

Supplementary material

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Supplementary Table 1 Published case reports on the use of endoscopic ultrasound-angiotherapy for visceral artery pseudoaneurysm

Ref.	Cases	Age/sex	Chief complaints	Artery involved	PsA size (mm)	EUS needle used	Embolization agent used	EUS sessions needed	Technical/clinical success	Complications	Follow up and comments
Roach <i>et al</i> ^[86] (2005)	1	32/M	Malena	SMA	-	22-G	Thrombin (500 IU, 1 mL)	1	Yes/yes	None	CT (6,28,42 wk): complete PSA obliteration; no further bleeding
Robinson <i>et al</i> ^[A] (2007)	1	51/M	asymptomatic	Splenic	30 × 13 (2 mm neck)	22-G	Thrombin (500 IU, 1 mL)	1	Yes/yes	None	CT (1 and 6 wk): complete obliteration
Levy <i>et al</i> ^[B] (2008)	1*	67/M	Severe bleeding (hemosuccus pancreaticus)	GDA	50 × 30	22-G	Alcohol (7 mL, 99%)	1	Yes/yes	None	CT (on F/U: complete obliteration); at 16 mo, no bleed
Gonzalez <i>et al</i> ^[87] (2009)	1	55/M	Abdominal pain (incidental discovery of PSA)	Splenic	-	19-G	2 ampoules of lipiodol with n-butyl cyanoacrylate	1 ^s	Yes/yes	none	CT (2 mo): complete obliteration; no bleeding
Lameris <i>et al</i> ^[C] (2011)	1	43/M	Pain and hematemesis	Splenic	40x32	22-G	Thrombin-collagen compound (7 mL)	1	Yes/yes	None	CT (6 wk, 10 mo): complete obliteration; [one attempt of DSA unsuccessful]
Chaves <i>et al</i> ^[D] (2012)	1	29/M	Abdominal pain	Splenic	45 mm diameter (4.5 mm neck)	22-G	Thrombin (500 IU, 1 mL)	1	Yes/yes	Small focal splenic infarction	CT and EUS (4 mo): complete obliteration
Robb <i>et al</i> ^[88] (2012)	1	54/M	With infected pseudocyst (incidental discovery on CT)	SMA	30	19-G	Multiple coils (Nester 0.035)	1	Yes/yes	None	CT (5 mo): complete obliteration; [previous 2 failed attempts at embolization]
Roberts <i>et al</i> ^[E] (2012)	1	73/F	Abdominal pain	GDA	-	-	Lipiodol and histoacryl glue	1	Yes/yes	None	CT (6 wk): complete obliteration; [previous 2 failed DSA attempts]
Gonzalez <i>et al</i> ^[F] (2012)	1 [@]	50/M	Bleeding	GDA	-	19-G	Lipiodol (2 mL) with cyanoacrylate	1	Yes/yes	None	CT (9 mo): no recurrence of PSA; [at 9 months, second PSA of SMA identified: underwent radiological embolization]
Law <i>et al</i> ^[G] (2014)	1 [%]	68/M	Bleeding	SMA	-	22-G	Alcohol (99%, 7 mL)	1	Yes/-	None	At 101 mo F/U: no bleeding; [one DSA attempt of coil and gel foam injection done prior]
Rai <i>et al</i> ^[H] (2014)	1	25/F	Abdominal pain (incidental finding on CT)	Splenic	65 × 60 × 68 mm	22-G	Thrombin (2 mL)	1	Yes/yes	None	CT (6 mo): no recurrence
Jeffers <i>et al</i> ^[I] (2017)	1	37/M	Hemosuccus pancreaticus	- (pancreatic neck PSA)	8 mm	22-G	Coil	1	Yes/-	None	No bleeding at 15 mo; [previous 3 unsuccessful attempts at embolization]

Sharma <i>et al</i> ^[1] (2017)	1	20/M	Abdominal pain (incidental finding)	Hepatic CT artery	-	19-G	Coils (first session: 10 mm [1], 6 mm[5]); second session: 10 mm[4], 8 mm[3])	2	Yes/yes	None	F/U color doppler USG: complete obliteration; [first EUS session caused 80% obliteration]
Rai <i>et al</i> ^[89] (2017)	1	33/M	Hematemesis and melena	Splenic	30 × 25	19-G	Coil (MWCE 18-14-10) and glue (1 mL)	1	Yes/yes	None	CT and EUS (1 mo): no PSA; no bleeding
Hashimoto <i>et al</i> ^[K] (2018)	1	55/M	Hematemesis	Left gastric	-	22-G	Glue (n-butyl cyanoacrylate) 1 mL	1	Yes/yes	None	CT (2 mo): complete obliteration; no bleeding
Sharma <i>et al</i> ^[L] (2018)	1	50/M	Melena	GDA	41 × 58	19-G	Coil (10 mm: 5) and thrombin (500 IU/ml; 8 mL)	2	Yes/yes	None	EUS (2 wk): complete obliteration; [first EUS session caused 30% obliteration]
Gunjan <i>et al</i> ^[M] (2018)	1	43/M	Upper bleeding	GI Left inferior phrenic artery	36 × 23	19-G	Glue (n-butyl cyanoacrylate) 3 mL	1	Yes/-	None	No bleeding at 9 mo F/U; [underwent one prior session of percutaneous embolization of PSA with thrombin]
Sharma <i>et al</i> ^[N] (2019)	1	52/M	malena	Cystic artery	34 × 24	22-G	Thrombin (1 mL, 500 IU)	1	Yes/-	None	-
Sidhu <i>et al</i> ^[O] (2020)	1	30/F	Hematemesis and malena	Right hepatic artery	45 × 21	25-G	Thrombin (5 mL) and Glue (2 ml cyanoacrylate)	1	Yes/-	None	After first EUS session, PSA reduced to 2 cm size; Patient underwent percutaneous embolization with 2 ml glue for same PSA (thereafter achieving complete obliteration)
Shah and Samanta <i>et al</i> ^[90] (2020)	1	39/M	Malena	Splenic	38 × 65 × 61	19-G	First session: Nester Coils (3) and cyanoacrylate glue (2 mL); second session: 5 Nester coils and 3 mL glue	2	Yes/yes	None	CT (1 mo): complete obliteration

PsA: Pseudoaneurysm; EUS: Endoscopic ultrasound; F/U: Follow-up; IU: international units; GDA: Gastroduodenal artery; CYA: Cyanoacrylate glue; GI: Gastrointestinal; CT: computed tomography; DSA: Digital subtraction angiography.

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Supplementary Table 2 Published literature on reports of endoscopic ultrasound-guided angiotherapy in cases of non-variceal bleeding

Ref.	Cases	Age/sex	Source of NVB	Size of lesion	Therapy given prior to EUS-therapy	Agent used for EUS-therapy	EUS-needle used	Findings post EUS intervention	Follow-up
Vila <i>et al</i> ^[A] (2014)	1	68/M	Rectal Dieulafoy's lesion	-	Endoscopic epinephrine and hemoclip	6 mL of 2 % polidocanol	-	Immediate hemostasis	No bleed (6 mo F/U)
Kumbhari <i>et al</i> ^[B] (2013)	1	94/M	Gastric GIST	40 × 45 mm	None	CYA glue (2 mL)	19-G FNA	Near absence of vascularity doppler	No bleed on F/U (6 mo)
Fockens <i>et al</i> ^[96] (1996)	8 (EUS guided therapy done in 3 cases)	Mean 41 years [5 males]	Gastric Dieulafoy's lesion	2-3 mm	None	3 cases (used sclerotherapy: polidocanol/ epinephrine)	-	No flow noted	One case rebled (managed by surgery)
Levy <i>et al</i> ^[97]	5	67/M; 67/F; 81/F; 79/F; 63/M	Hemosuccus pancreaticus, dieulafoy's, GIST, duodenal ulcer, PsA	-	IR coil + glue; heater probe with injection; fibrin + CYA	99% alcohol (2 cases); CYA glue [3-5 mL] (3 cases)	22-G FNA	Immediate cessation post therapy	15 d-23 mo: no rebleed
Law <i>et al</i> ^[98] (2015)	17	Median 73 years/ 10 F	Dieulafoy's (2); GIST (4); ulcer bleed (2); tumour bleed (4); aberrant vessel (3); PsA (1); brunners gland hamartoma (1)	-	99% alcohol; CYA + lipiodal injection	CYA (5), coil (4), hyaluronate (3), ethanol (3), band ligation (2), combined band ligation and ethanol (1) and combined epinephrine, snare ligation, and polypectomy (1).	22-G FNA	Complete cessation 10/17; decrease of flow (6); not mentioned (1)	15/17 (88%) cases no rebleed after 12 mo F/U

EUS: Endoscopic ultrasound; NVB: Non-variceal bleed; M: Male; F: Female; GIST: Gastrointestinal stromal tumour; PsA: Pseudoaneurysm; CYA: Cyanoacrylate; FNA: Fine needle aspiration; F/U: Follow-up.

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Supplementary Table 3 Studies conducted on animal models for endoscopic ultrasound-guided Portal vein access

Study	Year	Animal models	Approach	EUS FNA needle	Technical success	Complications	Correlation between EUS and trans-hepatic PVP measurement
Lai <i>et al</i> ^[101]	2004	21 pigs (14 PH model with PVA; 7 coagulopathy with heparin)	Trans-duodenal	22-G	18/21 cases	Small subserosal hematomas in all 21 cases	R = 0.91
Giday <i>et al</i> ^[103]	2007	5 pigs	Trans-gastric	19-G (with a modified ERCP catheter)	5/5 cases	None	QA-
Buscaglia <i>et al</i> ^[A]	2008	5 pigs	Trans-gastric	19-G	5/5 cases	None	-
Schulman <i>et al</i> ^[B]	2016	5 pigs	-	22-G	5/5 cases	None	HVPG within ± 1 mmHg of PVP
Schulman <i>et al</i> ^[C]	2017	5 pigs	-	22-G	5/5 cases	None	-
Huang <i>et al</i> ^[D]	2016	3 pigs	Trans-gastric	25-G	3/3 cases	None	R = 0.985-0.99

EUS: Endoscopic ultrasound; FNA: Fine needle aspiration; PVP: Portal venous pressure; PH: Portal hypertension; PVA: Polyvinyl alcohol; HVPG: Hepatic vein pressure gradient; G: Gauge; ERCP: Endoscopic retrograde cholangiopancreatography.

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