

# Vascular complications in moderately severe and severe acute pancreatitis are frequent and are associated with increased mortality

**Study Aims:**  
The present study aimed to identify the **incidence, timing and risk factors** of all vascular complications in acute pancreatitis (AP).

**Background:**  
There is limited data investigating all vascular complications in AP together, including splanchnic (SVT) or extra-splanchnic venous thrombosis (eSVT – PE, DVT or line thrombosis) and haemorrhagic complications, especially in relation to anticoagulation for thrombosis management <sup>(1)</sup>.

The growing incidence and high mortality rates of AP warrants a comprehensive understanding of its clinical outcomes <sup>(2, 3)</sup>.

**Methods:**  
**Patient Selection:**  
Patients were identified using a retrospective registry-based study including patients admitted to a tertiary referral centre with AP in the Northeast of England from 2015 to 2021.

**Statistical Analysis:**  
Univariate binary logistic regression followed by multivariate analysis to identify risk factors for each vascular complication, using odds ratios (OR). All statistics carried out using IBM SPSS.

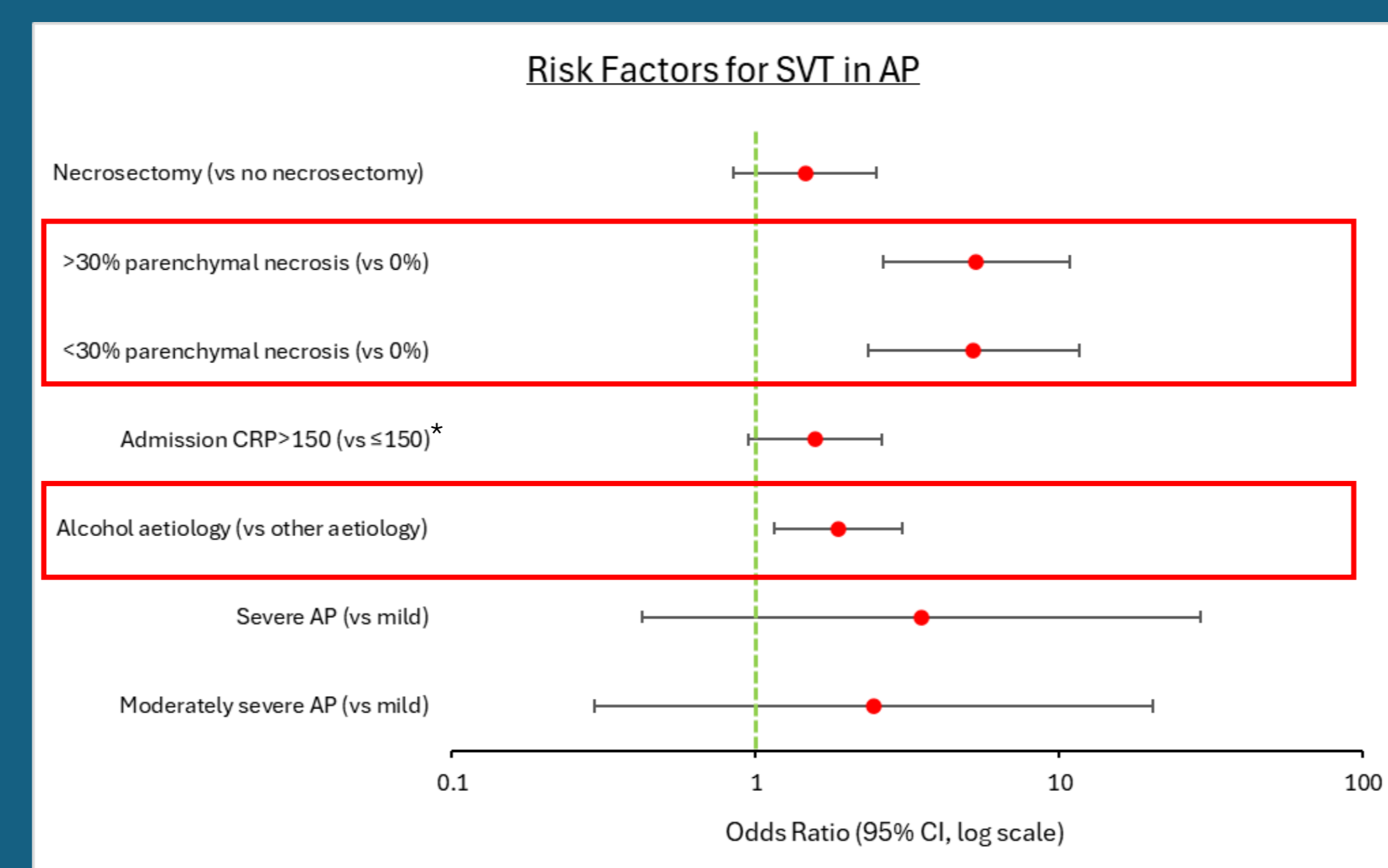
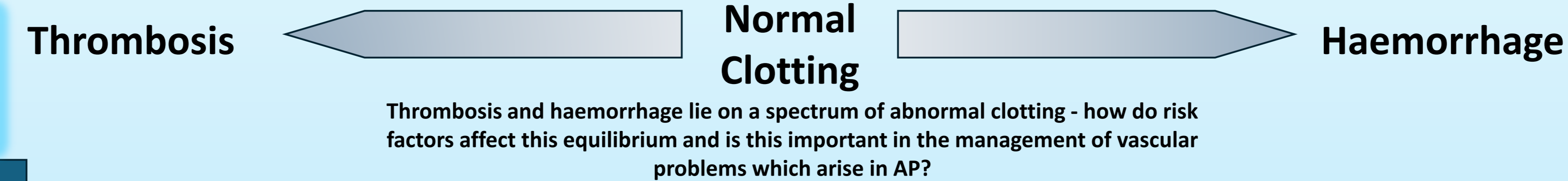
**Study Demographics:**  
**446 patients**  
Median age= **59 years** (IQR 24)  
Male:Female = **1.67:1**

Severity of AP in the study	n (%)
Mild (MAP)	21 (4.7)
Moderately Severe (MSAP)	204 (45.7)
Severe (SAP)	221 (49.6)

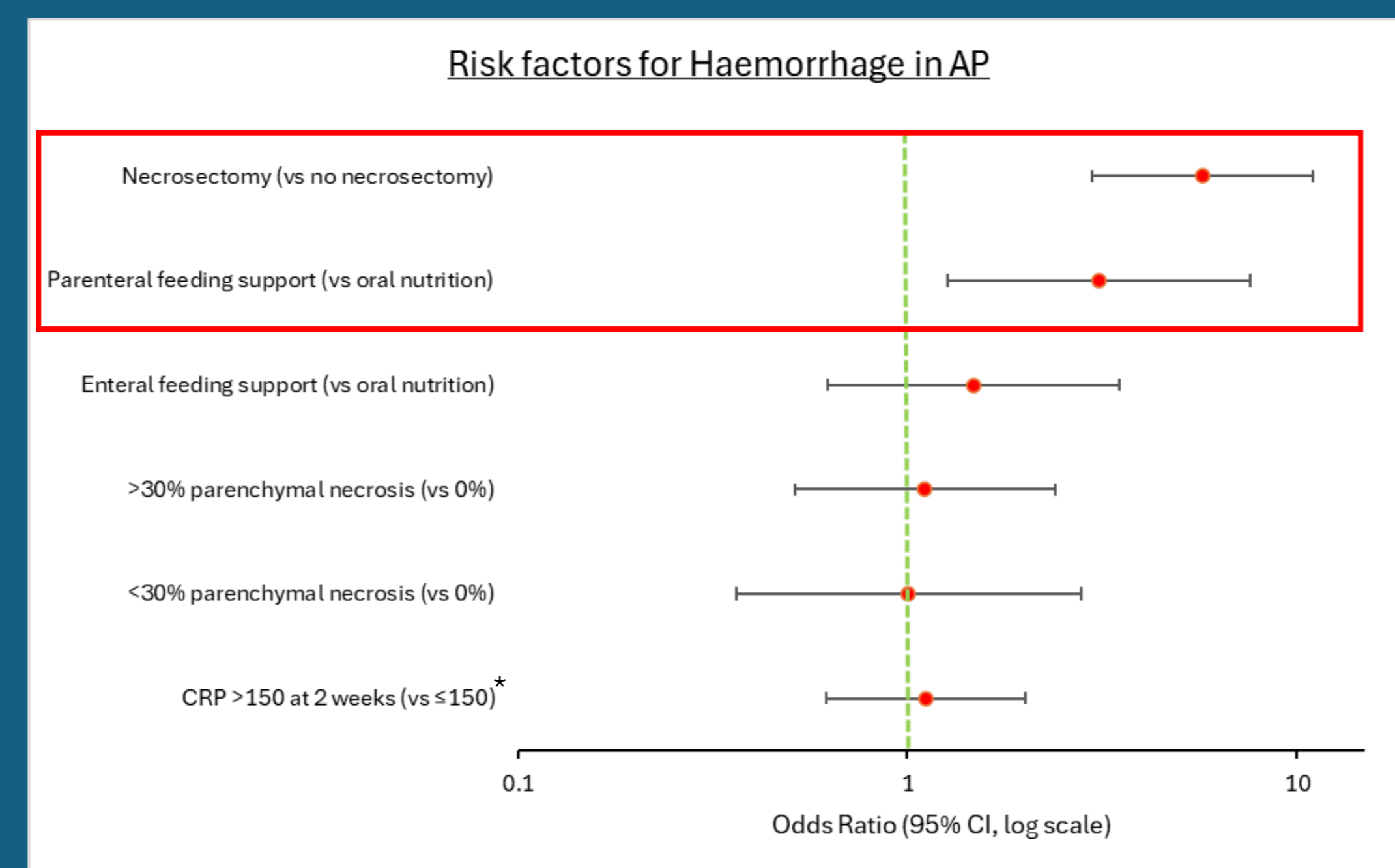
**Incidence Rate of each vascular complication**

Vascular Complication	Incidence rate (% (n))
eSVT	8.5 (38)
SVT	26.9 (120)
Haemorrhage	15.5 (69)

The sites of eSVT were: DVT at only 4.3% (n = 19), PE at only 2.2% (n = 10) and both DVT and PE at 2.0% (n = 9).



**SVT risk factors:** alcohol aetiology (OR = 1.87, p = 0.01) and Parenchymal necrosis (ORs: <30% = 5.23 p<0.001, >30% = 5.32, p<0.001).



**Haemorrhage risk factors:** Necrosectomy (OR = 5.73, p<0.001) and Parenteral nutrition requirement (OR = 3.106, p = 0.013)

\* CRP units: mg/L

**Time of first vascular complication from admission**

Vascular Complication	Median time to complication (days (IQR))
eSVT	41.5 (13.75-68.75)
SVT	6 (1-16.75)
Haemorrhage	28 (11-73.75)

**Therapeutic Anticoagulation (TAC) and Haemorrhage**  
Thrombotic complications were the most common indication for TAC in AP in the study. **19.2% (n = 25 of 130)** of patients receiving TAC had a haemorrhagic event, **P = 0.080**.

**Mortality of vascular complications**

Vascular Complication	Inpatient mortality rate (% (p value))
eSVT	28.94 (0.007)
SpVT	14.17 (0.947)
Haemorrhage	33.33 (<0.001)

**Limitations:**  
**Retrospective Study** – if done prospectively, pro-thrombotic/haemorrhagic disorders could have been screened for.  
• **Ethnic variation** not included in the analysis.  
• **Disproportionately large number of MSAP/SAP cases** means true incidence of complications in AP not reflected

**Conclusions:**

- SVT was the most common and earliest vascular complication observed.
- Vascular complications are associated with greater inpatient mortality rates, so understanding their risk factors is important.
- The rates of haemorrhage in those receiving TAC was not significant, but at almost 20% is still a risk worth noting for clinicians.
- Patients in the identified risk groups for SVT and haemorrhage should be treated with a higher index of suspicion to facilitate prompt management.

**References:**  
1. Samanta J, Dhar J, Gupta P, Kochhar R. Venous Thrombosis in Acute Pancreatitis: What to and Not to Do? Digestive Diseases and Sciences. 2024;1-14.  
2. Roberts S, Akbari A, Thorne K, Atkinson M, Evans P. The incidence of acute pancreatitis: impact of social deprivation, alcohol consumption, seasonal and demographic factors. Alimentary pharmacology & therapeutics. 2013;38(5):539-48.  
3. Boxhoorn L, Voermans RP, Bouwense SA, Bruno MJ, Verdonk RC, Boermeester MA, et al. Acute pancreatitis. Lancet. 2020;396(10252):726-34.