

# Intra Hepatic Cholangiostomy at Mayo Hospital, Lahore

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**Malignant obstructive jaundice due to obstruction of the hilar area of the liver can result from a number of causes. The most common causes are gallbladder carcinoma, hilar cholangiocarcinoma (Klatskin tumour). Primary or secondary liver tumours, or certain gastric or pancreatic cancers can also be responsible. Twelve patients were evaluated in our study, seven (58.33%) were male and five (41.67%) were female. Male to female ratio was 1.4:1. Mean age of patients in our study was 51.75 years. The median age was 55 years. The age range of the patients in our study was 36.-65 years. To relieve the obstruction, we performed intrahepatic-cholangiostomy in patients of unresectable tumours of portahepatitis. Operative mortality was 16%. Intrahepatic cholangiostomy is an effective palliative procedure for unresectable tumours at porta hepatis.**

**Key words:** Cholangiostomy, cholangiocarcinoma

Malignant obstructive jaundice due to obstruction of the hilar area of the liver can result from a number of causes. The most common causes are gallbladder carcinoma, hilar cholangiocarcinoma (Klatskin tumor), Primary or secondary liver tumors, or certain gastric or pancreatic cancers<sup>1</sup>. These hilar cholangiocarcinomas (Klatskin tumours) are itself divided into four types (Bismuth-corlette classification).

Type-I: Situated at main hepatic duct junction but not obstructing it.

Type-II: Obstructing the main hepatic duct junction only.

Type-III: Obstructing the main hepatic junction and right or left secondary junction.

Type-IV: Obstructing the main hepatic junction and both right and left secondary junctions<sup>2</sup>.

All of these tumours causing biliary obstruction are well known to have a poor prognosis and pose a similar management problem, that is, the relief of obstructive jaundice<sup>3</sup>.

Complete extirpation of the tumor was difficult because the tumor may have spread along the submucosal or subserosal layer of the bile duct and has a strong propensity for infiltration of surrounding structures i.e. hepatic artery and portal vein<sup>4</sup>.

Ultrasonography, percutaneous transhepatic cholangiography and computerized tomography help locating the site and extent of the tumor. When obstructive jaundice due to malignancy at portahepatitis has developed the disease is considerably advanced locally and in such cases biliary drainage is indicated to relieve the jaundice<sup>2</sup>.

Biliary drainage carries a significant risk of postoperative complications due to several etiological factors including hypotension, impaired nutritional status, depressed immune function, hepatic dysfunction and the presence of toxic substances (Bilirubin, bile salts, endotoxins) in the circulation<sup>5</sup>.

Biliary drainage for palliation of obstructive jaundice can be obtained by operative and non operative

methods. Non operative biliary drainage may be external and percutaneous transhepatic drainage<sup>6,7,8</sup> or internal by endoscopic stenting<sup>9</sup>. Placement of internal stent via percutaneous transhepatic cholangiography for palliation of malignant biliary obstruction was reported as early as 1978<sup>10</sup>. Recently, stents have been positioned endoscopically through duodenum<sup>11</sup>. Although these have been successfully placed in high proportion of cases with low lesions, these are not widely applicable to the lesions at confluence of right and left hepatic ducts<sup>12</sup> and the endoscopic stenting is sometimes impossible in hilar malignancies. Possible adverse effects of biliary stenting consist of dislodgement, hemobilia, cholangitis, intrahepatic abscess, pancreatitis and bleeding<sup>14,15</sup>. Surgical bypass operation to intrahepatic ductal system could potentially provide a better long term of life<sup>13,16</sup>. Longmire and Sandford in 1948 described their famous procedure in which segment II duct of liver was drained into Roux loop of Jejunum<sup>3</sup>.

Intrahepatic cholangiostomy described by Dogliotti<sup>17</sup> and Remesh<sup>18</sup> is a modification of Longmire's operation in which the stomach instead of jejunum is used for drainage of the segment II duct of the liver. Anastomosis between stomach and the stump of left lobe of liver is technically easy; is a single anastomosis; thick stomach wall provides a better buttress against leakage; presence of bile in the nasogastric aspirate is a reassuring sign that confirms anastomotic patency; operative time is reduced; less incidence of cholangitis and prompt relief of jaundice occurs. There is minimal morbidity and no procedure related mortality<sup>18</sup>. Three basic measures of successful palliation in patients with advanced unresectable malignant obstruction of the biliary tract are relief of symptoms, improvement in hospital free time and avoidance of additional morbidity because of palliative procedure<sup>19</sup>.

## Material and methods

Those patients having unresectable malignant lesions at portahepatitis causing jaundice. Diagnosis were made by detailed history, clinical examination, laboratory

investigations like total leukocyte count, differential leukocyte count, serum bilirubin, serum glutarate/oxaloacetate transferase, serum glutarate/pyruvate transferase. Alkaline phosphatase, ultrasonography (USG), percutaneous transhepatic cholangiography, endoscopic retrograde cholangiopancreatography and Computerized tomography.

Laparotomies were done by upper midline, right subcostal, left subcostal and or extended incisions. Confirmation of diagnosis and inability to perform curative procedure were decided peroperatively. Biopsy was taken for histopathological examination. Decision about palliation by intrahepatic- cholangiostomy was done. Left lobe of liver was mobilized by division of left triangular ligament. The left lobe was secured between thumb and index finger or a soft clamps was applied. A small peripheral portion of left lobe was resected. The duct of the segment II was found out by gentle fracturing of liver tissue between thumb and index finger. A polythene catheter (5-10 Fr) was passed into the duct. An opening equal to segment II duct size was made in the mucosa of the stomach while the seromuscular incision slightly bigger than the mucosal opening was made in the adjacent part of anterior wall of stomach. Stenting of anastomosis with the polythene catheter was made. A posterior layer of interrupted vicryl 2/0 sutures were applied between seromuscular layer of stomach and liver parenchyma and posterior capsule. Then interrupted vicryl 3/0 sutures were applied to the duct and musosal opening of the stomach around the tube. Finally an anterior layer of 2/0 vicryl sutures were placed between seromuscular layer of stomach and liver parenchyma and anterior capsule.

Nasogastric tube was passed, drain was placed near anastomosis and abdominal closure was done in layers with non absorbable suture.

We followed the patient for 6 month and following points were observed

1. Clinical improvement in symptoms and signs.
2. Assessment of the decline of serum billirubin level
3. Assessment of postoperative mortality, morbidity, and survival time and quality of life.

#### Results: -

Twelve patients were evaluated in our study, seven (58.33%) were male and five (41.67) were female. Male to female ratio was 1.4:1. Mean age of patients in our study was 51.75 years. The median age was 55 years. The age range of the patients in our study was 36-65 years. The main presenting complaint was jaundice which was present in all twelve (100%) patients. The duration of jaundice was more than one month in five (41.66%) patients, between 1-5 months in five patients (41.66%) and between 6-10 months in two patients ((16.66%).The jaundice was sudden in onset in one patients (8.33%) and gradual in eleven patients (91.66%)

All of the twelve patients in our study presented with clay colored stool and dark colored urine. Pain was the 2nd most common presentation of patients in our study. Out of twelve patients, nine patients (75%) presented with pain right upper abdomen. Pain was dull in eight (88.88%) patients, while in one (11.11%) patients pain was colicky. Fever was present in ten patients. Vomiting was the presenting symptoms in one patient, nausea in 4 patients and anorexia and weight loss was present in eleven patients. General physical examination revealed that jaundice was present in all patients. Hepatomegaly and mass in upper abdomen was present in six patients.

Serum bilirubin was raised in all patients with minimum level of 12.1 mg/dl and maximum of 30.6 mg/dl. Ten patients were negative for hepatitis B surface antigen and remaining two were positive. Serum glutamine oxalate transminase (SCOT) alanin transferase (ALT), serum glutamin pyruvate transminase / asparate transferase and alkaline phosphatase were elevated in all 12 patients. The range was 500-1000 unit per liter. Prothrombin time was raised in 10 patients while remaining were normal

Hepatomegaly was confirmed by abdominal ultrasonography in nine patients. Intrahepatic biliary channels were found dilated in all patients. Gall bladder was found distended in 3(25%) patients. Cholclithiasis was picked up in one patient. Pancreas and pancreatic duct looked normal in 11 patients while dilated in one patient. Percutaneous transhepatic cholangiography was performed in ten patients while in the remaining two patients it was not performed due to proionged prothrombin time. In 9 patients, out of two patients in which PTC was done on both side. Endoscopic Endoscopic retrograde cholangiopancreatography was performed in three patients. In 2 patient growth of periampullary region was found obstructing the lower end of common bile duct, the growth was extending to portahepatis. In two patients computerized tomography was performed and showed obstruction of hepatic ducts and dilation of intrahepatic biliary channels.

Carcinoma of pancreas with secondaries at portahepatis was present in two patients while remaining 2 patients had malignant obstruction due to unknown primary growth involving the bile duct, portal vein and / or hepatic artery. Bleeding from liver stump was profuse in five patients and in two patients the segment II duct was located with difficulty. Diagnosis was confirmed by histopathology, and carcinoma of gallbladder was the most common cause of obstruction at porta hepatis.

Post-operative fever with rigors due to cholangitis was the most frequent complication in 3 patients which settled after 3-5 days. Vomiting, profuse bleeding and respiratory tract infection were the other complication after procedure. Hepatic failure and hepatorenal shut down was seen in two patients. Over all mortality was

16.66%. Ten surviving patients improved clinically and jaundice was relieved. Color of stool and color of urine became normal, and in all patients itching was subsided.

Serum bilirubin on the 5th day was nearly half of the pre-operative level in 4 patient and nearly 1/3<sup>rd</sup> in 6 patients. One month after the operation serum bilirubin was with the range of 2-3 mg in 7 patients and 3.2 - 3.5 mg/dl in 3 patients. Gastrosopy was performed in 9 patients which revealed stent pouring bile into stomach and there was no evidence of biliary gastritis. Two patients were expired within 30 days after cholangiostomy. In remaining 10 patients, mean survival was 160 days and range was 60-277 days.

### Discussion

It is difficult to manage the malignancies at portahepatic at whatever their origin they remained silent for a long period. When jaundice had developed tumour almost gained unresectability. In such circumstances the safe palliation was the aim, and intrahepatic cholangiostomy was done in 12 patients to relieve the malignant obstructed jaundice. The most common cause of obstruction was of carcinoma of gall bladder in 8 patients. This malignancy was more common in females, as out of 66.6% patients of carcinoma of gallbladder, 5 (62.50%) were female and three (27.50%) were males. This female preponderance was a little bit higher in the study of Zia and Maqbool<sup>22</sup> (Female 90% and male 10%). The other causes of obstruction were, carcinoma of the pancreas and malignancy of unknown origin in two patients. Patients presented in relatively young age with mean age of 51.75 years. The peak incidence was in the sixth decade. These findings showed that the malignancies of biliary system, effect the younger age group in our region.

Jaundice was the chief presenting complaint in all patients presented with clay colored stool and dark colored urine. These findings were consistent with the findings of Launois et al., and Lygidakis et al who reported jaundice as a presenting symptoms in 100% cases. Loss of appetite and loss of weight were present in 91% cases and fever with rigors in 60% cases. Preoperative cholangitis was present in 50% of patients as compared to Malangoni et al<sup>20</sup>. reported 9%. It was mainly due to biliary obstruction and low resistance of patients due to obstructive jaundice. The incidence of fever with rigors is low in other studies as Grove et al., reported 14%.

Prothrombin time was 2.5 seconds above control in 50% of cases. Garrison in his study, was also of the opinion that the prothrombin time is a useful test of hepatic function<sup>20</sup>. But Pitt et al<sup>25</sup> did not find any relationship between operative mortality and raised prothrombin time. This is important because the prognosis is directly related to:

(a) Age above 70 years

(b) Hepatic metastasis and prothrombin time 2.5 second above control

(c) Positive hilar lymph nodes

(d) Mucobilia

Positive hilar lymph node was poor prognostic sign and Mucobilia was good prognostic sign.

On ultrasonography, intrahepatic biliary channels were found dilated in all cases. Hepatomegaly, thickening of gall bladder and mass right upper abdomen found in 75% of cases. The pre-surgical T- staging allows selection of therapy and offers an index of prognosis<sup>28</sup>. For accurately diagnosing the abnormalities within the biliary tract, percutaneous transhepatic cholangiography was performed in 83.33% of cases. Site of obstruction and extent of tumor in all cases. It also demonstrated the extent of involvement of right and / or left hepatic ducts and state of intrahepatic biliary channels. Ahmed's study is also in consistent with our study. Computerized tomography helped in determining the size and extent of tumor and was performed in two cases (16.66%). Endoscopic retrograde cholangiopancreatography was performed in 25% of cases and it determined the status of distal biliary tree and patency of duodenum.

To relieve the obstruction, we performed intrahepatic cholangiostomy in patients of unresectable tumors of portahepatis. Operative mortality was 16% and consistent with Guthrie et al., who also reported 16% postoperative mortality but Ahmad's<sup>14</sup> figure was quite high (44%). The cause of death was irreversible damage to the liver due to biliary obstruction and after wards hepatic failure in one patient. The damage was due to the prolonged obstruction and too high a bilirubin level i.e. 30.4 mg/dl. The second patient expired due to hepatorenal shut down.

In 10 surviving patients, serum bilirubin level was within the range of 2-3 mg/dl in 70%, while in remaining 30% patients it was between 3.2 to 3.5mg/dl. The study of Finch et al<sup>3</sup>. was somewhat consistent with our study, who mentioned that postoperative serum bilirubin level of less than 4 mg/ dl was achieved in 100% of cases with intrahepatic-enteric bypass.

Cholangitis was the most frequent post-operative complication 25% cases and settled within 3-5 days after treatment with antibiotics. The incidence was still low as compared to other biliary drainage procedures<sup>26</sup>.

Profuse bleeding from anastomotic site was noted in one (8.30%) patients. While in study of Henegonwen et al<sup>24</sup> showed bleeding from anastomotic site was only 2.20%. But the study of Lai et al<sup>21</sup> was consistent with our study (8.82%). On gastroscopy biliary gastritis was not seen in any cases and stent was found pouring bile. This finding was consistent with Ramesh<sup>18</sup> who reported no evidence of biliary gastritis in his study.

Excluding two patients who expired within thirty days after operation, mean survival rate was 167 days in

ten patients. The shortest survival being 60 days and longest 277 days. These findings were also consistent with the findings of Ramesh<sup>18</sup> in which mean survival was 166 days, the shortest being 78 days and longest survival being 282 days (range 72-282 days)

### Conclusion

Intra-hepatic cholangiostomy is an effective palliative procedure for unresectable tumors at porta hepatis. The procedure has advantage over the Longmire's operation that:

1. It is technically easy and takes less time.
2. It involves single anastomosis
3. The juxtaposition of stomach to left lobe of liver facilitates the procedure.
4. Thick stomach wall provides a cushion to anastomosis, this prevents leakage.

It effectively relieves jaundice, alleviates pruritus, to some degree relieves pain and anorexia, improve the general condition of the patient by restoring the enterohepatic circulation and alleviating the malabsorption. These goals could be achieved, without increasing the procedures related morbidity and mortality as compared with other biliary decompressive procedures

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