

Intro

- Hepatic resection is commonly performed for malignant and benign liver disease.
- Thoracic epidural analgesia provides effective analgesia and facilitates recovery, but postoperative thrombocytopenia and INR elevation can complicate epidural catheter management and raise concern for neuraxial hematoma.
- We sought to quantify the incidence and severity of these abnormalities and identify independent perioperative predictors to guide safer neuraxial management.

Methods

- Retrospective single-center study of adults undergoing liver resection between 2015-2022 (N= 877)
- Primary outcomes included platelets nadir <80×10³/μL and INR >1.5 (≤7 days postop)
- Multivariable logistical regression adjusting for liver function including models incorporating MELD and ALBI scores, patient demographics, and operative characteristics/complications

Results

Thrombocytopenia: Occurred in 9.2% (81/877) of patients

- Affected patients had lower baseline platelets (median 143 vs 238x10^3μL) and more blood loss (median 700 vs. 350mL)
- Major surgical resection (OR 2.30; P=0.0034) and greater EBL (OR 1.08; P<0/001) associated with increased risk
- Higher baseline platelets are protective(OR 0.85 per10×10³ μL)

INR >1.5: Occurred in 22.5% (160/711) of patients

- Major resection was the strongest predictor (OR 3.06; P<0.001)
- Other predictors included ASA III–IV (OR 2.87;P=0.039), younger age (OR per decade 0.82; P=0.01), lower baseline platelets (P=0.005), and higher baseline INR (P=0.03)

Epidural outcomes

- Longer catheter duration with elevated INR (median 81h vs 65h, P<0.0001)
- No cases of epidural hematomas

Discussion

- Surgical extent of resection and intraoperative blood loss correlate with post hepatectomy coagulopathy
- Baselines platelet count, baseline INR and age are independent predictors of coagulopathy
- Frequent laboratory abnormalities support risk stratified approach to epidural placement, surveillance, and removal after hepatectomies

Post-hepatectomy
coagulopathy is influenced by the *extent* of **liver resection** and intraoperative **blood loss**, with preoperative **INR**, **platelet count**, and **younger age** *identifying* **high-risk patients**.



Tables

Table 1. Demographics and Perioperative Characteristics

Characteristic	Overall (N = 877)
Age, yr	61 (50–69)
Female sex, no. (%)	456 (52.0)
BMI, kg/m²	28 (24–33)
Baseline platelet count, ×10³/μL	232 (178–297)
Baseline prothrombin time, sec	12 (11–13)
Extent of resection — minor/intermediate, no. (%)	489 (55.8)
Extent of resection — major, no. (%)	388 (44.2)
Duration of surgery, min	203 (162–269)
Estimated blood loss, mL	350 (200–700)
Length of stay, days	6 (4–8)

Table 2. Platelet Outcomes and Factors Associated with Postoperative Nadir Platelets <80×10³/μL

Variable	Platelet ≥80×10³/μL (n=796)	Platelet <80×10³/μL (n=81)	P value
Nadir <80×10³/μL, no. (%)	81 (9.2)		
Severity categories, no. (%)	Normal (>100k) 727 (83); Mild (>80k <100k) 69 (8); Moderate (>50k <80k) 66 (8); Severe (<50k) 15 (2)		
Baseline platelet count, ×10³/μL	237.50 (186.00, 306.00)	143.00 (105.00, 203.50)	<0.001
Baseline INR	1.07 (1.01, 1.15)	1.10 (1.04, 1.20)	0.015
Baseline PT, sec	12.00 (11.30, 12.95)	12.30 (11.70, 13.10)	0.028
Female sex, no. (%)	422 (53.02%)	34 (41.98%)	0.058
ASA class III–IV, no. (%)	724 (90.95%)	78 (96.30%)	0.102
Major resection, no. (%)	340 (42.71%)	48 (59.26%)	0.004
Duration of surgery, min	200.00 (158.50, 268.00)	225.00 (180.00, 279.00)	0.018
Estimated blood loss, mL	350.00 (200.00, 600.00)	700.00 (250.00, 1000.00)	<0.001

Table 3. INR Outcomes and Factors Associated with Postoperative Peak INR >1.5 (N=711)

Variable	INR ≤1.5 (n=551)	INR >1.5 (n=160)	P value
Peak INR >1.5, no. (%)	160/711 (22.5)		
Baseline INR	1.06 (1.01, 1.14)	1.11 (1.06, 1.26)	<0.001
Baseline PT, sec	11.90 (11.20, 12.80)	12.50 (11.70, 14.10)	<0.001
Baseline platelet count, ×10³/μL	235.00 (181.00, 304.50)	211.00 (167.00, 275.00)	0.005
Female sex, no. (%)	295 (53.54%)	67 (41.88%)	0.009
ASA class III–IV, no. (%)	498 (90.38%)	155 (96.88%)	0.008
Major resection, no. (%)	249 (45.19%)	114 (71.25%)	<0.001
Duration of surgery, min	202.00 (163.00, 262.00)	251.00 (195.50, 309.00)	<0.001
Estimated blood loss, mL	400.00 (200.00, 700.00)	500.00 (250.00, 1000.00)	0.005
Epidural duration, hr	65.49 (48.98, 86.78)	81.41 (61.70, 112.54)	<0.001