

# High Output External Biliary Drainage Leading to Acute Kidney Injury In a Patient with Malignant Obstructive Jaundice: A Rare Case Report

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## ABSTRACT

Most patients with malignant obstructive jaundice present to the hospital in an advanced unresectable stage. Percutaneous transhepatic biliary drainage (PTBD) and stenting are the established, safe and effective way of palliative treatment aiming prolongation and improving the quality of the life. We report a rare case of high output external biliary drainage leading to AKI and electrolyte imbalance following insertion of PTB drain. Patient was managed with hemodialysis and subsequent self-expandable metallic stent (SEMS) placement. We highlight the importance of awareness of this complication and need of further studies regarding role of biliary interventions, associated complications and management.

**Keywords:** *Biliary stenting; Obstructive Jaundice; Percutaneous Transhepatic Biliary Drainage*

## INTRODUCTION

Majority of patient with malignant obstructive jaundice presented to hospital in advanced unresectable stage. Carcinoma gall bladder, cholangiocarcinoma, pancreatic adenocarcinoma, metastasis and concurrent lymph nodal compression of common bile duct (CBD) accounts for majority of causes of malignant obstruction. Palliative treatment with placement of biliary drains and if possible stenting by interventional radiologist aiming prolongation of life as well as its quality are the best acceptable options for management. With

the widespread use of cross sectional imaging more number of these cases are being diagnosed leading to more request for percutaneous transhepatic biliary procedure because of proven efficacy and relative safety, though it had been practiced since early 1970's. These procedures are associated with wide range of complications ranging from 3% to 10% and procedural mortality rates ranging from 0.1% to 0.8% , thus demanding the need of interventional specialist for better outcome. Mean volume of physiological bile secretion is approximately 600

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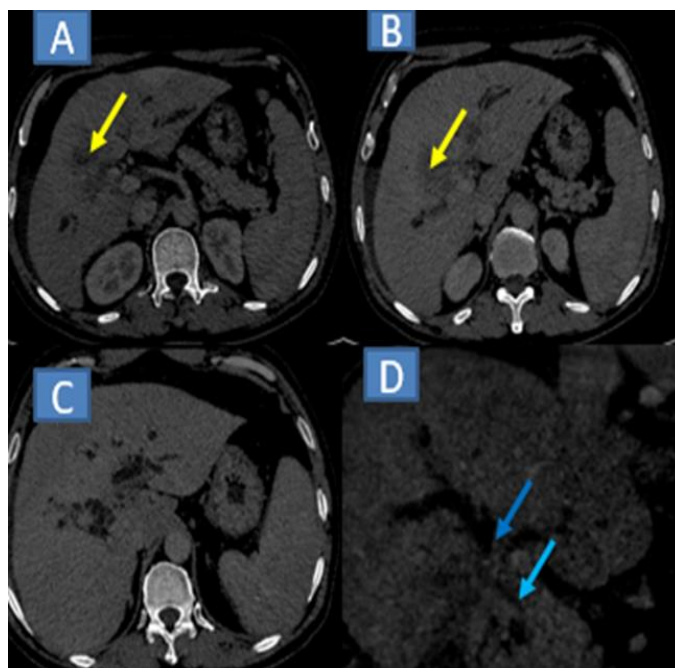


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ml per day with external drain of approx. 200-1600 ml per day. We report a rare case of high output from biliary drain following PTBD for malignant obstructive jaundice leading to acute kidney injury (AKI) and electrolyte imbalance, elaborating the need of vigilance for its early detection, monitoring and proper management.<sup>1,2,3,4</sup>

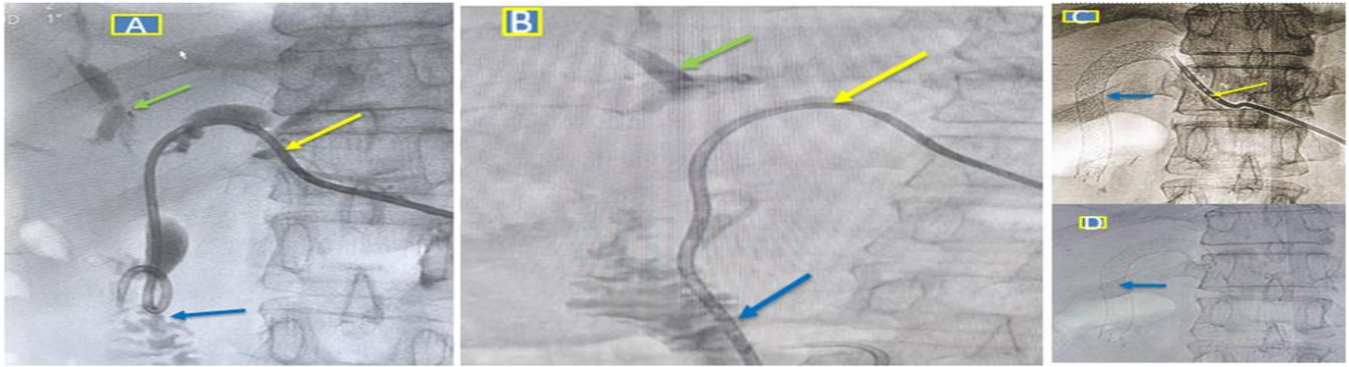
## CASE REPORT

A 60 year old male presented to OPD with yellowish discoloration of body for 2 weeks. No history of known comorbidities. After clinical evaluation, laboratory investigations were sent which showed total serum bilirubin (TSB)-16.6mg/dl, Directserum bilirubin (DSB):6.3mg/dl, raised liver enzymes, CEA- 112ng/ml and CA19.9: 1000U/ml. RFT, serum albumin, CBC and coagulation profiles were normal. Ultrasonography (USG) of abdomen showed an ill- defined mass replacing the GB fossa with dilatation of IHBDS. CECT was ordered which showed an ill-defined hypoenhancing lesion at the GB fossa involving the adjacent segment V of liver with hilar extension involving proximal CBD,CHD, involving primary biliary confluence and presence of ascites. PTBD was done under USG and fluoroscopic guidance with insertion of 8F drain via left sided puncture. Procedure was uneventful. From the next day of procedure there was high output in external drain ranging from 2-3 liters per day along with complain of peri-catheter leak. On 3rd day, he developed hypotension despite fluid resuscitation and inotrope support. There was an adequate biliary decline (ABD), TSB:6.3mg/dl and DSB:0.3mg/dl. Cholangiogram with internalization of the biliary drain was done, which showed normal passage of contrast into duodenum. He was discharged after internalization which leads to slightly reduced biliary output measuring approx. 1750ml in 24 hour. (Figure 1)



**Figure 1:** A,B,C) Axial Images of portal venous phase of CECT showing ill defined GB fossa mass (yellow arrow) with hepatic infiltration and dilatation of IHBDS. 1D) Coronal reformed image showing involvement of CHD (pink arrow) and biliary confluence(blue arrow)

The Patient landed in emergency with shortness of breath and reduced urine output within 48 hour of discharge. His blood reports showed features of acute kidney injury(AKI) and dys-electrolytemia with Urea: 243mg/dl, Creatinine: 2.7mg/dl, Na+:111mmol/L and K+:7.4 mmol/L and reduced albumin (2.2g/dl). Increase in amount of ascites as well as persistent pericatheter leak seen. Emergency hemodialysis, hyperkalemia correction and intravenous albumin was given during admission for next week .There was persistent high output up to 3850 ml in 24 hour. Biliary stenting was done with the SEMS. He was out of external biliary drain after 3rd day. There was ABD with normal RFT and chemotherapy for GB carcinoma was started after histopathology report. On 5 month follow up he had already completed 3rd cycle of chemotherapy and his functional status has drastically improved. (Figure 2)



**Figure 2:** A, B Showing insertion of Internal-external biliary drain (yellow arrow) via left sectoral duct, orange arrow-right sectoral ducts and (pink arrow)-drain tip in duodenum with adequate drainage of contrast C-SEMS (blue arrow) deployed via wire (yellow arrow), D-SEMS (blue arrow) after removal of external drain.

## DISCUSSION

Decompression of obstructed biliary tract ameliorates pain, cholangitis, and pruritus or in certain cases chemotherapy or intra-biliary brachytherapy can be started. Most of the surgeons preferred ERCP over PTBD which is still debatable as published meta-analysis showed fewer complications and better outcome with PTBD in hilar cholangiocarcinoma. However, it is a multidisciplinary opinion, ERCP usually performed in cases of distal CBD block (beyond hilum) and PTBD is preferred in proximal biliary obstruction. Complication of PTBD may range from minor pain, peri-catheter leak, catheter obstruction to cholangitis, biliary peritonitis and hemorrhage.<sup>1,3,5</sup>

We reported a case of persistent high output biliary drainage leading to AKI which was mentioned in few publications. Our case highlights the steps toward management of high output biliary drainage. Though fluid resuscitation and initial episode of hypotension were managed, frequent input/output monitoring is essential. Published literatures regarding such cases is scarce, which could be due to underreporting. High biliary output is seen in cases of malignant obstruction, exact pathophysiology beyond these is yet to be established. One of the earliest pieces of literature published by Taber et al. in 1982 in the review of 120 cases showed 7 of the patients' daily biliary output exceeded average amount and only three exceeded outputs of more than 2 liters, as in our case demanding fluid resuscitation.<sup>2</sup> In another

case report published by Jayarajah et al mentioned development of high biliary output AKI in case of blocked SEMS and failure of internal catheterization requiring hemodialysis.<sup>6</sup>

Literature regarding management options for this complication are even more scarce. Case report by Tiruneh F et al. mentioned successful trial of octreotide and Ketorolac and Study by Allen T. Yu et al. highlights the possible role of ketorolac for the management of high biliary drain output in similar settings. These drugs were used based on their theoretical physiological effect in bile release and biliary contractions. Thus our case highlights importance of awareness regarding this rare complication, early recognition, prompt fluid resuscitation and need of further research to find out the magnitude of problem and better evidence for use of medications like octreotide and NSAIDs. Literature regarding percutaneous biliary procedure Nepal is limited, a study by Thapa A et al. showed promising result in its role in palliation highlighting the need of further large scale study.<sup>4,7,8,9</sup>

## CONCLUSION

Persistent high output biliary drain is rare but potentially serious complication of PTBD. It can be managed by timely recognition and fluid resuscitation preventing AKI. Placement of SEMS by intervention radiologist is safe and effective way of palliative care in unresectable malignant biliary obstruction improving both the quality of life as well as prolonged survival.

## CONFLICT OF INTEREST

None

## SOURCES OF FUNDING

None

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