

Introduction

Endoscopic ultrasound-guided gallbladder drainage (EUS-GBD) has been described as an alternative palliative treatment for malignant biliary obstruction (MBO). We aim to assess the outcomes of EUS-GBD for MBO.

Methods

- We conducted a comprehensive literature review of MEDLINE, EMBASE, Cochrane, and Scopus databases
- Population of interest: Patients with MBO who underwent EUS-GBD
- Outcomes of interest: technical success, clinical success, adverse events, and reintervention rates.
- Pooled estimates were calculated following the restricted maximum likelihood method using random effects model.

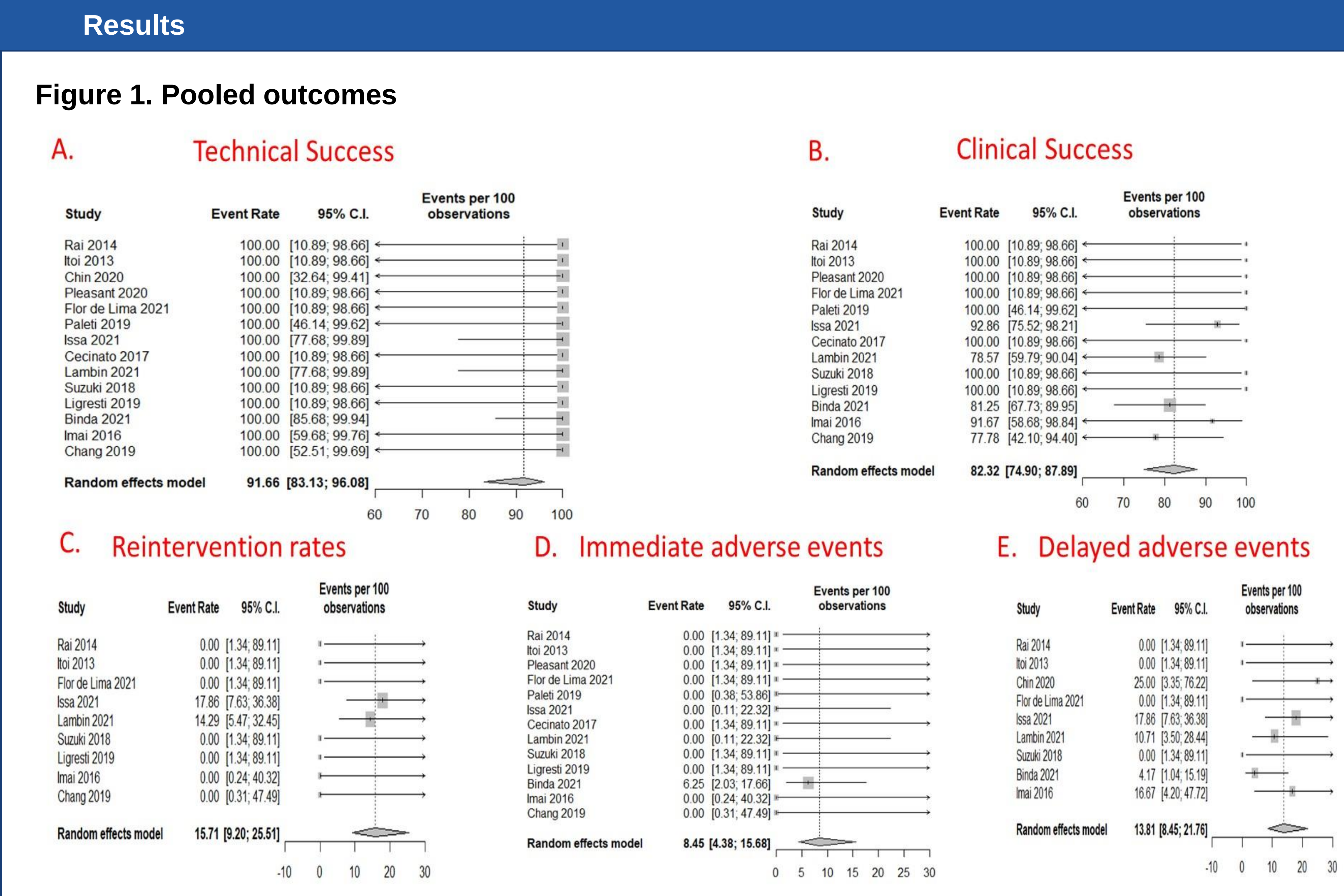
Definitions

- Technical success: successful stent deployment
- Clinical success: resolution of the indication to proceed with EUS-GBD which includes improvement of jaundice or significant improvement of bilirubin
- Reintervention: defined as the need for reintervention after achieving clinical success
- Immediate adverse events: complications that occurred intra-procedural till the first 24 hours after the procedure
- Delayed adverse events: complications that occurred after the first 24 hours of doing the EUS-GBD drainage

Results

- Table 1** summarizes the study characteristics
- The pooled technical success rate was 91.66% (95% CI 83.13-96.08%, I²=0)
- The pooled clinical success rate was 82.32% (95% CI 74.90-87.89%, I²=0)
- Three patients had immediate adverse events. None of the studies reported what the immediate adverse events were. The pooled immediate adverse events rates were 8.45% (95% CI 4.38-15.68%; I²=0)
- Thirteen patients had delayed adverse events. The delayed adverse events reported were food impaction in the stent (n=3), stent migration &/or dysfunction (n=3), bleeding (n=2), cholangitis (n=1), peritonitis (n=1), and unknown adverse events (n=3). There were no deaths related to the procedure. The pooled delayed adverse events rates were 13.81% (95% CI 8.45-21.76%; I²=0)
- Nine patients required reintervention to address some of the delayed adverse events (n=5), and for unclear reasons (n=4). The pooled reintervention rates were 15.71% (95% CI 9.20-25.51%, I²=0)

Table 1. Study characteristics						
Study (year); Location	Sample size (n)	Age (years)	Sex	Type of malignancy	Site of stent	Follow-up period (months)
Rai (2014); India	1	30	M	Ampullary cancer	Stomach	1
Itoi (2013); United States of America	1	57	M	Head of the pancreas malignancy	Stomach	12
Chin (2020); New Zealand	4	-	-	-	-	-
Pleasant (2020); United States of America	1	88	M	Ampullary cancer	-	0.25
Flor de Lima (2021); Portugal	1	60	F	Cholangiocarcinoma	Stomach	2
Paleti (2019); United States of America	7	67 ± 13.3	5M, 2F	Head of the pancreas malignancy	-	-
Issa (2021); United States of America	28	68 ± 13	16M, 12F	NR	Duodenum (n=15), Stomach (n=13)	33 (range 3-64)
Cecinato (2017); Italy	1	81	M	Head of the pancreas malignancy	Jejunal roux limb	-
Lambin (2017); France	28	-	-	Pancreatic cancer (n=19), cholangiocarcinoma (n=4), other malignancies (n=5)	-	3.6 ± 5
Suzuki (2018); Japan	1	70	F	Pancreatic cancer	Duodenum	17
Ligresti (2019); Italy	1	70	F	Adenocarcinoma involving distal CBD and duodenum	Stomach	-
Binda (2021); Italy	48	74.3 ± 11.7	23M, 25F	Pancreatic cancer (n=40), cholangiocarcinoma (n=2), duodenal and ampullary cancers (n=2); other malignancies (n=4)	Duodenum (n=20), Stomach (n=28)	4.07 ± 5.37
Imai (2016); Japan	12	67.3 ± 13.9	8M, 4F	Pancreatic cancer (n=6), lymph node metastasis (n=3), cholangiocarcinoma (n=2), lymphoma (n=1)	Duodenum (n=5), Stomach (n=7)	-
Chang (2019); USA	9	63.1 (mean)	5M, 4F	Pancreatic cancer	Duodenum (n=5), Stomach (n=4)	4.36



Discussion and limitations

Discussion

- This is the first meta-analysis to evaluate outcomes of EUS-GBD drainage in MBO
- We report high technical and clinical success rates with relatively low reintervention and AE rates
- EUS-GBD drainage is a feasible palliative option in MBO in experienced centers

Limitations

- The results were driven from low-level evidence (case reports and retrospective cohorts)
- There was no statistical comparison comparing outcomes between EUS-GBD and the other interventions