

# PTBD During COVID-19 Pandemic: A Life Saving Procedure in Malignant Obstructive Jaundice Patients

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**Objective:** PTBD is an important lifesaving alternative for biliary tract decompression to endoscopic drainage in the treatment of malignant obstructive jaundice patients. The aim of this study was to evaluate the usefulness of PTBD in terms of the relief of symptoms and laboratory data, survival after PTBD, and the relationship between patient characteristics and survival during COVID-19 pandemic.

**Methods:** During this study, in total thirteen patients' procedures of percutaneous drainage were applied during a three-month period. The average age of men was 59 years and women was 55 years. The causes of obstructive jaundice were investigated using both abdominal computed tomography and abdominal ultrasonography.

**Results:** In examined group percutaneous drainage was successful in 92.3% (12 patients) and drainage procedure application was ineffective in 7.7% (1 patient). After PTBD, almost all the symptoms of obstructive jaundice were relieved, except in one patient. Transient haemobilia was the only complication seen in one patient.

**Conclusion:** In present scenario of COVID-19 pandemic, PTBD emerges as an effective method of biliary tract decompression and an important alternative to endoscopic drainage. It decreased the jaundice and relieved the symptoms caused by biliary tract obstruction. Thus, our study shows a positive impact in quality of life of patients after PTBD.

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## Introduction

COVID-19 pandemic had an unprecedented adverse impact on health care services globally. This pandemic had started in the Wuhan city of China where the first case was reported on 31<sup>st</sup> December 2019 [1-2] and on 11<sup>th</sup> March 2020 the World health organization (WHO) had declared it as a global pandemic and as a public health emergency of international concern [3]. Government of India has imposed a nationwide lockdown from 24<sup>th</sup> March 2020 to contain the spread of corona virus infection.

Amid the ongoing corona virus (COVID-19) pandemic, many patients with cancer are facing a series of dilemmas, including whether to continue the treatment or not. The challenges faced by surgeons treating cancer are unique, because most of the cancer surgeries are elective but cannot be delayed beyond a certain point of time due to biology of the disease and adverse impact on survival if surgery is delayed.

ESMO is applying a tiered approach to guidance on the management of patients with cancer during the COVID-19 pandemic. This approach considers the patient's condition, the urgency of the planned cancer treatment and its anticipated benefit in light of the potential risk of COVID-19 associated with the logistics of receiving treatment, as well as the available resources to safely provide treatment. Using this approach, patients can be grouped into the following tiers: [4]

Tier 1: High priority. This group includes patients whose condition is life threatening or clinically unstable and/or where the planned treatment is likely to result in a significant benefit (e.g.

prolonging life or improving quality of life), making treatment a high priority.

Tier 2: Medium priority. This group includes patients whose condition is serious but not immediately life threatening and where a short delay in treatment can be considered. However, a delay of longer than 6–8 weeks could potentially impact on outcome and/or the amount of benefit derived, making treatment a medium priority.

Tier 3: Low priority. This group includes patients whose condition is stable enough that any treatment can be safely delayed for the duration of the COVID-19 pandemic. It also includes patients whose planned treatment is unlikely to provide a significant benefit (e.g. unlikely to prolong life or improve quality of life), making treatment a low priority.

Obstructive jaundice can be of benign and malignant etiologies. Of the malignant causes, carcinoma gall bladder, cholangiocarcinoma, pancreatic adenocarcinoma, metastasis, and lymph nodal compression of common bile duct (CBD) constitute the majority of cases [5]. Patients with obstructive jaundice, pancreaticobiliary malignancies, bile leaks, and other indications cannot wait to undergo procedures after the pandemic has receded. Blockage causes late cholangitis which can only be recognized and remedied by regular aftercare of the patient. Immediate drainage can usually prevent septic complications. Most of the cases of malignant obstructive jaundice are already advanced and unresectable by the time they are diagnosed, hence carry dismal prognosis with palliation being the only option left. Obstruction needs to be drained even in such cases for alleviation of pain, cholangitis, and pruritus or in certain cases to initiate chemo or intrabiliary brachytherapy. Over the years, palliative care has evolved with the introduction of newer methods and improvisation of existing techniques. Recent palliative measures not only prolong longevity but also improve the quality of life, hence increasing the acceptance to such procedures [5-7].

## Materials and Methods

The study group consisted of 13 patients: 10 males (76.92%) and 3 females (23.08%). The average age of men was 59 years and women was 55 years. The indication was of decline of any endoscopic procedure due to covid-19 pandemic. The patients who qualified for PTBD were found to have dilated intrahepatic ducts of at least 5 mm, which was necessary for the insertion of the catheter without damaging the duct walls. In our study three main unresectable tumours were pancreatic head tumours, cholangiocarcinoma and gall bladder tumours. In our case the most common sign and symptom was clinical jaundice. Additionally it was ensured that patients INR had to be within the normal limit. Patients were monitored for at least 48 hours after drainage.

## Results

### Procedure outcomes

In our study, 13 procedures of percutaneous transhepatic biliary drainage were performed. In one of the patient drainage application was ineffective leading to procedure of cholecystostomy.

### Patient outcome

Laboratory tests were conducted before (last result immediately preceding drainage) and after PTBD in patients to assess their general condition and the effectiveness of treatment. Laboratory tests included total bilirubin, alkaline phosphatase, and gamma-glutamyl transferase.

### Complication

With proper technique, including peripheral bile duct puncture, serious complications are uncommon. Transient hemobilia was the only complication seen in one patient.

## Discussion

During the COVID-19 crisis, most endoscopy procedures have been cancelled or deferred. Percutaneous transhepatic biliary drainage (PTBD) is a method of biliary tree decompression, applied as palliative treatment in patients with malignant biliary tree critical stenosis/ obstruction, but also as a potentially curative treatment in patients with non-malignant biliary tree stenosis. Novel instrumentation dedicated to PTBD has been designed in recent years, which makes it possible to perform more advanced procedures in patients with severe extensive malignant biliary tree stenosis/obstruction. Drainage can normalize plasma bilirubin level [8-9] and alleviate jaundice symptoms, leading to improvement in quality of life, thus optimizing the clinical state of patient allowing for resection or palliative radio or chemotherapy.

Percutaneous biliary decompression in the objective assessment found regression of hyperbilirubinemia and reduction of elevated values of GGT and ALP. After successful PTBD, the total bilirubin level was reduced [7, 10]. In present study majority of the patients had jaundice (100%). Pruritus is a common accompaniment in malignant obstructive jaundice which may be disproportionate to the jaundice and usually alleviated by the drainage of even a single liver segment [11]. After PTBD, the serum bilirubin levels decreased significantly, the liver function was remarkably improved and the clinical symptoms were obviously relieved in all patients. Before undergoing PTBD, most patients complained of pruritus and many of generalized fatigue. After PTBD, almost all the symptoms of obstructive jaundice were relieved, except in one patient who complained of generalized malaise (Table 1).

Initial symptom	Number of patients	Disappeared	Decreased	No change	Increased
Skin itching	6	2	4	0	0
Generalized malaise	5	1	3	1	0
Abdominal pain	4	3	1	0	0
Nausea	2	1	1	0	0
Abdominal fullness	1	0	1	0	0
Fever	1	1	0	0	0

**Table 1. Changes in Symptoms after PTBD.**

Fever, nausea, vomiting all these complaints described the patients during enrolment got dramatically decreased. Survival did not differ significantly according to the locations of the primary tumours or the numbers of organs with metastases. Thus our study shows a positive impact in the quality of life of patients after PTBD.

In conclusions, in the present scenario of covid-19 pandemic, PTBD emerges as an effective method of biliary tract decompression and an important alternative to endoscopic drainage. It is a life saving measure in patients with neoplastic obstruction of biliary tract with low expected survival rate and thus is a palliative procedure.

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## Conflicts of Interest

The authors have no conflicts of interest to declare.

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## References

## References

1. Zhu Na, Zhang Dingyu, Wang Wenling, Li Xingwang, Yang Bo, Song Jingdong, Zhao Xiang, Huang Baoying, Shi Weifeng, Lu Roujian, Niu Peihua, Zhan Faxian, Ma Xuejun, Wang Dayan, Xu Wenbo, Wu Guizhen, Gao George F., Tan Wenjie. A Novel Coronavirus from Patients with Pneumonia in China, 2019. *New England Journal of Medicine*. 2020; 382(8)[DOI](#)
2. Wang Dawei, Hu Bo, Hu Chang, Zhu Fangfang, Liu Xing, Zhang Jing, Wang Binbin, Xiang Hui, Cheng Zhenshun, Xiong Yong, Zhao Yan, Li Yirong, Wang Xinghuan, Peng Zhiyong. Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China. *JAMA*. 2020; 323(11)[DOI](#)
3. Novel Corona virus (2019-nCoV) situation reports [Internet]. [Cited 2020 Apr 8]. Available from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports>.
4. Cancer Care during the COVID-19 Pandemic: An ESMO Guide for Patients.
5. van Delden Otto M., Laméris Johan S.. Percutaneous drainage and stenting for palliation of malignant bile duct obstruction. *European Radiology*. 2007; 18(3)[DOI](#)
6. Crosara Teixeira Marcela, Mak Milena Perez, Marques Daniel Fernandes, Capareli Fernanda, Carnevale Francisco Cesar, Moreira Airton Mota, Ribeiro Ulysses, Ceconello Ivan, Hoff Paulo M.. Percutaneous Transhepatic Biliary Drainage in Patients with Advanced Solid Malignancies: Prognostic Factors and Clinical Outcomes. *Journal of Gastrointestinal Cancer*. 2013; 44(4)[DOI](#)
7. Covey Anne M., Brown Karen T.. Percutaneous Transhepatic Biliary Drainage. *Techniques in Vascular and Interventional Radiology*. 2008; 11(1)[DOI](#)
8. Ferrucci J T, Mueller P R, Harbin W P. Percutaneous transhepatic biliary drainage: technique, results, and applications.. *Radiology*. 1980; 135(1)[DOI](#)
9. Hellekant C, Jonsson K, Genell S. Percutaneous internal drainage in obstructive jaundice. *American Journal of Roentgenology*. 1980; 134(4)[DOI](#)
10. Andrzej Fedak, Wojciech Uchto, Andrzej Urbaniak. Transcutaneal drainage intrahepatic biliary ducts as a method of paliative treatment of inoperative liver hilum tumours *Przegląd Lekarski*, 70 (2013), p. 5.
11. Chandrashekhara SH, Gamanagatti S, Singh Anuradha, Bhatnagar Sushma. Current status of percutaneous transhepatic biliary drainage in palliation of malignant obstructive jaundice: A review. *Indian Journal of Palliative Care*. 2016; 22(4)[DOI](#)