad et al<sup>18</sup>, Kassa et al<sup>13</sup> and Van der Gaag et al<sup>19</sup>.

Clinical presentations of our patients as shown in table V are quite comparable to the presentations of the patients in the studies by Syed et al<sup>20</sup>, Ghaffar et al<sup>12</sup>, Kassa et al<sup>13</sup>, and Van der Gaag<sup>19</sup>.

In one study by Cheema et al.<sup>21</sup>, the values of bilirubin and alkaline phosphatase were found to be higher in the malignant cases; same was our findings.

In places where advanced diagnostic imaging (e.g. CT scan, ERCP, PTC, and MRCP) are available, still, we have to conform to exploratory laparotomies for reaching a diagnosis which otherwise was unclear or not reached on investigations.

In our study, the most of the patients with malignant obstructive jaundice treated with palliative surgery i.e bypass surgery, whereas the patients with benign obstructive jaundice were dealt with curative surgery. Similar treatment pattern was also reported by Mohammed et al<sup>22</sup>

We routinely used T-Tube placement after exploration of common bile duct in all the patients undergoing Choledocholithiasis; while in studies by Briggs and Peterson<sup>23</sup> and in by Bekele<sup>16</sup>, Gurusmay and Samraj<sup>24</sup>, and Leida<sup>25</sup>, it is recommended that T-tube placement may be avoided. Several factors including elder age group, duration of jaundice, malignant cases, high levels of bilirubin and presence postoperative complications (e.g. sepsis, coagulopathy, hepatic coma and renal failure) have been reported in the literature to be associated with high mortality rate in these patients.

## CONCLUSION

Obstructive jaundice is a common surgical problem in our setting and has the dilemma of expensive modern diagnostic and therapeutic tools. It presents more in females and malignant causes being more prevalent. Benign jaundice affects more patients of young age

while malignant found to be more in elder age group. Carcinoma of the head of the pancreas is the commonest malignant cause of jaundice whereas stones in the bile duct the commonest benign etiology. The diagnostic workup has a major role and is a costly affair being shared by the radiology and pathology departments.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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