



# Outcome of Percutaneous vs Endoscopic Biliary Drainage in Malignant Hilar Obstruction: Analysis of a Large Electronic Health Record Dataset

Wilfredo Pagani MD<sup>1</sup>, B. Joseph Elmunzer MD<sup>2</sup>, Zachary L. Smith DO<sup>1</sup>

<sup>1</sup> Division of Gastroenterology and Hepatology, Medical College of Wisconsin, Milwaukee, WI

<sup>2</sup> Department of Gastroenterology and Hepatology, Medical University of South Carolina, Charleston, SC

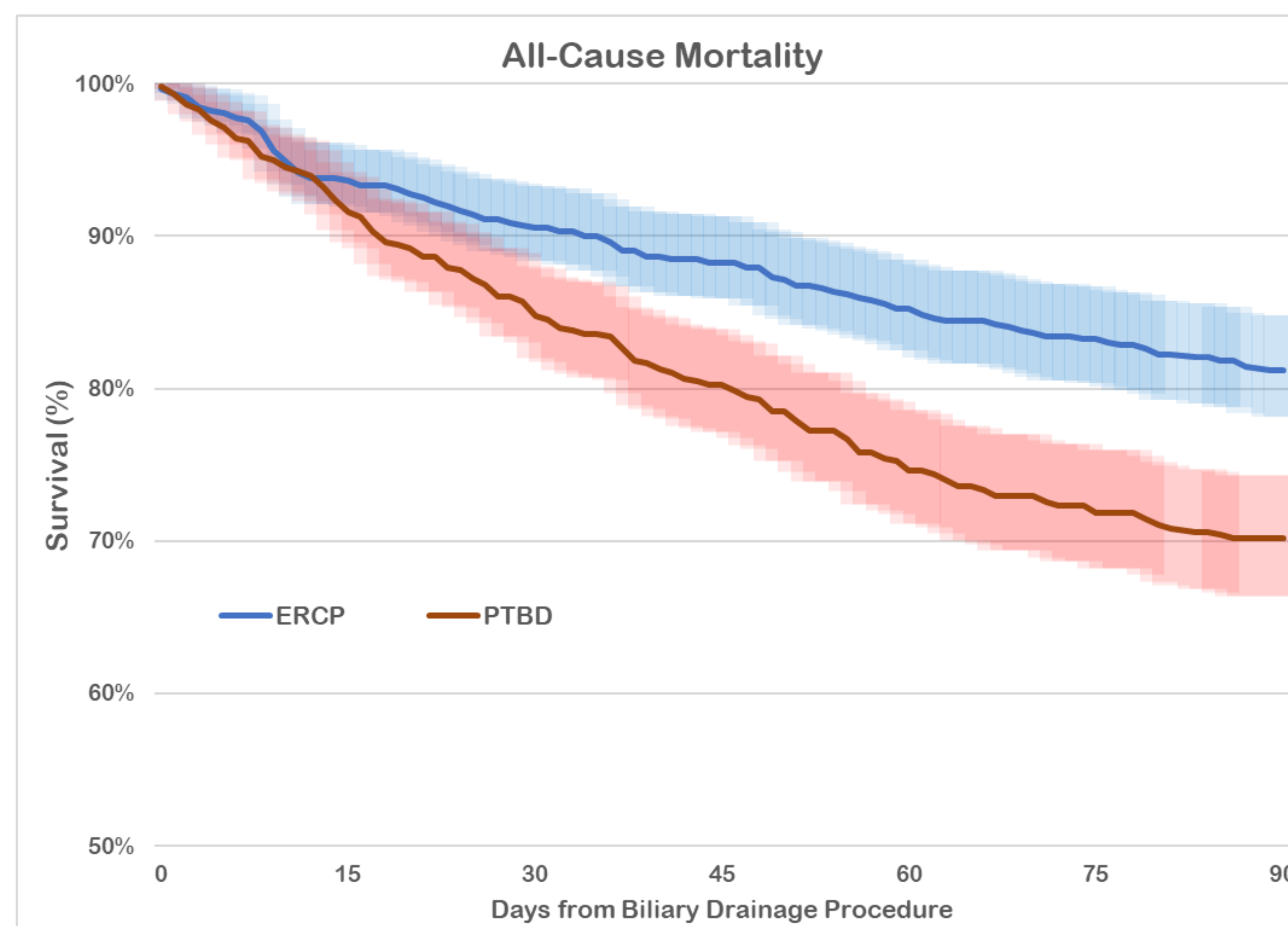
## BACKGROUND

- Most patients with malignant hilar obstruction (MHO) will require biliary drainage with percutaneous transhepatic biliary drainage (PTBD) or ERCP
- Two recent randomized control trials attempted to directly compare these modalities; however, both were terminated prematurely
- The aim of our study was to evaluate 90-day all-cause mortality and other outcomes in patients undergoing ERCP and PTBD for MHO

## METHODS

- Data from TriNetX, an electronic health record-derived national dataset was used
- Current procedural terminology and international classification of disease codes were used to establish a cohort of adult patients with MHO that underwent ERCP or PTBD as initial biliary drainage strategy from 2010-2020
- Propensity matching was performed based on age, sex, race, ethnicity, serum bilirubin, CEA, and CA 19-9 at the time of the index drainage procedure
- After matching, univariate and Kaplan-Meier analyses were performed

90-day Kaplan-Meier Mortality Curve



Post Propensity-Matching Characteristics

COVARIATE	PTBD	ERCP	SMD	P-VALUE
AGE (MEAN±SD)	65.4 ± 11.8	65.4 ± 11.6	0.0039	0.9463
FEMALE SEX	256 (43.6%)	273 (46.5%)	0.0582	0.3187
RACE N (%)				
WHITE	422 (71.89%)	421 (71.72%)	0.0038	0.9483
AFRICAN AMERICAN	85 (14.48%)	83 (14.14%)	0.0097	0.8676
ASIAN	24 (4.09%)	25 (4.26%)	0.0085	0.884
AMERICAN INDIAN OR ALASKA NATIVE	10 (1.70%)	10 (1.70%)	1	< 0.0001
NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER	10 (1.70%)	10 (1.70%)	1	< 0.0001
UNKNOWN RACE	53 (9.03%)	52 (8.86%)	0.006	0.9185
BILIRUBIN (MEAN±SD)	8.97 ± 8.69	6.2 ± 7.01	0.3505	< 0.0001
CA 19-9 (MEAN±SD)	961 ± 1,941	658 ± 1,438	0.1774	0.0354
CEA (MEAN±SD)	55.5 ± 270	34.8 ± 173	0.091	0.3518

## RESULTS

- A total of 4,061 patients were identified
- After matching, both cohorts contained 587 patients
- All cause 90-day mortality was lower for the ERCP cohort compared with the PTBD cohort (17.2% vs 26.7%, OR 0.6, 95% CI 0.43-0.75)
- At 6 months, there was no significant difference between the cohorts in rates of curative surgical resection or liver transplant (3.4% vs 5.1%, OR 0.72, 95% CI 0.41-1.25) or chemotherapy utilization (19.6% vs 16.7%, OR 1.2, 95% CI 0.87-1.70) between the PTBD and ERCP groups, respectively

## CONCLUSION

- Patients undergoing ERCP for MHO have significantly lower 90-day all-cause mortality compared with those undergoing PTBD
- While the possibility of selection bias due to unidentified confounding variables exists, These findings are consistent with those from prematurely terminated RCTs and may help inform the design of future RCTs in this patient population