# When not to anticoagulate?

Hemostasis and thrombosis in liver disease, Castellana Grotte, 8-10 April 2026

Pierre-Emmanuel Rautou, Nicolas Intagliata, Andrea De Gottardi

# When not to anticoagulate?

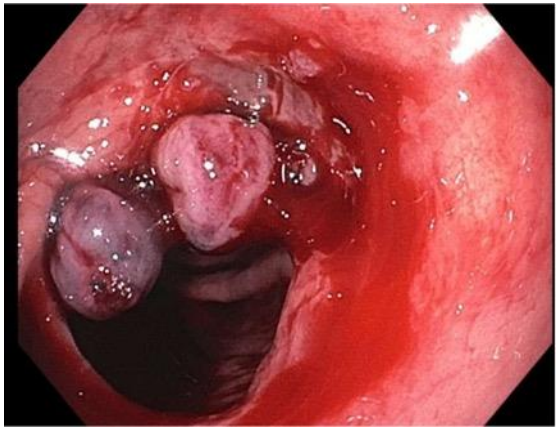
- Anticoagulation management and endoscopic procedures
- Anticoagulation management and portal vein recanalization
- Anticoagulation management in the listed transplant patient

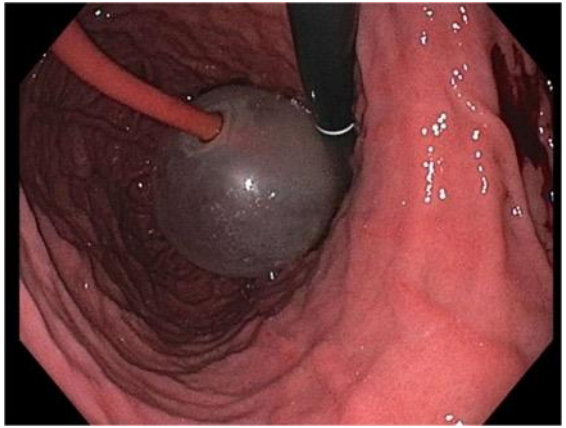
# When not to anticoagulate?

- Anticoagulation management and endoscopic procedures
- Anticoagulation management and portal vein recanalization
- Anticoagulation management in the listed transplant patient

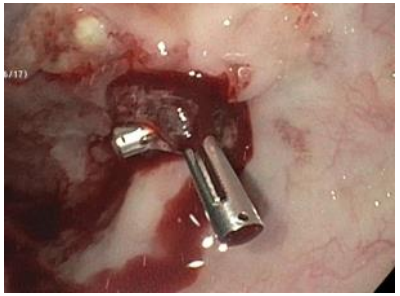
# Periprocedural EVL bleeding case DOAC and band ligation

- 72-year old man with decompensated cirrhosis and prior extensive PVT on DOAC presenting for outpatient EVL for primary prophylaxis
- **Apixaban held 72 hours prior to procedure**
- During EGD noted to have scarring from prior banding and 2 bands placed and 3rd and 4th attempt misfires with persistent bleeding unable to be endoscopically controlled-->
- Intubated and underwent Blakemore tube placement and then urgent TIPS without rebleeding





# Scope of the problem



- Bleeding can occur at 2 points in time:
  - **Intraprocedural: band slippage or misfire- very rare**
  - **Postprocedural: Delayed post banding ulcer bleed (PBUB)**

- Meta analysis PBUB[1] (*18 studies included)*
  - ***Incidence of PBUB - 5.5%*** *(95% CI 4.3–7.1)*
  - ***PBUB ~ 11 days*** *(95% CI 9.94–11.97)*
  - ***Mortality was 22.3%*** *(95% CI 14.1–33.6)*

Received: 9 December 2022 | Revised: 24 April 2023 | Accepted: 14 May 2023
DOI: 10.1111/liv.15621

ORIGINAL ARTICLE

Liver INTERNATIONAL WILEY

**Predictors and management of post-banding ulcer bleeding in cirrhosis: A systematic review and meta-analysis**

Maria de Brito Nunes[1,2,3] | Matthias Knecht[1] | Reiner Wiest[1] | Jaume Bosch[1] | Annalisa Berzigotti[1]

1 Nunes et al. Liver International 2023

# Anticoagulation and PBUB

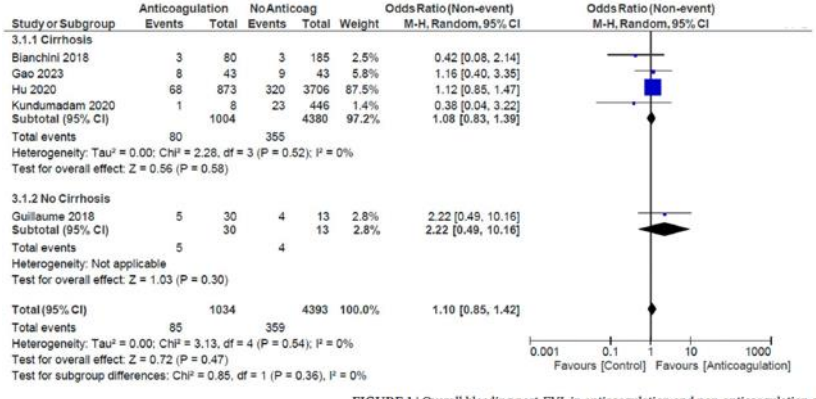



FIGURE 1 | Overall bleeding post-EVL in anticoagulation and non-anticoagulation groups.

**Summary of findings:**

**Anticoagulation compared to No Anticoagulation in patients post EVL**

**Patient or population:** patients post EVL
**Setting:** Patients post EVL
**Intervention:** Anticoagulation
**Comparison:** No Anticoagulation

| Outcomes | Anticipated absolute effects* (95% CI) Risk with No Anticoagulation | Risk with Anticoagulation | Relative effect (95% CI) | № of participants (studies) | Certainty of the evidence (GRADE) | Comments |
|---|---|---|---|---|---|---|
| Overall Bleeding - total | 78 per 1000 | 85 per 1000 (67 to 108) | OR 1.10 (0.85 to 1.42) | 5442 (5 non-randomised studies) | ⊕⊕◯◯ Low | The usage of anticoagulation did not result in increased episodes of bleeding in patients post-EVL. |
| Post Banding Ulcer Bleed - total | 83 per 1000 | 86 per 1000 (42 to 169) | OR 1.04 (0.48 to 2.24) | 4887 (3 non-randomised studies) | ⊕⊕◯◯ Low | The usage of anticoagulation did not result in increased episodes of post banding ulcer bleeding in patients post-EVL. |
| Severe Bleeding | 52 per 1000 | 49 per 1000 (17 to 135) | OR 0.94 (0.31 to 2.85) | 312 (2 non-randomised studies) | ⊕⊕◯◯ Low | The usage of anticoagulation did not result in increased episodes of severe bleeding in patients post-EVL. |
| Variceal Eradication - total | 903 per 1000 | 873 per 1000 (742 to 942) | OR 0.74 (0.31 to 1.74) | 331 (3 non-randomised studies) | ⊕⊕◯◯ Low | The evidence suggests that anticoagulation does not result in significant variceal eradication. |

*The risk in the intervention group (and its 95% confidence interval) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).

CI: confidence interval; OR: odds ratio

**GRADE Working Group grades of evidence**
**High certainty:** we are very confident that the true effect lies close to that of the estimate of the effect.
**Moderate certainty:** we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
**Low certainty:** our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
**Very low certainty:** we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

FIGURE 4 | GRADE summary of findings table.

TABLE 1 | Baseline characteristics of included studies.

| Author; year | Study design; country | Participants AC | Participants C | Duration of follow-up | Age (mean ± SD) | Male (n, %) | Study population | Grade of varices Small/Large (n, %) | MELD score (mean ± SD) | Child-Turcotte-Pugh score A/B/C (n, %) | History of variceal bleeding (n, %) | Previous decompensation (n, %) | Indication for anticoagulation (n, %) | Details of anticoagulation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bianchini 2018 | Retrospective cohort, Italy | 80 | 185 | 4 weeks | AC: 64 ± 12 C: 61 ± 12 | AC: 55 (68.8) C: 131 (70.4) | Cirrhosis | AC: 10/70 (12.5/88.8) C: 11/174 (5.9/94.1) | AC: 11 ± 3 C: 12 ± 5 | NR | NR | I: 28 (35) C: 61 (33) | PVT: 64 (80) AF: 7 (8.7) PE: 3 (3.7) DVT: 5 (6.3) Prosthetic valve: 1 (1.3) | Clexane 70–100 U/kg; during EVL |
| Guillaume 2018 | Prospective cohort, France | 30 | 13 | AC: 1521 ± 925 days C: 1899 ± 1739 days | AC: 48 ± 12 C: 45 ± 19 | AC: 21 (70) C: 8 (62) | Noncirrhotic portal hypertension (PVT) | AC: 6/30 (0/100) C: 1/12 (8/92) | AC: 13 ± 7 C: 11 ± 4 | AC:60%/40%/0% C: 77%/23%/0% | NR | NR | PVT | Warfarin aiming INR 2–3; during EVL |
| Hu 2022 | Retrospective cohort, China | 873 | 3706 | 6 weeks | NR | 1516 (77.2) | Cirrhosis | NR | NR | 30%/30%/20% | 2805 (61.3) | 2940 (64.6) | NR | NR |
| Kundumadam 2020 | Retrospective cohort, United States | 8 | 446 | 30 days | 57 ± 11 | 278 (61.2) | Cirrhosis | NR | 15 ± 6 | NR | NR | NR | NR | During EVL |
| Gao 2023 | Randomised Control Trial | 43 | 43 | 6 months | AC: 57 ± 10 C: 56 ± 11 | AC: 23(53.5) C: 27 (62.8) | Cirrhosis | AC: 0/43 (0/100) C: 0/43 (0/100) | AC: 10 ± 2 C: 10 ± 2 | AC: 35%/65%/5% C: 30%/65%/2% | AC: 23 (53.5) C: 21 (48.8) | NR | PVT | Nadroparin calcium–warfarin sequential therapy; 48 h after EVL |
| Bajaj 2008 | Retrospective cohort, United States | 5 | NR | NR | 60 ± 7 | 3 (60) | Cirrhosis and noncirrhotic portal hypertension | 0/5 (0/100) | NR | 4 out of 5 were Child B/C | 2 (40) | NR | Cardiogenic cirrhosis, BCS, PRV and PVT, PSC, cryptogenic | Warfarin aiming INR 2–3, during EVL |
| Ponthus 2019 | Retrospective cohort, Switzerland | 32 | NR | 13 (3–29) months | 59 (56–65) | 24 (75) | Cirrhosis | 0/32 (0/100) | 14 ± 6 | 31%/44%/25% | 17 (53) | 32 (100) | PVT | Clexane: 23 (72) 80 mg BD; during EVL Warfarin: 9 (28); during EVL |
| Nagata 2018 | Retrospective cohort, Japan | 106 | NR | 30 days | NR | NR | NR | NR | NR | NR | NR | NR | NR | Warfarin: 54 (50.9) DOAC: 52 (49.1) |
| Swarts 2022 | Retrospective cohort, United States | 47 | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR |

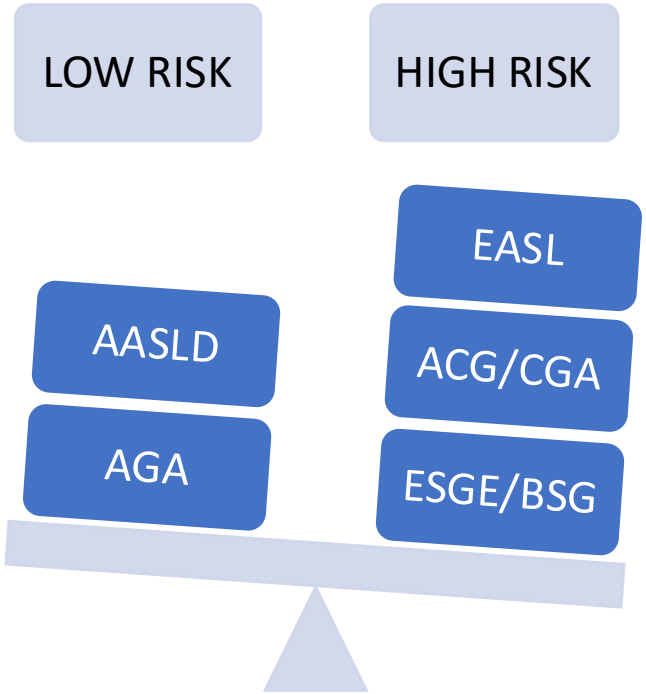
Abbreviations: AC, anticoagulation; AF, atrial fibrillation; BCS, Budd–Chiari syndrome; BGIT, bleeding gastrointestinal tract; C, control; DOAC, direct oral anticoagulant; DVT, deep vein thrombosis; MELD, model for end-stage liver disease; PE, pulmonary embolism; PRV, polycythaemia rubra vera; PSC, primary sclerosing cholangitis; PVT, portal vein thrombosis.

Heterogeneous studies and reporting on **management of anticoagulation during EVL procedure** and challenging to compare study protocols (only Bianchini, Guillaume, Gao papers explicitly state how AC managed)



Loo et al. Liver International 2025

# Procedure risk level?




2/3 of respondents considered EVL low risk!

| | Procedure | Voting percentage | |
|---|---|---|---|
| | | Low risk | High risk |
| Digestive endoscopy | Stricture dilatation (balloon) | 38% | 63% |
| | Enteral stent deployment | **77%** | 23% |
| | Cystogastrostomy | 13% | **87%** |
| | Polypectomy <1 cm | **76%** | 24% |
| | Polypectomy >1 cm | 12% | **88%** |
| | Diagnostic (with or without biopsy) | **98%** | 2% |
| | Variceal ligation | 71% | 29% |
| Upper | Glue injection of gastric varices | 54% | 46% |
| | Peroral endoscopic myotomy | 7% | **93%** |
| | Ampullary resection | 6% | **94%** |
| | Percutaneous gastrostomy or jejunostomy placement | 22% | **78%** |
| | Diagnostic balloon-assisted enteroscopy | **90%** | 10% |
| | Therapeutic balloon-assisted enteroscopy | 64% | 36% |
| | Push enteroscopy | **88%** | 12% |

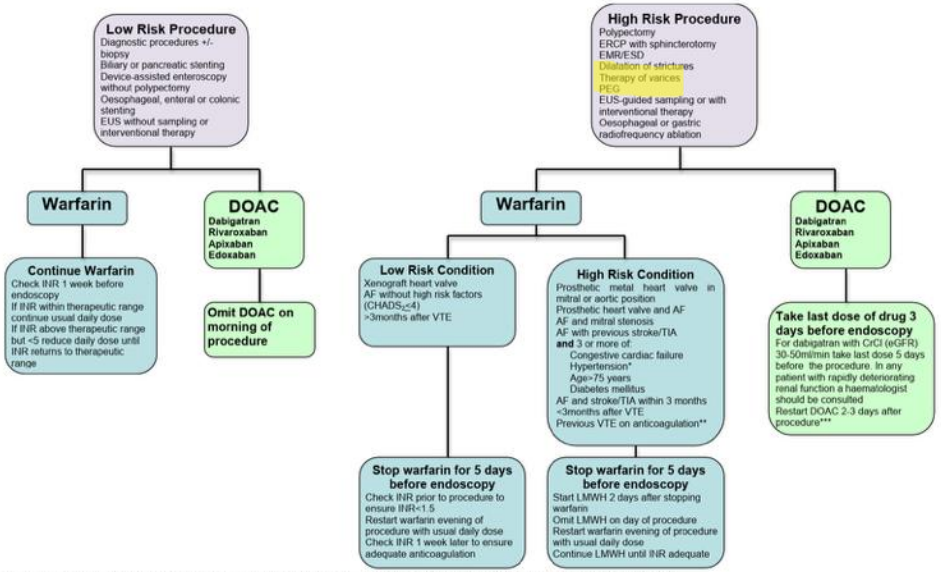
Reischer-Tuczkiewicz A. et al. JHEP Reports 2024

Villa et al. EASL Clinical Practice Guidelines on prevention and management of bleeding and thrombosis in patients with cirrhosis. J Hepatol. 2022

# Guidance?

## ESGE/BSG

**Figure 2: Guidelines for the management of patients on warfarin or Direct Oral Anticoagulants (DOAC) undergoing endoscopic procedures: 2021 update**




*Blood pressure >140/90mmHg or on antihypertensive medication **Previous VTE on anticoagulation and target INR now 3.5
***depends on haemorrhagic and thrombotic risk, interval may be extended for ESD
(EUS: endoscopic ultrasound, ERCP: endoscopic retrograde cholangiopancreatography, EMR: endoscopic mucosal resection, ESD: endoscopic submucosal dissection, PEG: percutaneous endoscopic gastroenterostomy, INR: international normalised ratio, AF: atrial fibrillation, VTE: venous thromboembolism, TIA: transient ischaemic attack, LMWH: low molecular weight heparin)

1

## ACG/CGA

The planned procedure type (Table 3) and its associated risk of postprocedural bleeding, and the baseline risk of VTE will influence the recommendation, as will resource requirements associated with discontinuation and reinitiation of anticoagulation (e.g., laboratory tests and clinic visits). For patients on warfarin who are undergoing elective and planned outpatient endoscopic GI procedures, we suggest warfarin be continued unless they are undergoing an advanced endoscopic procedure (Table 3), which may incur a higher risk of procedural bleeding, in which case 5 days of temporary interruption without bridging heparin would be appropriate

| **Management of antithrombotic agents in the elective endoscopy setting** |
|---|
| **Anticoagulant interruption vs continuation** |
| 11. For patients on warfarin undergoing elective/planned endoscopic GI procedures, we suggest warfarin be continued, as opposed to temporarily interrupted (1–7 d) (conditional recommendation, very low certainty of evidence). |
| 12. For patients on warfarin, who hold warfarin in the periprocedural period for elective/planned endoscopic GI procedures, we suggest against bridging anticoagulation (conditional recommendation, low certainty of evidence). |
| 13. For patients on DOACs who are undergoing elective/planned endoscopic GI procedures, we suggest temporarily interrupting DOACs rather than continuing DOACs (conditional recommendation, very low certainty of evidence). |

# EASL Guidelines

**Should antiplatelet and/or anticoagulant agents be discontinued in patients with cirrhosis before invasive procedures to decrease the rate of procedure-related clinically relevant bleeding?**

**Recommendation**

- In patients with cirrhosis, antiplatelet and/or anticoagulant agents should be managed following the same guidelines as in patients without cirrhosis before invasive procedures (**LoE 4, strong recommendation**).

- In both GI guidelines for high-risk procedures the recommendation is to **adjust anticoagulation with either holding or bridging.**

- However, we are most worried about a bleed that on average occurs **11 days post procedure**!

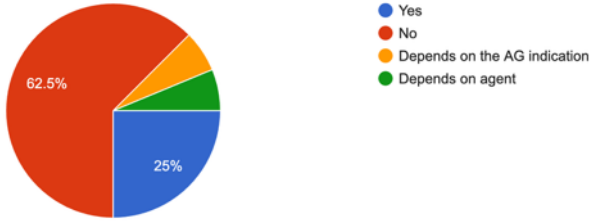
EASL Clinical Practice Guidelines on prevention and management of bleeding and thrombosis in patients with cirrhosis. J Hepatol. 2022

| Guideline and/or consensus | LMWH and VKA | DOAC | Risk of EVL |
|---|---|---|---|
| AASLD (Northup 2020) | Continue | Continue (implicitly) | Low |
| Chinese Society of GI (2021) | - | - | - |
| ESGE/BSG (Veicht 2021) | Hold | Hold | High |
| Italy AICF (Bruno 2021) | - | - | - |
| Baveno VII (de Franchis et al. 2022) | Continue | - | - |
| ACG/CGA (Abraham 2022) | Hold | Hold | High |
| EASL (Villa 2022) | Hold? | Hold? | High |
| Austrian Bilroth IV (Mandorfer 2023) | Continue | ? | - |
| ISTH (Carlin 2024) | - | - | - |
| AGA (Davis 2024) | - | - | - |
| Spain AEEH (Albillos 2025) | - | - | - |

# Survey results

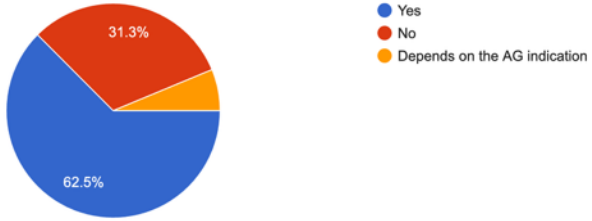
Do you routinely recommend to hold anticoagulation (VKA or LMWH) prior to elective EVL in patients with cirrhosis?

16 responses



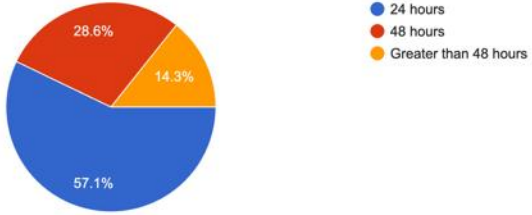

Do you routinely recommend to hold anticoagulation (DOAC) prior to elective EVL in patients with cirrhosis?

16 responses



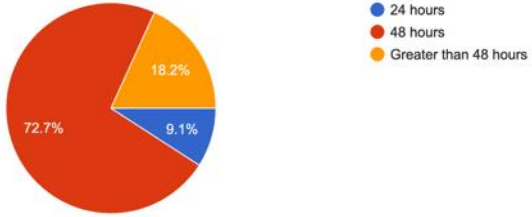

If yes, how long prior to EVL do you hold anticoagulation?

7 responses




If yes, how long prior to EVL do you hold anticoagulation?

11 responses



# Take away points

- **EVL represents a special case and probably does not fit into endoscopic guideline recommendations**
- The **underlying reason for anticoagulation matters most** in decision making
  - Patients with high risk for VTE and more urgent need for EVL
- If stopping then when to restart anticoagulation?
- Are DOAC different than traditional agents?
- Multicenter study?

# When not to anticoagulate?

- Anticoagulation management and endoscopic procedures
- Anticoagulation management and portal vein recanalization
- Anticoagulation management in the listed transplant patient

# Case presentation: June 2011

- 68 yr-old man; **ascites**
- Medical history:
  - excessive alcohol consumption
  - arterial hypertension
  - dyslipidemia
  - 90 kg; 1.68 m
  - diabetes

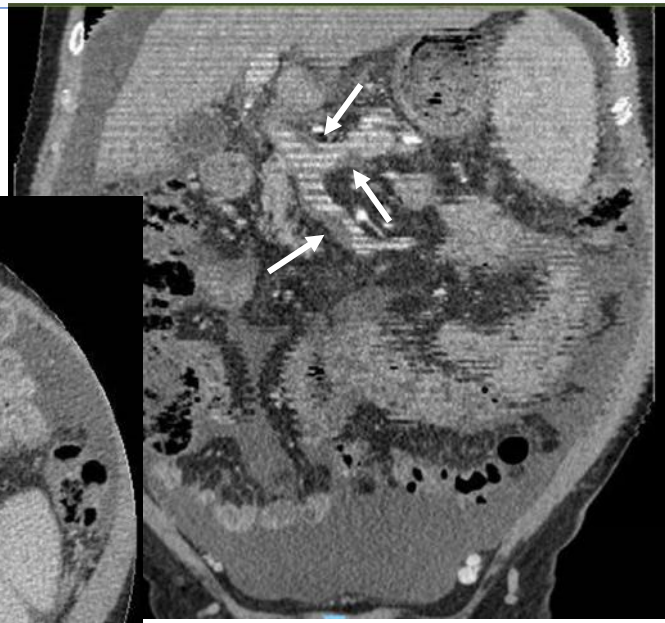
- Transjugular liver biopsy:
  - Cirrhosis (small fragments)
  - HVPG: 13 mmHg

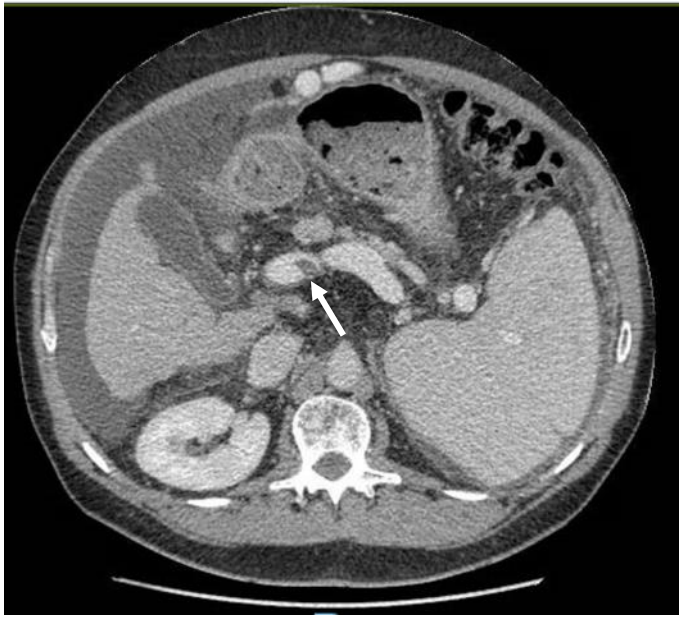
**Laboratory tests:**

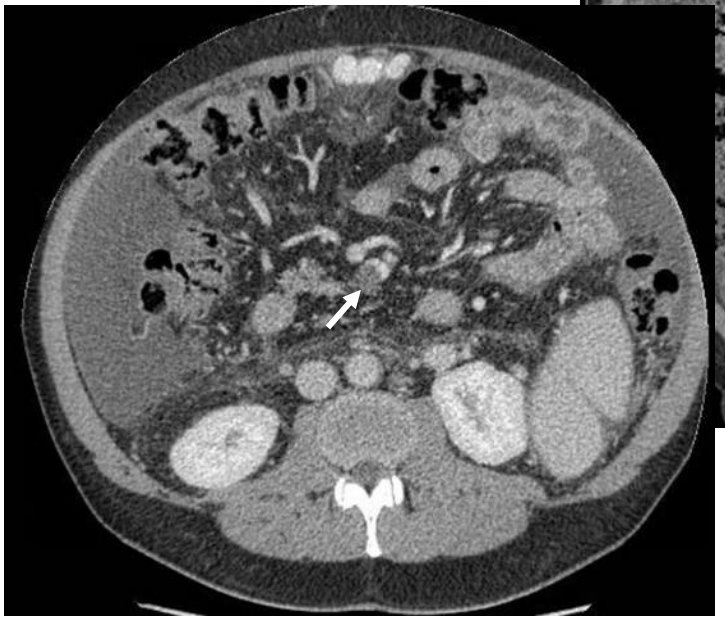
- AST: 50 UI/L
- ALT: 30 UI/L
- ALK: 80 UI/L
- GGT: 67 UI/L
- Platelet: 51 000 /$mm^3$
- Serum albumin: 27 g/L
- Serum bilirubin: 13 µmol/L
- INR 1.3
- Serum creatinine: 73 µmol/L

# Case presentation: June 2011

- Endoscopy: large varices
- Imaging: no HCC



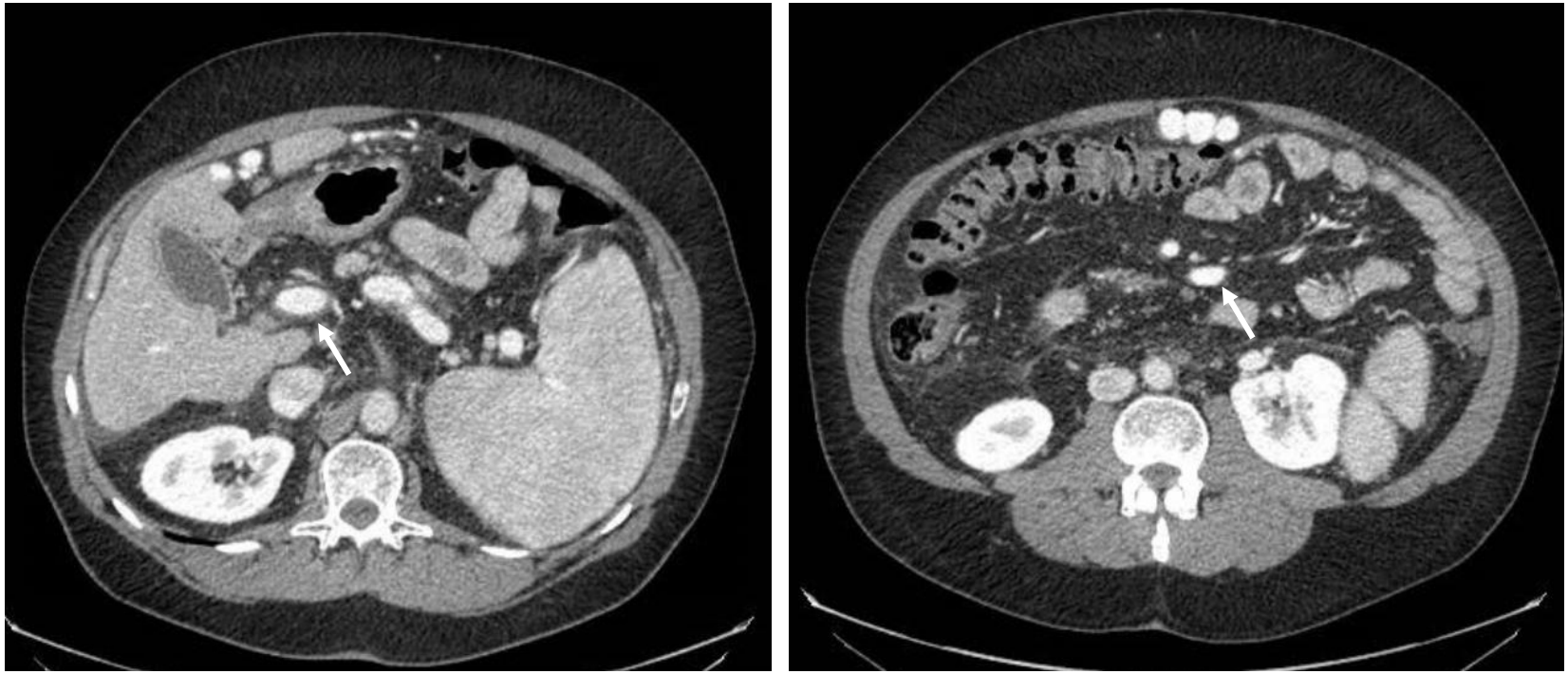




➔ VKA, Propranolol, diuretics, insulin

➔ Stop alcohol

# Case presentation: June 2011 ➔ Dec 2011

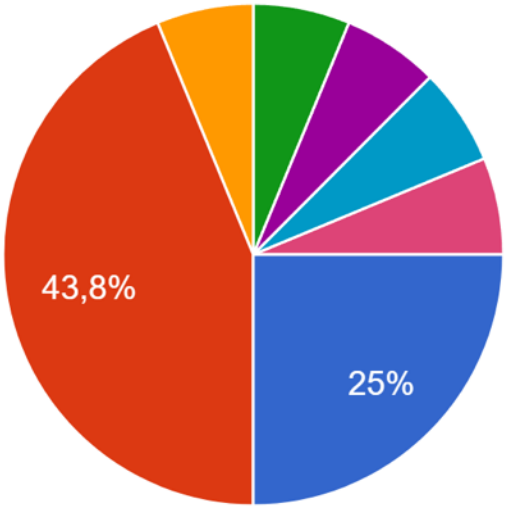


➔Portal vein recanalization with anticoagulant

# Survey results

In a patient with cirrhosis and PVT, who recanalizes portal venous system following anticoagulant (not on transplant list), are you going to:

16 réponses

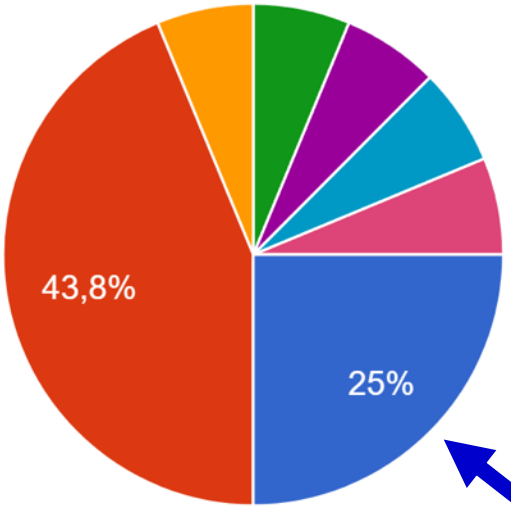



- Stop anticoagulation
- Continue anticoagulation
- continue at prophylactic dose
- Reduce to prophylactic dose AC
- Consider individual situations
- Case by case decision
- will depend on the bleeding risk (age, alcohol, he)

# Survey results

In a patient with cirrhosis and PVT, who recanalizes portal venous system following anticoagulant (not on transplant list), are you going to:

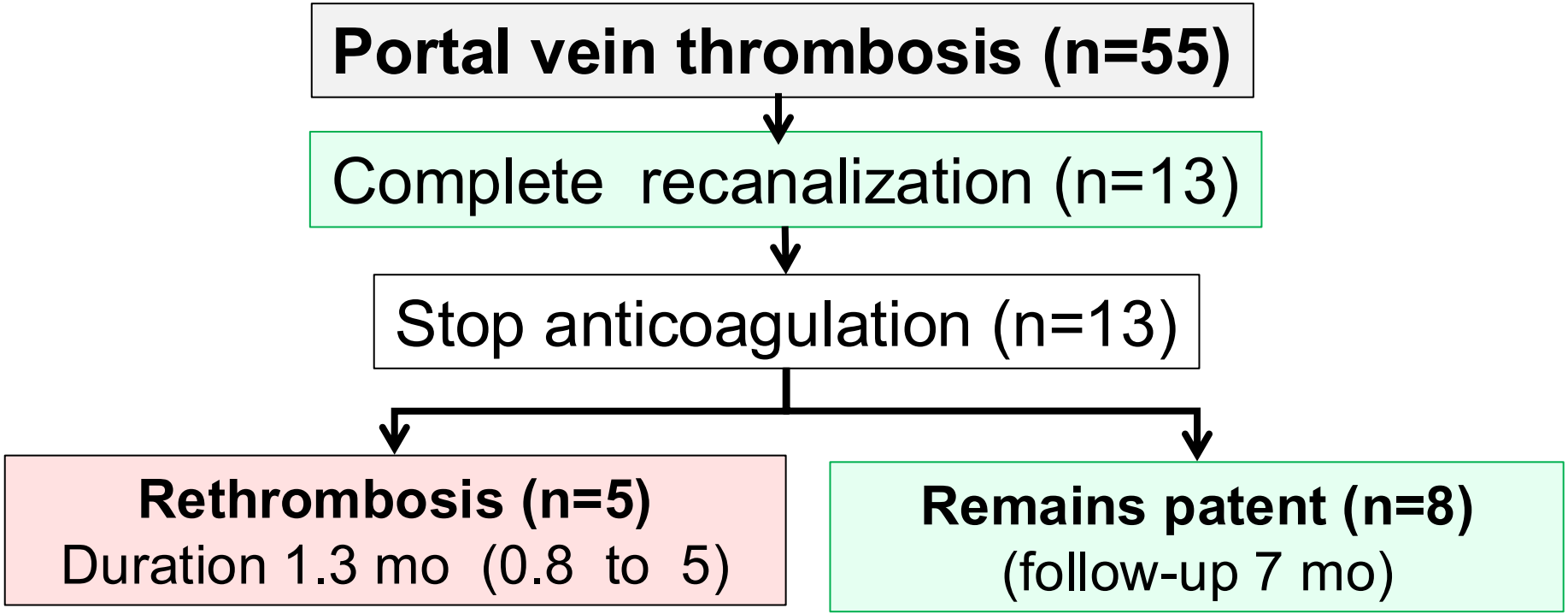
16 réponses




- Stop anticoagulation
- Continue anticoagulation
- continue at prophylactic dose
- Reduce to prophylactic dose AC
- Consider individual situations
- Case by case decision
- will depend on the bleeding risk (age, alcohol, he)

What happens if we stop?

# Outcome after interruption of anticoagulation

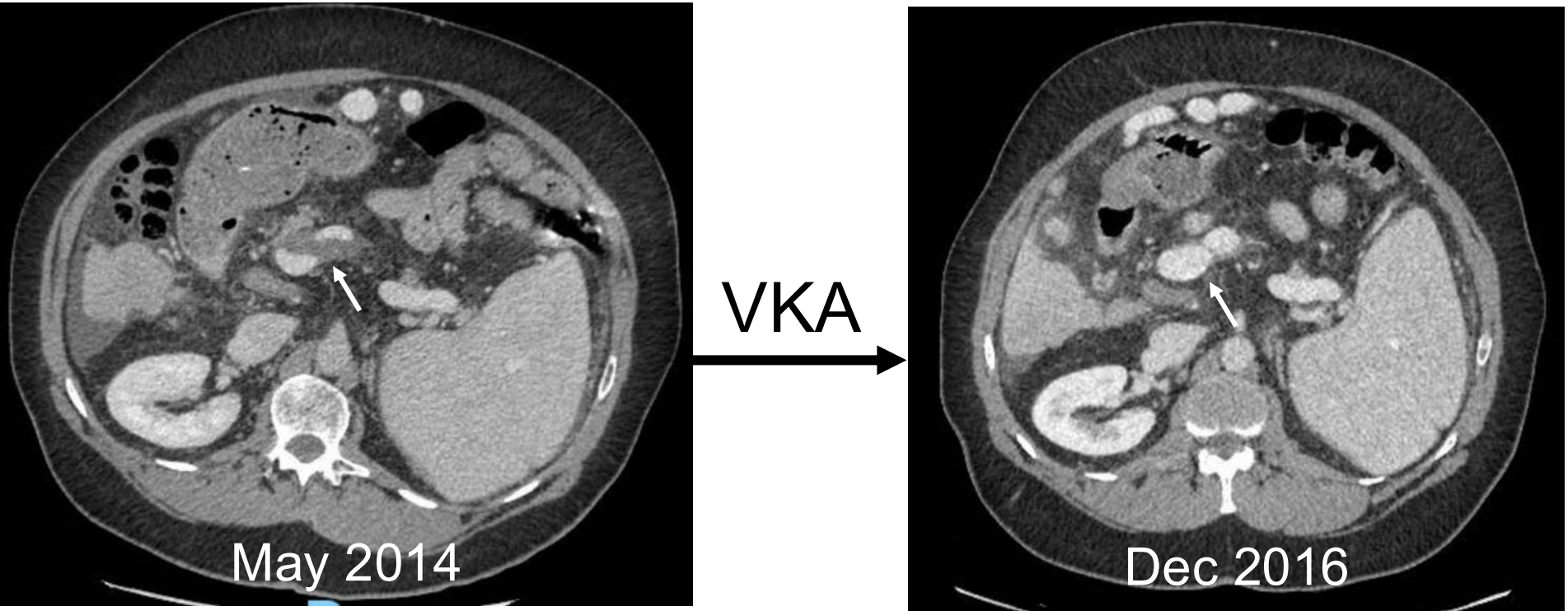





Delgado *et al.*, Clin Gastroenterol Hepatol. 2012

# Case presentation

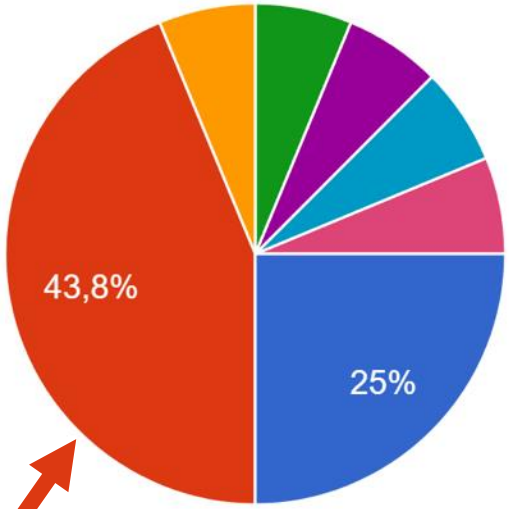
## We did stop



# Survey results

In a patient with cirrhosis and PVT, who recanalizes portal venous system following anticoagulant (not on transplant list), are you going to:

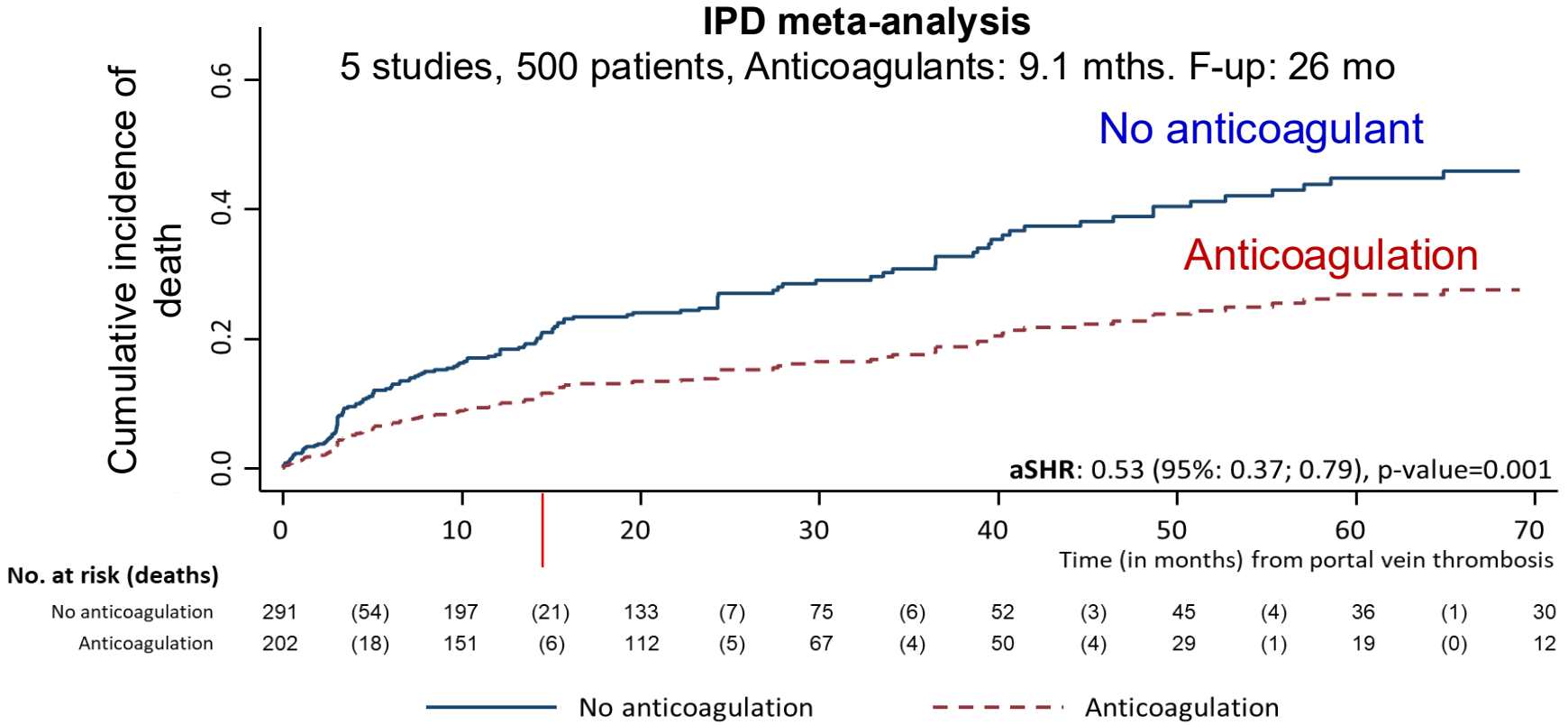
16 réponses




- Stop anticoagulation
- Continue anticoagulation
- continue at prophylactic dose
- Reduce to prophylactic dose AC
- Consider individual situations
- Case by case decision
- will depend on the bleeding risk (age, alcohol, he)

What happens if we continue?

# Anticoagulants in cirrhosis improve outcome




Sub-hazard ratio adjusted (**aSHR**) by age at diagnosis, etiology, Child, thrombosis extension and localization and variceal prophylaxis

Competing risk model with LT

A Guerrero *et al.* J Hepatol 2023

# Take away points

PVT in cirrhosis treated with anticoagulation:

- Partial or complete recanalization: 60-70%
- Interruption of anticoagulant possible (outside LT)
- Recurrence common and rapid

➔ Imaging at M1, M3, M6 if interruption

Elkrief *et al,* Lancet Gastro Hepato 2024; Rautou, Caldwell, Villa, CGH 2023;
Delgado, CGH. 2012; Loffredo, *et al.* Gastroenterology 2017; Guerrero A, *et al.* J Hepatol 2023

# When not to anticoagulate?

- Anticoagulation management and endoscopic procedures
- Anticoagulation management and portal vein recanalization
- Anticoagulation management in the listed transplant patient

# The listed transplant patient: case presentation

Woman, 64 yo
Metabolic Dysfunction–Associated Steatotic Liver Disease
Cirrhosis CPT B9
Hepatic venous pressure gradient 12 mmHg
Secondary prophylaxis with esophageal variceal ligation and NSBB
HCC screening negative
Previous decompensation in the form of ascites and HE
Incomplete thrombosis of the portal vein trunk, cavernoma of the left portal branch
Splenorenal shunts.
Listed for liver transplantation

Type 2 diabetes mellitus, insulin-dependent
Past hepatitis B infection

Carvedilol, Apixaban, Spironolactone, Torasemide, Lactulose, Rifaximin, Insulin, Levothyroxin, Vitamin D

# Laboratory

| | | | |
|---|---|---|---|
| 45 ▲ | Bereich: 10 - 35 U/L | 22.04.2025 | ASAT/GOT |
| 36 ▲ | Bereich: 10 - 35 U/L | 22.04.2025 | ALAT/GPT |
| 29 | Bereich: 5 - 36 U/L | 22.04.2025 | Gamma-GT |
| | Bereich: 240 - 480 U/L | 22.01.2019 | LDH |
| | Bereich: 135 - 214 U/L | 11.09.2024 | LDH |
| 96 | Bereich: 35 - 104 U/L | 22.04.2025 | Alkalische Phosphatase |
| | | | **PROTEINE** |
| < 5 | Bereich: <5 mg/L | 22.04.2025 | CRP |
| | Bereich: 5.83 - 34.5 µmol/L | 16.01.2025 | Eisen |
| | Bereich: 2.0 - 3.6 g/L | 16.01.2025 | Transferrin |
| | Bereich: 16 - 45 % | 16.01.2025 | Transferrinsättigung |
| | Bereich: 1.9 - 4.4 mg/L | 02.10.2018 | Lösl. Transf.- Rezeptor (Roche) |
| | Bereich: 30 - 400 µg/L | 16.01.2025 | Ferritin |
| | Kein Bereich gefunden | 02.10.2018 | Ferritinindex |
| 30 ▼ | Bereich: 35 - 52 g/L | 22.04.2025 | Albumin |

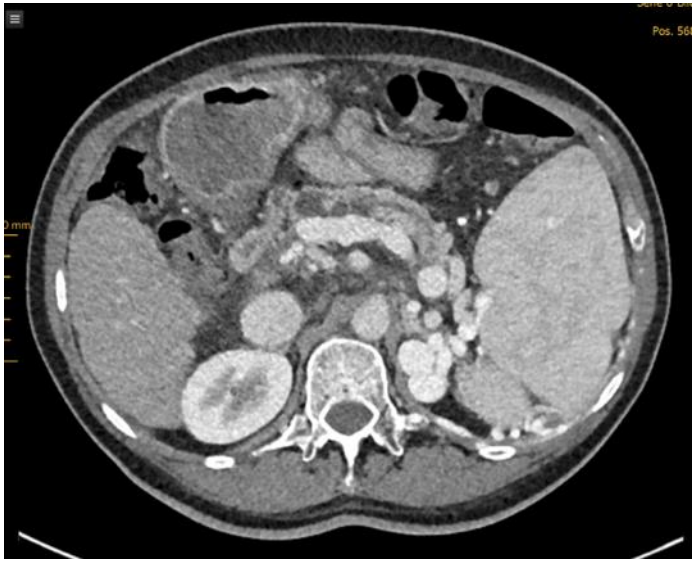
| | | | |
|---|---|---|---|
| 50 ▼ | Bereich: 70 - 130 % | 22.04.2025 | Thromboplastinzeit (Quick) |
| 1.7 ▲ | Bereich: <1.3 | 22.04.2025 | INR |

| | | | |
|---|---|---|---|
| 136 | Bereich: 136 - 145 mmol/L | 22.04.2025 | Natrium |
| 4.1 | Bereich: 3.4 - 4.5 mmol/L | 22.04.2025 | Kalium |

| | | | |
|---|---|---|---|
| 75 | Bereich: 44 - 97 µmol/L | 22.04.2025 | Creatinin (Elektrode) |
| | Bereich: <80 µmol/L | 24.10.2017 | Creatinin POCT (Reflotron) |
| | Einheit: ml/min/1.73m² | 21.03.2025 | eGFR |
| | Bereich: 2.76 - 8.1 mmol/L | 16.01.2025 | Harnstoff |
| 28 ▲ | Bereich: <21 µmol/L | 22.04.2025 | Bilirubin total |

| | | | |
|---|---|---|---|
| 1.9 ▼ | Bereich: 2.6 - 7.8 Giga/L | 22.04.2025 | Leukozyten |
| 3.58 ▼ | Bereich: 3.7 - 5.0 Tera/L | 22.04.2025 | Erythrozyten |
| 121 | Bereich: 115 - 148 g/L | 22.04.2025 | Hämoglobin |
| 0.35 | Bereich: 0.34 - 0.43 | 22.04.2025 | Hämatokrit / HCT |
| 97 | Bereich: 80 - 97 fL | 22.04.2025 | MCV |
| 34 | Bereich: 27 - 34 pg | 22.04.2025 | MCH |
| 350 | Bereich: 330 - 364 g/L | 22.04.2025 | MCHC |
| 51 | Bereich: 37 - 54 fL | 22.04.2025 | Anisozytose (RDW) |
| | Bereich: 1.1 - 6.1 % | 31.01.2019 | Thrombozyten unreif |
| 36 ▼ | Bereich: 130 - 330 Giga/L | 22.04.2025 | Thrombozyten |
| 12.4 | Bereich: 7.0 - 12.6 fL | 22.04.2025 | MPV |

# Imaging



Portal vein of small caliber from the confluence to the right portal vein branch.

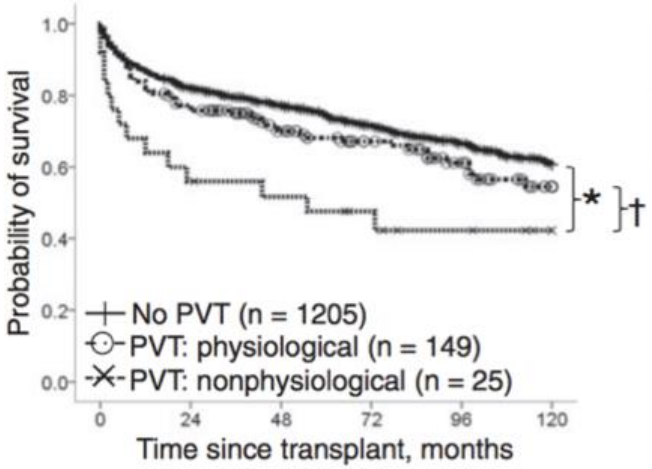
Lack of contrast enhancement of the left portal vein branch with cavernous transformation.

# Imaging

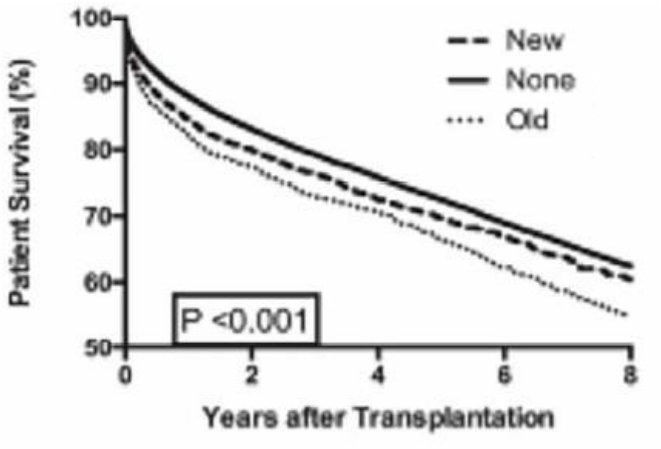
Oesophageal varices

Spleno-renal shunts

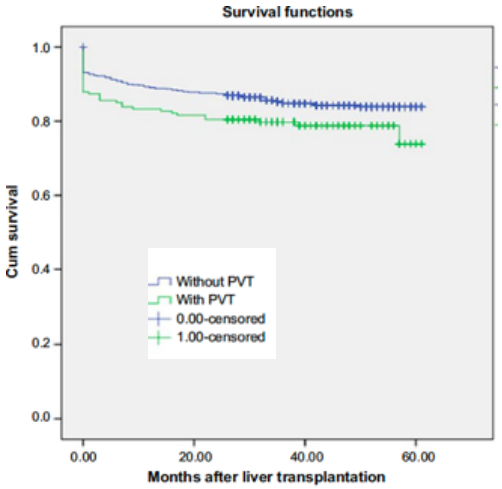
# PVT is associated with a negative outcome after LT




Hibi, Ann Surg, 2014




Conzen, Liver Transpl, 2017




Eshraghian, Int J Clin Pract, 2019

In potential liver transplant candidates, the goal of anticoagulation is to prevent re-thrombosis or progression of thrombosis to facilitate porto-portal anastomosis and reduce post-transplant morbidity and mortality. Anticoagulation is recommended in potential candidates for liver transplantation and any PVT (Baveno 8)

# Challenge from the LT team

Since the patient is now actively listed, we are initiating therapy with warfarin instead of the previously taken apixaban. We will now establish anticoagulation for the known portal vein thrombosis, with bridging using LMWH.

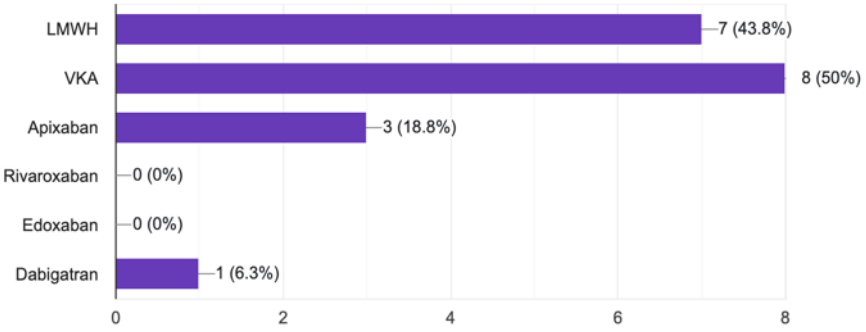
Is conversion to VKA correct?

Should anticoagulation be continued with significant thrombocytopenia?

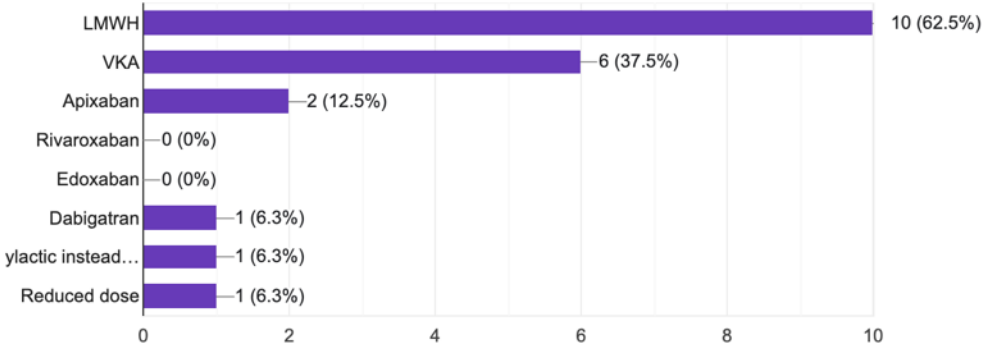
Are TPO receptor agonists indicated to maintain thrombocyte levels?

# Results of the survey

In patients on the LT waiting list with Child-Pugh Stage A-B with portal vein thrombosis and platelets > 50, what is your preferred anticoagulant short before expected LT time (listed for transplant)?

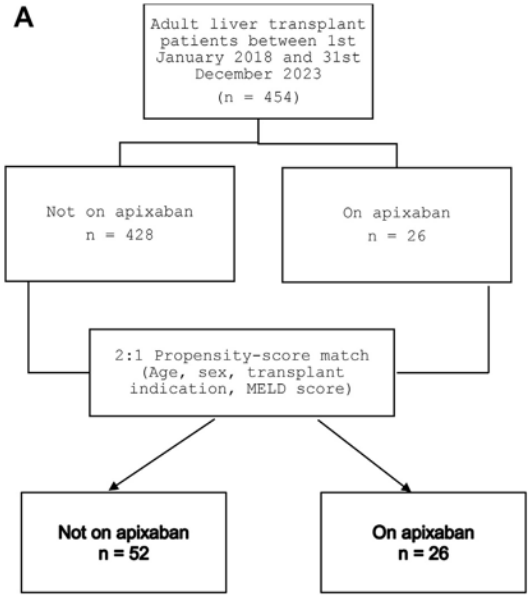


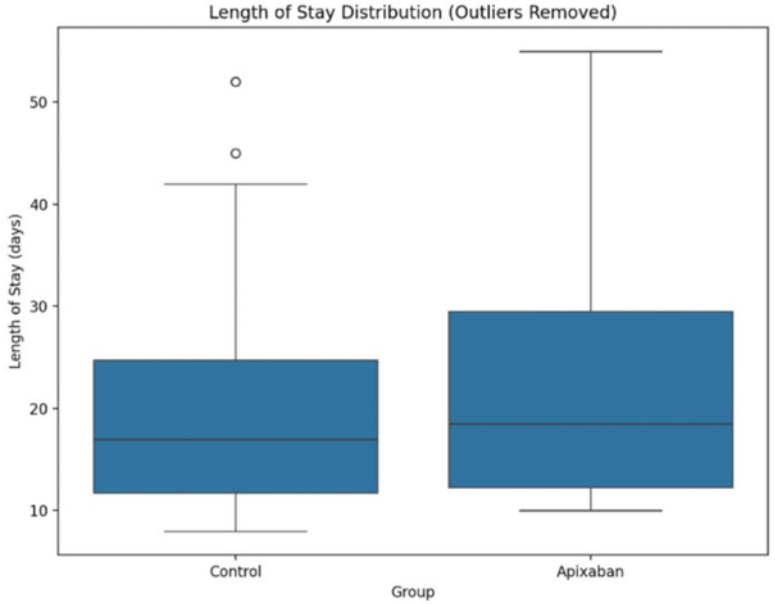

In patients on the LT waiting list with Child-Pugh Stage A-B with portal vein thrombosis and platelets < 50, what is your preferred anticoagulant short before expected LT time (listed for transplant)?



Original Article

# Safety of apixaban prior to liver transplantation: A single-center Australian case-control study in a low MELD population




Tan, Am J Transplant, 2025

Original Article

# Safety of apixaban prior to liver transplantation: A single-center Australian case-control study in a low MELD population

| Parameters | Apixaban group (n = 26) | Control group (n = 52) | Test statistic or OR | *P* value |
|---|---|---|---|---|
| Primary outcomes: blood product requirement | | | | |
| PRBC (mL) (median, IQR) | 898 (69-1989) | 997 (537-1789) | U = 675.00 | 1.00 |
| ICS (mL) (median, IQR) | 1500 (669-2411) | 1143 (623-2225) | U = 692.50 | .89 |
| FFP (mL) (mean, ± SD) | 133 (±288) | 306 (±628) | U = 736.50 | .31 |
| % of patients who received FFP intraoperatively | 20.0% | 30.19% | | |
| Platelets (mL) (mean, ± SD) | 105 (±185) | 302 (±409) | U = 820 | .06 |
| % of patients who received platelets intraoperatively | 28.0% | 45.28% | | |
| Cryoprecipitate (mL) (mean, ± SD) | 60 (±115) | 136 (±221) | U = 760 | .21 |
| % of patients who received cryoprecipitate intraoperatively | 24.0% | 35.85% | | |

Tan, Am J Transplant, 2025

## Hepatic Function Adjustments:

**Mild liver disease (Child-Pugh A)**, no dose adjustment

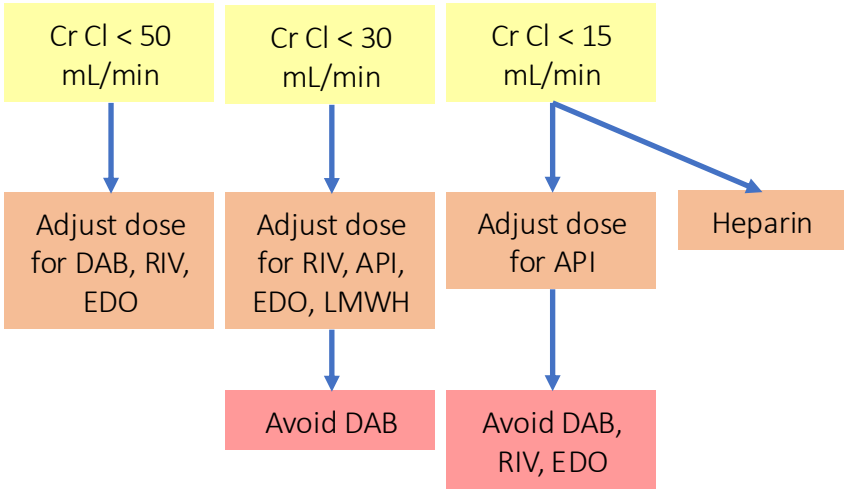
**Moderate liver disease (Child-Pugh B)**, reasonable to prescribe apixaban, dabigatran, or edoxaban over VKA, while **rivaroxaban is contraindicated** due to potentially increased bleeding risk.

**Severe liver disease (Child-Pugh C)**, all DOACs contraindicated. Caution with VKA and heparins.

Caution with platelets < 50 G/L.

## Renal Function Adjustments:

eGFR 15-30 mL/min: treatment with VKA or reduced doses of DOACs.
CrCl 15 mL/min or dialysis: VKA or reduced dose of apixaban.






Chen, J Am Heart Assoc, 2020

# Take to work messages

## When not to anticoagulate?

Consider to adapt rather than stop anticoagulation:

- by changing anticoagulant

- according to kidney and liver function

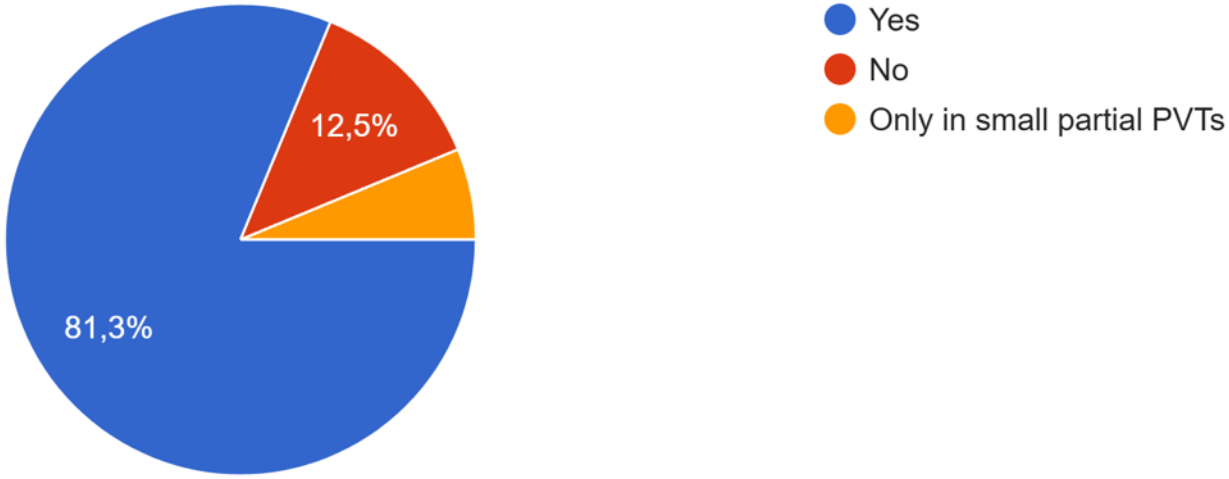
- in case of significant thrombocytopenia

# BACK UP SLIDES

# Survey results

Regarding spontaneous portal vein recanalization (i./e. without anticoagulant or TIPS) in patients with cirrhosis and PVT, is it a situation that you have been meeting?

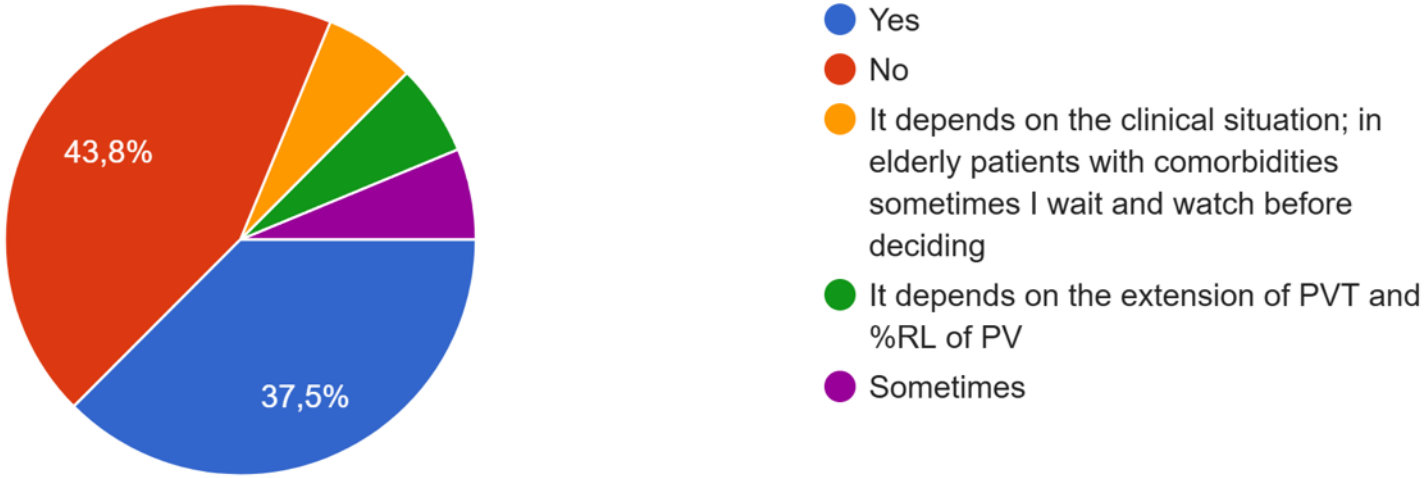
16 réponses



# Survey results

If yes, do you account for this (i.e. wait a period of time prior to starting anticoagulation) when deciding when to treat patients with PVT?

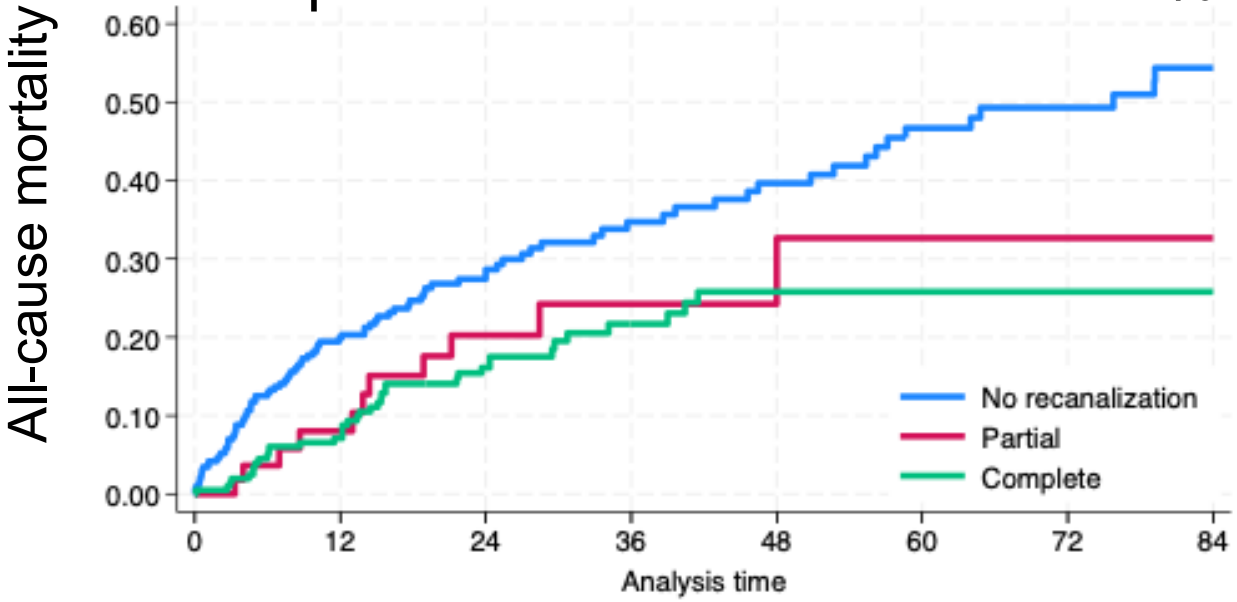
16 réponses



# Impact of spontaneous PV recanalization

IDP-meta-analysis: 8 studies; 586 patients

Spontaneous recanalization: 48%



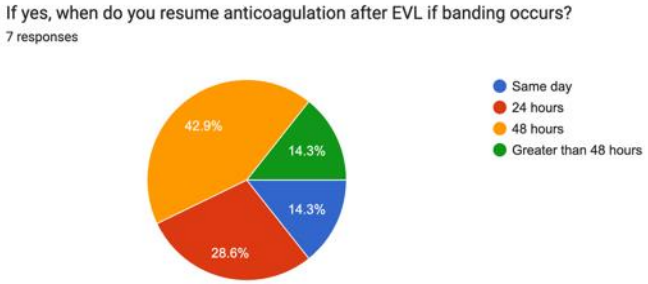

Number at risk

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No recanalization | 288 | (53) | 185 | (15) | 119 | (10) | 73 | (5) | 56 | (6) | 42 | (2) | 35 | (3) | 26 |
| Partial | 57 | (4) | 39 | (5) | 26 | (1) | 13 | (0) | 9 | (1) | 4 | (0) | 2 | (0) | 1 |
| Complete | 204 | (14) | 167 | (15) | 121 | (6) | 62 | (3) | 46 | (0) | 28 | (0) | 15 | (0) | 6 |

Guerrero, et al; submitted

# Restarting anticoagulation of EVL

## Traditional




## DOAC