Revisión bibliográfica

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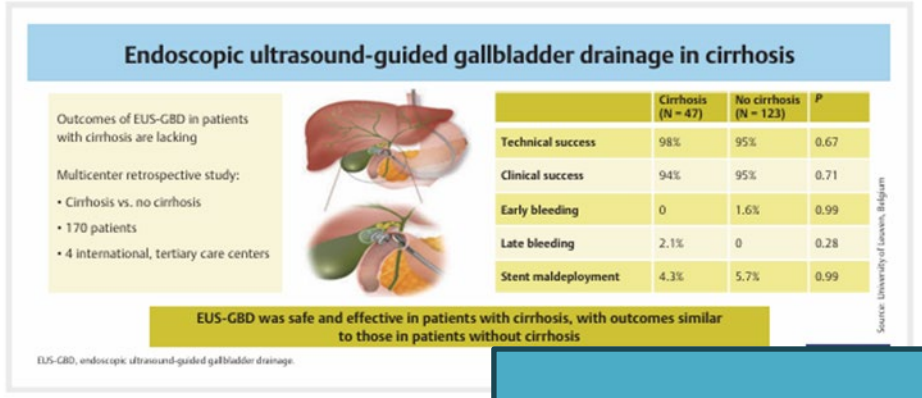
DRENAJE DE VESÍCULA GUIADO POR ECOENDOSCOPIA

Original article

Thieme

Safety and effectiveness of endoscopic ultrasound-guided gallbladder drainage in patients with cirrhosis: an international multicenter experience

GRAPHICAL ABSTRACT



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high surgical risk, but data are lacking for patients with cirrhosis. We investigated the safety and effectiveness of EUS-GBD in patients with and without cirrhosis.

received 24.1.2024

Review

Endoscopic Ultrasound

OPEN

EUS-guided gallbladder drainage as a rescue in distal malignant biliary obstruction: A systematic review with meta-analysis

Giacomo Emanuele Maria Rizzo[1,2], Stefano Francesco Crinò[3], Giuseppe Vanella[4], Antonio Facciorusso[5], Pietro Fusaroli[6], Fausto Catena[7], Judy A. Trieu[8], Todd H. Baron[8], Andrea Anderloni[9], Carlo Fabbri[10], Ilaria Tarantino[1], Lorenzo Fuccio[11,12,*]; the i-EUS Working Group

Abstract
Patients with distal malignant biliary obstruction (dMBO) needing biliary drainage (BD) undergo ERCP as a first approach. EUS–guided gallbladder drainage (EUS-GBD) is now accepted as a rescue alternative for the palliation of jaundice in those patients with dMBO who fail ERCP and cannot undergo EUS-BD. This is a systematic review with meta-analysis for evaluating the efficacy and safety of EUS-GBD in this scenario. A comprehensive search through the main database platforms was conducted to May 2024. Pooled estimates were obtained using a fixed-effects model with the generic inverse variance method. Study quality was evaluated using the Newcastle-Ottawa quality assessment scale (NOS). Heterogeneity was evaluated with I^2 statistic. Clinical success, adverse events (AEs) rate, and reintervention rate were the main outcomes. Sensitivity analyses were also conducted. Eight studies including 183 patients were identified. Pooled clinical success was 89% (95% CI, 84%–93%). The pooled clinical success of full-text publication was 88% (95% CI, 83%–93%; I^2 = 0%). Reintervention rate was 8% (95% CI, 4%–12%; I^2 = 0%). The overall AE rate was 10% (95% CI, 6%–15%; I^2 = 0%). The NOS allocated moderate quality in 7 studies. In conclusion, our findings confirm that EUS-GBD in dMBO is a feasible, effective, and safe
EUS-BD.
drainage; Malignant biliary obstruction; Distal

drainage in distal malignant biliary obstruction (dMBO).[1] Patients with dMBO needing biliary drainage (BD) undergo ERCP with transpapillary stent placement as a first approach.[2] Percutaneous transhepatic BD (PTBD) and EUS-guided BD are valuable alternatives in case of ERCP failure, preferring the EUS-guided approach when feasible.[3] Indeed, a meta-analysis of 10 studies, including 5 RCTs, comparing EUS-BD with PTBD showed comparable clinical success (90.0% *vs.* 88.7%, respectively; P = 0.51) but significant differences in adverse event (AE) rate (10.0% *vs.* 27.3%, P = 0.01) favoring EUS-BD.[4] However, technical issues encountered when performing ERCP or EUS-BD could lead to moving to other rescue procedures, such as EUS-guided gallbladder drainage (EUS-GBD) or percutaneous transhepatic biliary drainage (PT-BD). PT-BD has the disadvantage of inserting an external drainage catheter, increasing a potential source of infection and decreasing the oncologic patients' quality of life (QoL). Although the use of PT-BD or PT-GBD over the EUS approaches is still debated, the overall safer profile of the EUS-guided over the percutaneous procedures is leading to prefer the EUS approach when available.[4-6] Therefore, EUS-GBD is now accepted as a

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DRENAJE DE VESÍCULA GUIADO POR ECOENDOSCOPIA

Original article

Thieme

ENDO AULA

Safety and effectiveness of endoscopic ultrasound-guided gallbladder drainage in patients with cirrhosis: an international multicenter experience

INTRODUCCIÓN

- La colecistectomía laparoscópica es el tratamiento de elección de la colecistitis

- Alto riesgo quirúrgico: neoplasias no operables, cirrosis, comorbilidad cardiológica u otras enfermedades graves
  - Drenaje percutáneo
  - Drenaje transcístico mediante CPRE
  - Drenaje transmural mediante USE

Endoscopy

ORIGINAL RESEARCH

Endosonography-guided gallbladder drainage versus percutaneous cholecystostomy in very high-risk surgical patients with acute cholecystitis: an international randomised multicentre controlled superiority trial (DRAC 1)

Anthony Y B Teoh [1], Masayuki Kitano [2], Takao Itoi, Takeshi Ogura,[5] Shannon Melissa Chan,[1] Carlos Serna-H Raul Torres-Yuste,[4] Takayoshi Tsuichiya,[3] Ka Tak Wong,[7] Philip Wai Yan Chiu [1], Enders Kwok Wai Ng,[1] James Y

What are the new findings?

- In this randomised trial of 80 patients, EUS-GBD significantly reduced 1-year adverse events (25.6% vs 77.5%, p<0.001), 30-day adverse events (12.8% vs 47.5%, p=0.001), re-interventions after 30 days (2.6% vs 30%, p=0.001), number of unplanned readmissions (6% vs 50%, p=0.002) and recurrent cholecystitis (2.6% vs 20%, p=0.029).

RECOMMENDATIONS

ESGE recommends EUS-guided gallbladder drainage (EUS-GBD) or percutaneous gallbladder drainage (PTGBD) in patients at high surgical risk with acute cholecystitis requiring gallbladder drainage.
Strong recommendation, high quality of evidence.

ESGE recommends that, in patients at high surgical risk, EUS-GBD should be favored over PTGBD where both techniques are available, owing to the lower rates of AEs and need for re-intervention in EUS-GBD.
Strong recommendation, high quality of evidence.

RECOMMENDATION

ESGE recommends EUS-guided gallbladder drainage over transpapillary gallbladder drainage, given the suboptimal technical efficacy of transpapillary gallbladder drainage.
Strong recommendation, low quality of evidence.

Original article

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Safety and effectiveness of endoscopic ultrasound-guided gallbladder drainage in patients with cirrhosis: an international multicenter experience

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  - Drenaje percutáneo
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  - Drenaje transmural mediante USE

- La coagulopatía, trombopenia y ascitis (condiciones frecuentes en los pacientes cirróticos) se consideran contraindicaciones relativas del drenaje vesicular transmural guiado por ecoendoscopia

- Existe poca evidencia sobre los resultados del drenaje vesicular guiado por ecoendoscopia en pacientes cirróticos, pese a que constituyen un grupo con elevado riesgo quirúrgico

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ENDO AULA

Safety and effectiveness of endoscopic ultrasound-guided gallbladder drainage in patients with cirrhosis: an international multicenter experience

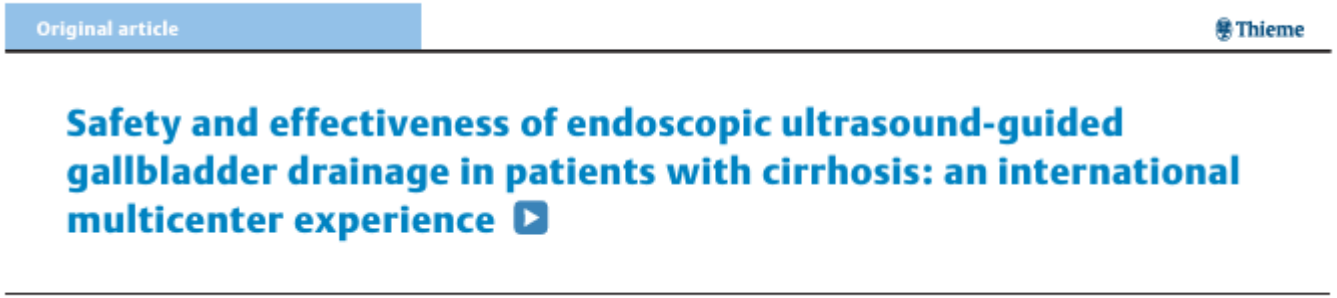
MÉTODOS: DISEÑO DEL ESTUDIO

- Estudio retrospectivo multicéntrico internacional

- INCLUSIÓN: Todos los pacientes adultos a los que se les realizó drenaje vesicular guiado por ecoendoscopia por cualquier motivo hasta 2022
- EXCLUSIÓN: Población pediátrica y pacientes sin datos recogidos

- Se dividieron los grupos entre pacientes con cirrosis y pacientes sin cirrosis

- Se recogieron retrospectivamente datos demográficos, variables sobre la enfermedad hepática, parámetros de laboratorio, datos técnicos del procedimiento y datos de la evolución postprocedimiento



MÉTODOS: RESULTADOS DE INTERÉS

- Éxito técnico: Completar el procedimiento de manera satisfactoria
- Éxito clínico: Resolución de los síntomas de colecistitis o la disminución de al menos 10% en la cifra de bilirrubina en las primeras 48-72 horas
- Efectos adversos:
  - Postprocedimiento
  - Tiempo de patencia del stent, necesidad de intercambios del stent, limpieza de litiasis, impactación de comida sobre el stent, mortalidad y el tiempo de seguimiento.

Thieme

Safety and effectiveness of endoscopic ultrasound-guided gallbladder drainage in patients with cirrhosis: an international multicenter experience

RESULTADOS: DATOS DEMOGRÁFICOS Y BASALES

170 pacientes

- 47 con cirrosis
- 123 sin cirrosis

Diferencias significativas:

- Mayor consumo de tabaco y alcohol y menor número de plaquetas en cirróticos
- Más cirugías abdominales previas y mayor uso de anticoagulantes en no cirróticos

No diferencias significativas en datos demográficos, comorbilidad, empleo de antibióticos, parámetros de laboratorio incluido Hb, INR, Bi (salvo plaquetas)

▶ **Table 1** Demographics, comorbidities, and baseline laboratory characteristics of patients undergoing endoscopic ultrasound-guided gallbladder drainage.

Factor	Cirrhosis (N = 47)	No cirrhosis (N = 123)	*P* value
Age, mean (SD), years	66.5 (13.5)	71.3 (17.0)	0.08
Female, n (%)	18 (38.3)	55 (44.7)	0.45
Race, n (%)			0.35
▪ White	36 (76.6)	92 (74.8)	
▪ African American	6 (12.8)	24 (19.5)	
▪ Others	5 (10.6)	7 (5.7)	
Current smoker, n (%)	8 (17.0)	8 (6.5)	0.04
Current alcohol use, n (%)	12 (25.5)	8 (6.5)	0.001
Body mass index, mean (SD), kg/m2	29.5 (7.6)	27.1 (7.4)	0.07
Coronary artery disease, n (%)	13 (27.7)	39 (31.7)	0.58
Cerebrovascular accident, n (%)	3 (6.4)	10 (8.1)	0.69
Chronic obstructive pulmonary disease, n (%)	6 (12.8)	13 (10.6)	0.69
History of abdominal surgeries, n (%)	6 (12.8)	37 (30.1)	0.02
History of malignancy, n (%)	19 (40.4)	61 (49.6)	0.28
Anticoagulant use, n (%)	3 (6.4)	34 (27.6)	0.003
Antiplatelet use, n (%)	10 (21.3)	32 (26.0)	0.55
Antibiotics use, n (%)	16 (34.0)	34 (27.6)	0.43
Hemoglobin, mean (SD), g/dL	10.9 (1.9)	10.6 (1.9)	0.44
International normalized ratio, mean (SD)	1.4 (0.52)	1.3 (0.41)	0.16
Albumin, mean (SD), g/dL	2.8 (0.69)	2.9 (0.64)	0.52
Platelet count, mean (SD), platelets/microliter	134 (98)	234 (129)	<0.001
Partial thromboplastin time, mean (SD), seconds	40.8 (17.5)	43.6 (42.7)	0.78
Pre-procedure total bilirubin, mean (SD), g/dL	6.7 (7.7)	5.1 (7.8)	0.3

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Safety and effectiveness of endoscopic ultrasound-guided gallbladder drainage in patients with cirrhosis: an international multicenter experience

RESULTADOS: CARACTERÍSTICAS DE LA CIRROSIS

Table 2 Etiology and characteristics of cirrhosis.

	N = 47[1]
Alcohol	20 (42.6)
Viral	4 (8.5)
MASLD	16 (34.0)
Other	7 (14.9)
Ascites	20 (42.6)
Large volume paracentesis	20 (42.6)
Child–Turcotte–Pugh class	
▪ A	9 (19.1)
▪ B	14 (29.8)
▪ C	3 (6.4)
MELD-Na, mean (SD)	16.2 (8.8)
Transplant candidate	4 (8.5)
▪ Underwent transplantation	1 (2.1)

MASLD, metabolic dysfunction-associated steatotic liver disease; MELD-Na, Model of End-stage Liver Disease-Sodium.
[1]Data are n (%), unless otherwise stated.

Thieme

Safety and effectiveness of endoscopic ultrasound-guided gallbladder drainage in patients with cirrhosis: an international multicenter experience

RESULTADOS: DATOS DEL PROCEDIMIENTO

▶ **Table 3** Procedure-related data in patients undergoing endoscopic ultrasound-guided gallbladder drainage.

Factor	Cirrhosis n = 47	No cirrhosis N = 123	*P* value
Indication, n (%)			0.02
• Acute cholecystitis	35 (74.5)1	70 (56.9)1	
• Chronic cholecystitis	2 (4.3)	4 (3.3)	
• Gallstone pancreatitis	1 (2.1)	5 (4.1)	
• Others	9 (19.1)[1]	44 (35.8)1	
Cautery-enhanced LAMS (N = 156), n (%)	46 (97.9)	110 (89.4)	0.07
Initial puncture site, n (%)[2]			0.12
• Gastric	2 (4.5)	20 (16.8)	
• Duodenum	41 (93.2)	96 (80.7)	
• Jejunum	1 (2.3)	3 (2.5)	
Same session ERCP	4 (8.5)	21 (17.1)	0.16
LAMS size, n (%)[3]			0.24
• 10×10 mm	36 (78.3)	86 (75.4)	
• 10×15 mm	5 (10.9)	8 (7.0)	
• 15×15 mm	4 (8.7)	7 (6.1)	
• Others	1 (2.2)	13 (11.4)	
Coaxial pigtail, n (%)[4]	37 (82.2)	94 (80.3)	0.78

ERCP, endoscopic retrograde cholangiopancreatography; LAMS, lumen-apposing metal stent.
[1]Significant difference between groups.
[2]Cirrhosis N = 44; No cirrhosis N 119.
[3]Cirrhosis N = 46; No cirrhosis N = 114.
[4]Cirrhosis N = 45; No cirrhosis N = 117

Thieme

ENDO AULA

Safety and effectiveness of endoscopic ultrasound-guided gallbladder drainage in patients with cirrhosis: an international multicenter experience

RESULTADOS

Sin diferencias en el éxito técnico, éxito clínico, estancia hospitalaria, en efectos adversos (incluido hemorragia), tiempo de patencia del stent ni en las tasas de mortalidad

Los efectos adversos fueron infrecuentes en los dos grupos. La complicación más frecuente es la oclusión del stent lo que conlleva recurrencia de la colecistitis.

3 efectos adversos graves:
- Perforación duodenal por malposición
- Colecistectomía tras malposición
- Hemorragia que requirió embolización de la gastroduodenal

▶ **Table 4** Clinical outcomes and adverse events in patients undergoing endoscopic ultrasound-guided gallbladder drainage.

Factor	Cirrhosis N = 47	No cirrhosis N = 123	P value
Technical success, n (%)	46 (97.9)	117 (95.1)	0.67
Clinical success, n (%)	44 (93.6)	112 (94.9)1	0.71
Length of stay, mean (SD), days	7.91 (15.4)	7.72 (13.1)	0.93
Early bleeding, n (%)	0	2 (1.6)	0.99
Late bleeding, n (%)	1 (2.1)	0	0.28
Pancreatitis, n (%)	0	1 (0.8)	0.99
Stent maldeployment, n (%)	2 (4.3)	7 (5.7)	0.99
Perforation, n (%)	0	2 (1.6)	0.99
Bile leak, n (%)	0	3 (2.4)	0.56
Peritonitis, n (%)	1 (2.1)	1 (0.8)	0.47
Post-procedure total bilirubin, mean (SD), g/dL	6.1 (7.6)	3.5 (4.9)	0.1
Median change in bilirubin, mean (SD), g/dL	15.6 (53)	27.3 (48)	0.17
Gallstone clearance, n (%)	5 (10.6)	27 (22.0)	0.09
Food impaction on follow-up, n (%)	0	1 (0.8)	0.99
Stent exchange, n (%)	17 (36.2)	40 (33.9)[1]	0.78
Stent indwelling time, mean (SD), weeks[2]	19.4 (38)	7.6 (6.2)	0.14
Eventual cholecystectomy, n (%)	2 (4.3)	11 (9.1)[3]	0.51
Total follow-up, mean (SD), months	19.3 (23.1)	11.7 (15.5)	0.04
Death, n (%)	23 (50.0)[4]	66 (53.7)	0.67
Time to death, mean (SD), months[5]	9.5 (10.9)	7.0 (11.7)	0.39

[1]No cirrhosis N = 118.
[2]Cirrhosis N = 24; No cirrhosis N = 52.
[3]No cirrhosis N = 121.
[4]Cirrhosis N = 46.
[5]Cirrhosis N = 20; No cirrhosis N = 60.

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Thieme

ENDO AULA

Safety and effectiveness of endoscopic ultrasound-guided gallbladder drainage in patients with cirrhosis: an international multicenter experience

DISCUSIÓN Y CONCLUSIONES

- El drenaje vesicular por ecoendoscopia fue seguro y efectivo en pacientes con cirrosis: similares tasas de éxito técnico (97,9%) y clínico (93,6%) y no mayor tasa de complicaciones (10-16%)

- Tras el drenaje por ecoendoscopia se puede llevar a cabo una limpieza de las litiasis mediante colecistoscopia lo que añade ventajas en el manejo del cuadro en estos pacientes

- El drenaje por ecoendoscopia no debería realizarse en pacientes candidatos a trasplante hepático salvo tras discusión en un equipo multidisciplinar. En este estudio un paciente recibió un trasplante hepático durante el seguimiento tras el drenaje por ecoendoscopia

- LIMITACIONES: retrospectivo, ecoendoscopistas expertos, no se ha podido hacer un subanálisis en el grupo de ascitis

- FORTALEZAS: tamaño muestral, datos multicéntricos, resultados relevantes, tiempo de seguimiento

Thieme

Safety and effectiveness of endoscopic ultrasound-guided gallbladder drainage in patients with cirrhosis: an international multicenter experience

CONCLUSIÓN FINAL

El drenaje vesicular guiado por ecoendoscopia es seguro y efectivo en pacientes con cirrosis, con resultados similares a los pacientes sin cirrosis cuando se realiza por ecoendoscopistas expertos.

Mayores estudios se requieren para extrapolar estos datos en pacientes con cirrosis y ascitis

Review

Endoscopic Ultrasound

OPEN

ENDO AULA

EUS-guided gallbladder drainage as a rescue in distal malignant biliary obstruction: A systematic review with meta-analysis

INTRODUCCIÓN

- La CPRE es el procedimiento de elección en el drenaje de la vía biliar por obstrucción maligna

- El drenaje biliar percutáneo o el drenaje biliar guiado por ecoendoscopia son las alternativas en caso de CPRE fallida.
  - Metaanálisis[1]: éxito clínico similar (90% grupo USE; 88,7% grupo percutáneo) pero diferencias significativas en efectos adversos favoreciendo el grupo de USE

- El drenaje vesicular guiado por ecoendoscopia constituye una alternativa de rescate aceptada en pacientes con CPRE fallida a los que no se les puede realizar un drenaje biliar por cuestiones técnicas en aquellos pacientes con cístico permeable

[1] Endosc Ultrasound 2022; 11(1):4–16

Review

Endoscopic Ultrasound

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ENDO AULA

EUS-guided gallbladder drainage as a rescue in distal malignant biliary obstruction: A systematic review with meta-analysis

MÉTODOS

- Revisión sistemática con metaanálisis

- ESTUDIOS INCLUIDOS:
  - Obstrucción biliar maligna
  - Drenaje vesicular guiado por ecoendoscopia tras una CPRE/drenaje biliar por eco fallido o no posible
  - Datos de eficacia y seguridad recogidos

- ESTUDIOS EXCLUIDOS:
  - Colecistitis como indicación de drenaje vesicular
  - Series de casos con menos de 5 pacientes y artículos de revisión

Review

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ENDOAULA

EUS-guided gallbladder drainage as a rescue in distal malignant biliary obstruction: A systematic review with meta-analysis

MÉTODOS

- OBJETIVO PRIMARIO: Eficacia del drenaje de vesícula (éxito clínico)

- OBJETIVO SECUNDARIO: Conocer la seguridad (tasa de efectos adversos) y la tasa de reintervenciones

- Análisis por subgrupos: tipo de fallo primario, estadio de la enfermedad oncológica, vía de colocación de la LAMS, número de hospitales involucrados

Endoscopic Ultrasound

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RESULTADOS

8 estudios
todos retrospectivos
con 183 pacientes
fueron incluidos

Table 1

Characteristics of included studies (n = 8).

Author	Centers	Geographical area	Age	Gender (M/F)	Tumor stage	Type of previous failure	EUS-GBD, n	Clinical success, %	Definition of clinical success	Route of drainage, %		Comments	Follow-up	NOS score
										Transgastric	Transduodenal			
Imai et al.[15]	Single center	Japan, Asia	67.3 ± 13.9	8/4	Unresectable (100%)	ERCP, then EUS-RVS, EUS-CDS, and EUS-HGS	12	91.7	Decrease in bilirubin levels to <50% of the pretreatment value within 2 wk	58.3	41.7	EUS-GBD with PC-SEMS (Wallflex, 8 × 60 mm)	NA	4
Chang et al.[18]	Single center	USA, America	63.1 (range, 41–80)	5/4	Unresectable (100%)	ERCP and EUS-RV	9	77.8	Symptom and post-procedural liver chemistry improvement	44.4	55.6	LAMS	130.7 d	4
Paleti et al.*[13]	Single center	USA, America	67 ± 13.3	5/2	NA	ERCP	7	100	NA	NA	NA	LAMS	NA	3
Issa et al.[16]	Multicenter	USA, America	68 ± 13	15/13	Unresectable (100%)	ERCP and EUS-BD (not specified)	28	92.6	Decrease in serum bilirubin of >50% within 2 wk	46	54	After both ERCP and EUS-BD failure. 26 pts with LAMS (EC-LAMS n = 20 and LAMS n = 6) and 2 pts with SEMS	33 (3–64) mo	5
Lambin et al.*[19]	Multicenter	France, Europe	NA	NA	NA	ERCP	28	78.6	NA	NA	NA	EC-LAMS	3.6 ± 5.0 mo (mean)	4
Binda et al.[14]	Multicenter	Italy, Europe	74.3 ± 11.7	23/25	Resectable 1/48 (1.5%) Unresectable† 47/48 (97.9%)	ERCP and EUS-CDS	48	81.3	Reduction of bilirubin blood level of 50% within 2 wk after the procedure	58.3	41.7	LAMS and other stents	122 ± 161 d (mean)	4
Debourdeau et al.[17]	Multicenter	France, Europe	70.16 ± 11.06	22/19	Resectable 3/41 (7.3%) Unresectable 38/41 (92.7%)	ERCP	41 (EUS-GBD) 37 (EUS-BD)	87.8 (EUS-GBD) 89.2 (EUS-CDS)	Defined by a >50% decrease in total bilirubin levels at day 7 or normalization at day 28 (<48 lmol/L)	100%	0%	EUS-GBD *vs.* EUS-BD. EC-LAMS (Hot AXIOS stent; Boston Scientific, Marlborough, MA)	5.2 (1.21, 48.09) mo (median)	5
Korani*[20]	Multicenter	U.K., Europe	70 (range, 37–80)	NA	NA	ERCP	10	100	Decrease in serum bilirubin of >50% within 30 d post-procedure	70%	30%	LAMS. Additional pigtail stents were inserted through LAMS in 3 procedures; 5 patients were alive at 6 mo, showing all LAMS patent.	6 mo (median)	5

EUS-BD: EUS–guided biliary drainage; EUS-CDS: EUS-guided choledocoduodenostomy; EUS-GBD: EUS–guided gallbladder drainage; EUS-RV: EUS–guided rendez-vous; LAMS: Lumen apposing metal stent; SEMS: Self-expandable metal stent.

*Abstracts. NA: Not available.

†Authors declared missing data regarding patients' stage.

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Review

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RESULTADOS: EFICACIA – ÉXITO CLÍNICO

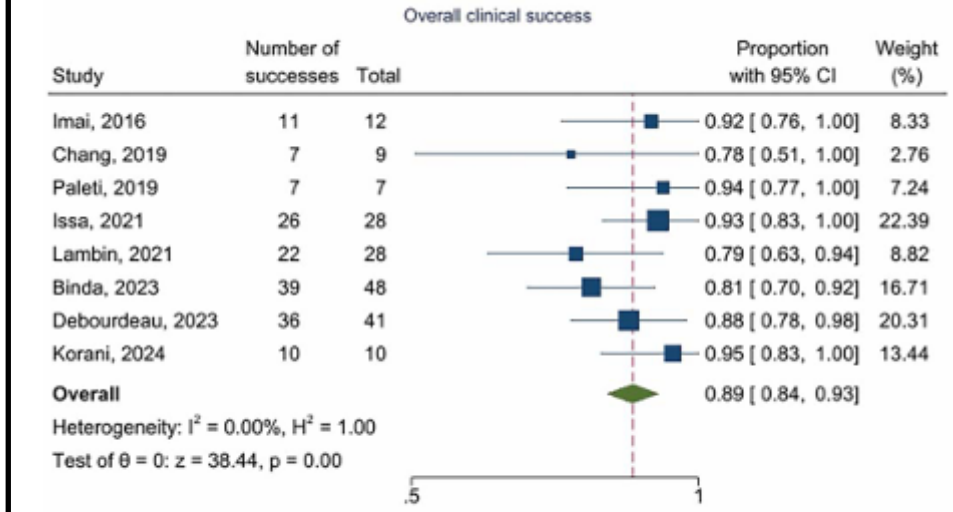

Figure 1. Forest plot for pooled rate of clinical success after EUS-GBD in dMBO among 8 included studies.

Review

Endoscopic Ultrasound

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EUS-guided gallbladder drainage as a rescue in distal malignant biliary obstruction: A systematic review with meta-analysis

RESULTADOS: EFICACIA – ÉXITO CLÍNICO

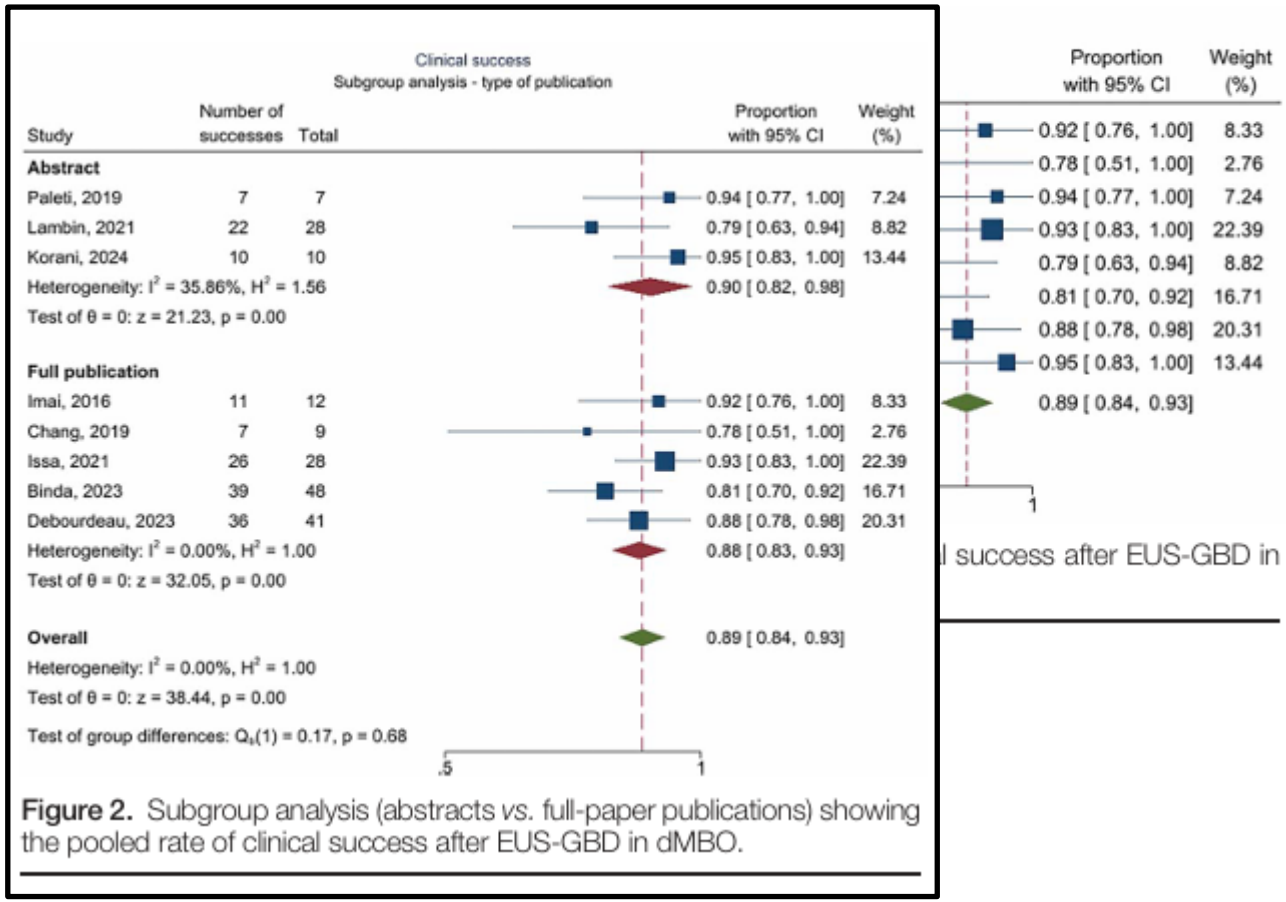

Figure 2. Subgroup analysis (abstracts *vs.* full-paper publications) showing the pooled rate of clinical success after EUS-GBD in dMBO.

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RESULTADOS: EFICACIA – ÉXITO CLÍNICO

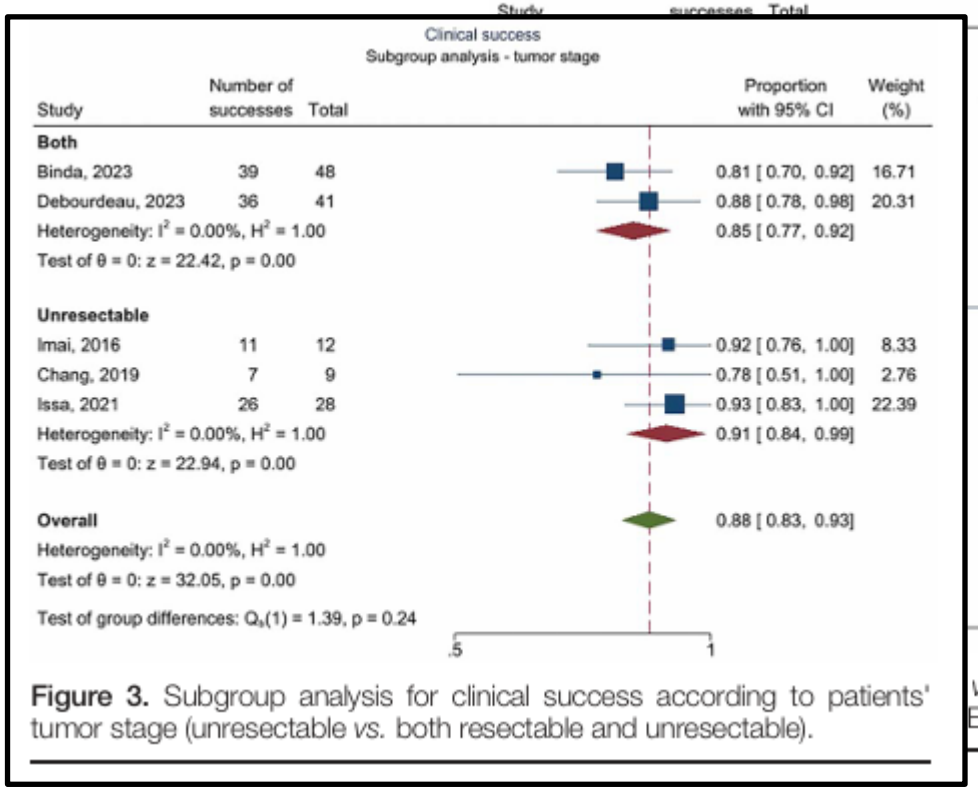
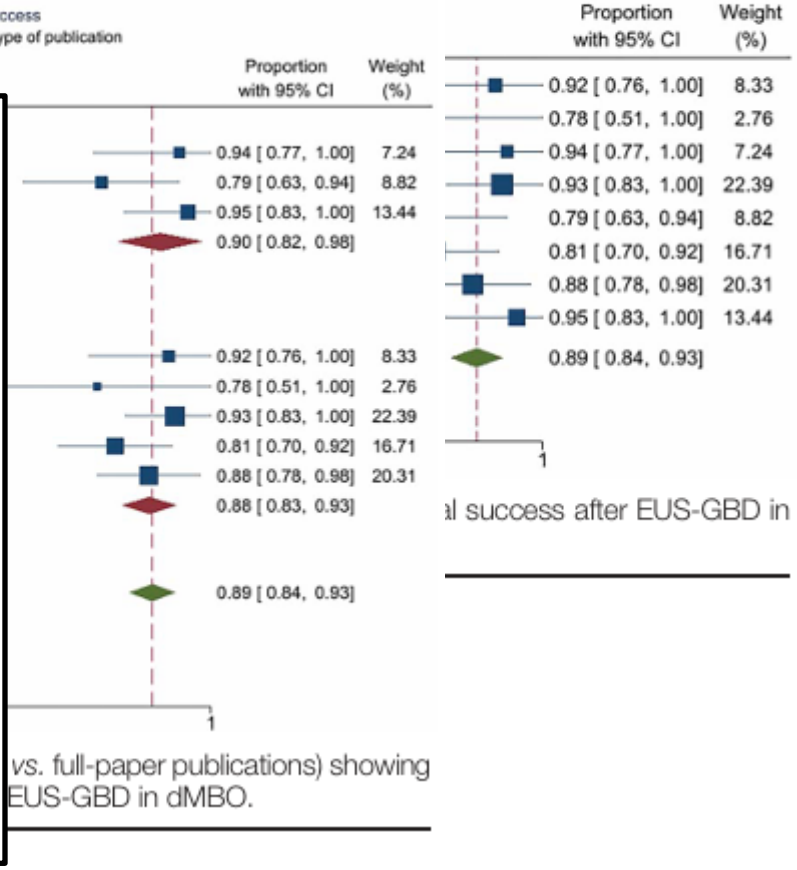


Figure 3. Subgroup analysis for clinical success according to patients' tumor stage (unresectable *vs.* both resectable and unresectable).



vs. full-paper publications) showing EUS-GBD in dMBO.

al success after EUS-GBD in

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RESULTADOS: SEGURIDAD

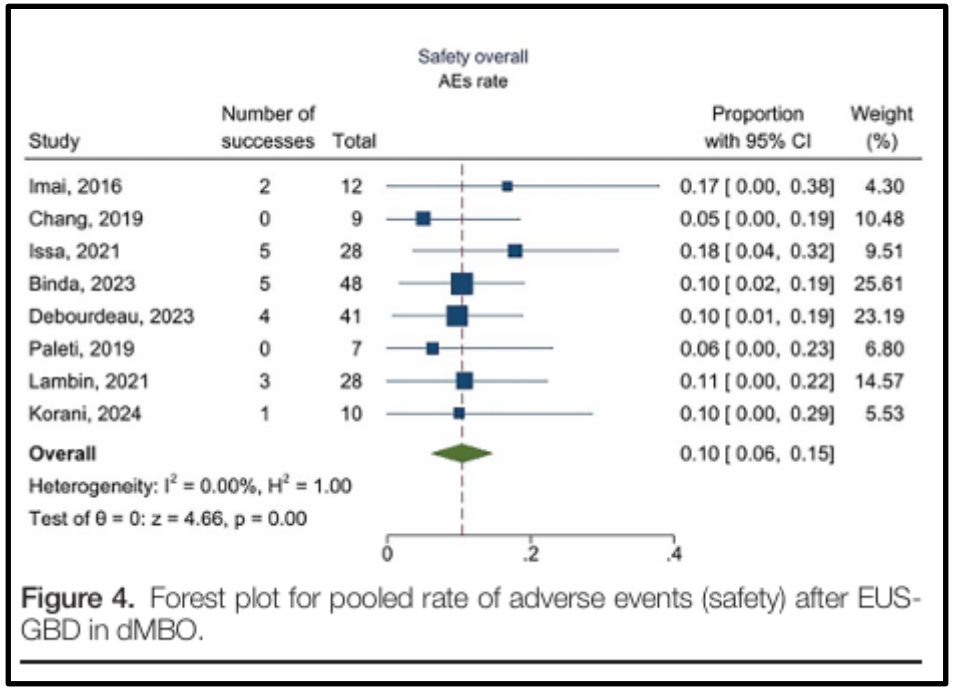

Figure 4. Forest plot for pooled rate of adverse events (safety) after EUS-GBD in dMBO.

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RESULTADOS: SEGURIDAD

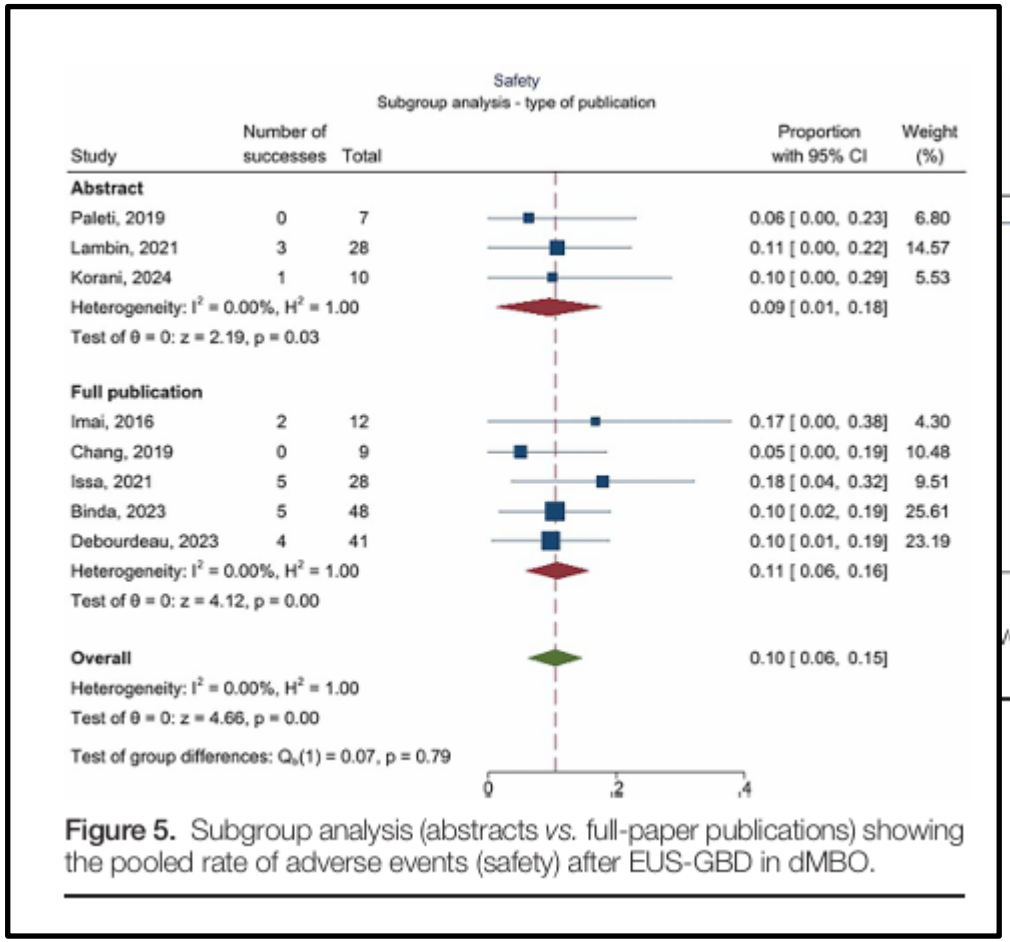

Figure 5. Subgroup analysis (abstracts *vs.* full-paper publications) showing the pooled rate of adverse events (safety) after EUS-GBD in dMBO.

Proportion with 95% CI
Weight (%)
0.17 [0.00, 0.38] 4.30
0.05 [0.00, 0.19] 10.48
0.18 [0.04, 0.32] 9.51
0.10 [0.02, 0.19] 25.61
0.10 [0.01, 0.19] 23.19
0.06 [0.00, 0.23] 6.80
0.11 [0.00, 0.22] 14.57
0.10 [0.00, 0.29] 5.53
0.10 [0.06, 0.15]
.4
vents (safety) after EUS-

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RESULTADOS: EFECTOS ADVERSOS

Table 2

Adverse events among included studies (*n* = 7).

Author	AE rate, *n*/*N* (%)	Details on AEs and management after EUS-GBD	Deaths
Imai et al.6[15]	2/12 (16.7)	Adverse events (*n* = 2): • One peritonitis ➔ conservative treatment • One stent dysfunction due to tumor grown with cystic duct entrapment ➔ PTBD	—
Chang et al.[18]	0	No procedural adverse events	4 deaths for tumor progression
Paleti et al.*[13]	0	No procedural adverse events	—
Issa et al.[16]	5/28 (17.9)	Adverse events (delayed, >24 h) (*n* = 5): • 3 cases of food impaction➔ reintervention ➔ cholecystitis • 2 bleedings ➔ one needing clip of ulcer inside the GBD and the other self-solving	10 deaths (36%) at the time of paper writing
Lambin et al.*[19]	3/28 (10.7)	Adverse events (*n* = 3): • 1 stent obstruction • 1 cholangitis • 1 septic shock	—
Binda et al.[14]	5/48 (10.4)	Adverse events (*n* = 5): • 3 intraprocedural ➔ 2 bleedings (endoscopy/conservative) and 1 dislodgement (PTC) • 2 delayed (>15 d) ➔ 1 stent occlusion and 1 buried stent ➔ both with second LAMS	—
Debourdeau et al.[17]	EUS-GBD: 4/41 (9.76) EUS-BD: 9/37 (24.32)	Significant adverse events (*n* = 4) • 1 LAMS dislodgment within an hour postprocedure, leading to biliary peritonitis and necessitating surgical treatment and intensive care unit admission (AGREE grade IVa) • 2 bleeding • 1 bacteremia	No deaths among EUS-GBD group
Korani*[20]	1	No immediate adverse events occurred. One patient with additional pigtail had blocked LAMS within the first week from gallstones requiring reintervention.	Only 1 death was recorded within 30 d, which was no procedure-related.

AEs: Adverse events; AGREE: Classification for adverse events gastrointestinal endoscopy; EUS-BD: EUS–guided biliary drainage; EUS-GBD: EUS–guided gallbladder drainage; LAMS: Lumen apposing metal stent; PTBD: Percutaneous transhepatic biliary drainage; PTC: Percutaneous transhepatic cholangiogram.

*Abstracts.

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RESULTADOS: REINTERVENCIONES

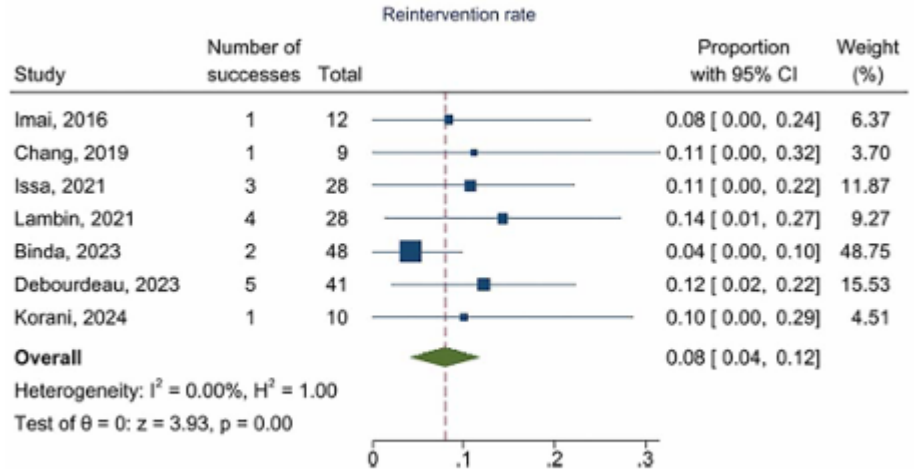

Figure 6. Forest plot for pooled reintervention rate.

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CONCLUSIONES

Cuando el drenaje biliar por CPRE falla (estenosis duodenal maligna o afectación tumoral del área papilar)

y el drenaje biliar por ecoendoscopia falla (dilatación < 15mm, interposición de vasos o estructuras, anatomía alterada)

el drenaje vesicular guiado por ecoendoscopia (si existe vesícula in situ y cístico permeable)

- es una opción válida con un éxito clínico de 89%
- es una opción segura con una tasa de efectos adversos de 10% y solo 1 complicación grave
- es una opción con baja tasa de reintervención

También es una opción en neoplasias resecables: Son necesarios estudios prospectivos

GRACIAS