## Supplemental Material

### Supplemental table Profile of clinical success, technical success, and adverse events of EUS-BD versus ERCP.

<table>
<thead>
<tr>
<th>Author and Year</th>
<th>Technical Success Rate (%)</th>
<th>Clinical Success Rate (%)</th>
<th>Adverse Event Rate (%)</th>
<th>Description of Adverse Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paik et al, 2018</td>
<td>EUS-BD: 60/64 (93.75)</td>
<td>EUS-BD: 54/60 (90.00)</td>
<td>EUS-BD: 7/64 (10.94)</td>
<td>EUS-BD: Early: Self-limited pneumoperitoneum (2); Bile peritonitis (1); Cholangitis (1); Late: Cholangitis (3)</td>
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<td></td>
<td>ERCP: 55/61 (90.16)</td>
<td>ERCP: 52/55 (94.55)</td>
<td>ERCP: 24/61 (39.34)</td>
<td>ERCP: Early: Pancreatitis (9); Acute cholecystitis (2); Stent migration (1); Late: Acute cholangitis (6); Acute Cholecystitis (3); Stent occlusion (3)</td>
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<tr>
<td>Bang et al, 2018</td>
<td>EUS-BD: 30/33 (90.91)</td>
<td>EUS-BD: 32/33 (96.97)</td>
<td>EUS-BD: 7/33 (21.21)</td>
<td>EUS-BD: Abdominal pain (5); Acute cholecystitis, moderate (1); Bile peritonitis (1)</td>
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<td></td>
<td>ERCP: 32/34 (94.12)</td>
<td>ERCP: 31/34 (91.18)</td>
<td>ERCP: 5/34 (14.71)</td>
<td>ERCP: Abdominal pain, mild (3); Pancreatitis (1), Cholangitis (1)</td>
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<tr>
<td>Park et al, 2018</td>
<td>EUS-BD: 13/14 (92.88)</td>
<td>EUS-BD: 13/13 (100.00)</td>
<td>EUS-BD: 2/14 (14.29)</td>
<td>EUS-BD: Sphincterotomy perforation (2)</td>
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<tr>
<td></td>
<td>ERCP: 14/14 (100.00)</td>
<td>ERCP: 13/14 (92.86)</td>
<td>ERCP: 4/13 (30.77)</td>
<td>ERCP: Sphincterotomy perforation (4)</td>
</tr>
<tr>
<td>Nakai et al, 2018</td>
<td>EUS-BD: 33/34 (97.06)</td>
<td>EUS-BD: 33/33 (100.00)</td>
<td>EUS-BD: 5/34 (14.71)</td>
<td>EUS-BD: Abdominal pain, mild (2); Cholecystitis (3)</td>
</tr>
<tr>
<td></td>
<td>ERCP: 25/25 (100.00)</td>
<td>ERCP: 25/25 (100.00)</td>
<td>ERCP: 6/25 (24.00)</td>
<td>ERCP: Pancreatitis (1), Cholecystitis (4), Liver abscess (1)</td>
</tr>
<tr>
<td>Yamao et al, 2018</td>
<td>EUS-BD: 14/14 (100.00)</td>
<td>EUS-BD: 13/14 (100.00)</td>
<td>EUS-BD: 8/14 (57.14)</td>
<td>EUS-BD: Cholangitis (4); Stent migration (1); Peritonitis (2), Cholecystitis (1)</td>
</tr>
<tr>
<td></td>
<td>ERCP: 14/25 (86.00)</td>
<td>ERCP: 13/25 (52.00)</td>
<td>ERCP: 8/25 (32.00)</td>
<td>ERCP: Pancreatitis (2), Pneumoperitoneum/perforation (1), Cholangitis (5)</td>
</tr>
</tbody>
</table>

### Supplemental Fig. 1a technical success rate for EUS-BD for treatment of distal malignant biliary obstruction: only randomized controlled trials, excluding low-quality studies. 

**Legend:**
- EUS-BD: Endoscopic ultrasound-guided biliary drainage
- ERCP: Endoscopic retrograde cholangiopancreatography
- Adverse Event Rate: Percentage of patients who experience an adverse event

**Description of Adverse Events:**
- Early complications: those occurring within 7 days of endoscopy.
- Late complications: those occurring after 7 days of endoscopy.

**Clinical Success:**
- EUS-BD: 54/60 (90.00)
- ERCP: 52/55 (94.55)

**Technical Success:**
- EUS-BD: 60/64 (93.75)
- ERCP: 55/61 (90.16)

**Adverse Event Rate:**
- EUS-BD: 7/64 (10.94)
- ERCP: 24/61 (39.34)

**Description of Adverse Events:**
- EUS-BD: Early: Self-limited pneumoperitoneum, Bile peritonitis, Cholangitis; Late: Cholangitis
- ERCP: Early: Pancreatitis, Acute cholecystitis, Stent migration; Late: Acute cholangitis, Acute Cholecystitis, Stent occlusion

- Abdominal pain: mild or moderate
- Pancreatitis
- Cholecystitis
- Liver abscess
- Sphincterotomy perforation
Supplemental Fig. 2  
a Technical success rate for EUS-BD for treatment of distal malignant biliary obstruction: observational studies only.  
b Clinical success rate for EUS-BD for treatment of distal malignant biliary obstruction: observational studies only.  
c Adverse event rate for EUS-BD for treatment of distal malignant biliary obstruction: observational studies only.  
d Reintervention rate for EUS-BD for treatment of distal malignant biliary obstruction: observational studies only.

Supplemental Fig. 3  
Comparative rate of post-procedure pancreatitis of EUS-BD versus ERCP for treatment of distal malignant biliary obstruction.
Supplemental Fig. 4 Risk of bias summary: review authors’ judgements about each risk of bias item for each included study.

Supplemental Fig. 5 Risk of bias graph: review authors’ judgements about each risk of bias item presented as percentages across all included studies.
Supplemental Fig. 6 Risk of publication bias funnel plot for included studies that examined technical success for EUS-BD for treatment of distal malignant biliary obstruction.

Supplemental Fig. 7 Risk of publication bias funnel plot for included studies that examined clinical success for EUS-BD for treatment of distal malignant biliary obstruction.
Supplemental Fig. 8 risk of publication bias funnel plot for included studies that examined reintervention rate for EUS-BD for treatment of distal malignant biliary obstruction.

Supplemental Fig. 9 Risk of Publication Bias Funnel Plot for Included Studies That Examined Adverse Events for EUS-BD for Treatment of Distal Malignant Biliary Obstruction