STANDARD TREATMENT WORKFLOW (STW)

IMAGE GUIDED MANAGEMENT OF OBSTRUCTIVE JAUNDICE

Sanjiv Sharma[1], Amar Mukund[2], Pushpinder Singh Khera[3], Rengarajan Rajagopal[4], Pankaj Banode[5], N Shyam Kumar[6], Sanjeev Kumar[7], Manish Shaw[8], Pradeep Hatimota[9], Niraj Pandey[10]

[1]All India Institute of Medical Sciences Delhi; [2]Institute of Liver and Biliary Sciences, New Delhi; [3]All India Institute of Medical Sciences Jodhpur; [4]All India Institute of Medical Sciences Jodhpur; [5]Jawaharlal Nehru Medical College Wardha, Maharashtra; [6]Christian Medical College Vellore Tamil Nadu; [7]All India Institute of Medical Sciences Delhi; [8]NIMS University, Jaipur, Rajasthan; [9]Apollo Hospital, Guwahati, Assam; [10]All India Institute of Medical Sciences Delhi

CORRESPONDING AUTHOR
Sanjiv Sharma, All India Institute of Medical Sciences Delhi
Email: meetisv@yahoo.com

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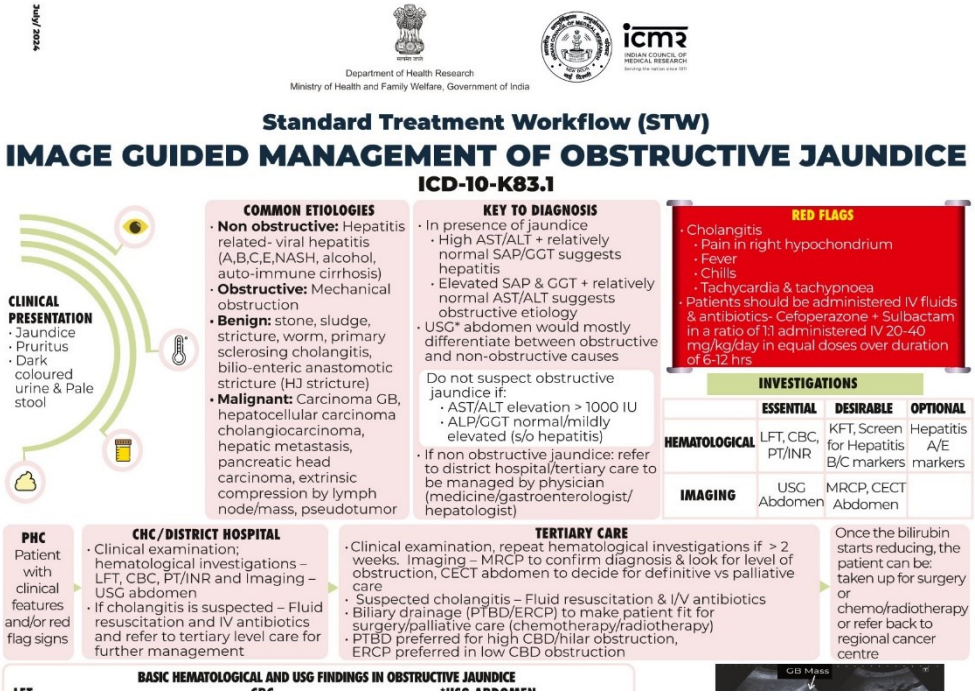

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Standard Treatment Workflow (STW)

IMAGE GUIDED MANAGEMENT OF OBSTRUCTIVE JAUNDICE

ICD-10-K83.1

CLINICAL PRESENTATION
- Jaundice
- Pruritus
- Dark coloured urine & Pale stool

COMMON ETIOLOGIES
- **Non obstructive:** Hepatitis related- viral hepatitis (A,B,C,E,NASH, alcohol, auto-immune cirrhosis)
- **Obstructive:** Mechanical obstruction
- **Benign:** stone, sludge, stricture, worm, primary sclerosing cholangitis, bilio-enteric anastomotic stricture (HJ stricture)
- **Malignant:** Carcinoma GB, hepatocellular carcinoma cholangiocarcinoma, hepatic metastasis, pancreatic head carcinoma, extrinsic compression by lymph node/mass, pseudotumor

KEY TO DIAGNOSIS
- In presence of jaundice
  - High AST/ALT + relatively normal SAP/GGT suggests hepatitis
  - Elevated SAP & GGT + relatively normal AST/ALT suggests obstructive etiology
- USG* abdomen would mostly differentiate between obstructive and non-obstructive causes

Do not suspect obstructive jaundice if:
- AST/ALT elevation > 1000 IU
- ALP/GGT normal/mildly elevated (s/o hepatitis)

- If non obstructive jaundice: refer to district hospital/tertiary care to be managed by physician (medicine/gastroenterologist/ hepatologist)

RED FLAGS
- Cholangitis
  - Pain in right hypochondrium
  - Fever
  - Chills
  - Tachycardia & tachypnoea
- Patients should be administered IV fluids & antibiotics- Cefoperazone + Sulbactam in a ratio of 1:1 administered IV 20-40 mg/kg/day in equal doses over duration of 6-12 hrs

INVESTIGATIONS

	ESSENTIAL	DESIRABLE	OPTIONAL
HEMATOLOGICAL	LFT, CBC, PT/INR	KFT, Screen for Hepatitis B/C markers	Hepatitis A/E markers
IMAGING	USG Abdomen	MRCP, CECT Abdomen	

PHC
Patient with clinical features and/or red flag signs

CHC/DISTRICT HOSPITAL
- Clinical examination; hematological investigations – LFT, CBC, PT/INR and Imaging – USG abdomen
- If cholangitis is suspected – Fluid resuscitation and IV antibiotics and refer to tertiary level care for further management

TERTIARY CARE
- Clinical examination, repeat hematological investigations if > 2 weeks. Imaging – MRCP to confirm diagnosis & look for level of obstruction, CECT abdomen to decide for definitive vs palliative care
- Suspected cholangitis – Fluid resuscitation & I/V antibiotics
- Biliary drainage (PTBD/ERCP) to make patient fit for surgery/palliative care (chemotherapy/radiotherapy)
- PTBD preferred for high CBD/hilar obstruction, ERCP preferred in low CBD obstruction

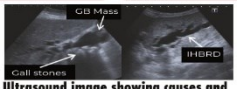
Once the bilirubin starts reducing, the patient can be: taken up for surgery or chemo/radiotherapy or refer back to regional cancer centre

BASIC HEMATOLOGICAL AND USG FINDINGS IN OBSTRUCTIVE JAUNDICE

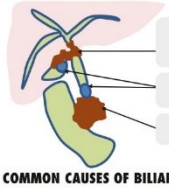
LFT
- Serum bilirubin – Elevated
- AST/ALT – Normal to elevated
- ALP/GGT – Markedly elevated (ALP>GGT)

CBC
- Hb: Normal to low
- TLC: Normal to elevated
- PT/INR: Normal to elevated

***USG ABDOMEN**
- Gall bladder stone/mass
- Dilatation of Common bile duct/intrahepatic biliary radicles



Ultrasound image showing causes and findings in of obstructive jaundice


GB mass/cholangiocarcinoma causing biliary radicle dilatation (obstruction)

GB/CBD stone causing biliary dilatation

Periampullary mass causing biliary dilatation(obstruction)

COMMON CAUSES OF BILIARY OBSTRUCTION

MANAGEMENT

CLINICAL FEATURES

LFT
- Raised serum bilirubin with
- Markedly raised ALP and/ or GGT
- Normal/ mildly raised AST/ALT

If signs of cholangitis: Jaundice with fever, rigor, pain

Urgent referral to higher centre

USG
- CBD/IHBR dilatation
- GB stone/Mass

MEDICAL MANAGEMENT FOLLOWED BY
- USG/MRCP
- Lower CBD obstruction: ERCP
- Higher common bile duct/Hilar Obstruction PTBD#

MRCP
- Ascertain level and cause of obstruction in the biliary tree
  - Lower CBD obstruction: ERCP preferred
  - High CBD obstruction: PTBD# preferred

Choledocholithiasis/other benign cause needing bile drainage
- ERCP
- PTBD# (If ERCP not possible)

Biliary tract malignancy

CECT ABDOMEN
- Identify the malignancy and extent of disease
- Decide for definitive vs palliative care

DEFINITIVE TREATMENT
- PTBD followed by surgery

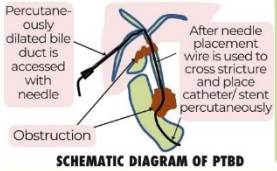
PALLIATIVE TREATMENT
- PTBD# followed by Biliary stenting
- Chemotherapy/Radiotherapy

PERCUTANEOUS TRANSHEPATIC BILIARY DRAINAGE (PTBD)#

INDICATIONS
- Decrease bilirubin to commence appropriate therapy (surgical/palliative)
- Cholangitis (draining infected bile)
- Intense pruritus

DAYS OF HOSPITALISATION
- 1-3 days (non-infected/no cholangitis cases)
- 7-14 days (Cholangitis, can be prolonged in severely septic patients)

CONTRAINDICATIONS
- Deranged coagulation (correct before procedure)
  - Emergent cases: infuse fresh frozen plasma (FFP) - 10ml/kg body weight prior to the procedure
  - Elective cases: I/V vitamin K injection (5-10 mg) - 3 to 5 days
- Ascites (to be dried before therapy)



SCHEMATIC DIAGRAM OF PTBD

PROCEDURAL DETAILS
- **External drainage** for infected cases (aim to establish internal drainage with or without biliary stenting, once the infection is treated. In cases of long-term external drainage – electrolytes should be replaced for ongoing bile salt loss)
- **Internal drainage** using internal external drainage catheter for non infected cases else may be considered for primary biliary stenting

#PTBD IN CHOLANGITIS: IV antibiotics** and fluids to be started before the procedure: Cefoperazone+Sulbactam in 1:1 ratio, 20-40 mg/kg/day in equal doses after duration of 6-12 hrs; Piperacillin 4 gm +Tazobactam 0.5 gms every 8 hrs
- External drainage till cholangitis subsides (normalization of leucocytosis, and draining bile to become clear – golden brown or light green)
- Establish internal drainage once infection is treated
- Plan for definitive/palliative therapy and manage same as described for non-infected patients

OUTCOME MEASURES
Normal bile drainage through the catheter

EXPECTED OUTCOMES
Reduction in bilirubin to make patient fit for required therapy

COMPLICATION
- Development of cholangitis post PTBD
- **Haemorrhagic output** should prompt an immediate evaluation to **rule out vascular injury**

AFTER CARE
- Appropriate antibiotics** : Ofloxacin/Cefixime 200 mg 12 hrly for 3-5 days
- LFT & CBC
- Clinically stable patient with reducing bilirubin can be planned for biliary stenting/ definitive surgery/discharge as per the requirement and suitability

FOLLOW UP
- Follow-up with IR in case of non-reducing or rise in bilirubin/sign of cholangitis/ stent block
- Patients to follow with respective physician (surgeon/medical or radiation oncologist) after successful biliary drainage and normalization of bilirubin

**Respective contraindications, risks and precautions, pediatric dose of antibiotics to be considered before prescription

Patients with obstructive jaundice having no/ minimal IHBRD with distended GB may be considered for percutaneous cholecystostomy in emergent situations. Similarly, cholecystostomy may be a bridge to surgery in patients with pyocele/mucocele of GB

ABBREVIATIONS

ALP: Alkaline Transferase
ALT: Alanine Aminotransferase
AST: Aspartate Aminotransferase
CBC: Complete Blood Count (Hemogram)
CBD: Common Bile Duct
CECT: Contrast Enhanced Computed Tomography
ERCP: Endoscopic Retrograde Cholangiopancreatography
GB: Gall Bladder
GGT: Gamma Glutamyl Transferase
IHBRD: Intrahepatic Biliary Radicle Dilatation
IR: Interventional Radiology
KFT: Kidney Function Test
LFT: Liver Function Test
MRCP: Magnetic Resonance Cholangiopancreatography
NASH: Non Alcoholic Steatohepatitis
PT/INR: Prothrombin Time/International Normalized Ratio
PTBD: Percutaneous Transhepatic Biliary Drainage
SAP: Serum amyloid P
USG: Ultrasonography

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CHOLANGITIS IN OBSTRUCTIVE JAUNDICE NEEDS AN EARLY BILIARY DRAINAGE