Managing the Difficult Variceal Bleed

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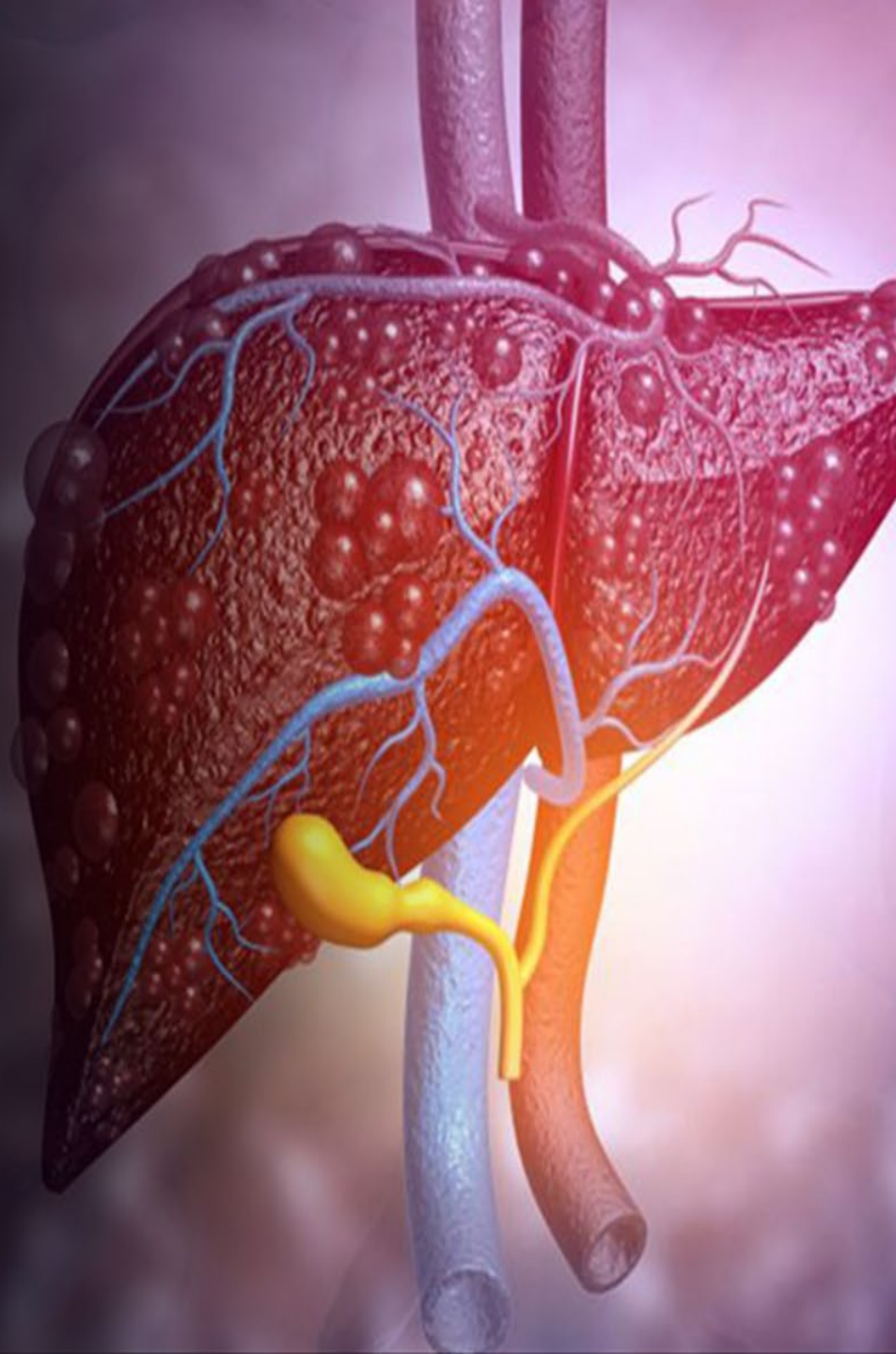
University Club

February 3, 2024

2024 Update in Medical Hepatology

Session 3: 12:55-1:15PM



- No Disclosures

Variceal Bleeding

- Talk today will be
- Focusing on patient's with cirrhosis admitted with an 'acute' esophageal variceal bleed

Not going to be discussing:

- 1. Non-cirrhotic portal hypertension
- 2. Gastric or ectopic variceal bleeding
- 3. Prophylaxis
- 4. Medicines/therapies not approved for use in the US
- 5. Follow up management

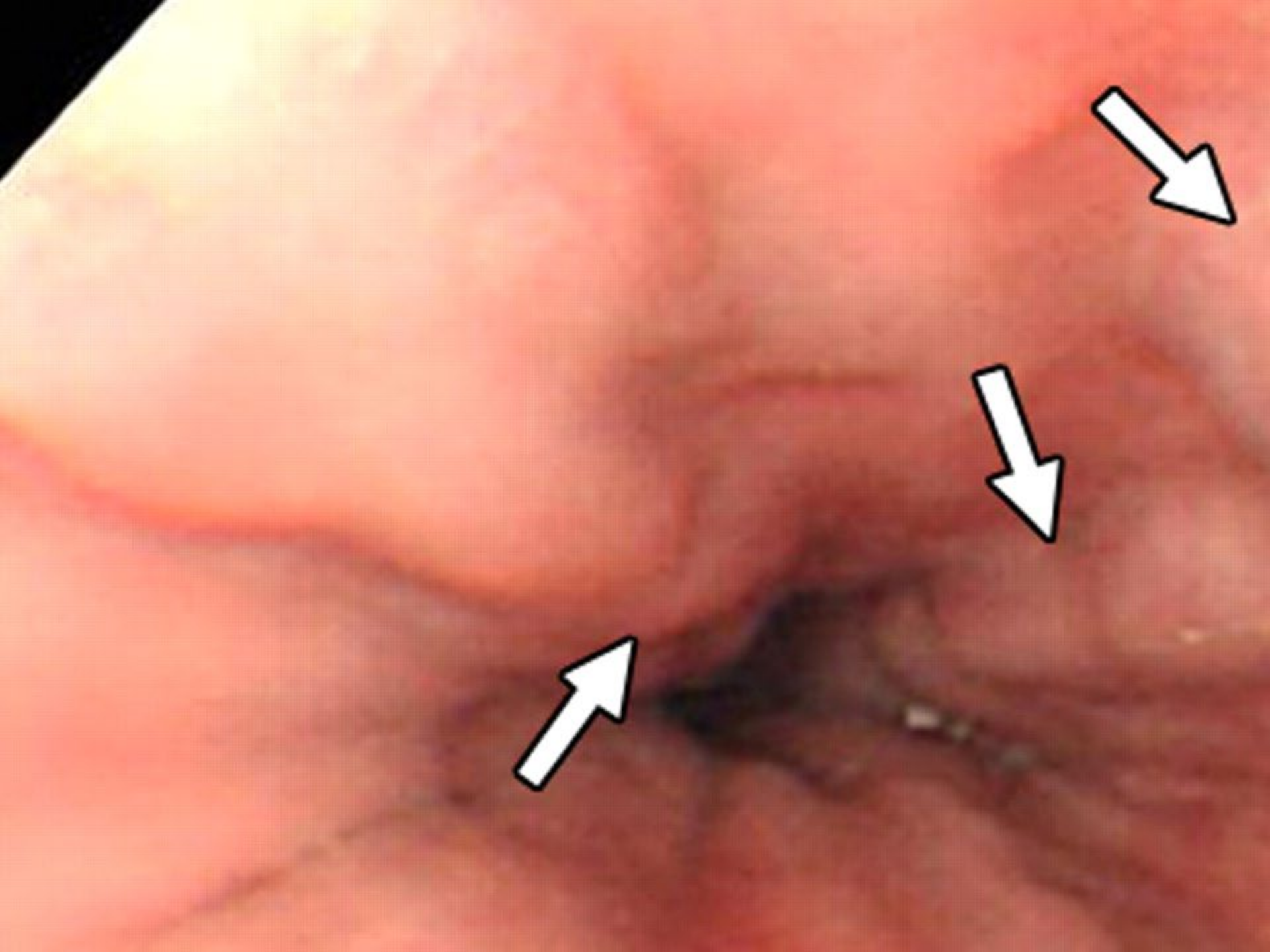
Esophageal Varices

- Develop and are at a risk of bleeding when portal pressure rises to greater than 12mm Hg

- Variceal hemorrhage occurs in 25-50% of patients with cirrhosis

Predicting the risk of variceal hemorrhage in cirrhotics

- 1. Location
  - GE jxn more at risk
- 2. Size
  - Large>small
- 3. Appearance
  - Endoscopic signs of high risk varices
- 4. Clinical features of patient
  - Childs & MELD
  - History of prior variceal bleed
- 5. HVPG
  - Risk of bleeding is greater than 50% with a pressure greater than 16mm Hg



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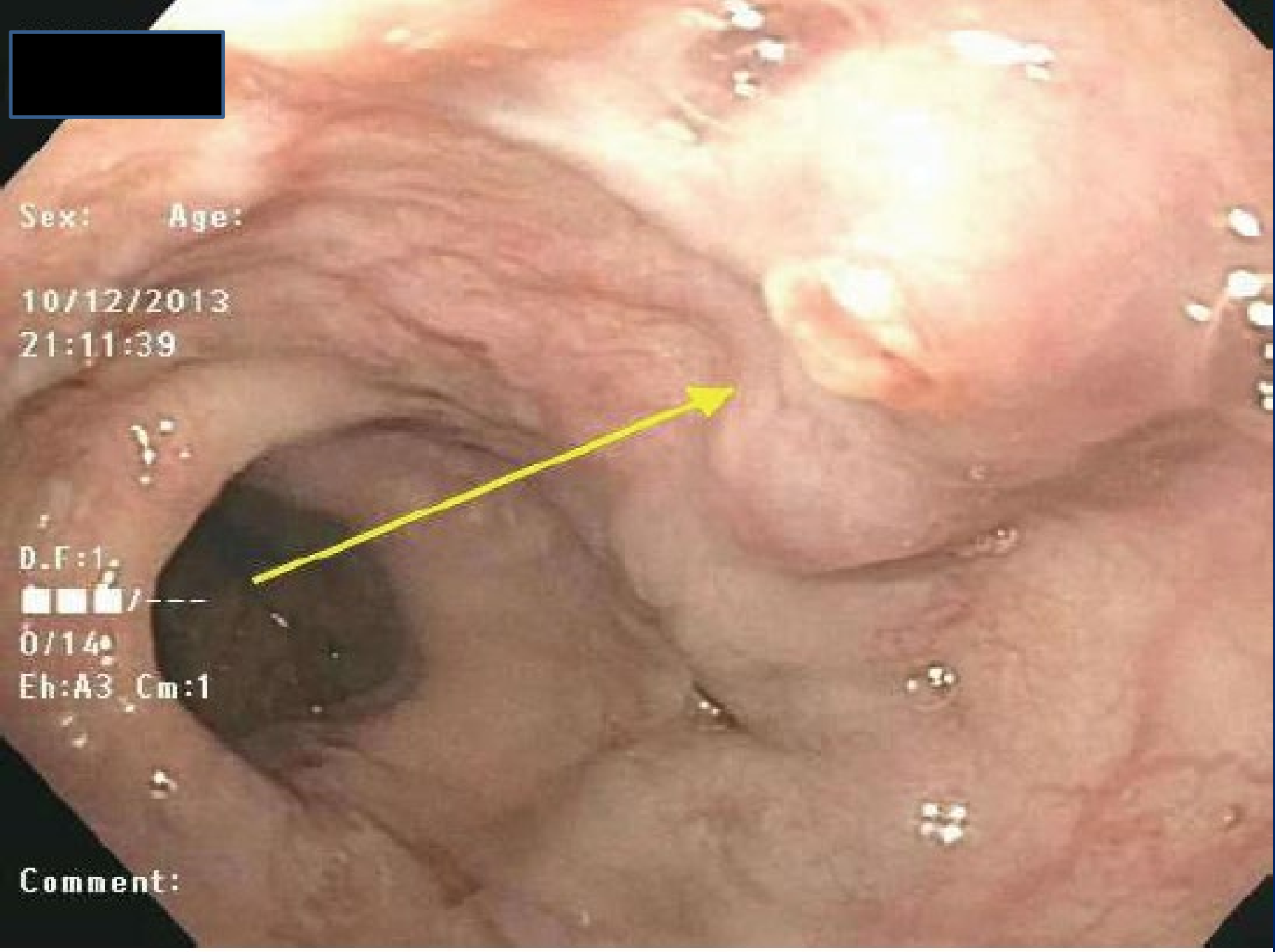
HIGH RISK VARICES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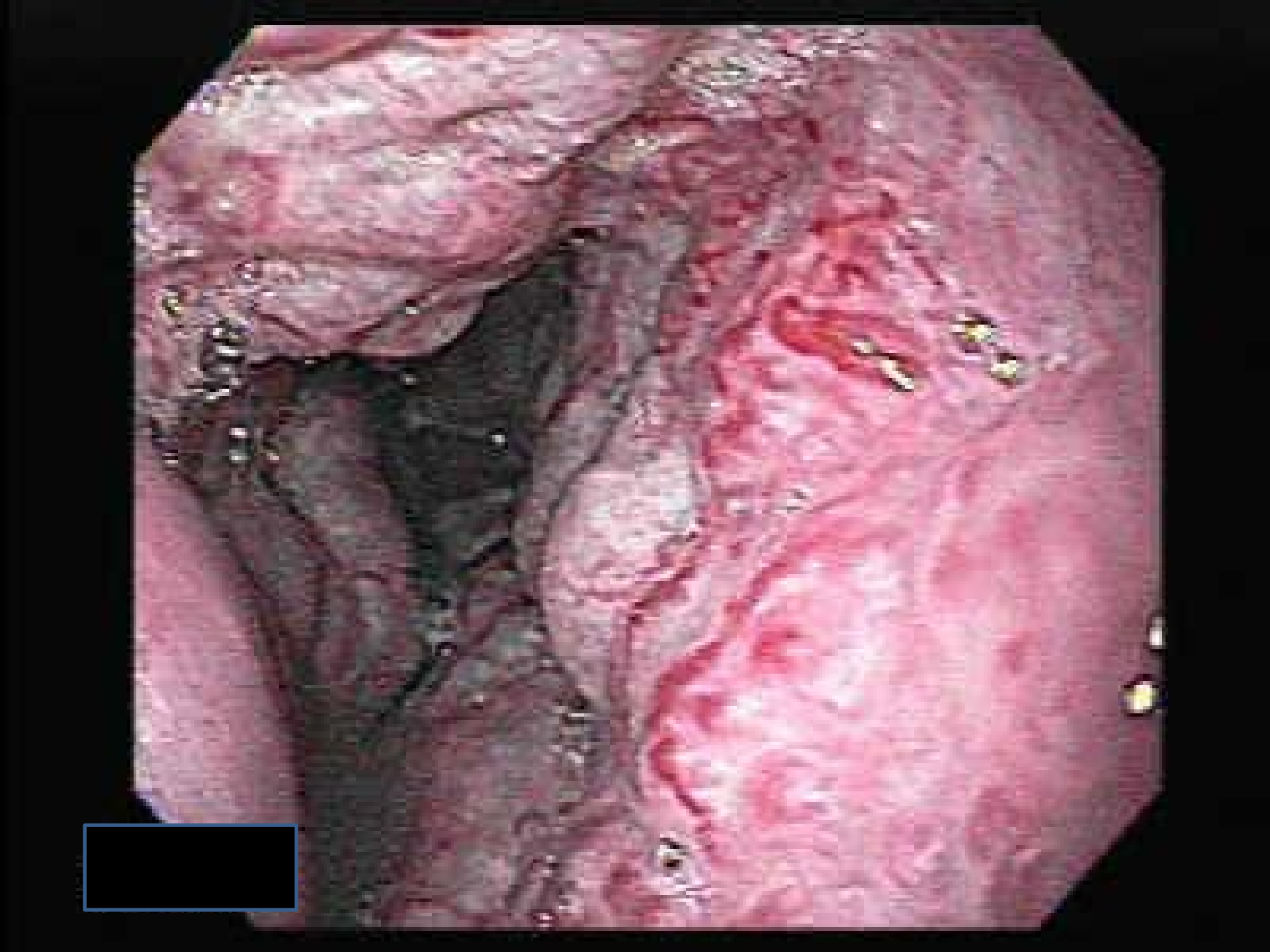
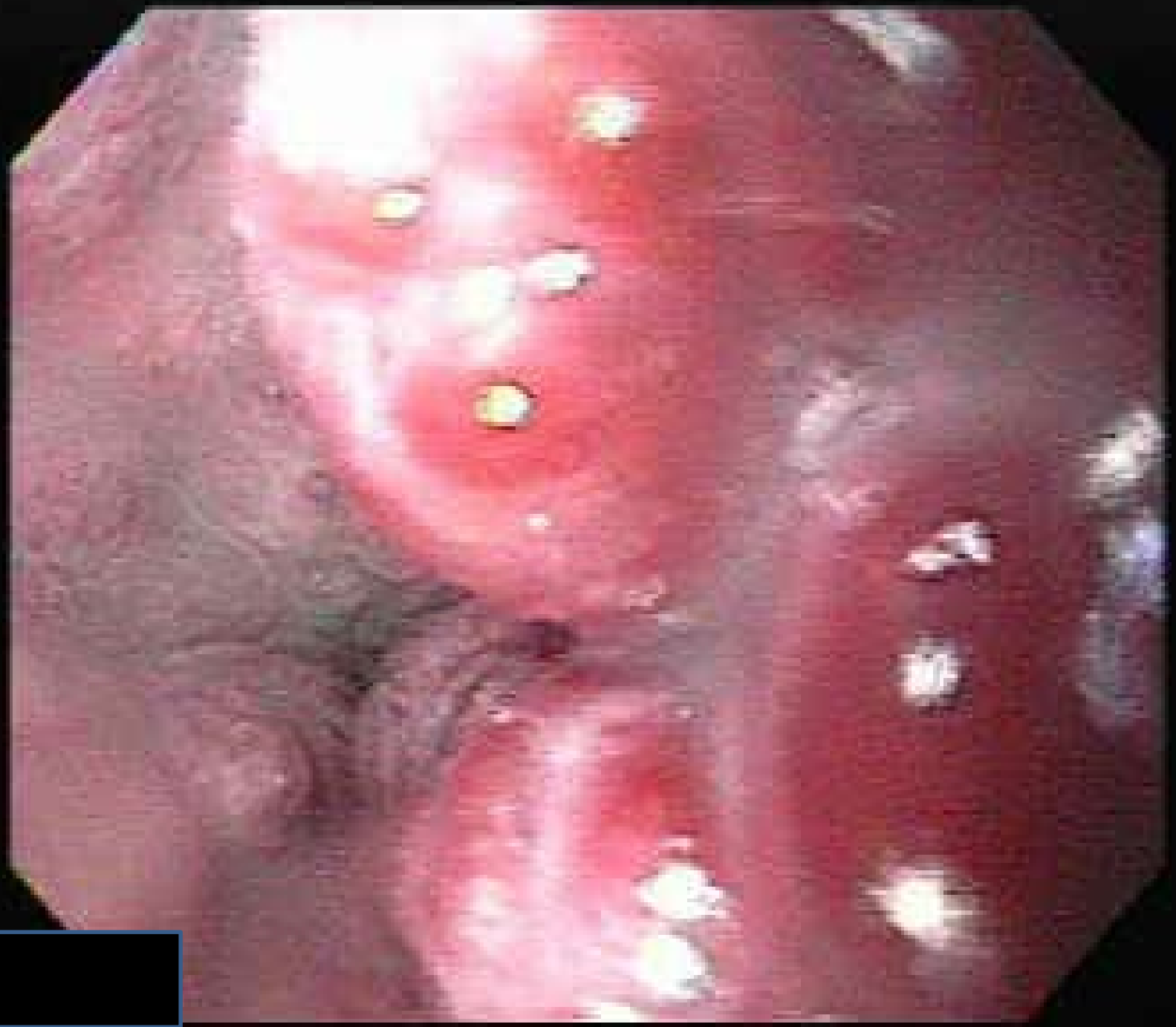




Putting all this together:

- A Child's C cirrhotic with:
- large ascites
- with large varices
- with red wale signs
- Has a 75% likelihood of variceal bleed within one year

The ideal treatment of an active variceal bleeder:

- 1. Universally effective
- 2. Completely Safe
- 3. Easy to Administer
- 4. Inexpensive

What we do have currently is a combo of pharmacological and endoscopic therapies

- Current Guidelines Recc:
- 1. Antibiotics
- 2. Vasoactive Drugs
- 3. Endoscopic Therapy
- …
- 4. Consider TIPS in high-risk patients

Prophylactic Antibiotics

- There is a high incidence of bacterial translocation
- There is an overall reduction in infectious complications
- It may also reduce the risk of bleeding

- Cirrhosis + UGIB should be given antibiotics

Antibiotics

- The most evidence is for
- Ceftriaxone 1g/day

Vasoactive Drugs

- Somatostatin
- Somatostatin more effective for control of variceal bleeding than placebo

- Octreotide (long-acting analog of somatostatin)
  - 50mcg/hr bolus followed by gtt at 50mcg/hr
  - 5 days

Timing of EGD

Hepatology

Early EGD

- Early EGD?
  - Current guidelines recommend EGD for all UGIB patients within 24 hours
  - AASLD and Baveno recommend within 12 hours in patients with cirrhosis
    - * regardless of severity

Endoscopic therapy

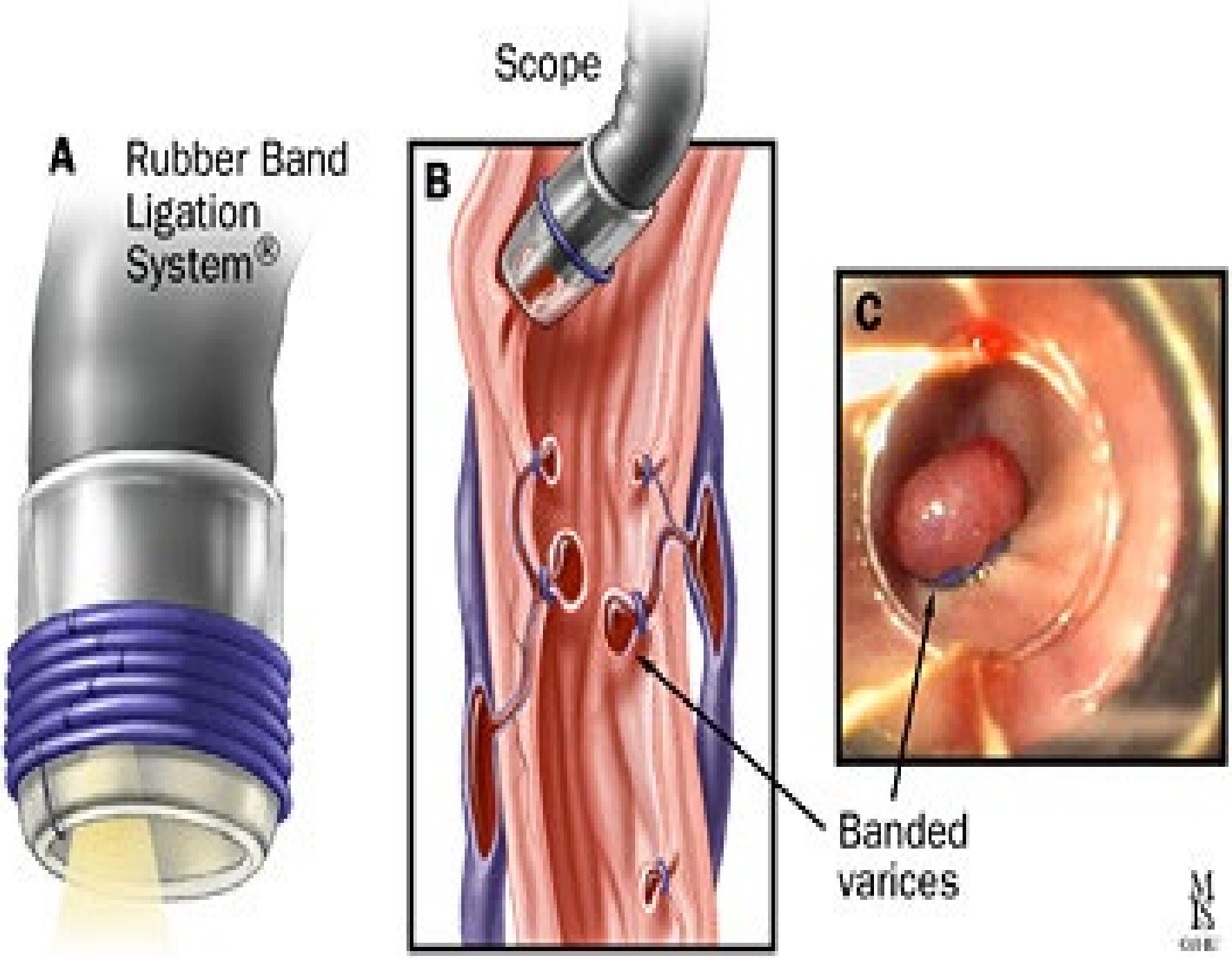
- Sclerotherapy – injection of sclerosant solution into varices through a needle

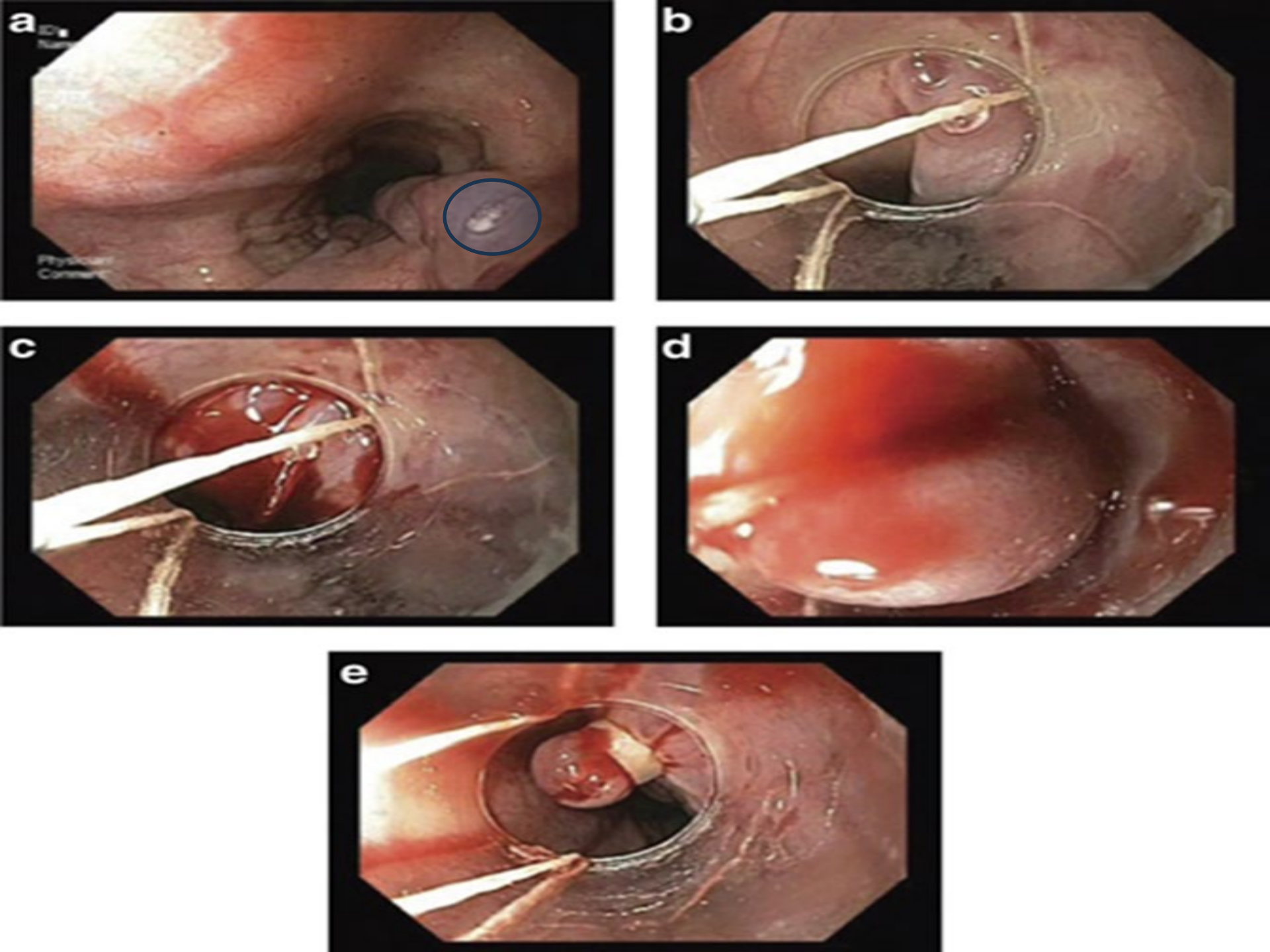
Band Ligation

- Placement of a small elastic band around varix.
- Works by capturing all or part of a varix resulting in occlusion from thrombosis. Several kits available
- Once kit is applied anywhere from 4-10 bands can be deployed

Endoscopic Band Ligation (EBL)

- Bands are typically placed starting distally.
- Ideally should band individual columns.


A
Rubber Band Ligation System®
Scope
B
C
Banded varices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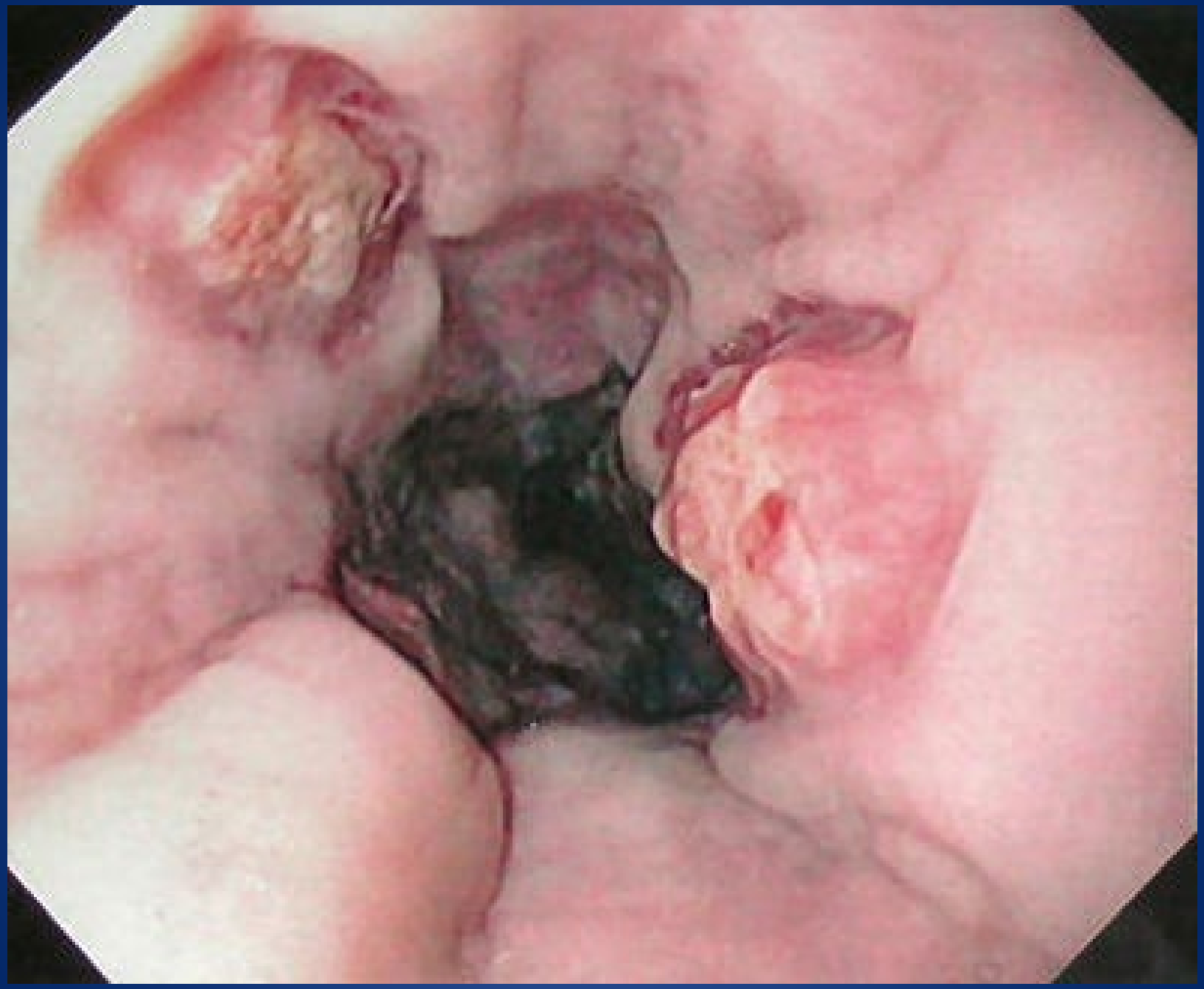


Less complications associated with EBL vs Sclerotherapy

- Mediastinitis
- Strictures
- Pain
- Esophageal dysfunction
- Bacteremia

Synthesis of Available Literature Suggests:

- 1. Medical therapy alone is beneficial (RCT)
  - Limited mainly to Terlipressin
  - Data supporting administration pre EGD limited, but recommended
- 2. Early EGD (consensus)
- 3. Endoscopic Therapy is beneficial (RCT)
  - Ligation>Sclerotherapy>Sham
- 4. Ligation>Medical Therapy Alone (RCT)
  - Ligation+Medical Therapy>Medical Therapy (RCT)
  - Ligation + Medical Therapy>Ligation Alone (RCT)

Current evidence does support

- Abx +
- Use of Vasoactive drugs +
- (Early) EGD
  - With Band ligation

Sclerotherapy

- Guidelines do state (as do some experts) that sclero may be preferable when visibility is an issue

- BUT when possible band ligation is preferred

Combination Therapy

- Using the above therapies
  - Abx, Vosactive Drugs + Endoscopic Therapy
- In the last 40 years
- Failure to treat variceal bleeding has decreased
- From 50%
- To 10-20%

- Treatment failure
- Is still 10-20%

- DIFFICULT VARICEAL BLEEDER

Risk Factors for early (within 6 weeks) re-bleed

- Age > 60
- Severe initial bleed
- Renal failure
- Severity of liver disease
- Ascites
- Active bleeding at the time of endoscopy
- Large Varices
- High Risk Stigmata

Risk Factors for 6-week Mortality

- 1. HVPG > 20 is consistently associated with greater treatment failure and mortality (OR:10)
- 2. Child Class
- 3. MELD
- 4. Active Bleeding
- 5. Shock
- 6. AST Elevation
- 7. Bacterial infection
- 8. Liver Cancer
- 9. PVT

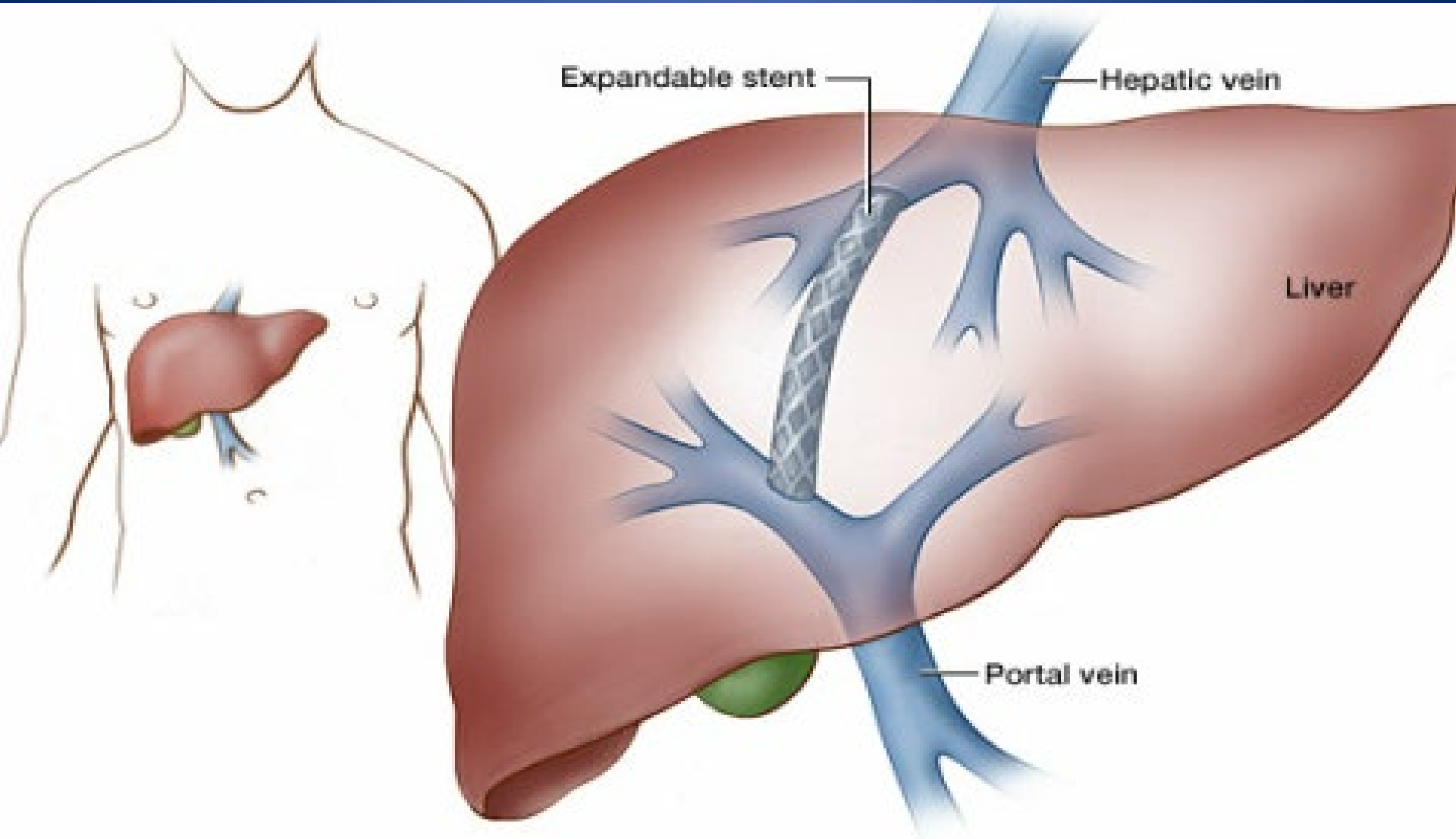
The most important variables consistently associated with treatment failure of variceal bleeding:

- 1. HVPG
- 2. Active bleeding at time of EGD
- 3. Severity of liver disease

What's the typical next step in patient's who fail endosopic/medical therapy?

- TIPS

Transjugular Intrahepatic Portosystemic Shunt



TIPS for ‘salvage’

- Is very effective in control of bleeding (most studies suggest > 90%)

HOWEVER

- Mortality in this group remains high: 27-55%

PREVENTION!

- The best treatment for treatment failure
- Is to PREVENT the failure

- This formed the basis of the 'Early TIPS' Study
- Know commonly referred to as pre-emptive TIPS (p-TIPS)
  - Basis of early TIPS was credited to study published in 2004 Hepatology Monescillo et al.

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Early Use of TIPS in Patients with Cirrhosis and Variceal Bleeding

Juan Carlos García-Pagán, M.D., Karel Caca, M.D., Christophe Bureau, M.D., Wim Laleman, M.D., Beate Appenrodt, M.D., Angelo Luca, M.D., Juan G. Abraldes, M.D., Frederik Nevens, M.D., Jean Pierre Vinel, M.D., Joachim Mössner, M.D., and Jaime Bosch, M.D., for the Early TIPS (Transjugular Intrahepatic Portosystemic Shunt) Cooperative Study Group

Published June 24, 2010; Has been Cited 1409

PRIZE QUESTION!!!

Question:

- This score was first published in 2001 as a tool to predict survival in patient's undergoing TIPS

- Answer: Model End Stage Liver Disease
- MELD SCORE
  - Kamath et al. Gastro. 2001
    - Cited > 6K!

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Early Use of TIPS in Patients with Cirrhosis and Variceal Bleeding

- 9 European Centers
- Based on previous studies identified 'high risk group':

- Childs C (but less than <13), OR Childs B + active bleeding
- EGD performed with therapy

- Then randomized to
- 1. Current standard of care (medication and endoscopy)
- Or
- 2. Early TIPS within 72 hours

Results:

- 359 patient admitted with acute variceal bleed
- Only 63 met inclusion criteria or ‘high risk’
- 17.5%

- Ie: select group of patients!

Results

- In the standard of care group
- Failure to control bleeding was 50% at one year

- Remember these are HIGH RISK PATIENTS!

Versus TIPS group

- Failure only 3% ($p<0.0001$)
- 1 patient

- Survival (2 years): standard therapy 60%
- Versus 86% in TIPS group

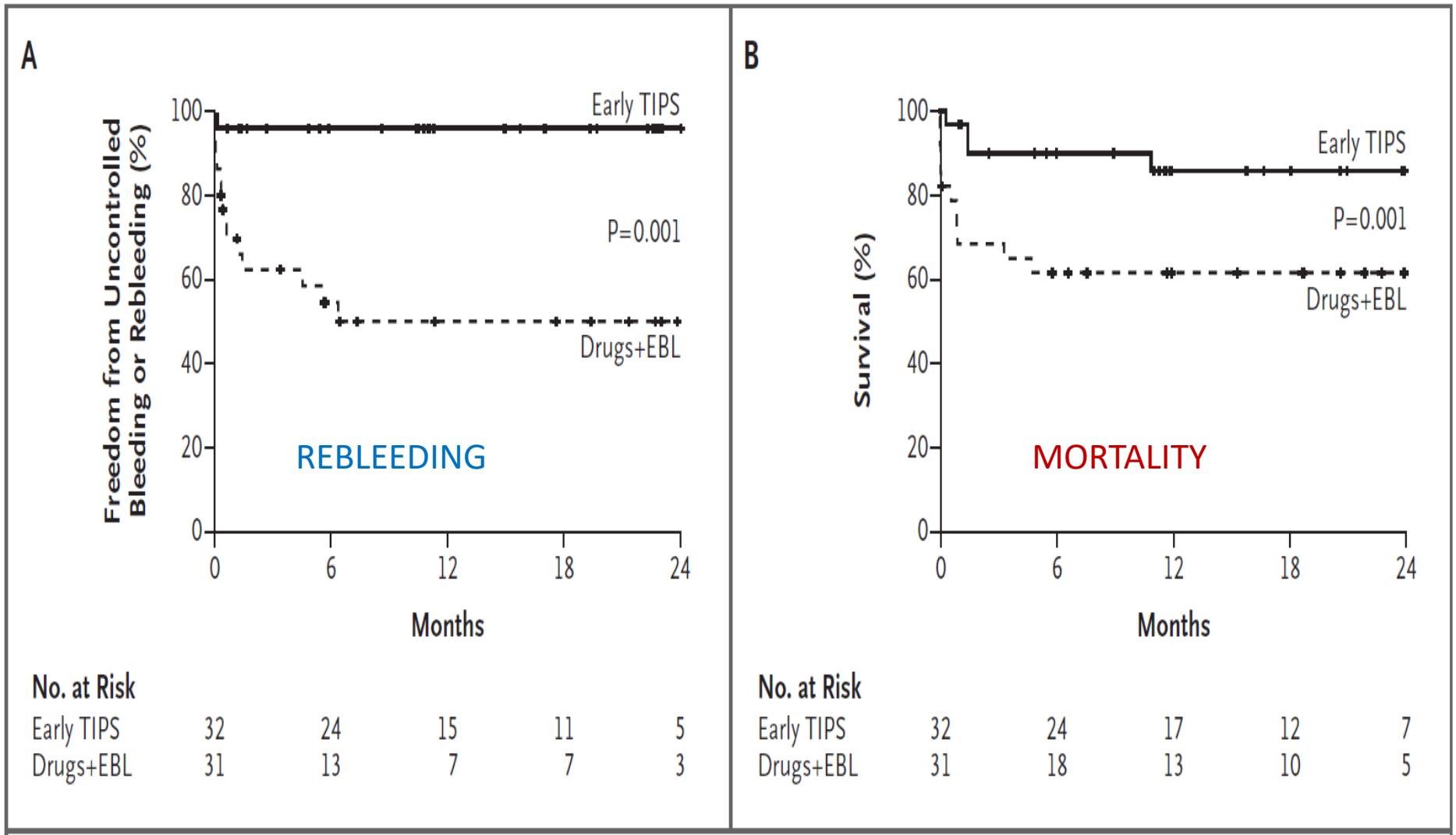


Figure 2. Actuarial Probability of the Primary Composite End Point and of Survival, According to Treatment Group.

The probability of remaining free from uncontrolled variceal bleeding or variceal rebleeding is shown in Panel A, and the probability of survival is shown in Panel B. EBL denotes endoscopic band ligation, and TIPS transjugular intrahepatic portosystemic shunt.

Other outcomes

- Encephalopathy
- Ascites
- Time ICU/Hospital (both ss)
  - Standard therapy: 8.6 days versus 3.6
  - Standard therapy: 43 days versus 17

Early TIPS now known as Pre-emptive TIPS

- The benefit of TIPS was multiple
- Not just re-bleeding
- But ascites, LOS and mortality

- The benefit of TIPS in these cases seems to be from preventing or pre-empting the sequelae of the bleed and so…
- P-TIPS

Since original RCT

- Since the NEJM p-TIPS paper in 2010 there have been 9 additional studies evaluating the role of p-TIPS

- 2 meta-analysis have been published (both by the same group).

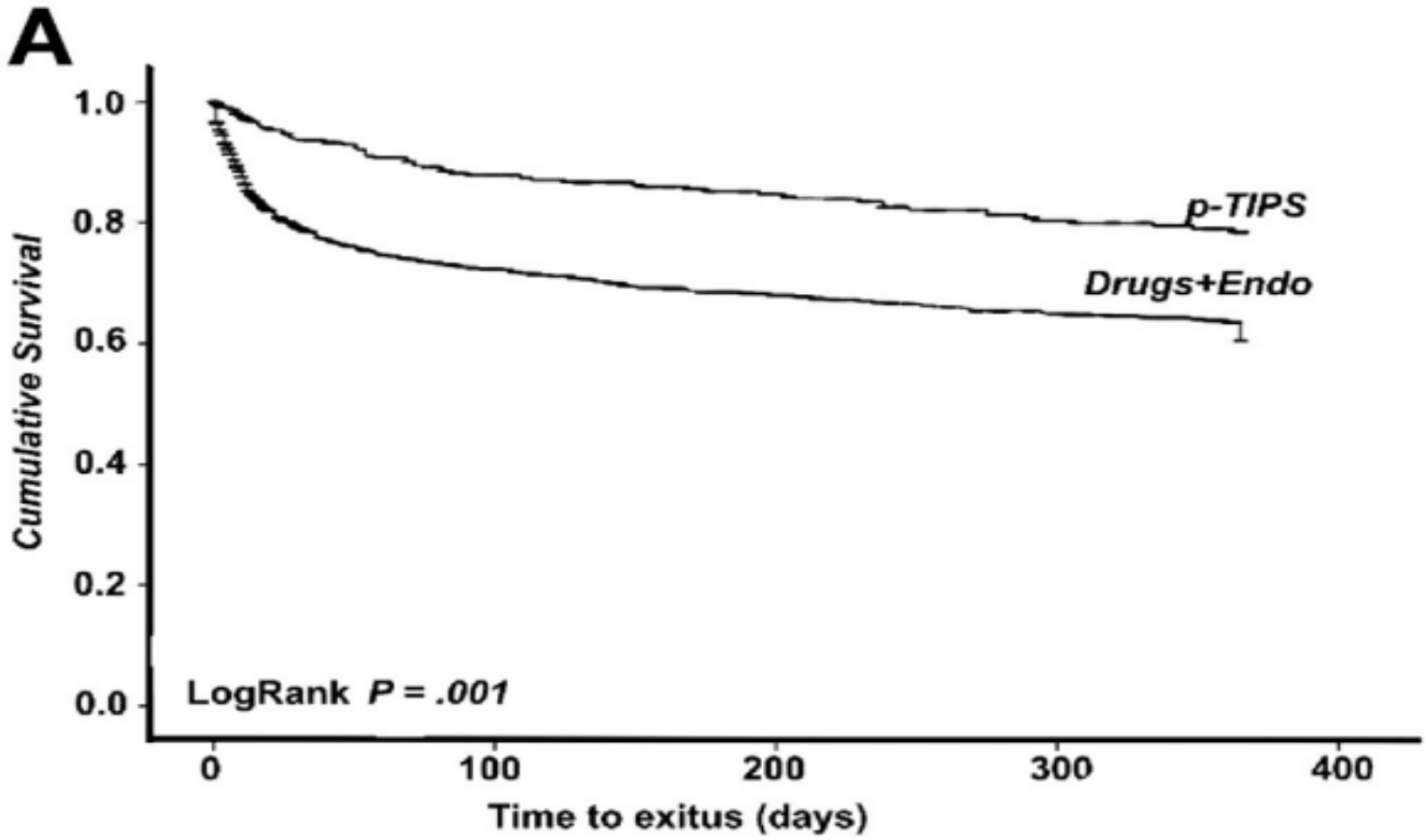
Meta-Analysis Hepatology 2023 Garcia-Pagan et al

- 8 studies included
- 4 randomized and 4 observational

- 342 patients underwent p-TIPS
- compared to 1047 SOC

- p-TIPS significantly reduced mortality
- HR 0.43

- reduces risk of re-bleeding
- ascites
- and does not increase PSE



D + E	1017	612	528	476	420
p-TIPS	310	237	206	181	161

TABLE 1 - Baseline characteristics of the population included in the IPD meta-analysis

	Drugs + endoscopy group N=1047	p-TIPS group N=342	*p*
Age	53.6 (10.59)	53 (11.3)	0.534
Male, n (%)	646 (62)	221 (64.6)	0.333
Etiology of cirrhosis, n (%)			
Alcohol	454 (43.4)	168 (49)	0.063
Viral	126 (12)	61 (17.8)	**0.006**
Other	69 (6.6)	16 (4.7)	0.201
Child-Pugh class, n (%)	—	—	0.673
Child B + AB	476 (45.5)	151(44)	—
Child C	571 (54.5)	191 (56)	—
Child-Pugh score at admission	10 (3)	10 (3)	0.539
MELD score at admission	15 (8)	15 (7)	0.157
Laboratory values			
Albumin	25.6 (6.3)	25.5 (5.6)	0.578
Bilirubin mg/dL	4.2 (5.4)	3.4 (3.5)	**0.012**
Creatinine mg/dL	0.94 (0.5)	0.92 (0.4)	0.327
INR	1.72 (0.6)	1.79 (0.7)	0.107

Note: For continuous variables age and laboratory values, the data are expressed as mean (±SD) and for Child-Pugh and MELD score the data are presented as median (IQR).

Abbreviations: p-TIPS, pre-emptive transjugular intrahepatic portosystemic shunt.

Hepatology January 2024

- 7 hospital in China
- 1554 patients
- 1264 SOC; 290 p-TIPS
- 2010-2017

Received: 6 January 2023 | Accepted: 12 June 2023

DOI: 10.1097/HEP.0000000000000548

AASLD

ORIGINAL ARTICLE

Development and validation of a prognostic score to identify the optimal candidate for preemptive TIPS in patients with cirrhosis and acute variceal bleeding

Yong Lv[1] | Wei Bai[1,2] | Xuan Zhu[3] | Hui Xue[4] | Jianbo Zhao[5] |

$$CCG-AVBs = 10 \times \left[0.0289 \times (Age, years) - 0.0525 \times (Albumin, g/L) + 0.3334 \times Ln(Bilirubin, mg/dl) + 1.7631 \times Ln(INR) + 0.3373 \times Ln(WBC, 10^9/L) + 0.4509 \times Ln(Creatinine, mg/dl) - 0.0294 \times (Sodium, mmol/L) + 8 \right]$$

Development and validation a prognostic score to identify the optimal candidate for preemptive TIPS in patients with cirrhosis and acute variceal bleeding

Treatment effect from pre-emptive TIPS in individual patients with cirrhosis and acute variceal bleeding

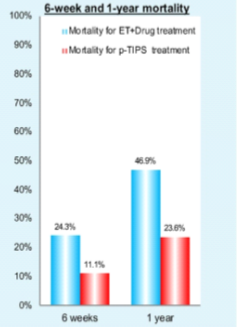
Data

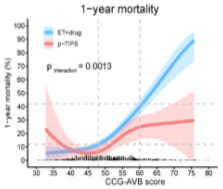
Age	65.0	years
Albumin	34.0	g/L
Bilirubin	2.3	mg/dl
Creatinine	1.4	mg/dl
INR	1.7	
White blood cell	7.9	10^9 cell/L
Sodium	135.0	mmol/L

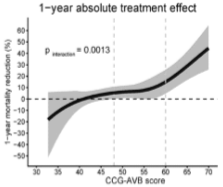
CCG-AVB Score 62 points

Probability of death, ARR an NNT

	6 weeks	1 year
Mortality for ET+Drug treatment	24.3%	46.9%
Mortality for p-TIPS treatment	11.1%	23.6%
Absolute risk reduction	13.1%	23.3%
Number need to treat	8	4







CCG-AVB score, Chinese Collaboration Group on the Acute Variceal Bleeding score

Lv, et al. *Hepatology.*

HEPATOLOGY

[Development and validation of a prognostic score to identify the optimal candidate for preemptive TIPS in patients with cirrhosis and acute variceal bleeding]

Lv, Yong; Bai, Wei; Zhu, Xuan; Xue, Hui; Zhao, Jianbo; Zhuge, Yuzheng; Sun, Junhui; Zhang, Chunqing; Ding, Pengxu; Jiang, Zaibo; Zhu, Xiaoli; Ren, Weixin; Li, Yingchun; Zhang, Kewei; Zhang, Wenguang; Li, Kai; Wang, Zhengyu; Luo, Bohan; Li, Xiaomei; Yang, Zhiping; Guo, Wengang; Xia, Dongdong; Xie, Huahong; Pan, Yanglin; Yin, Zhanxin; Fan, Daiming; Han, Guohong

Hepatology79(1):118-134, January 2024.

doi: 10.1097/HEP.0000000000000548

AGE
Albumin
TBR
Cr
INR
WBC
Na

AASLD
AMERICAN ASSOCIATION FOR THE STUDY OF LIVER DISEASES

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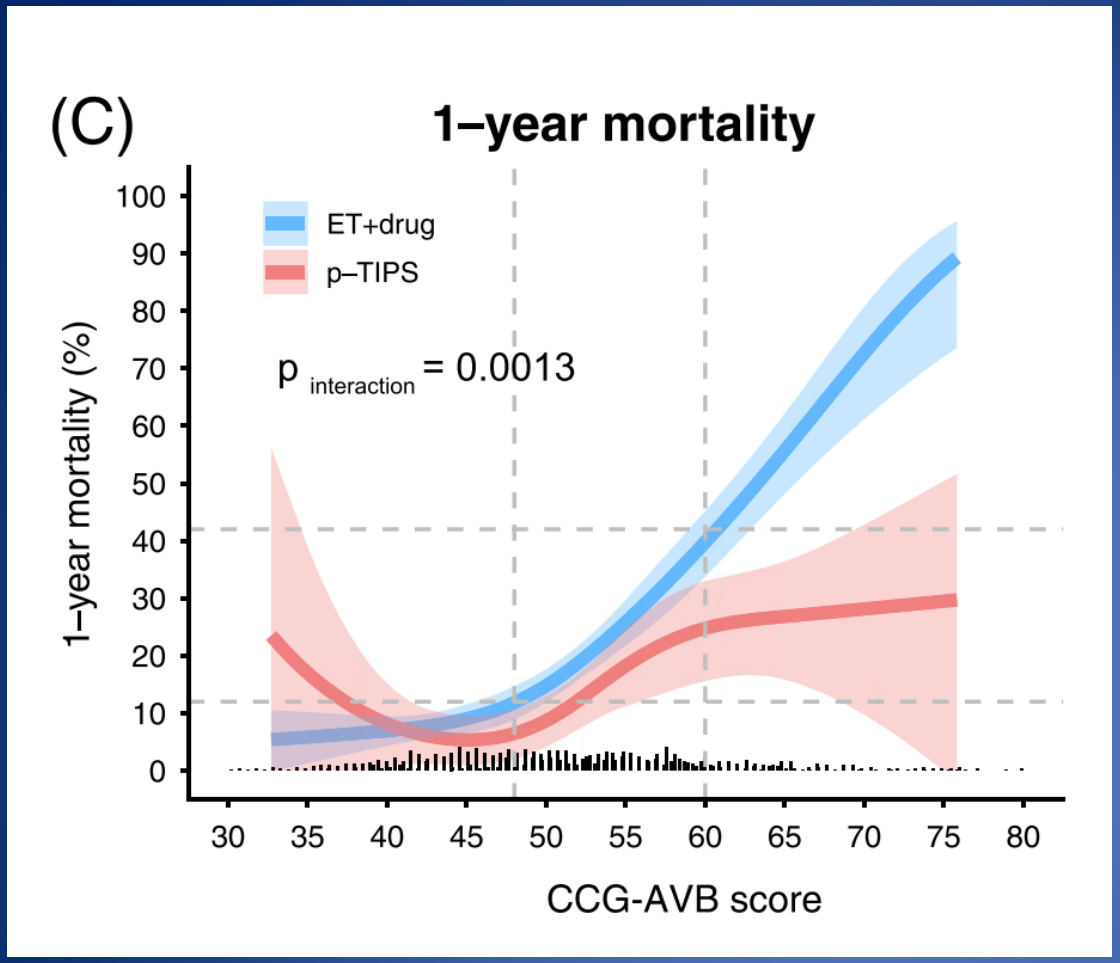
(C)
1–year mortality
ET+drug
p–TIPS
p interaction = 0.0013
1–year mortality (%)
100
90
80
70
60
50
40
30
20
10
0
30
35
40
45
50
55
60
65
70
75
80
CCG-AVB score

Platelet count (× 10^9/L)	85.5 (106.6)	89.6 (66.3)	0.415
International normalized ratio	1.4 (0.3)	1.4 (0.7)	0.867
Albumin (g/L)	29.9 (5.7)	31.8 (5.3)	<0.001
Bilirubin (mg/dL)	1.6 (1.6)	1.6 (1.7)	0.66
Creatinine (mg/dL)	0.9 (0.4)	0.9 (0.4)	0.512
Sodium (mmol/L)	138.9 (9.1)	138.9 (5.7)	0.992
MELD score (points)	11.9 (3.8)	11.6 (4.1)	0.312
MELD-NA score (points)	12.7 (5.2)	12.5 (5.4)	0.649
Recalibrated MELD score (points)	-2.9 (0.8)	-2.9 (0.8)	0.310
MELD-HE score (points)	-2.7 (0.6)	-2.8 (0.6)	0.329
CLIF-C AD score (points)	45.4 (9.0)	43.0 (9.7)	<0.001
Child-Pugh score (points)	7.2 (1.5)	7.1 (1.6)	0.714
Child-Pugh class, n (%)	–	–	0.002
A (5–6)	462 (36.6)	119 (44.9)	–
B (7–9)	701 (55.5)	116 (43.8)	–
C (10–13)	101 (8.0)	30 (11.3)	–

75% of patients HBV
No MASLD

Synthesis of ALL p-TIPS studies in the literature

- 632 patients
- Very low rate of re-bleeding, low rate of mortality when compared to standard of care
- In the cohort studied, NNT is ~ 5-7

- Caveats:
- Relatively low MELD scores
- Almost no MASLD patients

Critique

Sen *et al. Critical Care* 2013, **17**:323
http://ccforum.com/content/17/4/323

JOURNAL CLUB CRITIQUE

'The TIPSing point'

Ayan Sen[1,2], Shahid M Malik[3] and Ali Al-Khafaji*[1,2]

University of Pittsburgh Department of Critical Care Medicine: Evidence-Based Medicine Journal Club, edited by Sachin Yende

(Devil in the) Details

- 1. ~ 70% of patients were alcoholic
  - with a majority actively drinking
- 2. Mean MELD in TIPS cohort 15 +/- 5
- 3. How do you explain the lower incidence of PSE in the TIPS group?
  - Defaulted to 8mm stents
- 4. Sclerotherapy was used in ~ 25% of cases
- 5. 33% of patients in the EARLY TIPS cohort
  - 'had previous varcieal bleeding in the absence of combined treatment'

Problem with Early/p-TIPS

- 64 year old with MASLD cirrhosis, Childs C (12), MELD of 25 with two prior episodes of encephalopathy in the last two months (one requiring intubation) is admitted with her first variceal bleed.
- An EGD reveals medium-sized esophageal varices and a clear nipple sign in the distal esophagus on the largest varix.
- Band ligation is performed with good decompression

WHO HERE WOULD SEND THIS PATIENT FOR EARLY TIPS???

UPMC

- June 2010-June 2020
- 744 patients with cirrhosis admitted with variceal bleed
- 136 (18%) met criteria for p-TIPS
  - Exact % of the original study
- However, only NINE of the eligible 136 patients underwent p-TIPS

UPMC

- UPMC: 97% of patients were Childs C
- 60% Alcohol, 20% HCV, 15% MASLD
- Mean MELD-Na was 24
  - >50% of our patients had a MELD > 20. you would be hard pressed to find any patients in the entire published literature of p-TIPS (> 600 patients with a MELD > 23)

UPMC Experience p-TIPS

- Rebleeding occurred 32%.
- One year mortality was 53% (versus no deaths in the 9 patients)
- Salvage TIPS in 19 patients
  - 63% of these patients died

Conclusion of UPMC Experience

- We have a different demographic of patients and are patients are significantly sicker
- But, what we are currently doing is not working. There remains high incidence of re-bleeding and mortality (no different than historical)
- p-TIPS needs to be proven to be safe and effective in this sicker/different patient population

Linda's Case

- Variceal bleeding in patient with ACLF
- Barcelona Group (Pagan et al). JOH 2022
- 2138 patients with from 34 European Centers over 4-year span
- 18% (380) had ACLF
- Of those with ACLF 93 (24%) course was complicated by bleeding
- Underwent EGD

- 22 of these patients were sent for TIPS
- Compared to 147 SOC
- Risk of re-bleeding was significantly less (HR 0.128; p=0.043)
- In addition lower one-year mortality (23% versus 57%; p=0.002)

Table 3. Comparison of baseline characteristics between patients with and without pre-emptive TIPS based on baseline ACLF status.

	ACLF			Non-ACLF		
Baseline characteristics	**pTIPS (n = 22)**	**No pTIPS (n = 147)**	***p* value**	**pTIPS (n = 44)**	**No pTIPS (n = 458)**	***p* value**
Male, n (%)	13 (59.1)	116 (78.9)	0.058	34 (77.3)	350 (76.4)	1.000
Age	53.0 (43.8–60.5)	54.0 (49.0–60.0)	0.522	53.0 (44.3–62.0)	55.0 (47.0–62.0)	0.300
Etiology of cirrhosis, n (%)			0.754			0.262
Alcohol liver disease	16 (72.7)	94 (64.0)		31 (70.5)	260 (56.8)	
Hepatotropic virus	1 (4.5)	22 (15.0)		6 (13.6)	62 (13.5)	
Alcohol and virus	3 (13.6)	23 (15.6)		5 (11.4)	80 (17.4)	
Others	2 (9.1)	18 (5.4)		2 (4.5)	56 (12.2)	
Hepatocellular carcinoma, n (%)	0 (0.0)	4 (2.7)	1.000	1 (2.3)	4 (0.9)	0.369
Previous bleeding, n (%)	6 (27.3)	34 (23.1)	0.788	11 (25.0)	156 (34.1)	0.245
Portal vein thrombosis	0 (0.0)	8 (5.5)	0.599	2 (4.5)	27 (6.0)	1.000
Previous episode of decompensation, n (%)						
Ascites	13 (59.1)	90 (61.2)	1.000	19 (43.2)	238 (52.0)	0.274
Bacterial infection	5 (22.7)	55 (37.4)	0.235	6 (13.6)	91 (19.9)	0.424
Hepatic encephalopathy	7 (31.8)	48 (32.7)	1.000	8 (18.2)	67 (14.6)	0.509
Spontaneous bacterial peritonitis/bacteremia	2 (9.1)	24 (16.3)	0.534	3 (6.8)	24 (5.2)	0.722
Hepatorenal syndrome	1 (4.5)	6 (4.1)	1.000	1 (2.3)	8 (1.7)	0.565
Laboratory test						
Hemoglobin (g/L)	87.5 (51.0–101.3)	76.0 (63.0–90.0)	0.298	77.5 (60.0–90.3)	86.0 (68.0–101.0)	0.017
Leucocytes (10^9/L)	9.1 (6.7–12.9)	8.7 (6.1–14.1)	0.900	9.5 (6.3–12.7)	8.2 (5.8–11.6)	0.337
Platelet count (10^9/L)	76.0 (64.5–97.8)	79.0 (54.0–125.0)	0.835	89.0 (73.0–112.0)	83 (58.5–122.5)	0.296
Creatinine (mg/dl)	0.9 (0.6–1.4)	1.3 (0.8–1.8)	0.070	0.8 (0.7–1.1)	0.8 (0.6–1.0)	0.193
Urea nitrogen (mg/dl)	51.0 (24.6–91.0)	59.0 (36.0–105.0)	0.227	40.0 (18.5–51.7)	40.0 (24.8–64.0)	0.883
Na (mEq/L)	135.0 (132.9–139.8)	135.2 (131.0–140.0)	0.868	138.0 (134.1–140.8)	137.0 (134.0–140.0)	0.344
Bilirubin (mg/dl)	2.4 (1.7–5.3)	4.6 (2.1–13.0)	0.020	2.3 (1.7–4.4)	2.9 (1.7–4.5)	0.337
Albumin (g/L)	22.9 (20.6–27.9)	26.0 (22.0–29.0)	0.219	25.0 (21.3–27.2)	26.0 (22.0–29.0)	0.333
AST (U/L)	71.0 (51.0–164.0)	81.0 (48.0–143.0)	0.734	54.0 (39.0–97.0)	64.0 (41.0–112.0)	0.131
ALT (U/L)	50.0 (29.0–74.5)	39.0 (25.0–65.5)	0.386	23.0 (19.0–39.0)	34.0 (22.0–55.0)	0.025
INR	1.9 (1.6–2.4)	1.9 (1.6–2.6)	0.886	1.7 (1.5–1.8)	1.6 (1.4–1.9)	0.749
Glucose (mg/dl)	153.0 (129.0–234.5)	139.5 (103.7–171.5)	0.034	150.5 (113.5–197.8)	132.0 (109.0–173.0)	0.541
Scores						
MELD	19.0 (13.0–22.0)	22.0 (17.0–26.0)	0.021	14.0 (10.0–17.0)	13.0 (10.0–17.0)	0.620
Child-Pugh	11.0 (10.0–11.0)	11.0 (10.0–12.0)	0.362	10.0 (9.0–11.0)	10.0 (8.0–11.0)	0.755
Child B, n (%)	3 (13.6)	27 (18.4)	0.769	16 (36.4)	191 (41.7)	0.525
Child C, n (%)	19 (86.4)	120 (81.6)		28 (63.6)	267 (58.3)	
ACLF grades			0.043			
1	8 (36.4)	50 (34.0)			–	
2	13 (59.1)	56 (38.1)			–	
3	1 (4.5)	41 (27.9)			–	

My 15 steps for a patient with cirrhosis and UGIB

- 1. ABCs
  - Type and cross, (hold at least 3units), large-bore IV access
  - Lab data, X-ray
- 2. Transfuse conservatively ~ 7-8 g/dL
- 3. INR not reliable
  - 3a. Platelets? Most recc > 50
  - Query role of TEG
- 4. ICU
- 5. +/- NGT
- 6. Intubation
  - Extubate ASAP
  - If you're going to keep intubated, strongly consider endoscopic placement of enteral access after you've done your work

15 steps

- 7. Octreotide
  - Carvedilol should be b-blocker of choice upon discharge
- 8. PPI pre scope
  - Stop if deemed non-ulcer related
- 9. Abx
- 10. Erythromycin (clear the fundal clot)
- 11. EGD within 12 hours of presentation
  - Band ligation>sclerotherapy
- 12. Tamponade device (Blakemore/Minnesota tube; Esophageal Stent) at bedside
- 13. RUQ US with dopplers
  - To evaluate vessel patency; tumors etc…
  - I'm a fan of triphasic CT

- 14. EGD should ideally be done in centers equipped
  - Hepatology/GI, ICU, IR, Transplant
- 15. Think (fast and hard) about p-TIPS specifically in Childs B + AVB and Childs C < 13

That being said…

- I think p-TIPS needs to be proven to be safe and effective in an American cohort (sicker with more MASLD)
- and until then I anticipate there will remain (right or wrong) a reluctance to send patients for p-TIPS

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Additional Studies:

Lv et al. Lancet Gastro & Hep. 2019
China
Followed blue-print of NEJM 2010 study
Except patients were randomized 2:1
132 patients; 86 assigned to TIPS, 46 in control
75% HBV
Mean MELD 14
Improvement in Survival in p-TIPS

Thabut et al. JOH. 2017. France.
964 patients from 58 centers.
35% were eligible but only 7% actually underwent p-TIPS
Survival at one year was superior in TIPS group 86% versus 59%

Hernandez-Gea et al.
Hepatology 2019.
671 patients from 34 centers in Europe
66 patients underwent p-TIPS
MEAN MELD 15
One year mortality in TIPS cohort was 22% versus 47%
p=0.0002

One outlier study. RCT

- Dunne et al. Alimentary Pharmacology & Therapeutics. 2020. UK Study
- 58 patients were randomized
- 90% alcohol; 83% actively drinking
- Mean MELD 17
- One year survival p-TIPS: 80% versus 75% in standard of care (nss)
- Survival in standard of care is much higher than has been reported historically or in other studies
- Conclusions: only used band ligation. Only used terlipressin. Only used carvedilol