



# SYSTEMATIC REVIEW OF ENDOSCOPIC ULTRASOUND-GUIDED BILIARY DRAINAGE VERSUS PERCUTANEOUS TRANSHEPATIC BILIARY DRAINAGE

Zeinab Hassan<sup>1</sup>, Eyad Gadour<sup>2</sup>

1. Stockport Hospital NHS Foundation Trust
2. University Hospitals of Morecambe Bay NHS Foundation Trust

## Aim:

Endoscopic ultrasound-guided biliary drainage (EUS–BD) is a novel technique that allows biliary drainage by echoendoscopy and fluoroscopy using a stent from the biliary tree to the gastrointestinal tract. Percutaneous transhepatic biliary drainage (PTBD) is a diagnostic and therapeutic procedure that involves inserting a needle into the biliary tree, followed by the immediate insertion of a catheter. This study examined the technical aspects and outcomes of these different approaches to biliary drainage.

## Methods:

We compared the technical aspects and outcomes of two different approaches of biliary drainage; Endoscopic ultrasound-guided biliary drainage (EUS–BD) and Percutaneous transhepatic biliary drainage (PTBD). Different databases, including PubMed, Embase, clinicaltrials.gov, Cochrane Library, Scopus, and Google Scholar, were searched according to the guidelines for Preferred Reporting Items for Systematic reviews and Meta-Analyses to obtain studies comparing (PTBD) and (EUS–BD).

## Results:

Among the six studies that fulfilled the inclusion criteria, PTBD patients underwent significantly more reinterventions (4.9 vs. 1.3), experienced more postprocedure pain (4.1 vs. 1.9), and experienced more late adverse events (53.8% vs. 6.6%) than EUS–BD patients. EUS–BD group had a higher success rate of biliary drainage (92% vs. 46%, respectively,  $P > 0.05$ ) and a lower rate of adverse events than PTBD group (20% vs. 46%,  $P = 0.05$ ). There was a significant reduction in total bilirubin in both groups (16.4 to 3.3 and 17.2–3.8 for EUS–BD and PTBD, respectively,  $P = 0.002$ ) at the 7-day follow-up. There were no significant differences observed for complication rates between PTBD and EUS–BD (3.3 vs. 3.8). PTBD was associated with a higher adverse event rate than EUS–BD in all procedures, including reinterventions (80.4% vs. 15.7%, respectively) and a higher index procedure (39.2% vs. 18.2%, respectively).

## Conclusions:

The findings of this systemic review revealed that EUS–BD is linked with a higher rate of effective biliary drainage and manageable procedure-related adverse event profile compared with PTBD. EUS–BD could become a first-line biliary drainage treatment instead of ERCP if the outcomes of clinical studies are positive and technologies are simplified. Prospective, randomized controlled studies are required to clarify these issues.

Study	Technical success		Clinical success	
(Event/total cases)	EUS-guided	Percutaneous	EUS-guided	Percutaneous
	Choledochoduodenostomy	transhepatic biliary	Choledochoduodenostomy	transhepatic biliary
	(EGBD)	drainage (PTBD)	(EGBD)	drainage (PTBD)
Artifon et al. [1]	13/13	12/12	13/13	12/12
Bapaye et al. [2]	23/25	26/26	23/25	26/26
Khashab et al. [3]	19/22	51/51	19/19	47/51
Giovannini et al. [4]	19/20	17/17	18/19	17/17
Jung et al. [5]	32/34	31/32	28/32	27/31
Sharaiha et al. [6]	43/47	12/13	27/43	3/12

## References:

1. Artifon EL, et al; [Biliary drainage in patients with unresectable, malignant obstruction where ERCP fails: endoscopic ultrasonography-guided choledochoduodenostomy versus percutaneous drainage](#). Journal of clinical gastroenterology. 2012, 46:768-74.
2. Bapaye A, et al; [Comparison of endosonography-guided vs. percutaneous biliary stenting when papilla is inaccessible for ERCP](#). United European gastroenterology journal. 2013, 1:285-93. [10.1177/2050640613490928](#)
3. Khashab MA : [A comparative evaluation of patients E-gbdapdi, Sci. wdmboafEDD](#). 2015, 60:557-65. [10.4103/JCD.JCD\\_140\\_17](#)
4. Giovannini M. [Endoscopic Ultrasound](#). 2021, 10:317. [10.4103/EUS-D-21-00205](#)
5. Jung Y, et al; [Comparison of efficacy and safety between endoscopic submucosal dissection and transanal endoscopic microsurgery for the treatment of rectal tumor](#). Saudi journal of gastroenterology: official journal of the Saudi Gastroenterology Association. 2016, 14. [10.4103/sjg.SJG\\_440\\_17](#)
6. Sharaiha RZ, et al [Endoscopic ultrasound-guided biliary drainage versus percutaneous transhepatic biliary drainage: predictors of successful outcome in patients who fail endoscopic retrograde cholangiopancreatography](#). Surgical endoscopy. 2016, 30:5500-5. [10.1007/s00464-016-4913-y](#)