TREATMENT OF GASTRIC VARICES

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GASTRIC VARICES

Type	Definition	Relative frequency	Overall bleeding risk without treatment
Gastro-oesophageal varices (GOV)			
GOV type 1	OV extending below cardia into lesser curvature	70%	28%
GOV type 2	OV extending below cardia into fundus	21%	55%
Isolated gastric varices (IGV)			
IGV type 1	Isolated varices in the fundus	7%	78%
IGV type 2	Isolated varices else in the stomach	2%	9%

Bleeding risk 1, 3 5 yrs 16%, 36%, e 44%

EASL Clinical practice guidelines for the management of patients with decompensed cirrhosis, 2018

UPDATED ENDOSCOPIC CLASSIFICATIONS OF GASTRIC VARICES

A. Sarin's classification of gastric varices[1]	
Gastroesophageal varices GOV1 GOV2	Varices in continuity with esophageal varices Along the lesser curvature Along the greater curvature extending toward the gastric fundus
Isolated gastric varices IGV1 IGV2	 Isolated cluster of gastric varices in the gastric fundus Isolated gastric varices in the other parts of the stomach
B. Hashizume classification of gastric varices[2]	
Form	F1 (tortuous), F2 (nodular) and F3 (tumorous)
Location	La (anterior), Lp (posterior), Ll (lesser curvature), Lg (greater curvature), Lf (fundus)
Color	Cw (white), Cr (red)
RCS	Glossy, thin-walled focal redness on the varix
C. Hoskins and Johnson's classification of gastric varices[3]	
Type 1	Inferior extension of esophageal varices across the squamo-columnar junction
Type 2	Gastric varices located in fundus, which appear to converge to cardia with esophageal varices
Type 3	Gastric varices in fundus or body in the absence of esophageal varices
D. Arkawa classification of gastric varices[4]	
Type I Ia Ib	 A single supplying vessel forms a fundic varix Plural supplying vessels join and form a varix that drains into a single vessel
Type II	Gastric varices with multiple communications with vessels in stomach wall
E. Mathur's classification of gastric varices[5]	
Type 1	Esophageal varices with lesser curvature varices
Type 2	Esophageal varices with fundal varices (2a—subcardiac and 2b—diffuse fundal)
Type 3	Isolated fundal varix (3a—due to splenic vein thrombosis, 3b—due to generalized portal hypertension)
Type 4	Lesser curvature gastric varices with esophageal varices with fundal varices
Type 5	Antral varices

RISK OF BLEEDING OF GASTRIC VARICES

- Size of fundal varices (large>medium>small, defined as >10 mm, 5– 10 mm, and <5 mm, respectively)

- Child class (C>B>A)

- Endoscopic presence of variceal red spots (defined as localized reddish mucosal area or spots on the mucosal surface of a varix)

Kim et al. 1997

RISK FACTOR FOR BLEEDING IN GASTRIC VARICES

RCT primary prophylaxis GV:	no treatment	45% bleeding
	NSBB	28% bleeding
	endoscopic treatment	13% bleeding

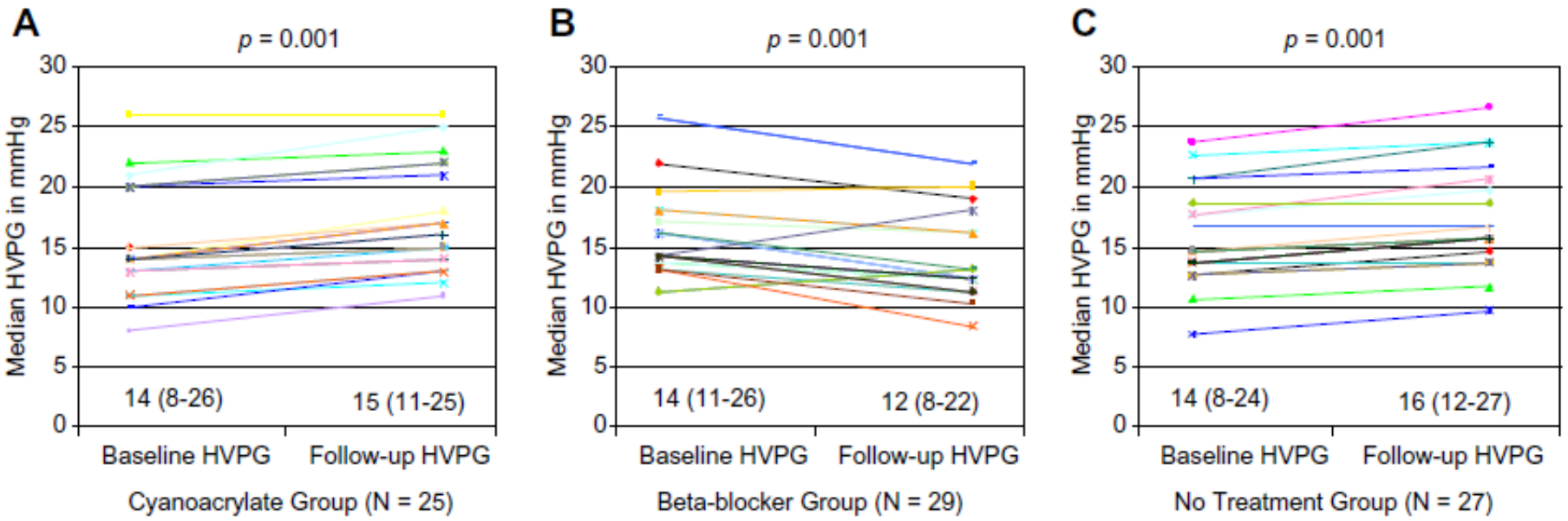
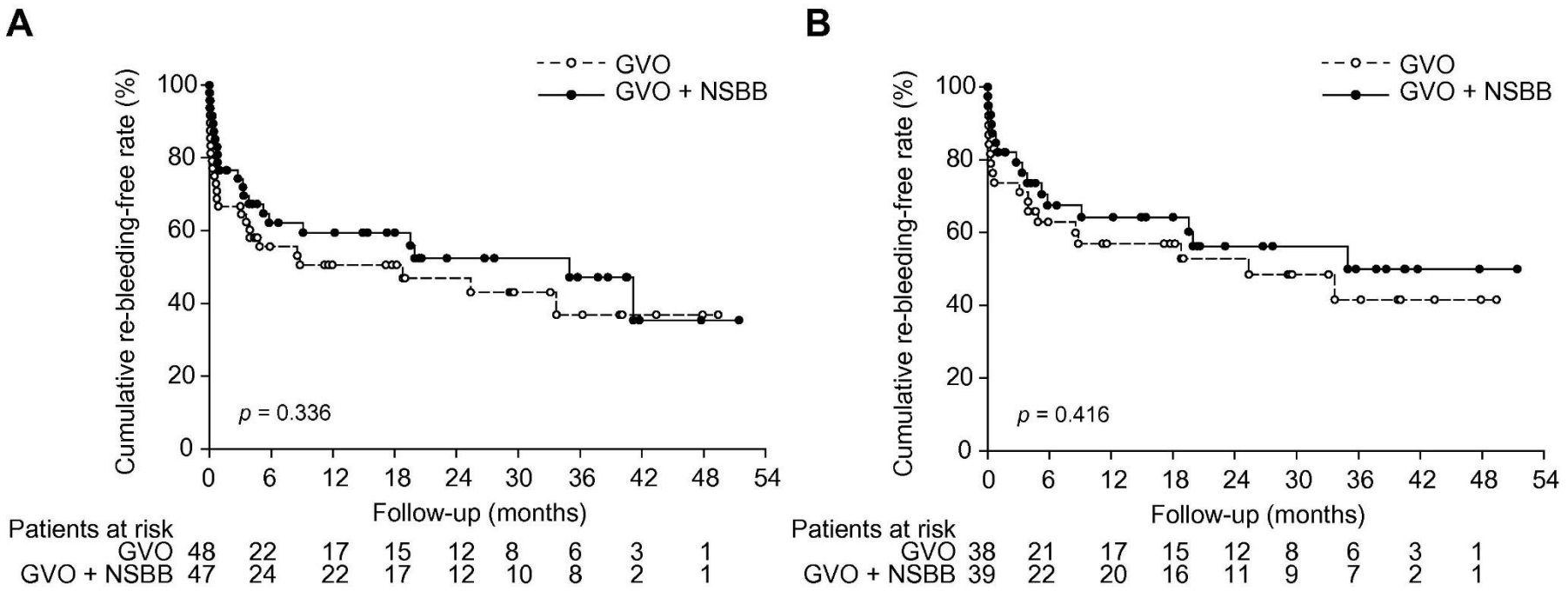


Fig. 2. Baseline and follow-up HVPG in cyanoacrylate group (A), beta-blockers group (B), and no-treatment group (C).

Mirsha, J Hepatol 2011

Efficacy of non-selective β-blockers as adjunct to endoscopic prophylactic treatment for gastric variceal bleeding: A randomized controlled trial

Hung-Hsu Hung[1,2,3], Chen-Jung Chang[1,2,4], Ming-Chih Hou[1,2,3,*], Wei-Chih Liao[1,2,5], Che-Chang Chan[1,2], Hui-Chun Huang[1,2], Han-Chieh Lin[1,2], Fa-Yauh Lee[1,2], Shou-Dong Lee[1,6,7]



EFFICACY OF ENDOSCOPIC TREATMENT

SCLEROTHERAPY – GASTRIC VARICES

Authors	Agent (%)	*n*	Success (%)	Rebleeding (%)	Complications
Gimson *et al.*, 1991	EO/glue	41	40	16	Ulcer 29%, perforation
Oho *et al.*, 1995	EO (5)	24	67	25	
Chang *et al.*, 1996	STD (1.5)	25	80	70	Ulcer 30%
Chang *et al.*, 1996	GW (50)	26	92	30	Ulcer 30%
Sarin *et al.*, 1997	AA (95)	18	67	34	Ulcer 100%
Ogawa *et al.*, 1999	EO (5)	21	81	100	–
Sarin *et al.*, 2002	AA (95)	8	62	25	–

EO = Ethanolamine oleate; STD = Sodium tetradecyl; GW = Glucose water; AA = Acetic acid; GVS = Gastric variceal sclerotherapy

OBTURATION – GASTRIC VARICES

Authors	Study design	*n*	Follow-up (month)	Hemostasis (%)	Rebleeding (%)	Mortality (%)
Seewald *et al.*, 2008	Retro	131	60	100	17	47
Fry *et al.*, 2008	Retro	33	9	88	15	18
Cheng *et al.*, 2007	Retro	635	3-115	95	8	7
Joo *et al.*, 2007	Retro	85	24	98	29	31
Kim *et al.*, 2006	Pros	86	11	93	16	45
Noophun *et al.*, 2005	Retro	24	8.3	71	10	6
Mahadeva *et al.*, 2003	Retro	23	6	96	35	24
Greenwald *et al.*, 2003	Pilot	44	12	95	20	23
Sarin *et al.*, 2002	RCT	9	15.4	89	22	11
Dhiman *et al.*, 2002	Retro	18	31.6	100	10.3	NA
Lo *et al.*, 2001	RCT	31	14	87	31	9
Huang *et al.*, 2000	Retro	90	13.2	100	23	39

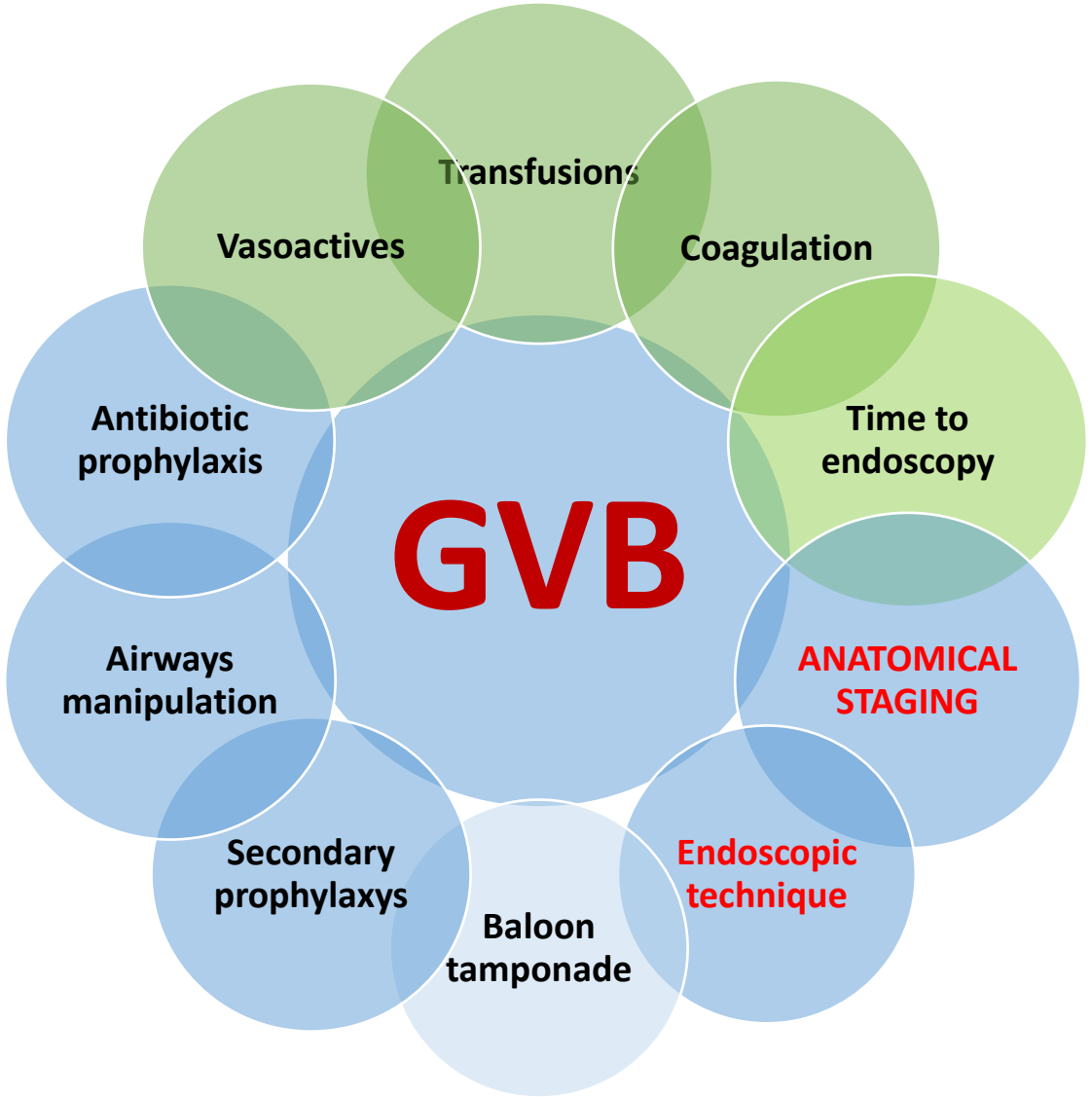
RCT = Randomized controlled trial; Retro = Retrospective; Pros = Prospective; NA = Not available; GVO = Gastric variceal obturation

CURRENT GUIDELINES

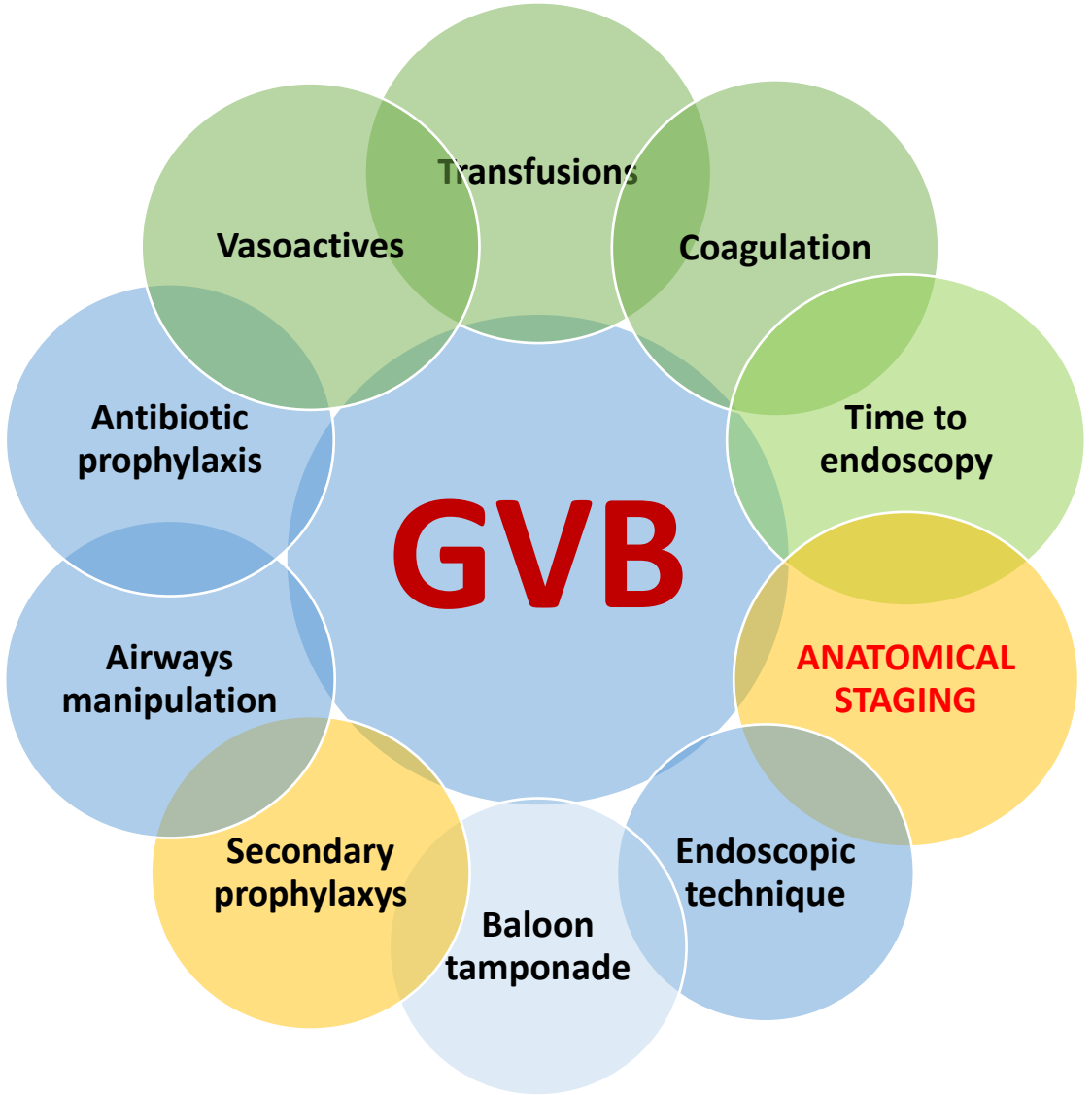
Treat similarly to oesophageal varices, use glue for GOV2, BRTO if GRS

EASL, BAVENO, AASLD

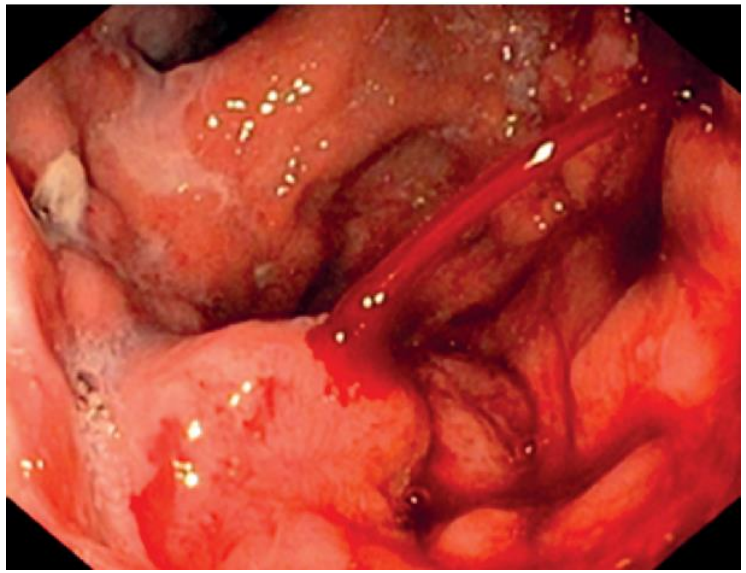
IMPROVE SURVIVAL IN GASTRIC VARICEAL BLEEDING

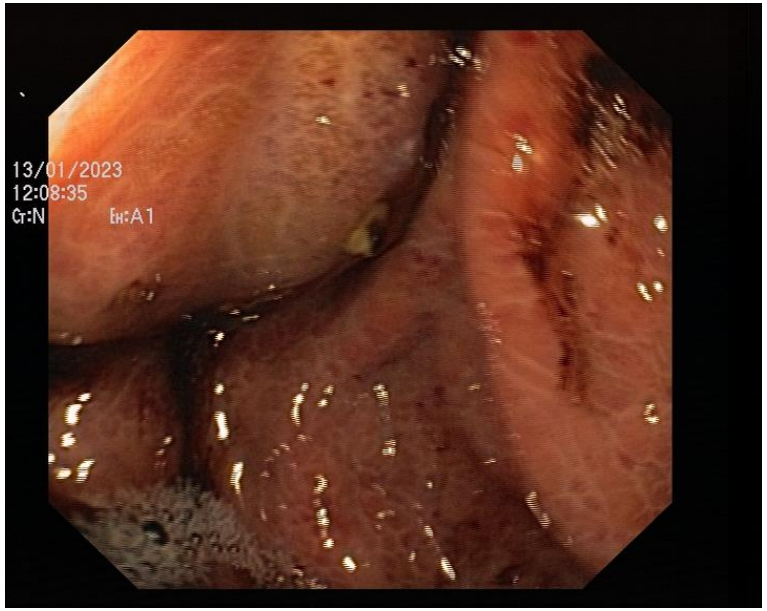


IMPROVE SURVIVAL IN GASTRIC VARICEAL BLEEDING



ENDOSCOPIC TREATMENT



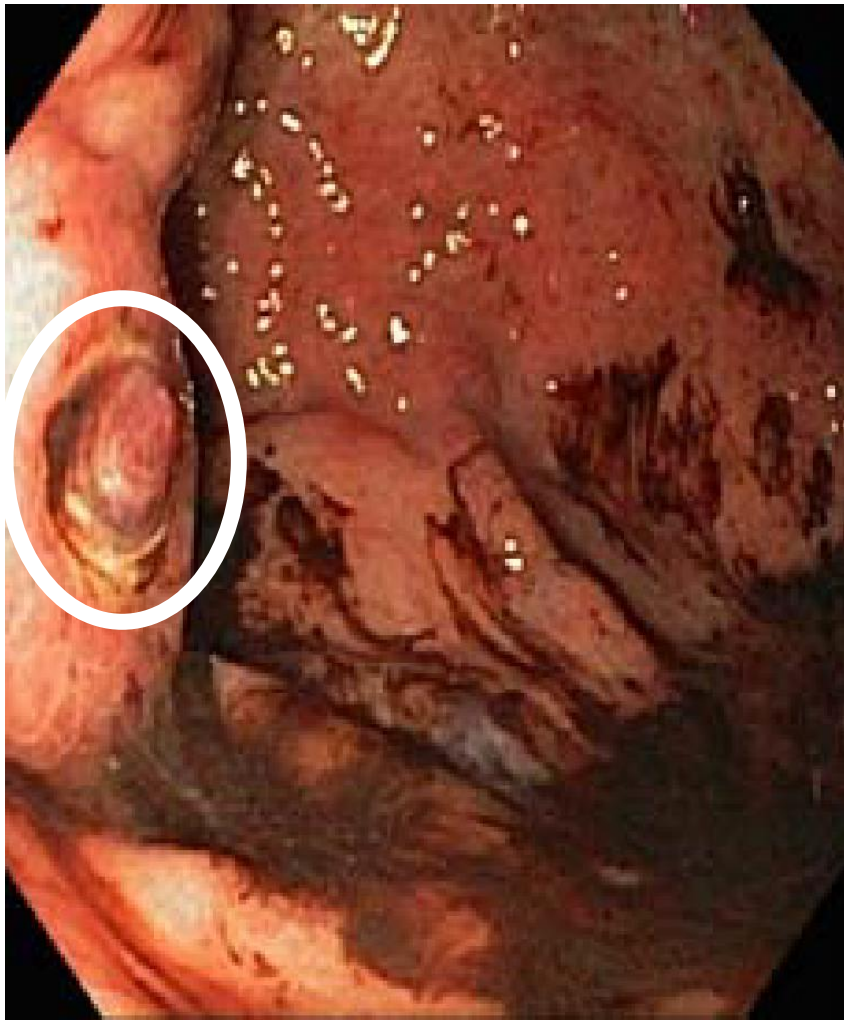


Prior to anatomical staging if:

-active bleeding

-endoscopic high risk signs

ENDOSCOPIC TREATMENT



DO NOT wash the fibrin clot

Prepare banding/looping only in GOV1

Glue injection....

N-BUTYL-2-CYANOACRYLATE TECHNIQUE

- **Straight n-Butyl-2- Cyanoacrylate**: to decrease ambolization
- **Not into the Fibrin Clot:** it may dislodge it. Wall is thinnest, fragile, and may be removed when pulling the needle
- **Few mm away from clot**
- **INTRAvariceal** (stick needle inside the varix): submucosal injection causes ulcer formation

ENDOSCOPIC TREATMENT

Not very frequent: 1%

Extra GI embolization

Extravascular injection

Local venous thrombosis

Ulcerations

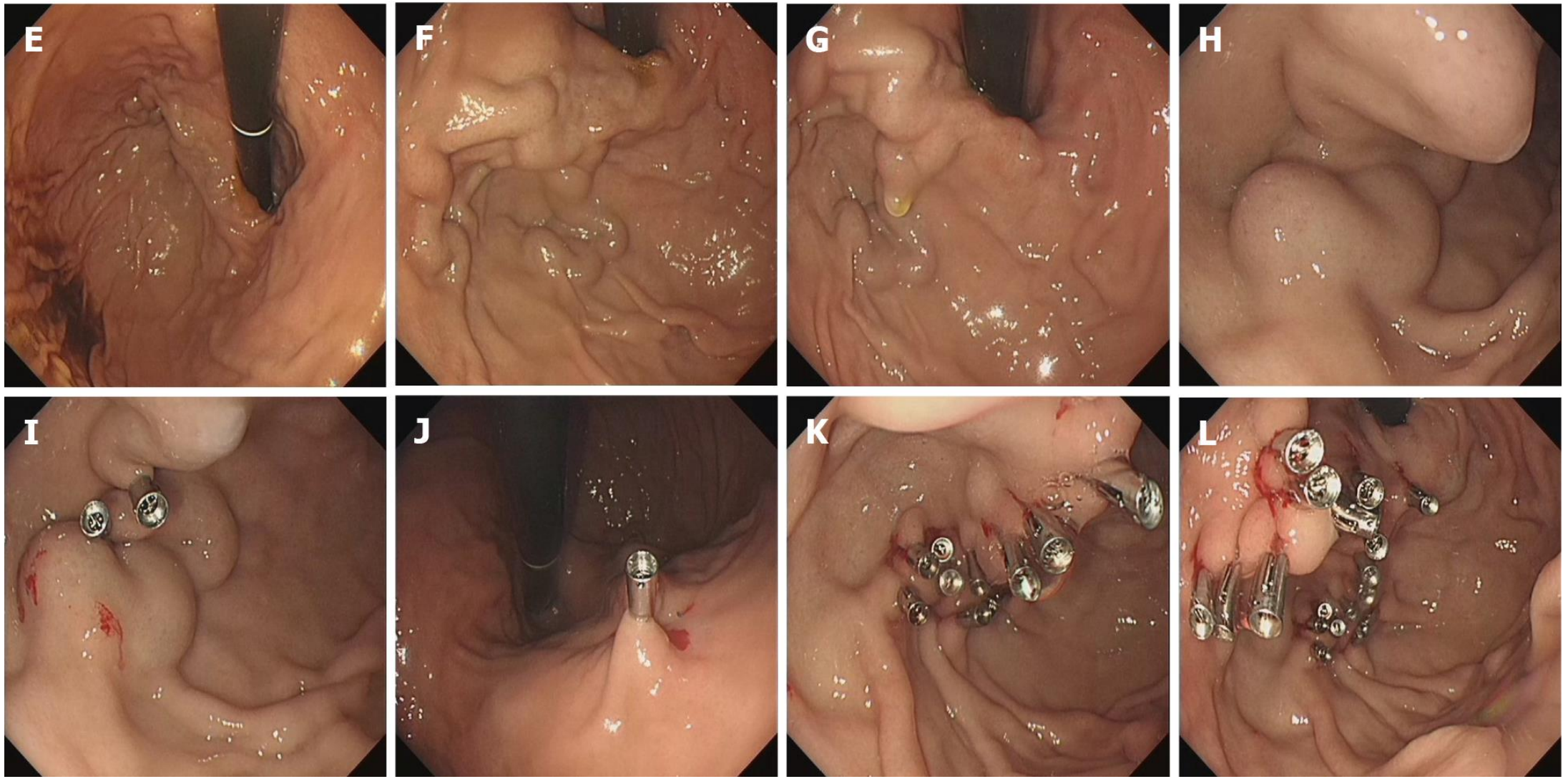
Stenosis

Sepsis

Risk factors for embolization are: excessive dilution, large volumes (> 1 mL/per injection), rapid injection.

Al-Hillawi, WJ Gastroint Surg 2016

CLIPPING OF GASTRIC VARICES



Yang, WJCG 2022

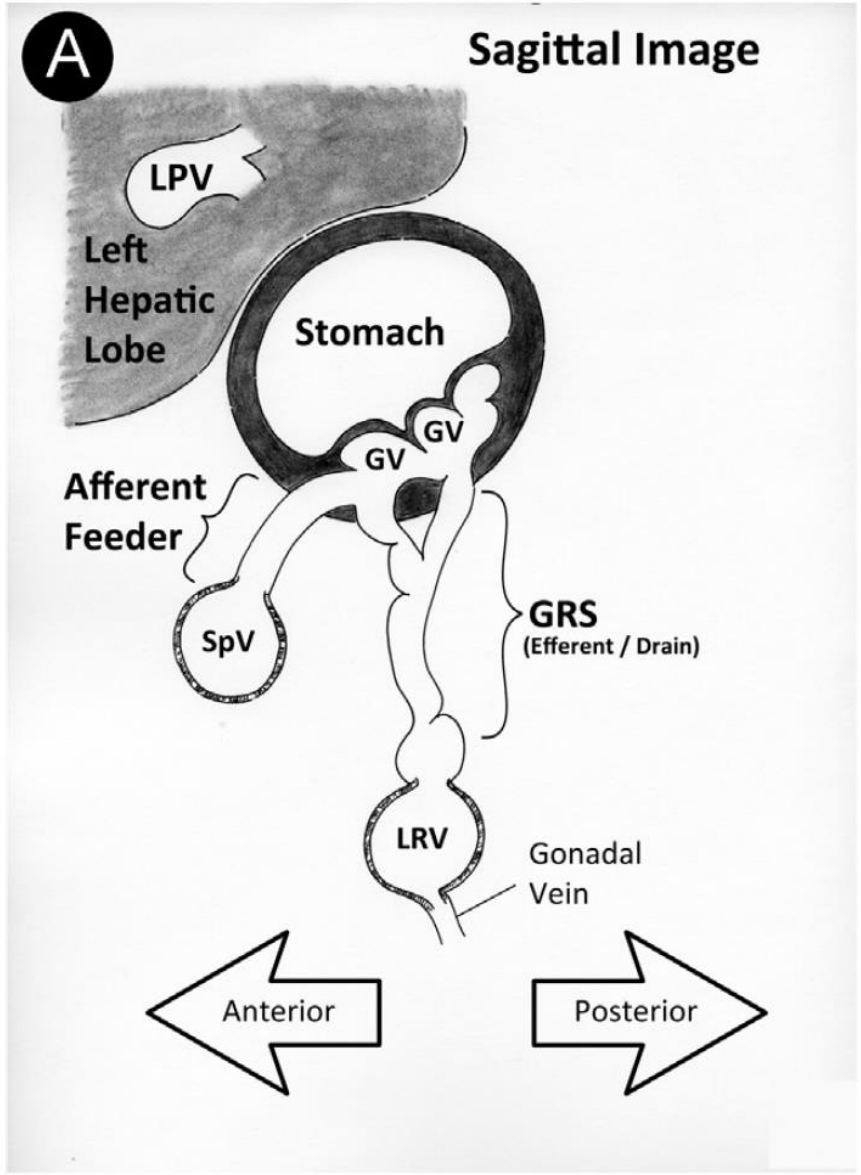
SPONTANEUS POSTO SYSTEMIC SHUNT AND GASTRIC VARICES

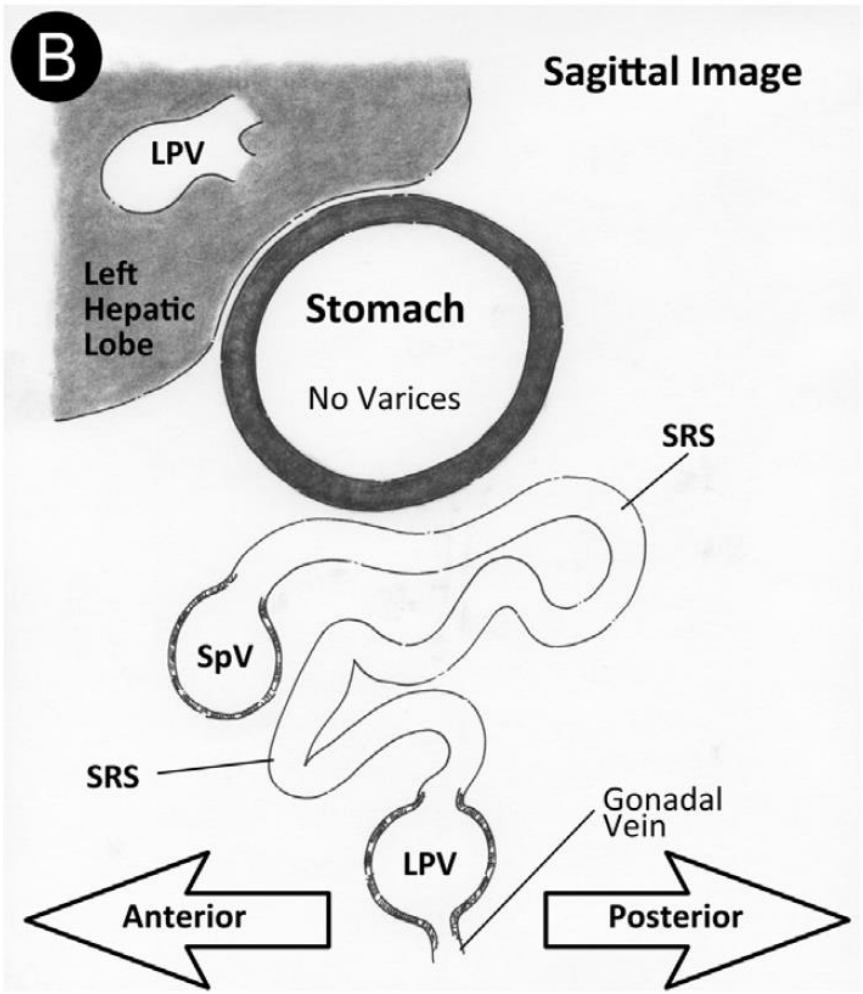
Table 2 Spontaneous PortoSystemic Shunts (SPSS)

SPSS	Portal Component	Systemic Component	Portal to Systemic	Systemic to Portal	Laterality
Paraumbilical vein	Left portal vein	Anterior abdominal wall veins iliofemoral veins	Yes	Yes	Right
Subhepatic portoiliac	Main portal vein	Iliac veins	Yes		Right
Mesorenal	Mesentric vein	Left renal vein	Yes		Central or right
Perisplenic splenoiliac	Splenic vein	Iliac vein	Yes		Left
Esophageal varices	Left gastric vein	Azygos-hemiazygos veins	Yes	Yes	Right
Gastrocaval	GVs or PGV	IVC	Yes		Left
Indirect gastrocaval	GVs or PGV or SGV	Inferior phrenic vein	Yes		Left
Gastrorenal	GVs or PGV or SGV	Left renal vein	Yes		Left
Splenorenal shunt	Spleen	Left renal vein	Yes		Left
Internal hemorrhoids	IMV	Iliac vein	Yes		Right

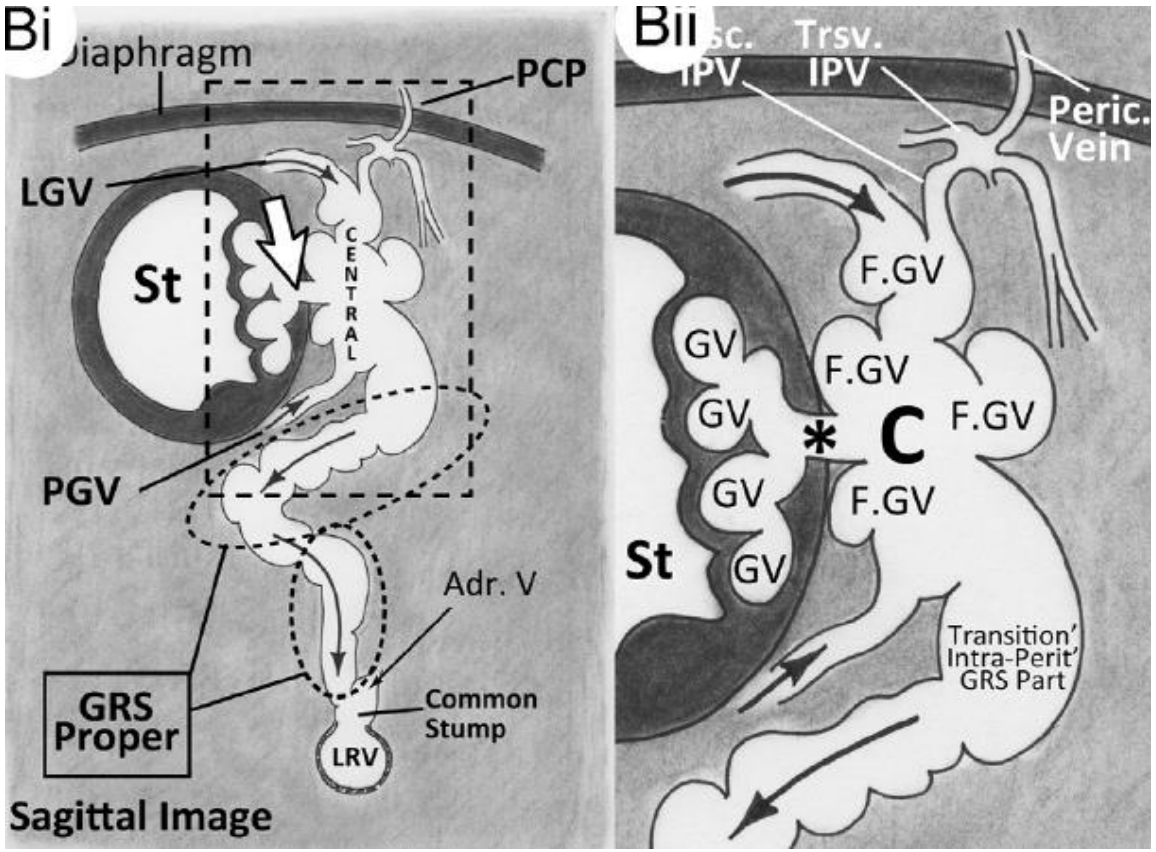
GVs, Gastric Varices; PGV, Posterior gastric vein; IMV, Inferior Mesenteric Vein; IVC, Inferior Vena Cava.

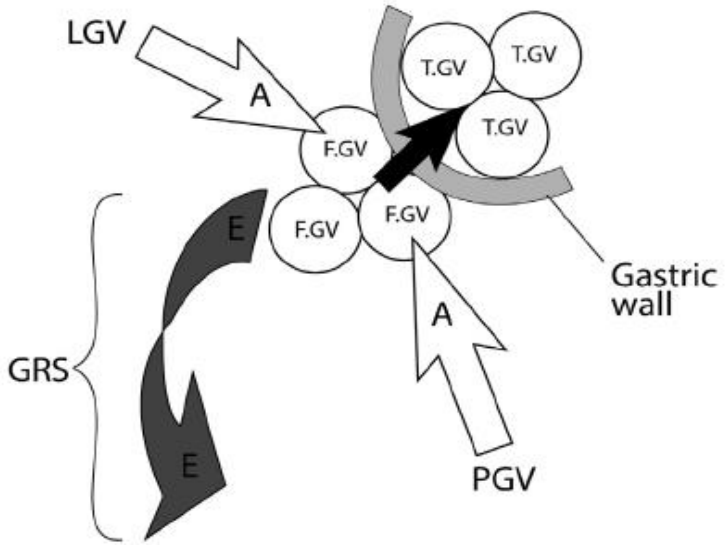
SPENORENAL VERSUS GASTRONENAL SHUNT





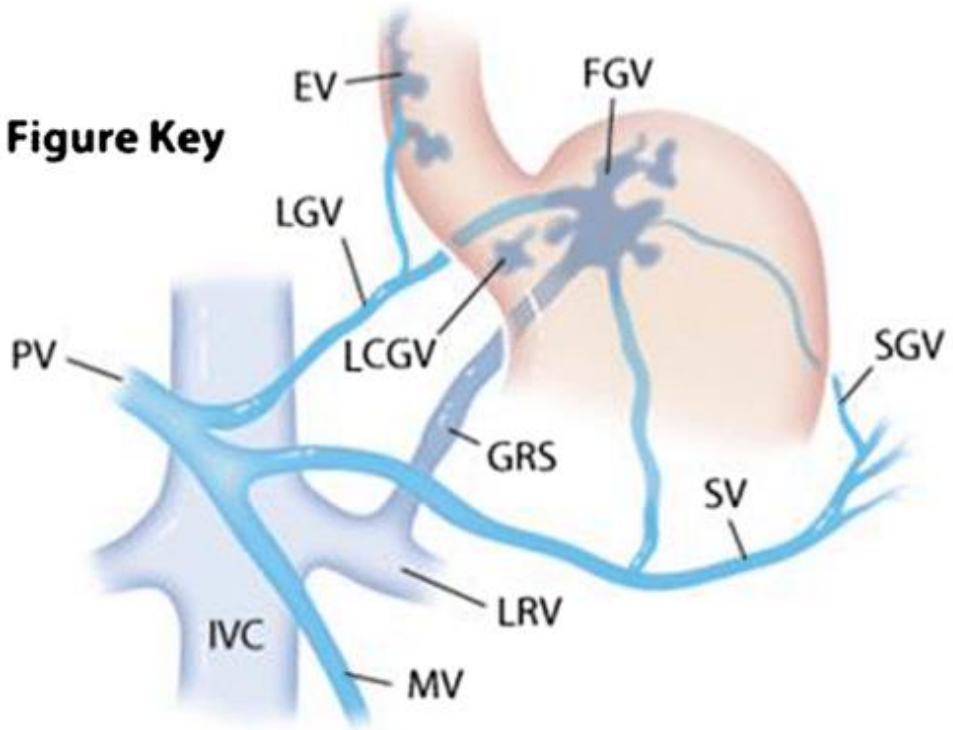
ANATOMICAL STAGING- SAAD CALDWELL CLASSIFICATION

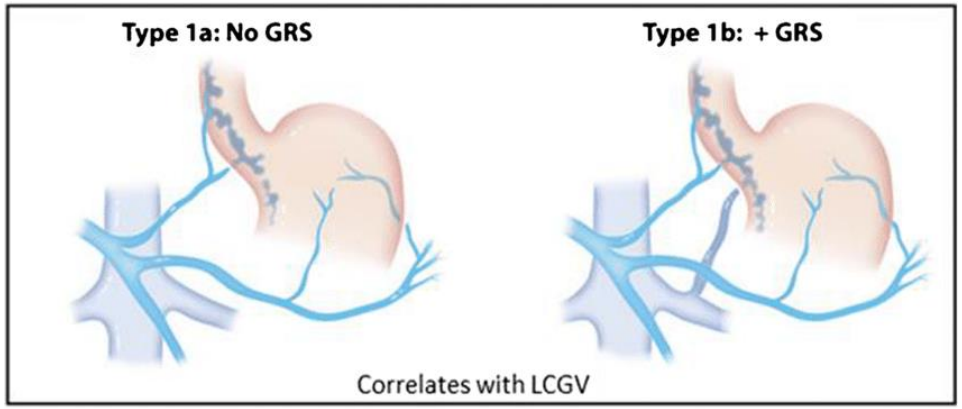


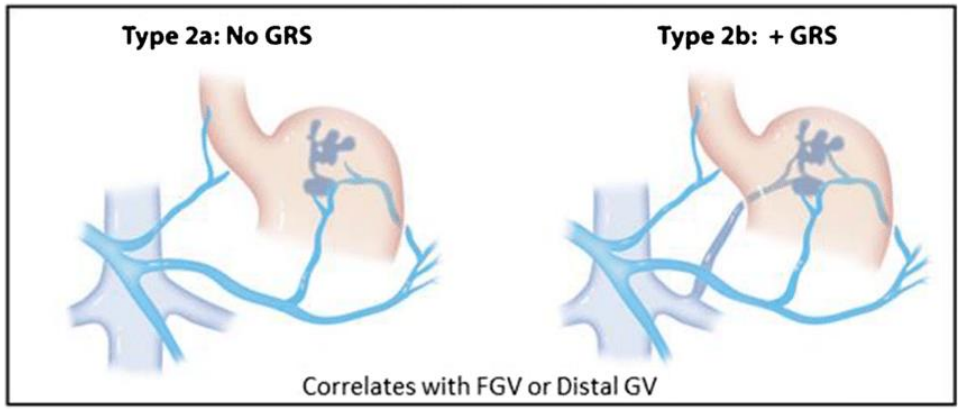


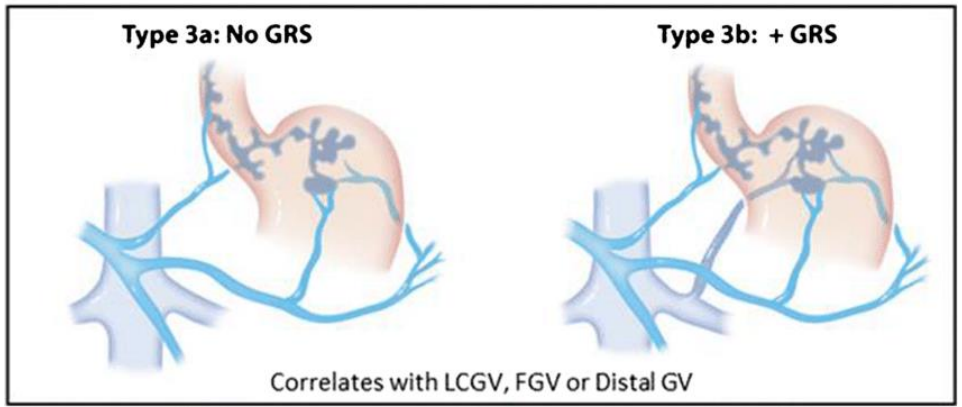
The gastric variceal system (GVS) is composed of the afferent portal venous feeders, the central variceal part, and the gastrorenal shunt (systemic venous drainer(s)).

ANATOMICAL STAGING- SAAD CALDWELL CLASSIFICATION



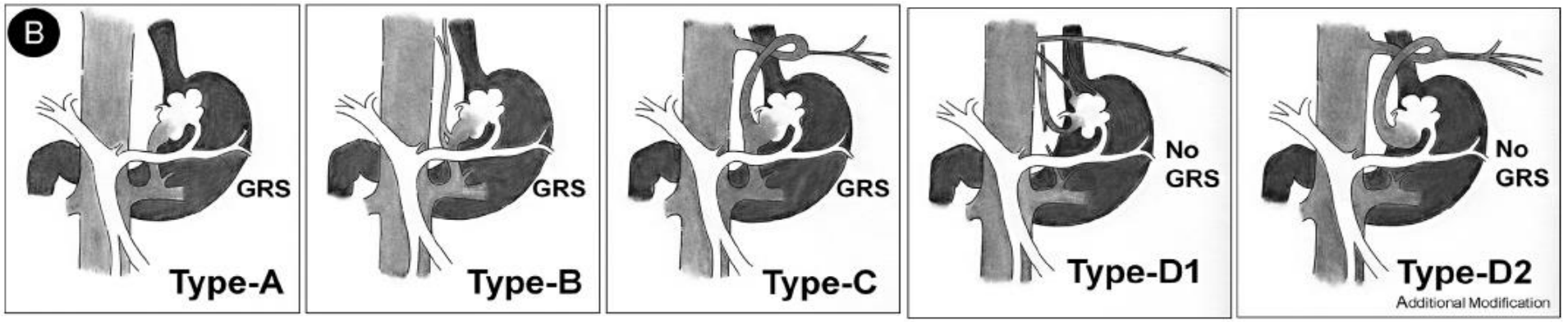




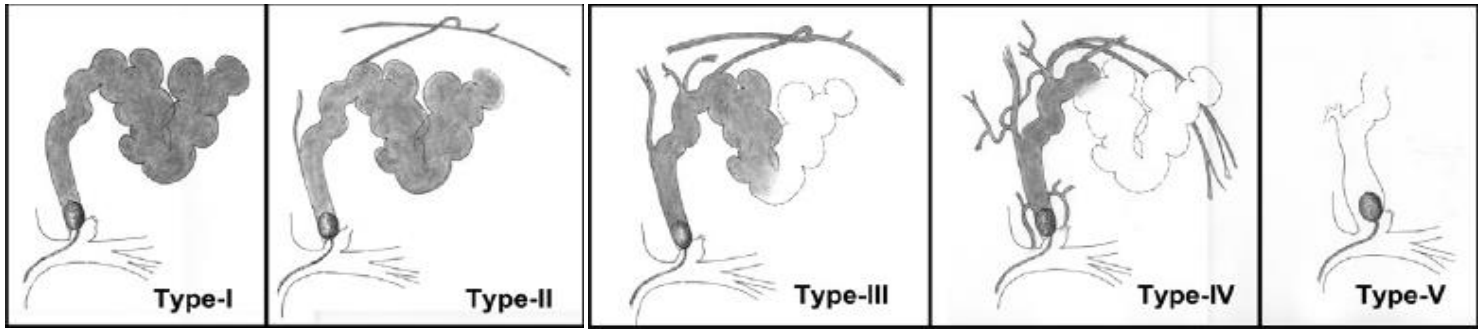


HEMODYNAMIC CLASSIFICATION

Kiyosue: systemic venous drenaige

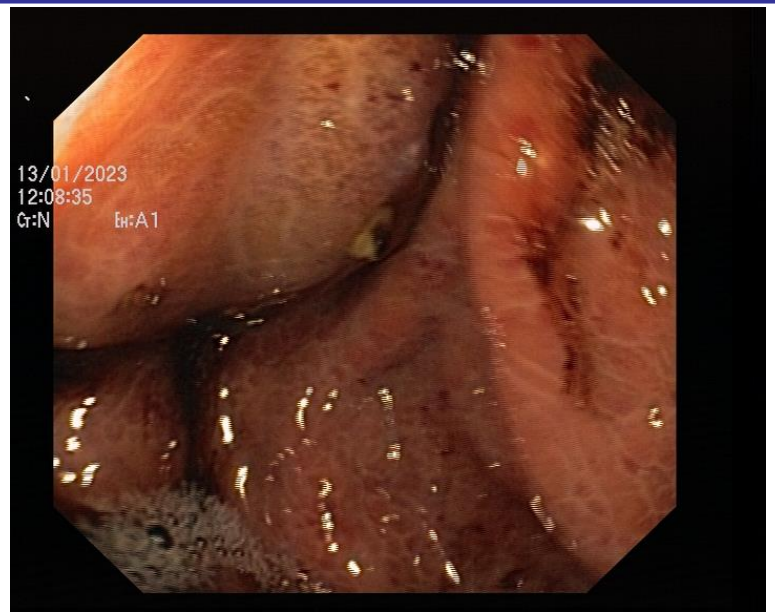


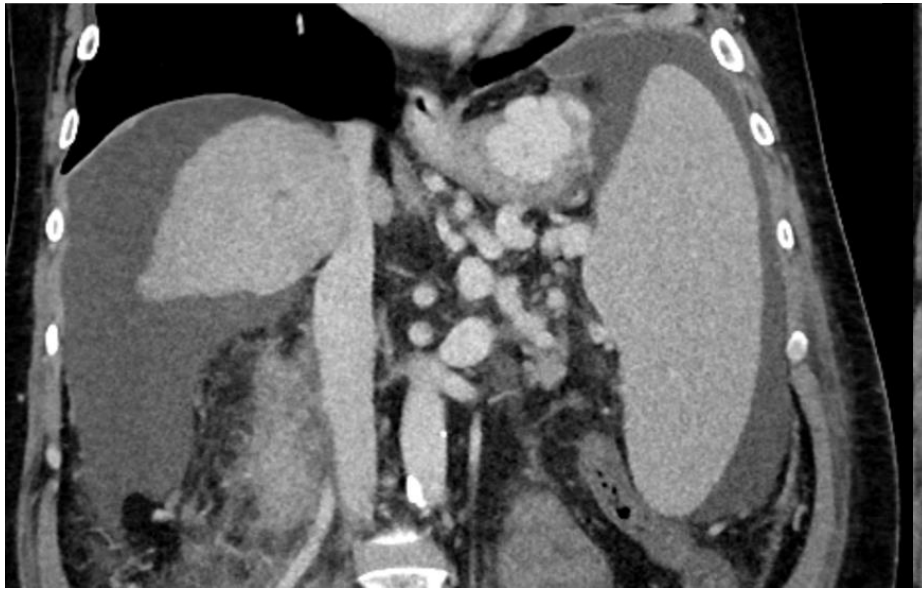
Hirota: BORV

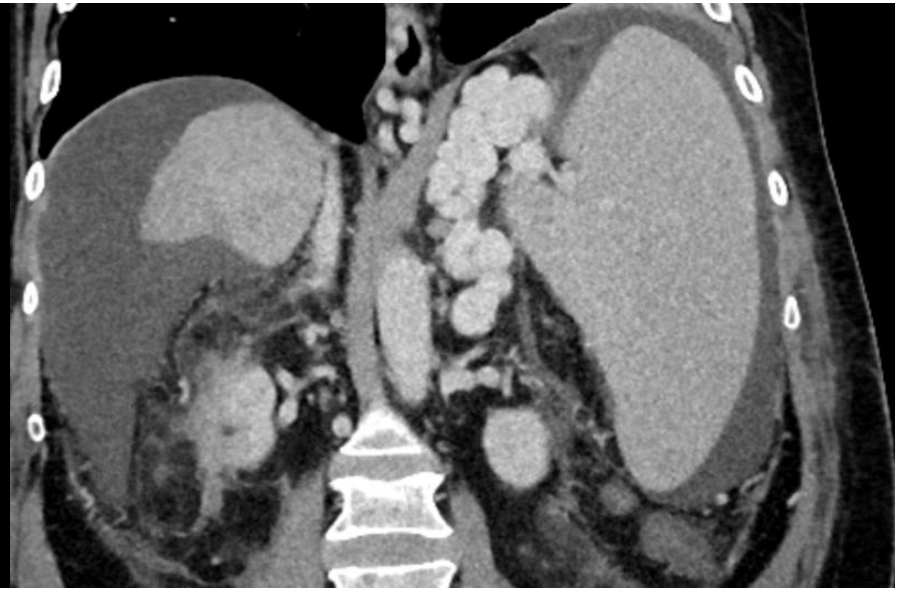


WHY IS IMPORTANT?

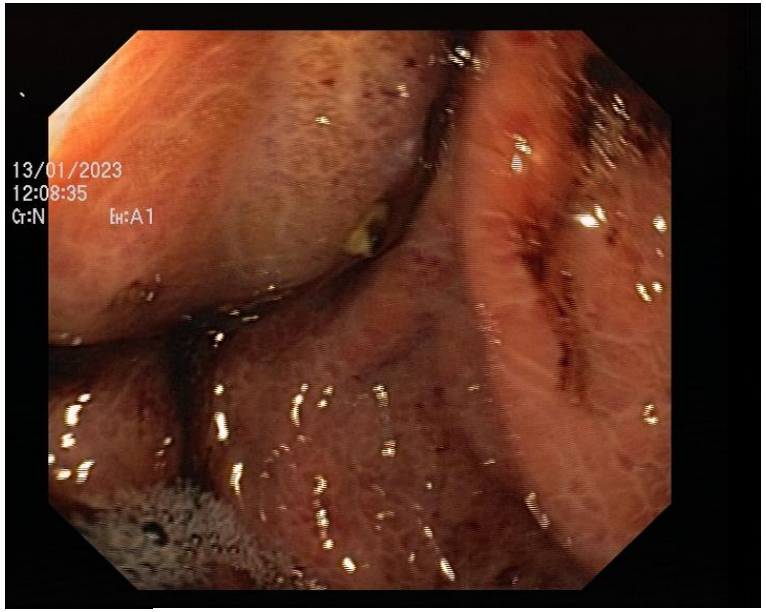
CLINICAL CASE

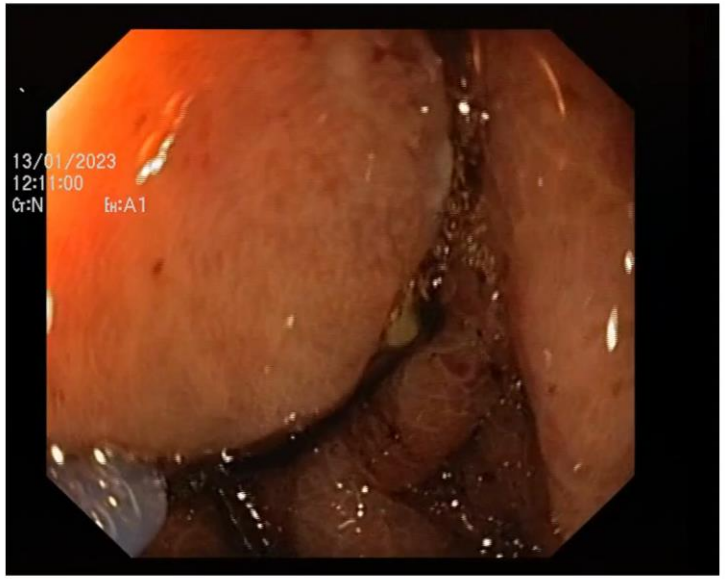


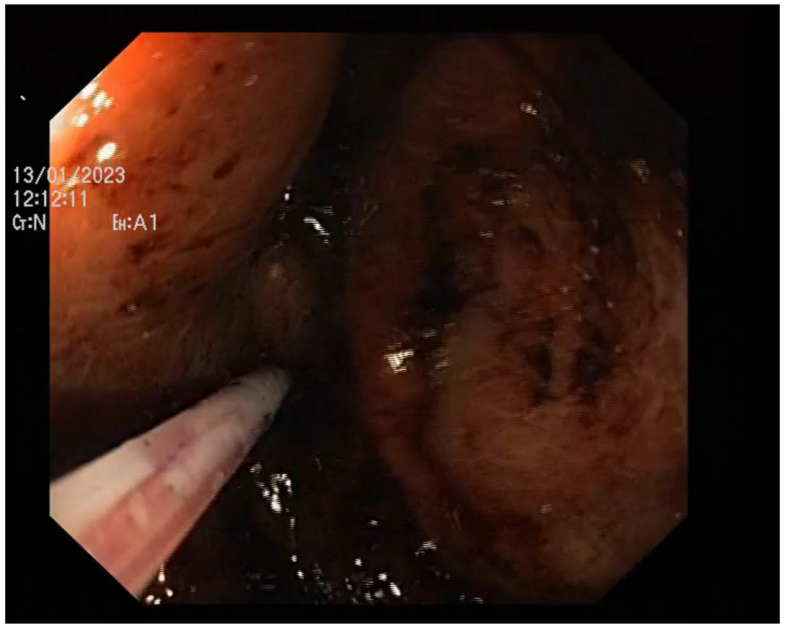




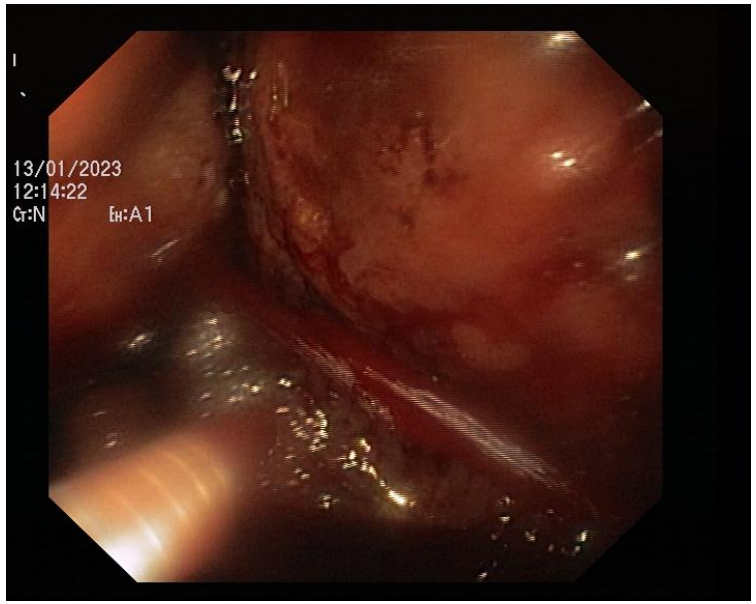
CLINICAL CASE

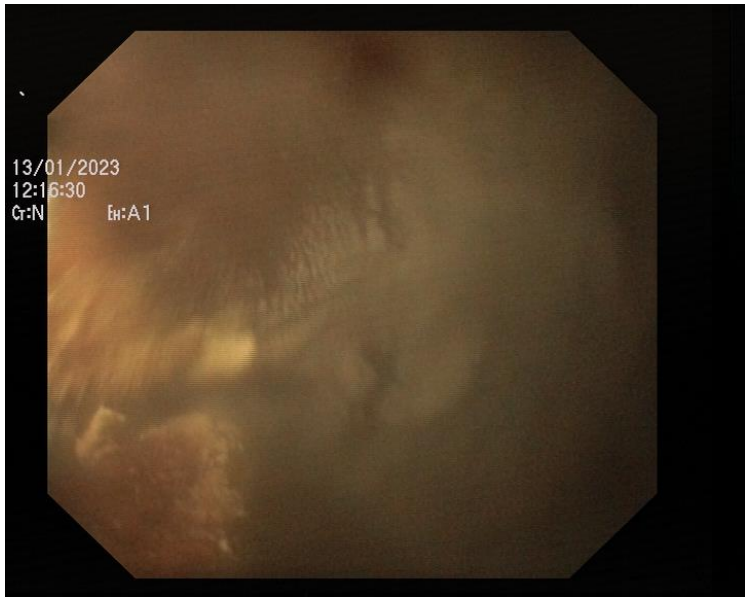






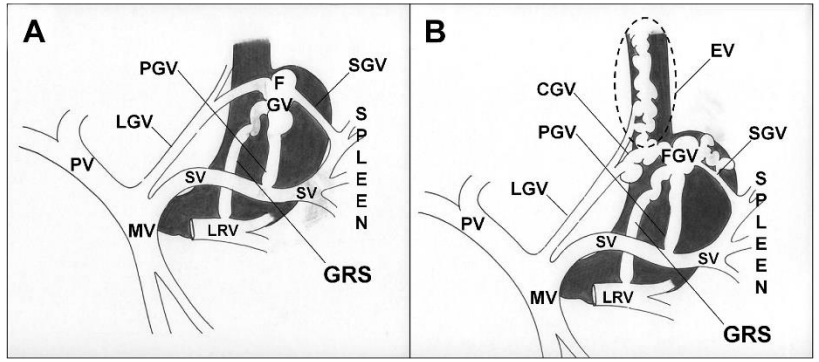
CLINICAL CASE





TEMPORARY HEMOSTASIS ACHIEVED WITH HEMOSTATIC POWDER AS RESCUE THERAPY

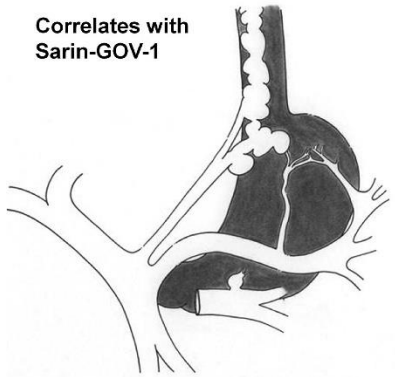
EXITUS



Ci

Type 1a: No GRS

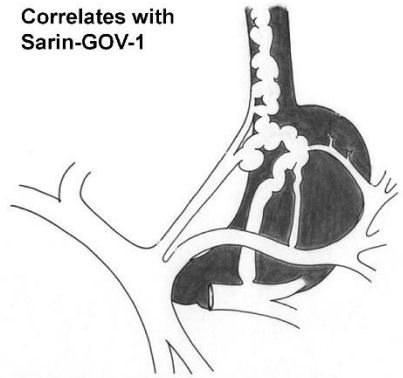
Correlates with
Sarin-GOV-1



Cii

Type 1b: + GRS

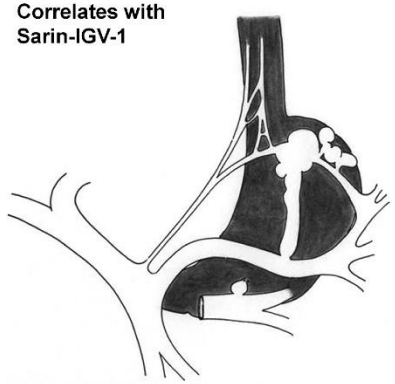
Correlates with
Sarin-GOV-1



Di

Type 2a: No GRS

Correlates with
Sarin-IGV-1



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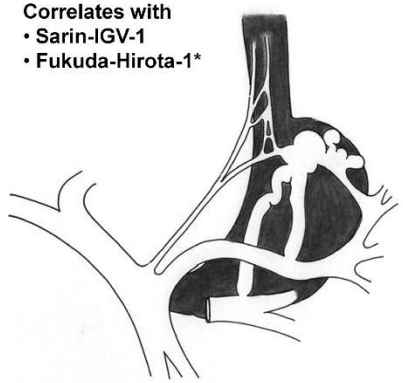
Type 2b: + GRS

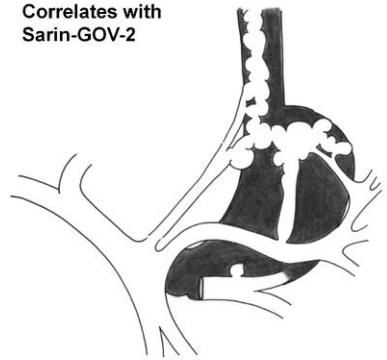
Correlates with
- Sarin-IGV-1
- Fukuda-Hirota-1*



Ei

Type 3a: No GRS

Correlates with
Sarin-GOV-2



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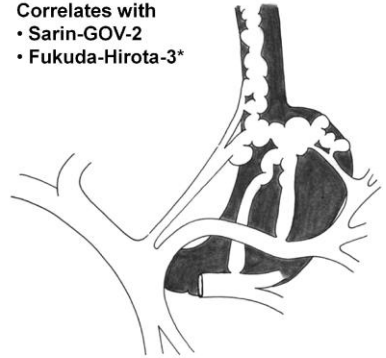
Type 3b: + GRS

Correlates with
- Sarin-GOV-2
- Fukuda-Hirota-3*



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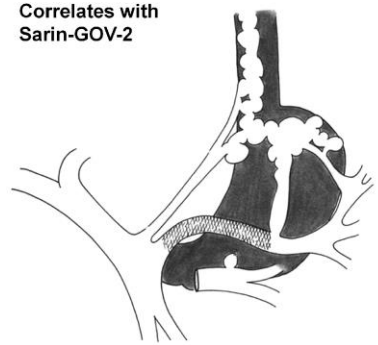
Type 4a: No GRS

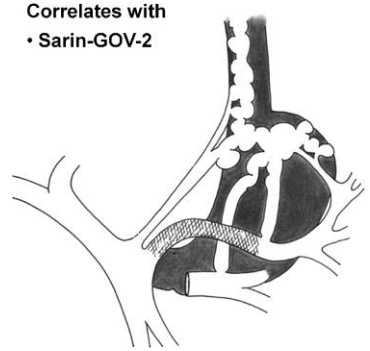
Correlates with
Sarin-GOV-2



Fii

Type 4b: + GRS

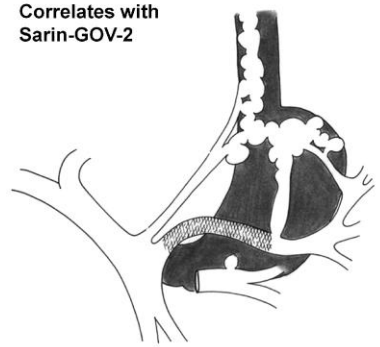
Correlates with
- Sarin-GOV-2



Gi

Type 4a: No GRS

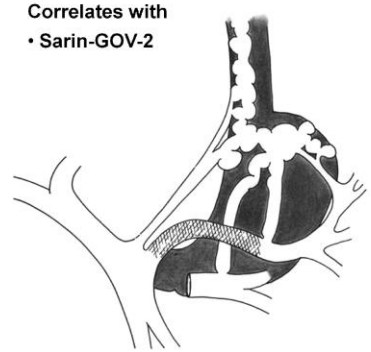
Correlates with
Sarin-GOV-2



Gii

Type 4b: + GRS

Correlates with
- Sarin-GOV-2



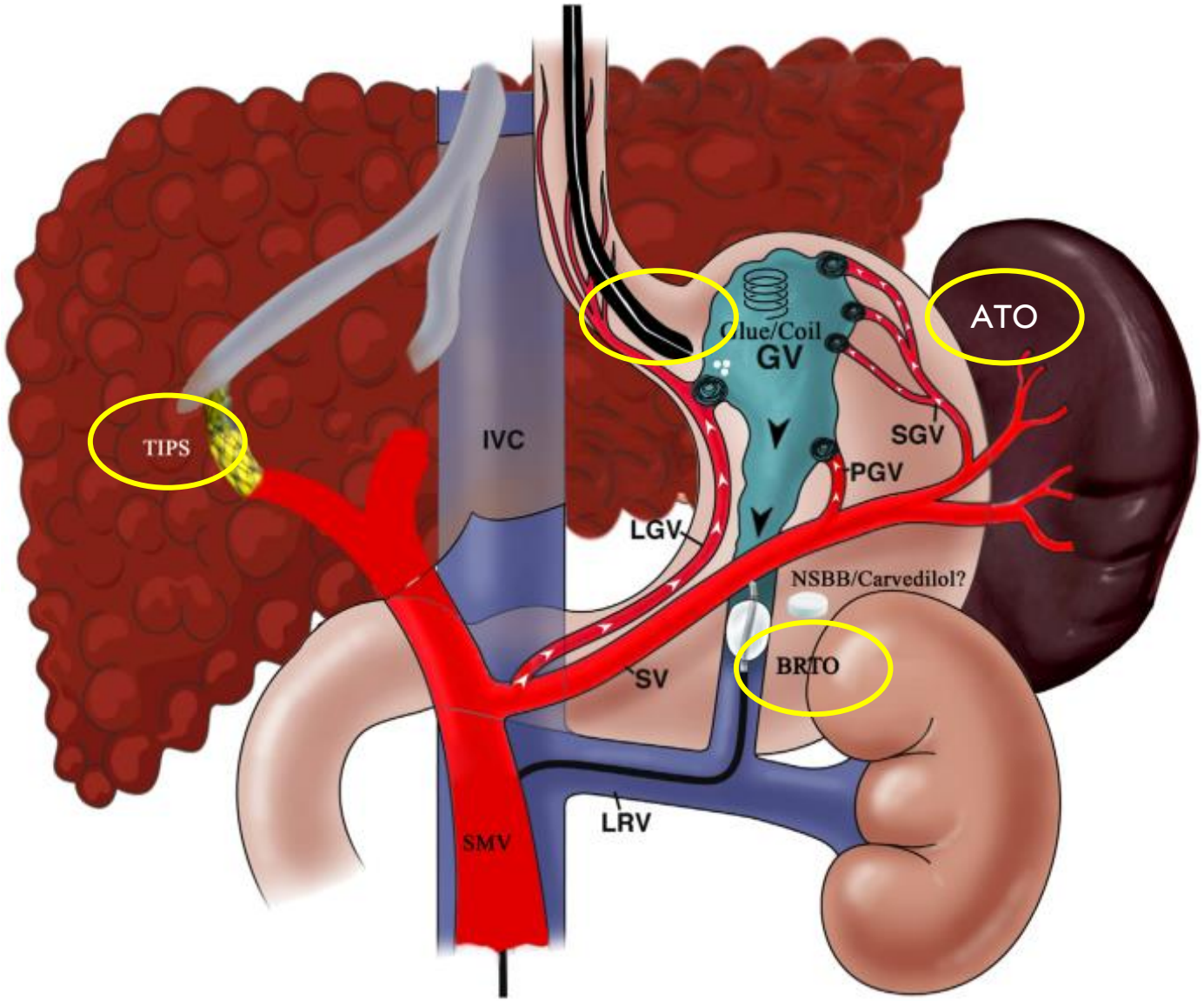
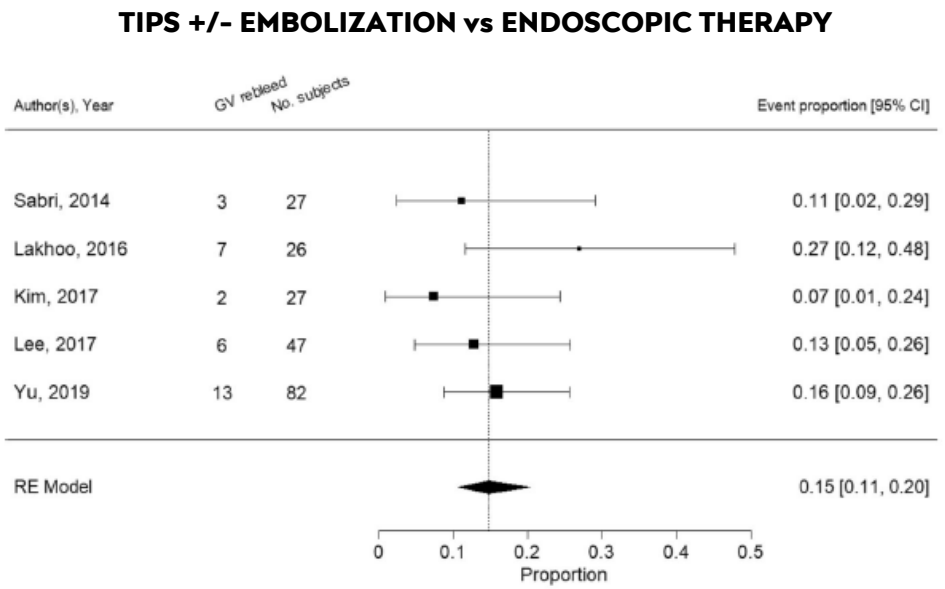

ATO
Glue/Coil
GV
SGV
PGV
TIPS
IVC
LGV
NSBB/Carvedilol?
BRTO
SV
LRV
SMV

Table 6 Management Options for Variceal Types (Saad-Caldwell Classification)

Saad GV Classification Type	Management Opinion
Type-1a	TIPS TIPS will probably decompress the EVs and the GVs in a similar way as if the EVs were solitary (please see the right vs left shunt discussion [Fig. 13].)
Type-1b	TIPS + trans-TIPS BATO or BRTO ± TIPS TIPS will possibly decompress these GVs + EVs, however, its effectiveness depends on the size of the GRS or portosystemic gradient BRTO would be the primary treatment if the hepatic reserve is poor (MELD > 18) (please see the Indications & Contraindications section of the article in this issue of Conventional-BRTO)
Type-2a	TIPS + trans-TIPS BATO or BATO alone If the portosystemic gradient is high and the hepatic reserve is adequate (MELD < 18) a TIPS + BATO sclerosis is appropriate If the gradient is low or the MELD is high or both, a BATO or unconventional BRTO (if feasible) can be performed
Type-2b	BRTO TIPS will probably fail to decompress the GVs (please see the right vs left shunt discussion [Fig. 13], particularly in the presence of a large GRS.)
Type-3a	TIPS + BATO TIPS will decompress the EVs and partly decompress this complex (multifeeder) GV system (please see the right vs left shunt discussion [Fig. 13], particularly in the presence of a large GRS.). BATO will help obliterate the remainder of the GVs and eliminate the competing shunt (GRS). This is providing that the hepatic reserve is adequate (MELD < 18)
Type-3b	BRTO + TIPS BRTO alone will aggravate the already present EVs. TIPS will help decompress the EVs and part of the GVs This is providing that the hepatic reserve is adequate (MELD < 18)
Type-4a	Splenic embolization + TIPS The spleen is emptying via the gastroesophageal varices. The splenic embolization reduces the splenic outflow, which is the primary problem. The TIPS will help decompress the EVs. Obliterating the varices may close the outflow of the spleen and cause the development of ectopic varices
Type-4b	Splenic embolization + BRTO ± TIPS The spleen is emptying via the gastroesophageal varices. The splenic embolization reduces the splenic outflow, which is the primary problem. The TIPS will help decompress the EVs if they cannot be controlled endoscopically. Obliterating the varices may close the outflow of the spleen and cause the development of ectopic varices. If BRTO is to be performed a large part of the spleen needs to be embolized (this can be staged)

MELD, model for end-stage liver disease (score).
Note: BATO or BRTO refers to "obliteration" that means sclerosis. Coil embolization of varices is not obliteration; it is embolization.

OBTURATION VS TIPS



TIPS: 16% rebleeding

Paleti, J Clin Gastroenterol 2020; Alqadi, Cardiovasc Intervent Radiology 2021

TIPS FOR GASTRIC VARICES

- 6 TIPS studies, 147 patients
- Control of acute bleeding 95%
- Rebleeding rate 30% before 2000 and 11%-20% afterwards
- Gastric varices bleed at a lower hepatic–portal venous gradient (mean gradient 11.2mmHg for gastric, 15.5mmHg for oesophagal) (Sanyal 1997)
- Moreover, four of the six unresolved gastric varices (75%) had a pre-TIPS portosystemic gradient of <12 mm mercury (Saad 2010).

RCT CYANOACRYLATE VS BRTO

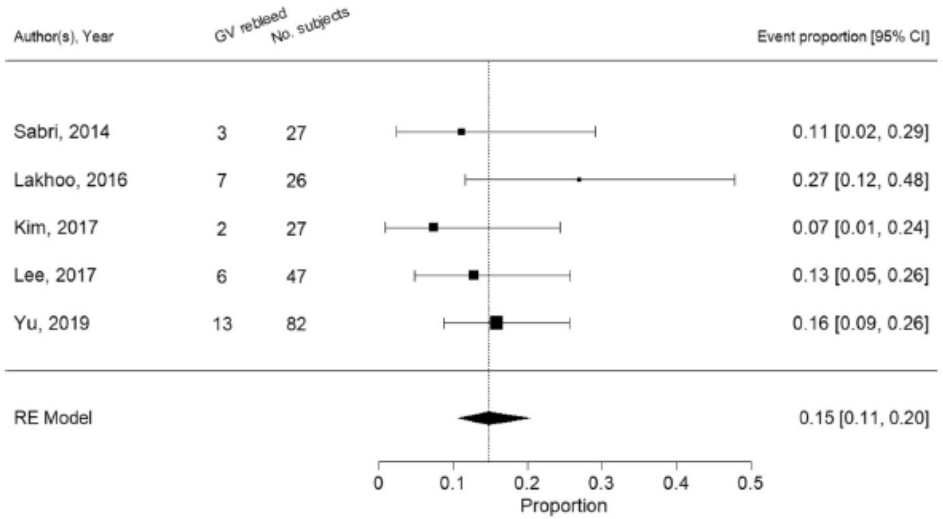
Cause of rebleeding	Cyanoacrylate	BRTO
Patients	11/32	2/32
Source of rebleeding	5	
GVs	5	0
GV ulcer	1	0
EVs	3	2
Undetermined	2	
Major	10	2
Minor	1	0

NO DIFFERENCE IN SURVIVAL

Luo et al Hepatology 2023

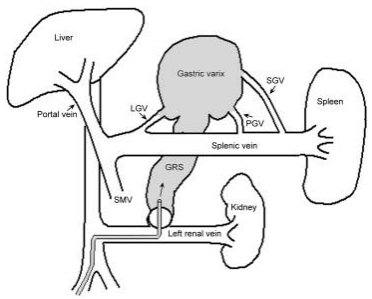
OBTURATION VS TIPS

TIPS +/- EMBOLIZATION vs ENDOSCOPIC THERAPY



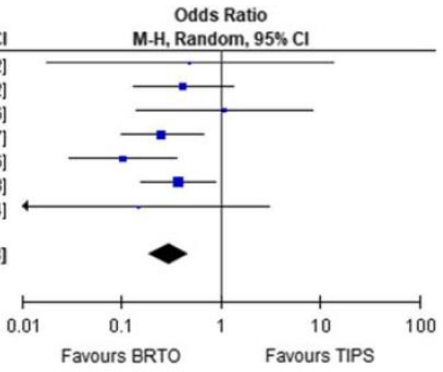
TIPS: 16% rebleeding

TIPS VS BRTO



Study or Subgroup	Favours BRTO Events	Total	TIPS Events	Total	Weight	Odds Ratio M-H, Random, 95% CI
Choi 2003	0	8	1	13	2.1%	0.49 [0.02, 13.52]
Gimm 2018	96	157	15	19	17.6%	0.42 [0.13, 1.32]
Kim SK 2017	2	25	2	27	5.6%	1.09 [0.14, 8.36]
Lee DY 2014	8	86	14	49	25.4%	0.26 [0.10, 0.67]
Lee JY 2012	4	68	12	32	15.1%	0.10 [0.03, 0.36]
Lee SJ 2017	13	95	14	47	31.6%	0.37 [0.16, 0.88]
Sabri 2014	0	23	3	27	2.5%	0.15 [0.01, 3.04]
Total (95% CI)		**462**		**214**	**100.0%**	**0.30 [0.18, 0.48]**
Total events	123		61			

Heterogeneity: Tau² = 0.00; Chi² = 5.31, df = 6 (P = 0.50); I² = 0%
Test for overall effect: Z = 4.93 (P < 0.00001)



Paleti, J Clin Gastroenterol 2020; Alqadi, Cardiovasc Intervent Radiology 2021

BALLOON-OCCLUDED RETROGRADE TRANSVENOUS OBLITERATION

1016 patients BRTO (24 uncontrolled studies: 23 retrospectives, 1 prospective)

Complete obliteration: 87%-100%

5 yrs survival at 5 yrs (10 studies) 39%-85 % (median 65.4 ± 13.5 %).

Rebleeding risk 1, 5, 8 years :

- secondary prophylaxis: 2.4%, 2.4%, 14.3%
- primary prophylaxis: 0%, 0%, 0%,

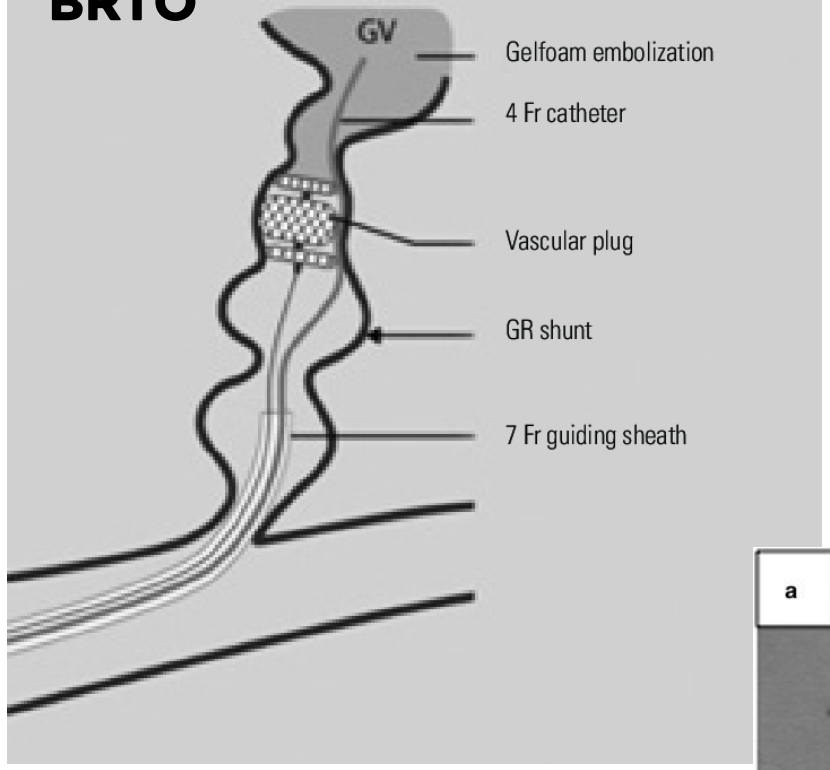
(Akahoshi 2008)

Possible worsening of portal hypertension!

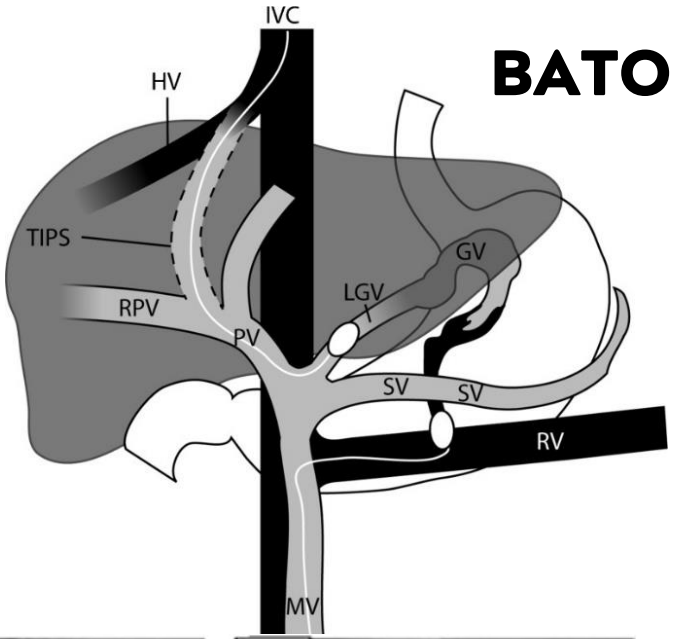
Amongst 78 patients, 29 worsening EVs, 1, 3, e 5 yrs 27%, 58%, and 66%,

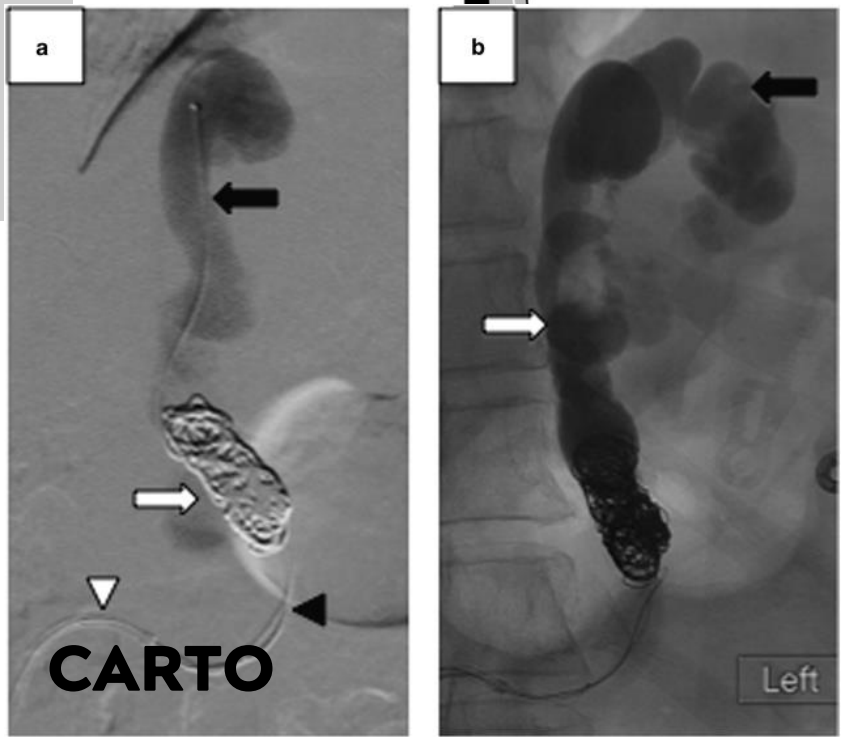
(Ninoi 2005)

VASCULAR PLUG ASSISTED BRTO

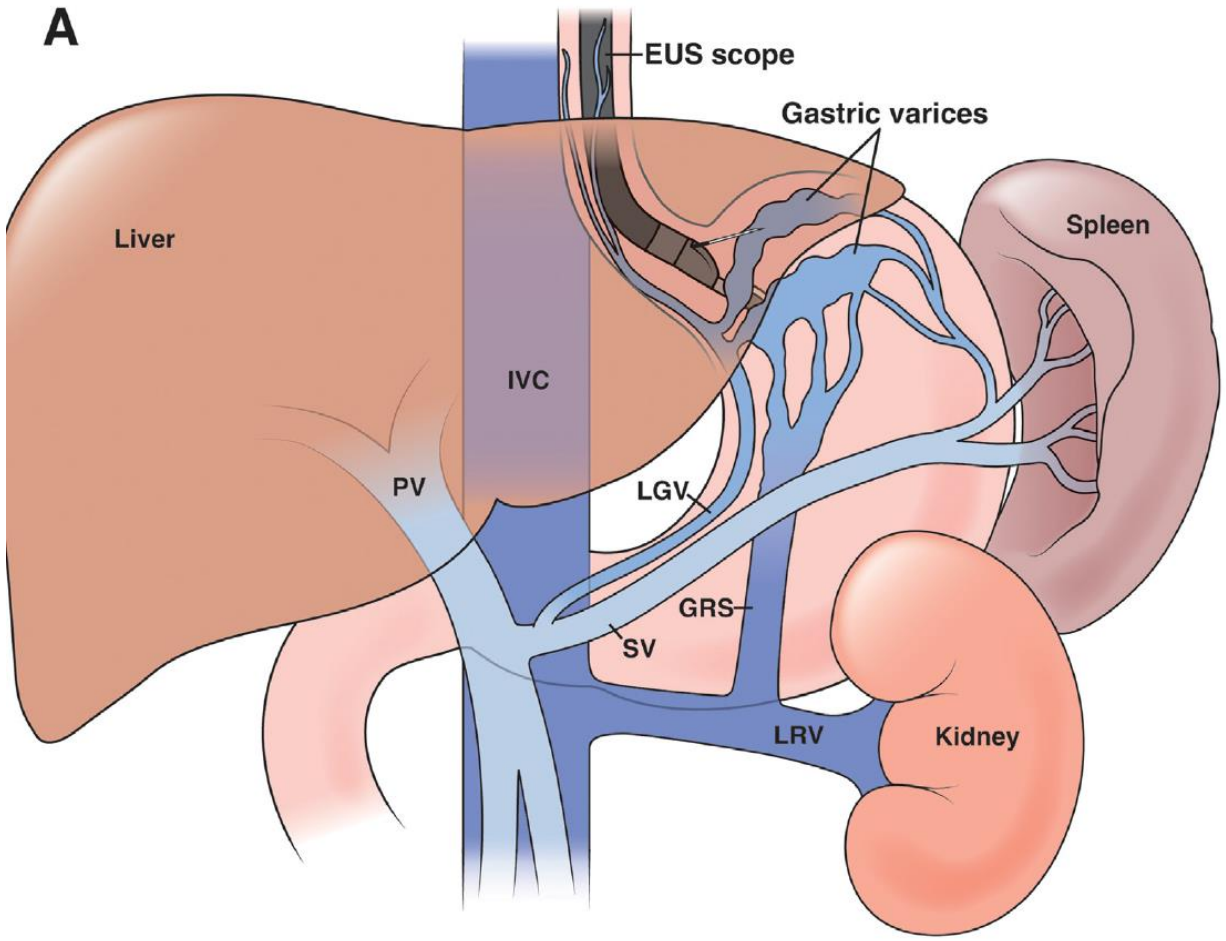


BATO





EUS TREATMENT GASTRIC VARICES



- Cyanoacrilate
- Coils
- Combined Cya+Coils
- Gelfoam
- Tornado- and Nester-type coils

Ryou et al. Clinical Gastroenterology and Hepatology 2023

US GUIDED ENDOSCOPIC TREAMENT

- Published literature involves small numbers of patients
- Meta-analysis comparing EUS-guided treatment of GV vs. direct endoscopic injection using data from 23 studies
  - No difference in pooled treatment efficacy
  - Pooled rate of GV obliteration significantly higher in the EUS group (84% vs 63%; P = 0.02)
  - No difference in early rebleeding
  - Lower rate of late rebleeding and GV recurrence in the EUS group

Mohan et al. Endoscopy 2020

EUS TREATMENT OF GASTRIC VARICES

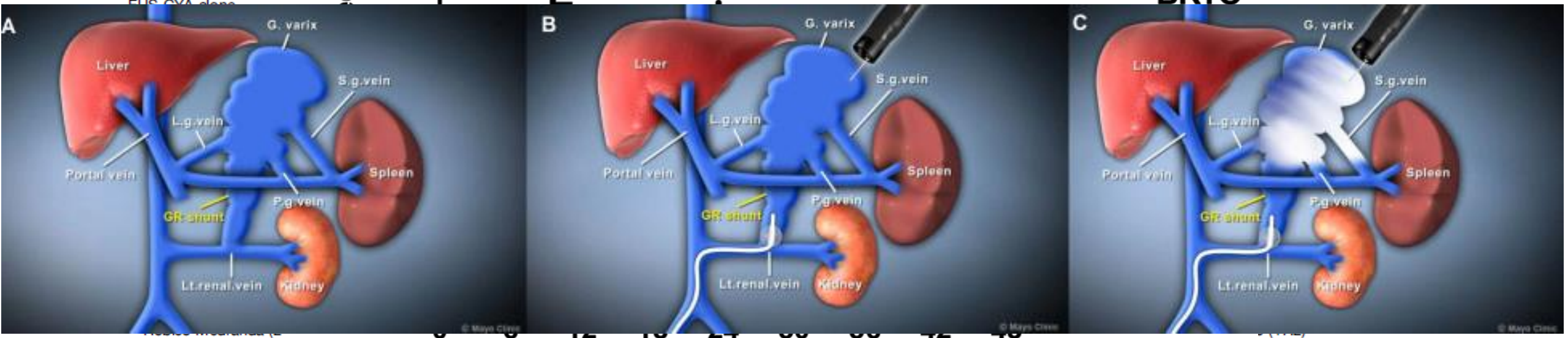
Supplementary Tabl

eeding

ate of leeding | All-Cause Mortality

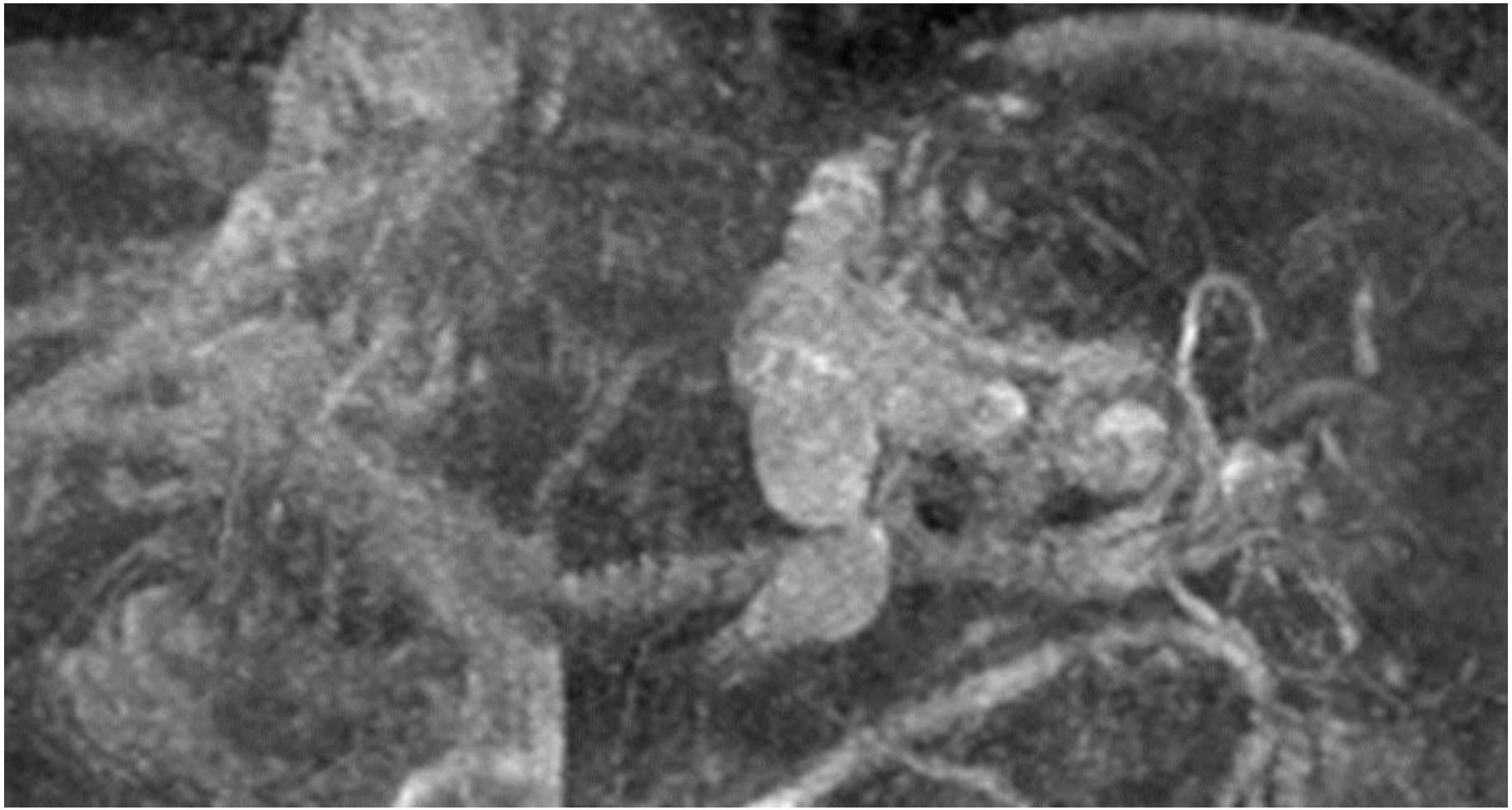
Fujii-Lau (2016)[7] — 3 (33) —
Bazarbashi (2020)[12,] — 10 (0) 1/10 (10)
Frost (2018)[14] — 3 (33) —

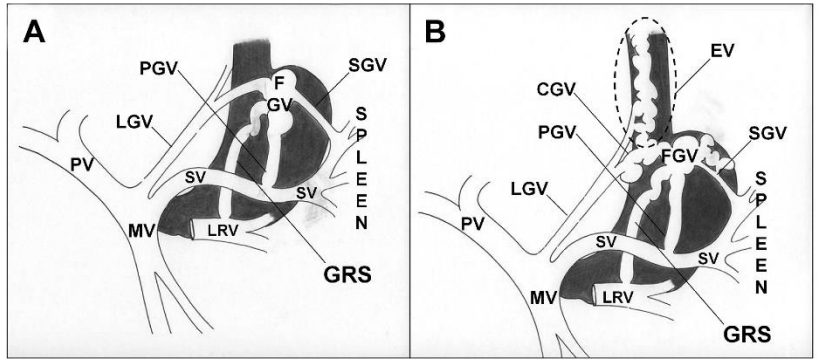
Values are mean ± SD or r
CYA = cyanoacrylate; EUS
[a]All had asymptomatic pul



Ryou et al. Clinical Gastroenterology and Hepatology 2023; Zying et al Endoscopic ultrasound 2023; Bazerbachi, Gastroenterology Report 2021

CLINICAL CASE - ATO

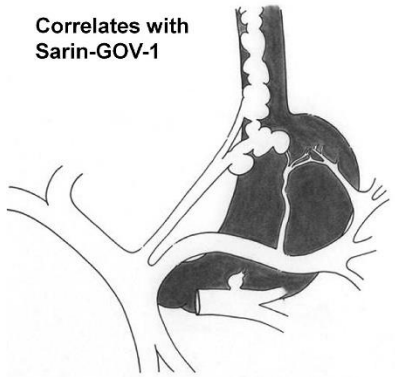




Ci

Type 1a: No GRS

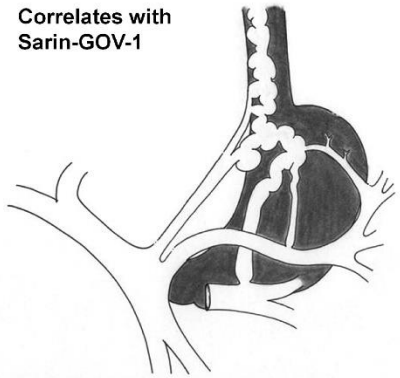
Correlates with
Sarin-GOV-1



Cii

Type 1b: + GRS

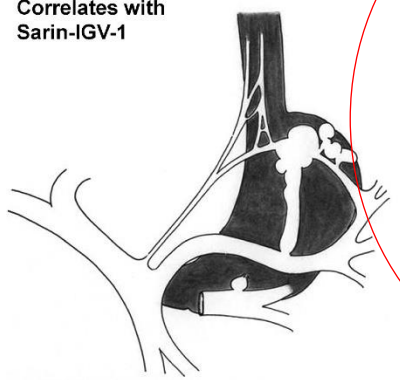
Correlates with
Sarin-GOV-1



Di

Type 2a: No GRS

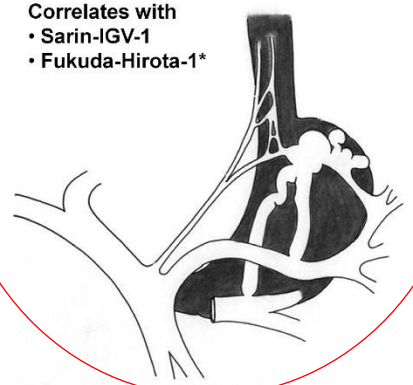
Correlates with
Sarin-IGV-1



Dii

Type 2b: + GRS

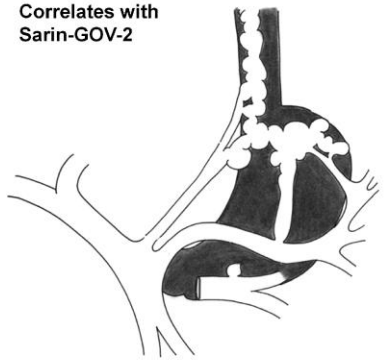
Correlates with
- Sarin-IGV-1
- Fukuda-Hirota-1*



Ei

Type 3a: No GRS

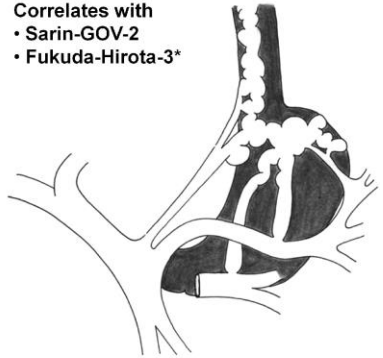
Correlates with
Sarin-GOV-2



Eii

Type 3b: + GRS

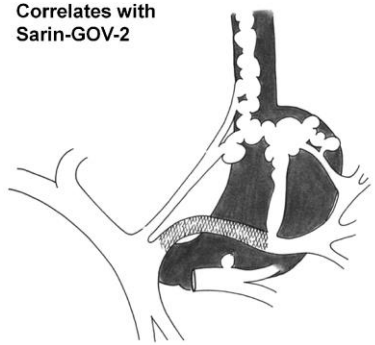
Correlates with
- Sarin-GOV-2
- Fukuda-Hirota-3*



Fi

Type 4a: No GRS

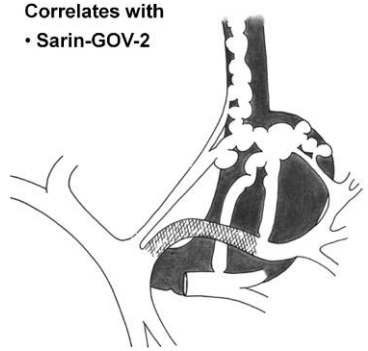
Correlates with
Sarin-GOV-2



Fii

Type 4b: + GRS

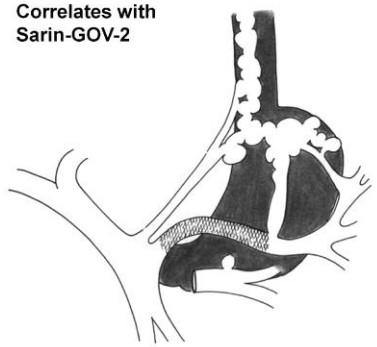
Correlates with
- Sarin-GOV-2



Gi

Type 4a: No GRS

Correlates with
Sarin-GOV-2



Gii

Type 4b: + GRS

Correlates with
- Sarin-GOV-2

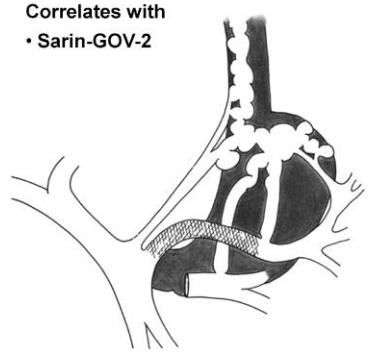


Table 6 Management Options for Variceal Types (Saad-Caldwell Classification)

Saad GV Classification Type	Management Opinion
Type-1a	TIPS TIPS will probably decompress the EVs and the GVs in a similar way as if the EVs were solitary (please see the right vs left shunt discussion [Fig. 13].)
Type-1b	TIPS + trans-TIPS BATO or BRTO ± TIPS TIPS will possibly decompress these GVs + EVs, however, its effectiveness depends on the size of the GRS or portosystemic gradient BRTO would be the primary treatment if the hepatic reserve is poor (MELD > 18) (please see the Indications & Contraindications section of the article in this issue of Conventional-BRTO)
Type-2a	TIPS + trans-TIPS BATO or BATO alone If the portosystemic gradient is high and the hepatic reserve is adequate (MELD < 18) a TIPS + BATO sclerosis is appropriate If the gradient is low or the MELD is high or both, a BATO or unconventional BRTO (if feasible) can be performed
Type-2b Correlates with IGV	BRTO TIPS will probably fail to decompress the GVs (please see the right vs left shunt discussion [Fig. 13], particularly in the presence of a large GRS.)
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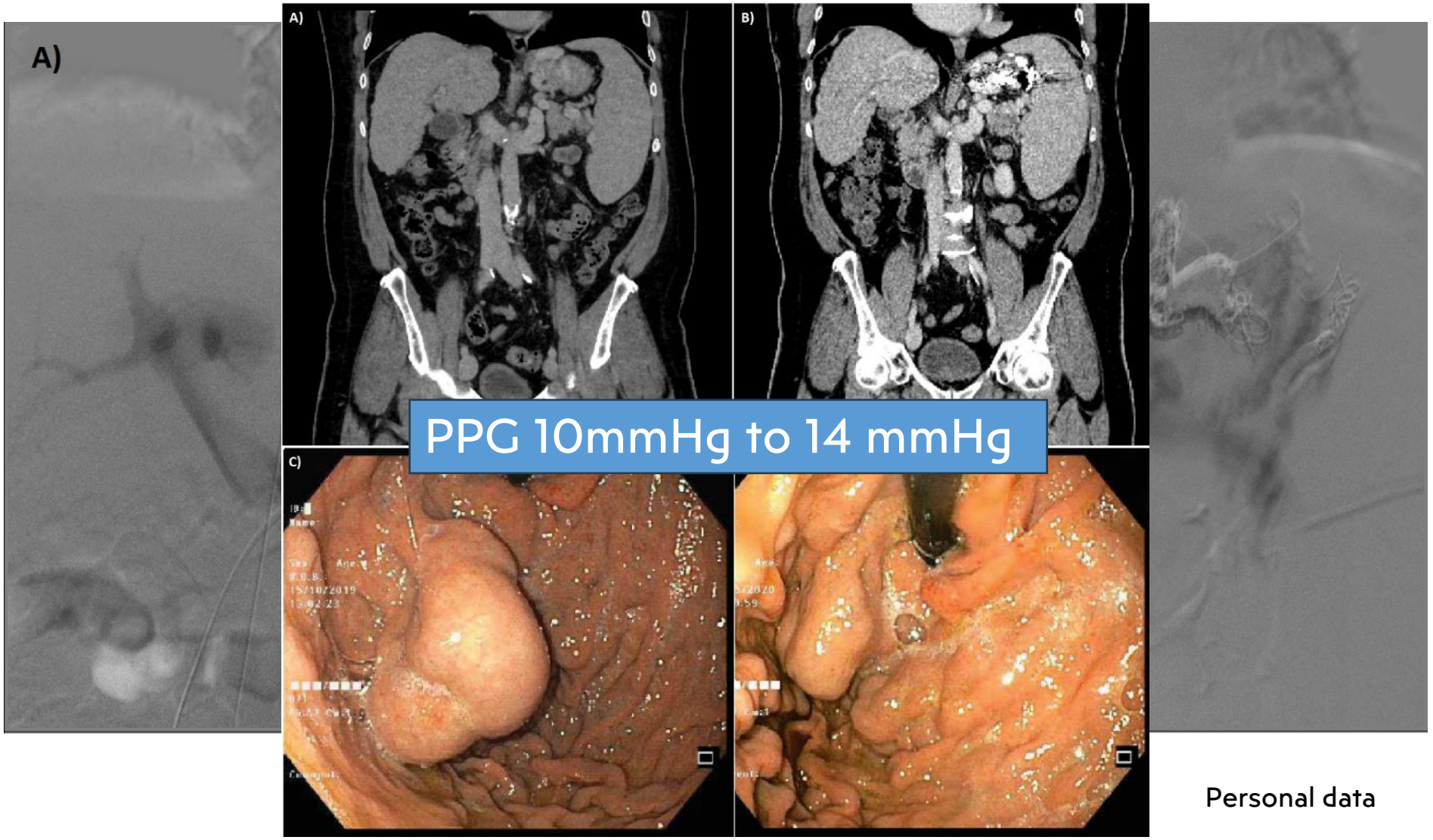
TRANS-SPLENIC ANTEROGRADE COIL-ASSISTED TRANSVENOUS OCCLUSION (TACATO)



Personal data

TRANS-SPLENIC ANTEROGRADE COIL-ASSISTED TRANSVENOUS OCCLUSION (TACATO) - PADUA EXPERIENCE

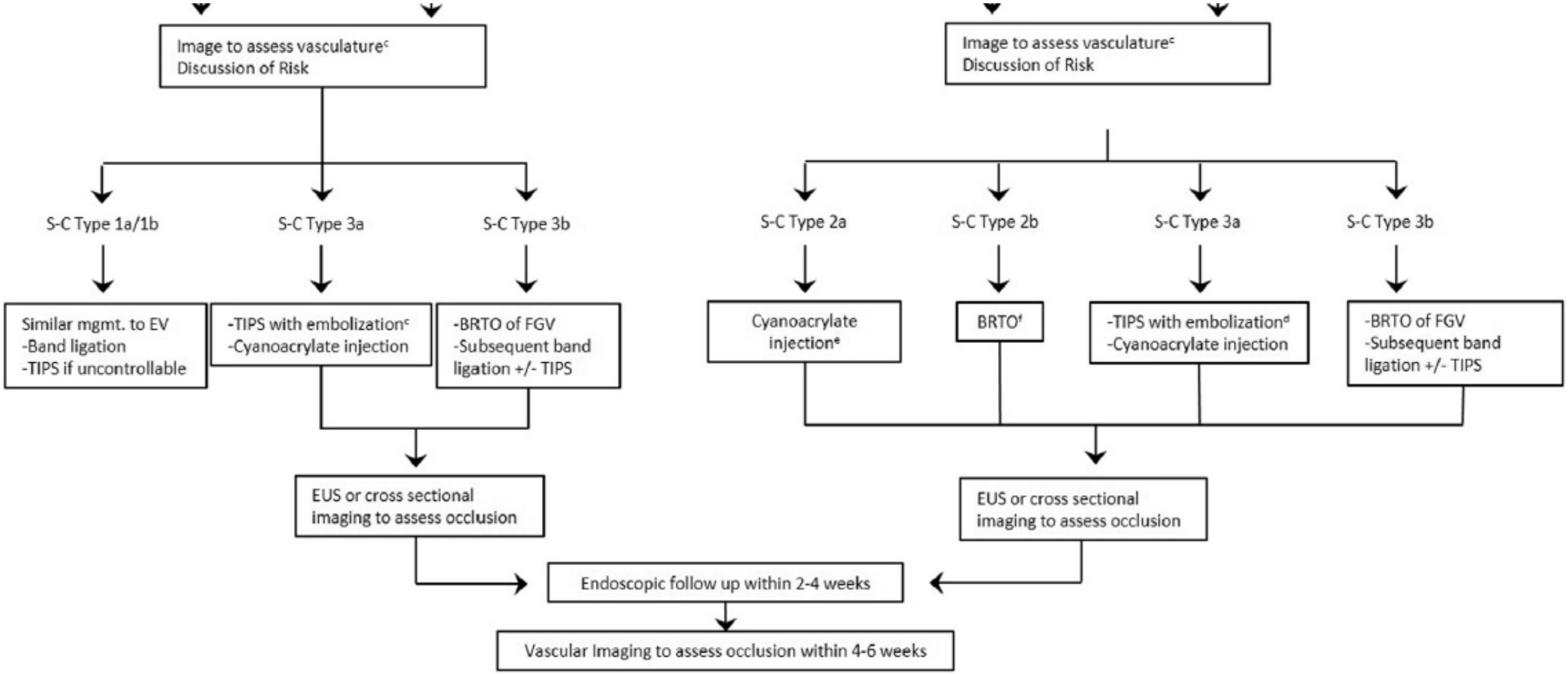
Clinical characteristics	
Sex - male, n of patients (%)	16 (80)
Age, years, median (range)	56 (48-74)
Etiology of cirrhosis	
Alcohol, n of patients (%)	10 (50)
Viral, n of patients (%)	4 (20)
Other, n of patients (%)	6 (30)
Child-Pugh grade A/B/C, n of patients (%)	12/8/0 (60/40)
MELD score, median (range)	13 (11-15)
GOV2/IGV1, n of patients (%) *Endoscopically 14 patients had only GOV2, 3 only IGV1 and 3 patients had combined GOV2 and IGV1.	17/6* (85/15)
Esophageal Varices (none/low risk), n of patients (%)	5/15 (25/75)
Time interval between index bleed and TACATO, days, mean ± SD	5 ± 2
Saad-Caldwell classification, n of patients (%) 1b 2b 3b	 2 (10.0%) 10 (50%) 8 (40%)

J Hep Rep submitted

- 3 yrs, 22 patients, secondary prophylaxis GVBs
  - 2 excluded from the analysis due to concomitant SVT
- Microcoils + NBCA+LUF 80%
- Complete radiological occlusion 75%
- No rebleeding, no worsening of EVs
- Amelioration of hepatic perfusion
- 1 minor bleeding after the procedure (concomitant AKI!)
- 2 partial PVT

ALGORITHM TREATMENT GVB

Eventual endoscopic urgent evaluation/treatment according to expertice/indication



CLINICAL STAGING IS ALSO ESSENTIAL

Severity of liver disease

Previous AD episodes

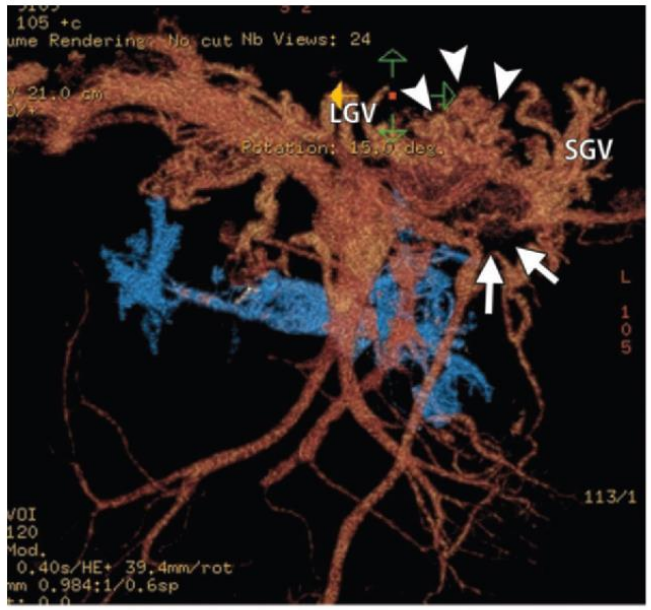
Clinical significant ascites

History of AVB

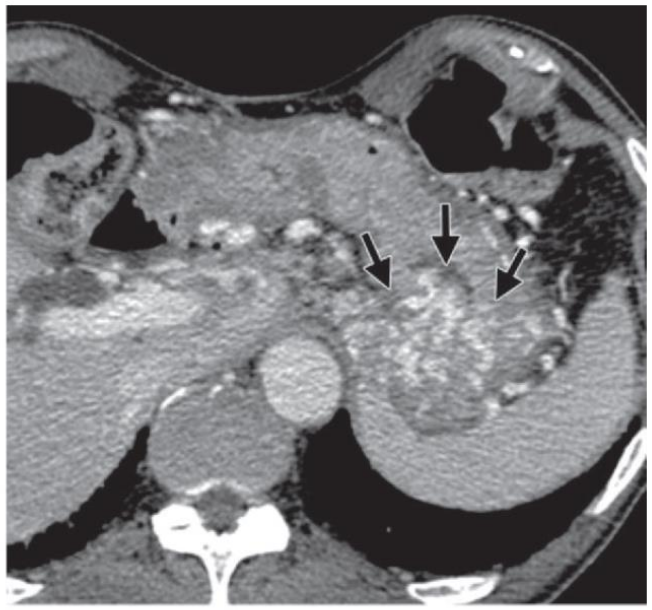
Multiple sessions of band ligations

(HVPG measurement)

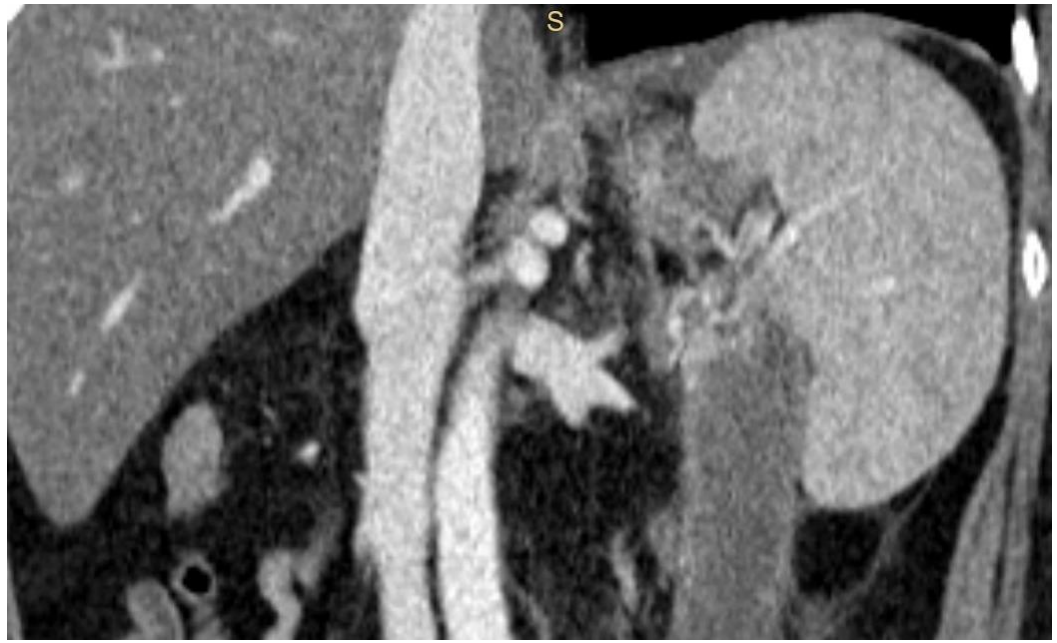
GASTRIC VARICES IN LEFT SIDED PORTAL HYPERTENSION

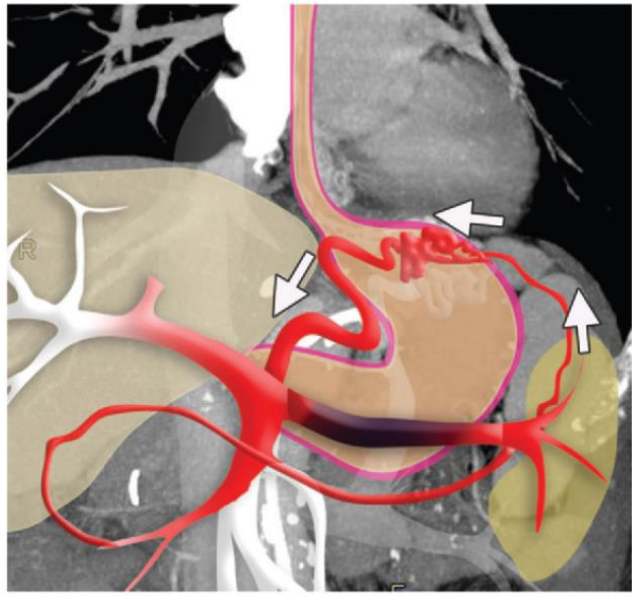


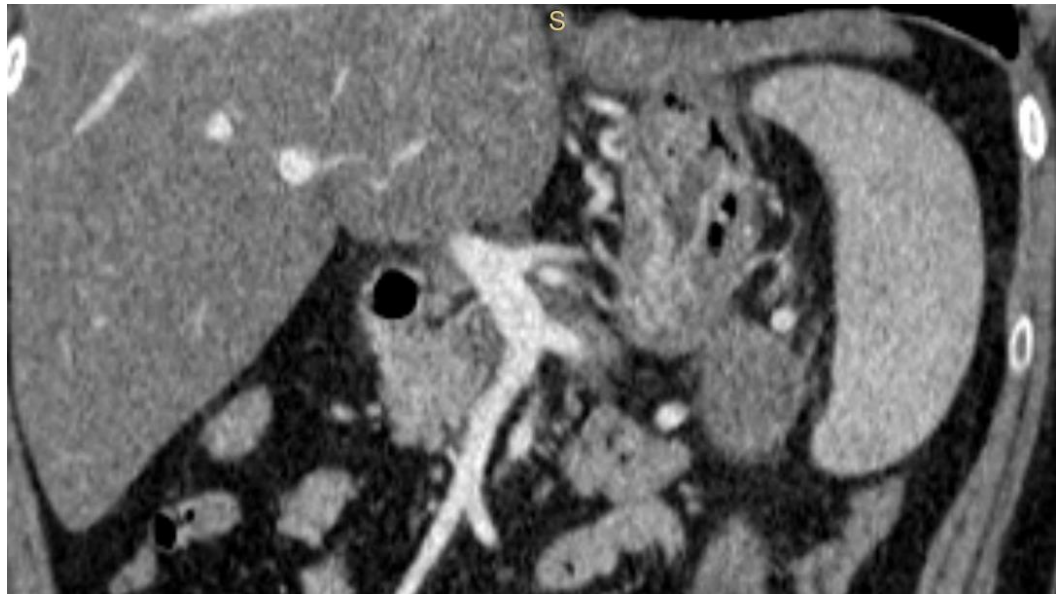
a.

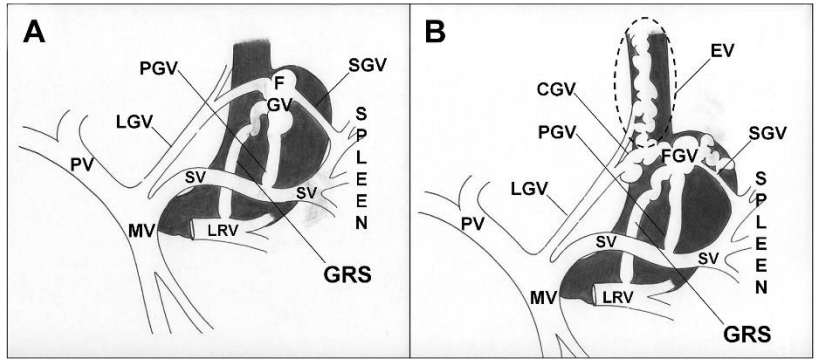


b.





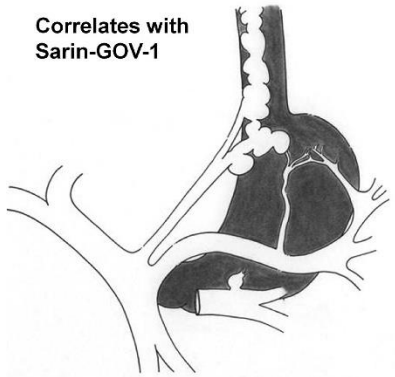




Ci

Type 1a: No GRS

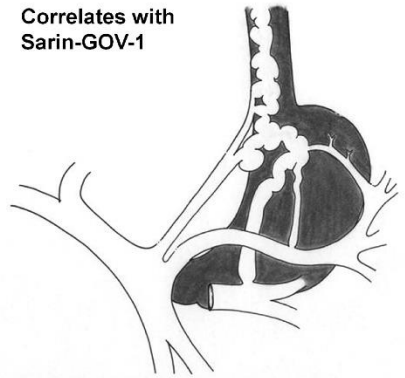
Correlates with
Sarin-GOV-1



Cii

Type 1b: + GRS

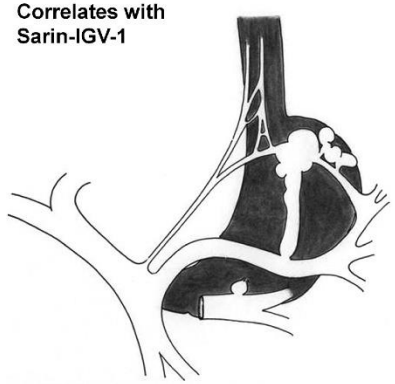
Correlates with
Sarin-GOV-1



Di

Type 2a: No GRS

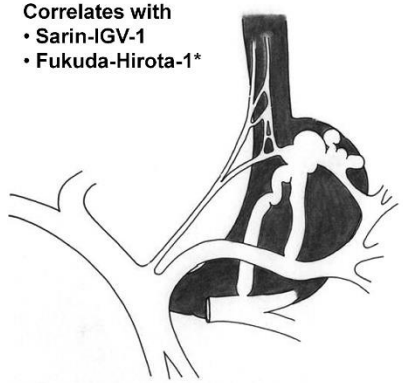
Correlates with
Sarin-IGV-1



Dii

Type 2b: + GRS

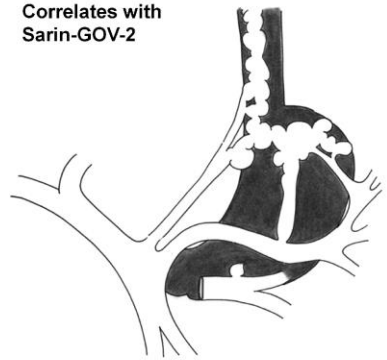
Correlates with
- Sarin-IGV-1
- Fukuda-Hirota-1*



Ei

Type 3a: No GRS

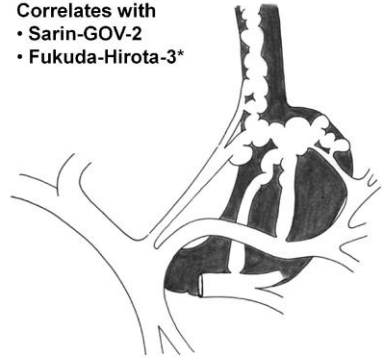
Correlates with
Sarin-GOV-2



Eii

Type 3b: + GRS

Correlates with
- Sarin-GOV-2
- Fukuda-Hirota-3*



Fi

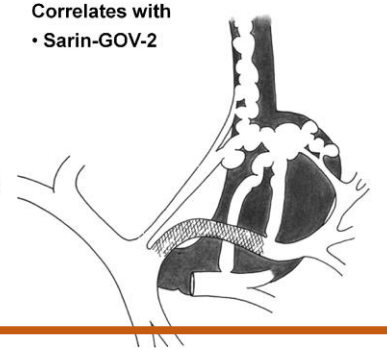
Type 4a: No GRS

Correlates with
Sarin-GOV-2

Fii

Type 4b: + GRS

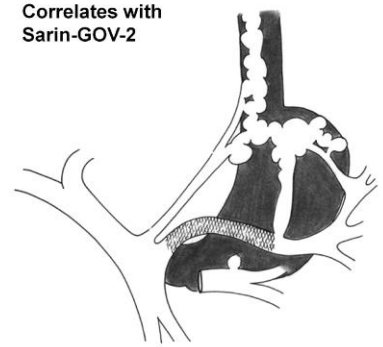
Correlates with
- Sarin-GOV-2



Gi

Type 4a: No GRS

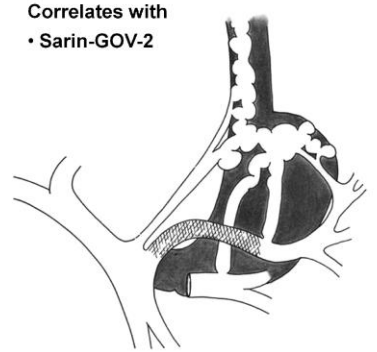
Correlates with
Sarin-GOV-2



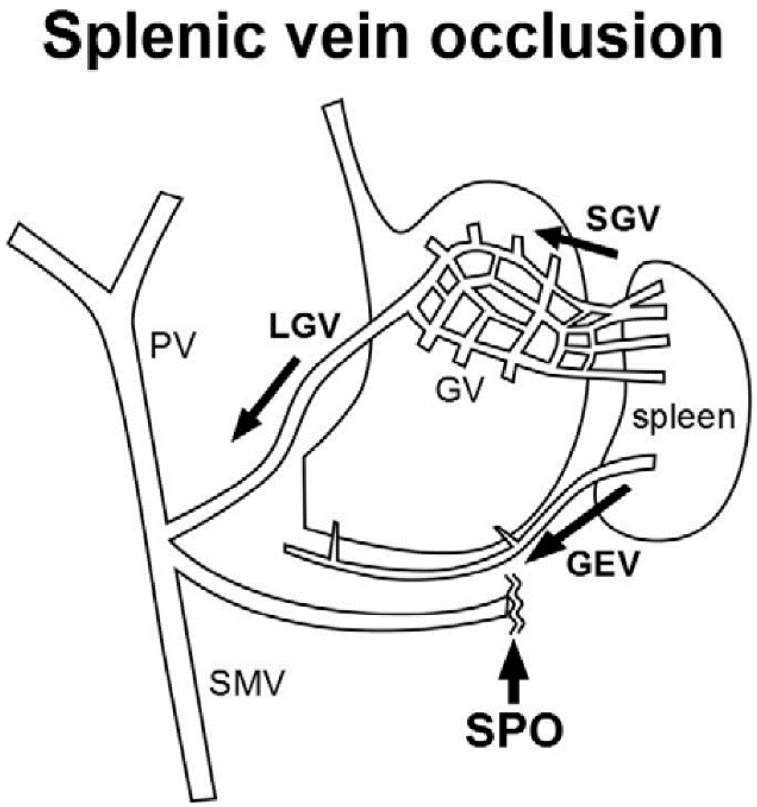
Gii

Type 4b: + GRS

Correlates with
- Sarin-GOV-2



GASTRIC VARICES IN PVT WITH SVT



GV: gastric varices PV: portal vein
SMV: superior mesenteric vein
SGV: short gastric vein LGV: left gastric vein
GEV: gastroepiploic vein
SPO: splenic vein occlusion

In PVT, SVT and GV predictors of re-bleeding (5 folds)

(HR= 4.21 p=0.03 and HR= 5.07 p=0.01 respectively).

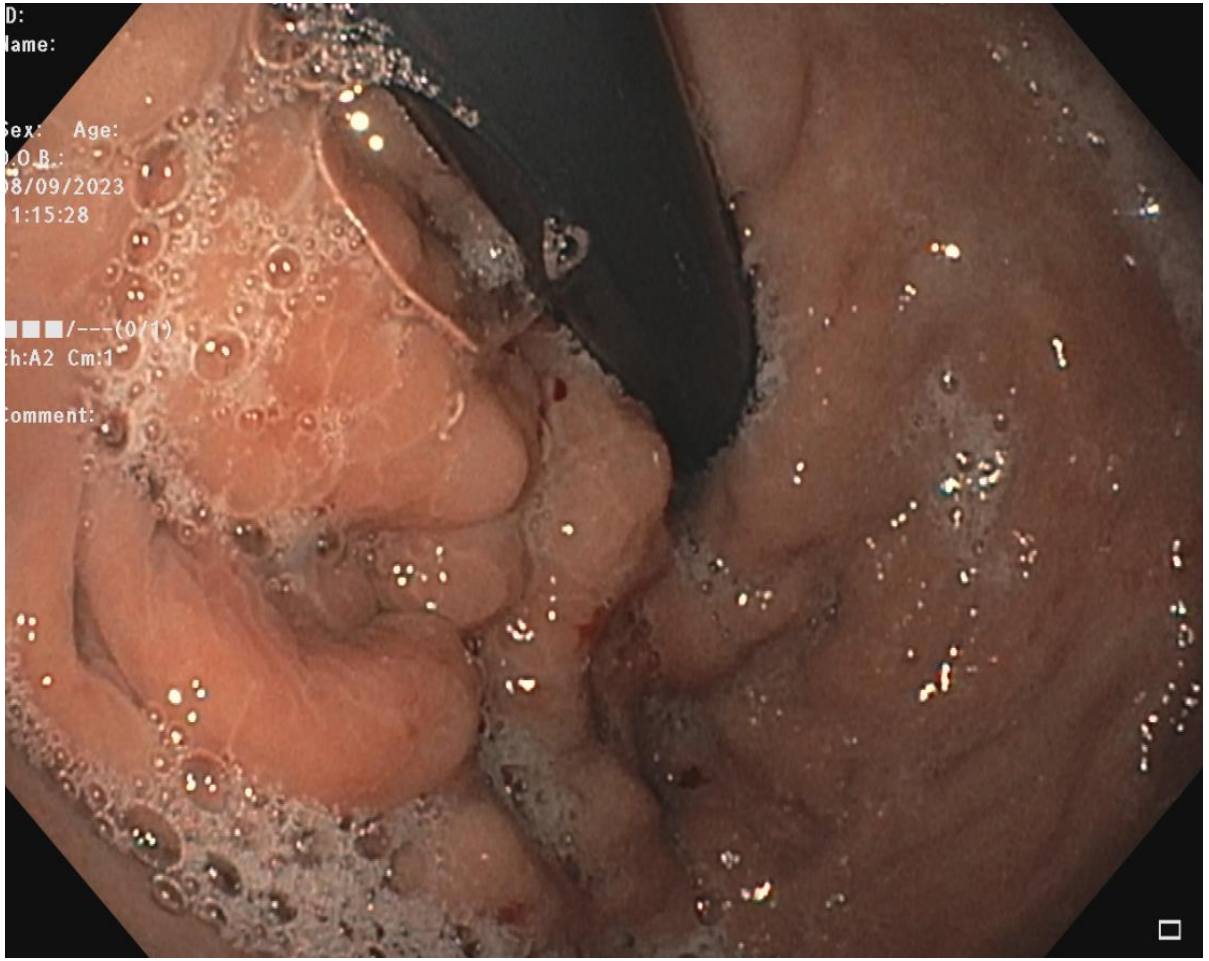
Spaander, Gastrointest Endoscopy 2008;

GASTRIC VARICES IN PVT

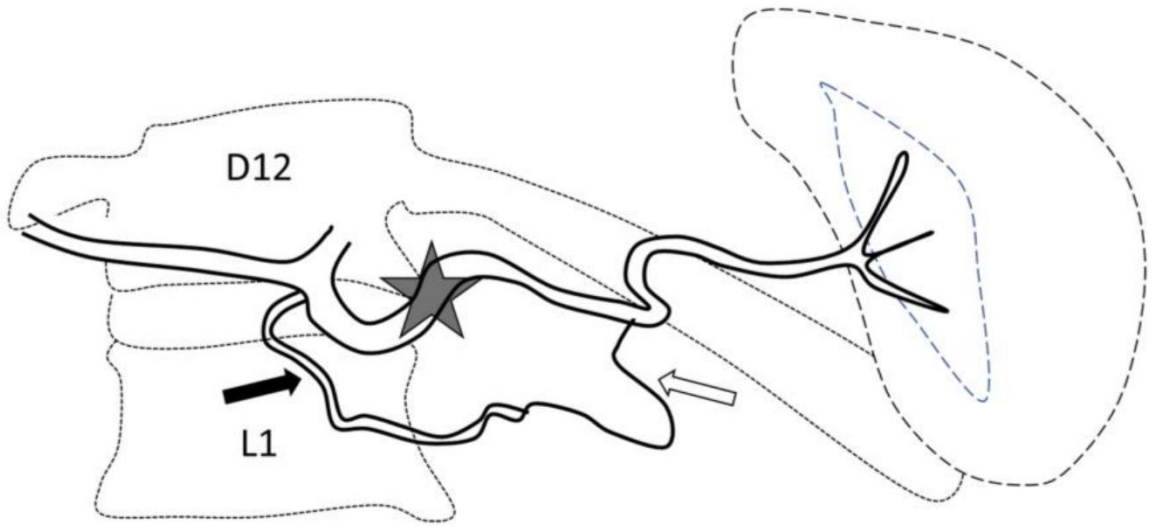
	Cirrhosis (n = 56)	EHPVO (n = 30)	p Value
Glue injection ≤2 ml at first session	88% (n = 49)	73% (n = 22)	0.001
>1 sessions of glue injection	36% (n = 20)	57% (n = 17)	0.4
>2 ml glue for GOV obturation	57% (n = 32)	60% (n = 12)	0.4
Total glue (ml)	3.2 ± 2	4.7 ± 3.1	0.014
Rebleeding	9% (n = 5)	10% (n = 3)	0.87
Rebleeding in <48 h	3.6% (n = 2)	6.7% (n = 2)	0.4
EVL for esophageal varices	57% (n = 31)	14% (n = 4)	0.04
Mean no. of sessions for obturation	1.6 ± 1	2.2 ± 1.5	0.03
Mortality	11% (n = 6)	3% (n = 1)	0.4

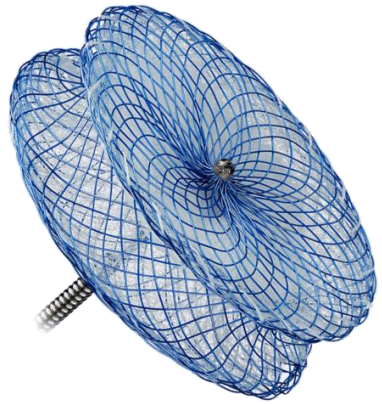
Sharma, J Cin Exp Hepatol 2013

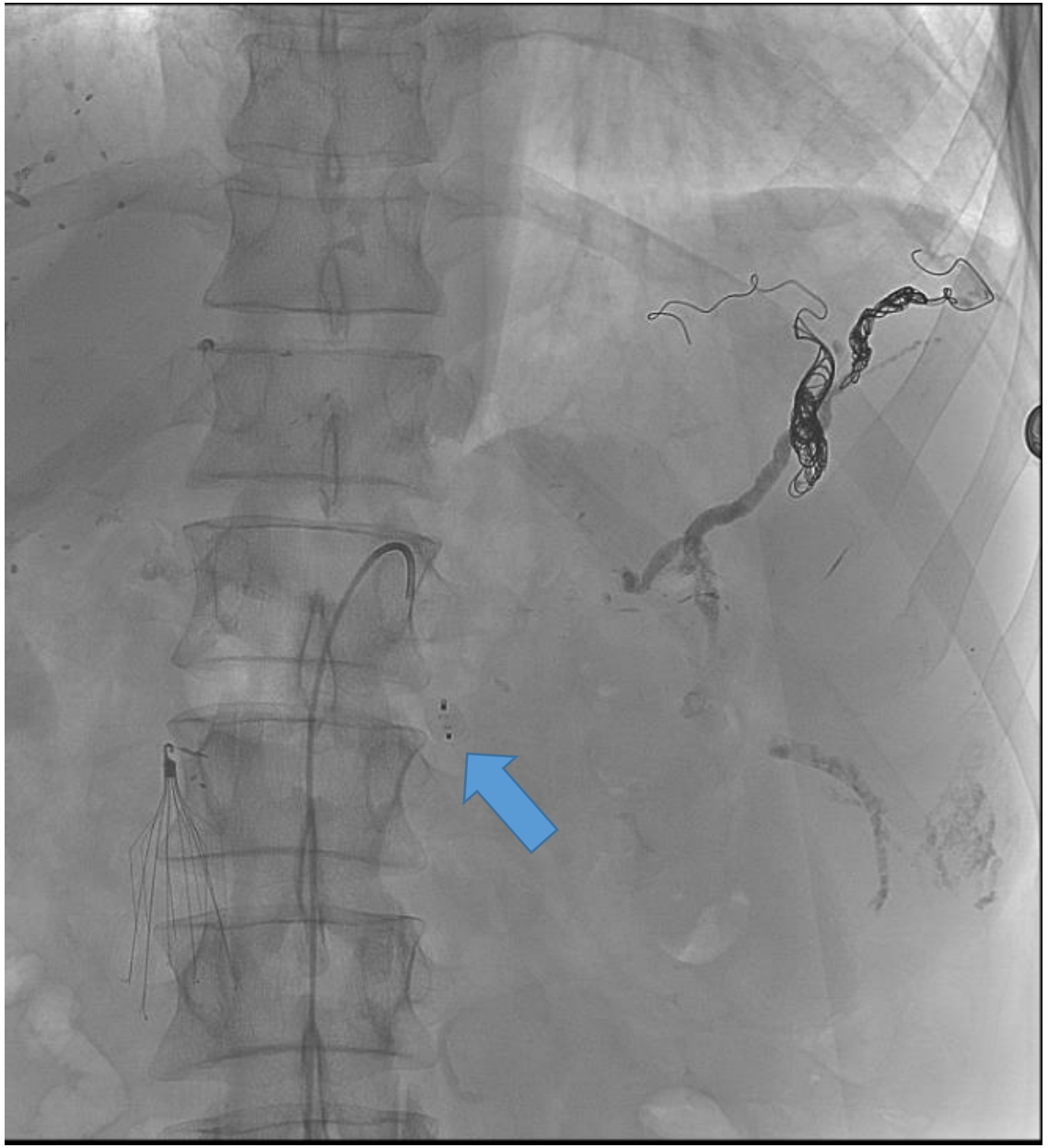
LEFT-SIDE PH WITH GVs



SPLENIC ARTERY EMBOLIZATION







TAKE HOME MESSAGES

- GVs have higher risk of bleeding, less response to NSBB than EVs
- Endoscopic technique/specific expertice in US obturation are important for optimal clinical outcome
- Anatomical and clinical staging are definitively a part of the algorythm of treatment
- Early referral to centers with specific radiological or endoscopic experience should be timely considered