



VENOUS THROMBOTIC OUTCOMES IN PREGNANT PATIENTS WITH MYELOPROLIFERATIVE NEOPLASMS: A PROPENSITY SCORE-MATCHED ANALYSIS

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INTRODUCTION

- Pregnant patients with Philadelphia-negative myeloproliferative neoplasms (MPNs) are associated with compounding thrombotic risk from both Janus kinase-signal transducer and activator of transcription signaling (JAK-STAT)-driven biology and the hypercoagulable state of pregnancy.
- Population-level data on the magnitude and timing of this risk are lacking, limiting evidence-based management decisions.

Objective

- To quantify thrombotic outcomes in pregnant MPN patients compared with a matched normal pregnant population and to identify high-risk subgroups.

METHOD

- We conducted a multicenter retrospective study using the TrinetX database network, a federated electronic medical record network.
- Propensity score matching (PSM, 1:1) balanced age, race, body mass index, comorbidities, antiplatelet and anticoagulant use, and socioeconomic status.
- Cox proportional hazards regression was used over a 350-day follow-up.

Patients

- Among 4467127 pregnant patients aged 18–40 years identified from January 2000 to March 2025, 4563 had a diagnosis of Philadelphia-negative MPN (essential thrombocythemia, 85%; myelofibrosis, 11%; polycythemia vera, 4%).
- After PSM, 4529 MPN pregnancies were matched to 4529 controls. Patients with prior hematologic or solid malignancy, inherited thrombophilia, multiple gestations, and in vitro fertilization were excluded.

Main Outcomes Measures

- Cumulative venous thromboembolism (VTE), deep vein thrombosis (DVT), pulmonary embolism (PE), and atypical site thrombosis (portal, hepatic, cerebral venous sinus).

CONCLUSIONS

- Thrombotic events in pregnant MPN patients exceed matched controls by more than threefold, with atypical site thrombosis occurring exclusively in the MPN group.
- These findings provide hematologists with the first large-scale, propensity-matched evidence base to justify early thromboprophylaxis planning and close multidisciplinary surveillance in this high-risk population..

RESULTS

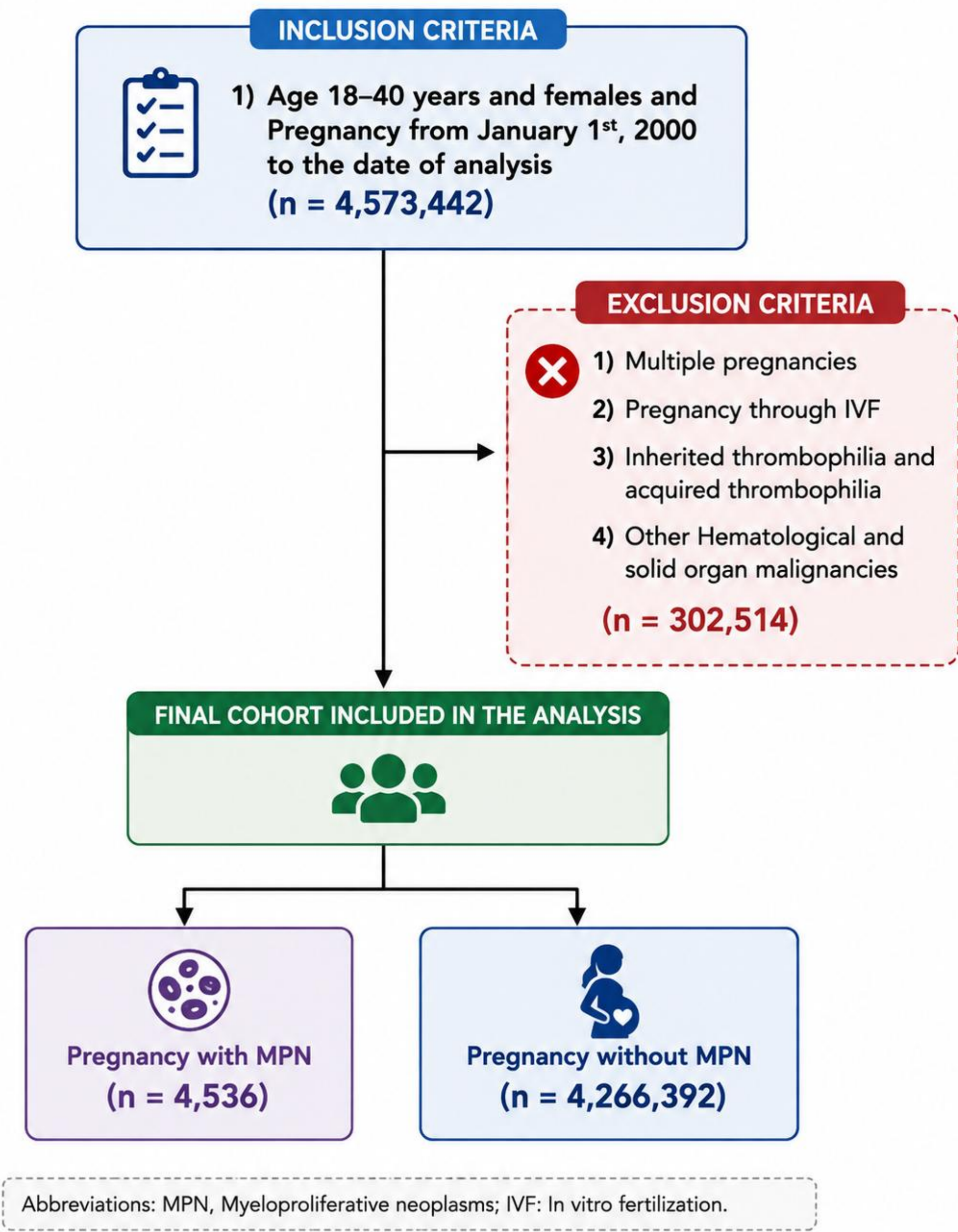


Table. Baseline Characteristics After Propensity Score Matching			
Characteristic	Pregnancy with MPN (n = 4,529)	Pregnancy without MPN (n = 4,529)	SMD
	n (%) or mean ± SD	n (%) or mean ± SD	
Age, mean ± SD, years	27.7 ± 5.0	27.7 ± 5.1	0.009
White race	2,584 (57.1)	2,589 (57.2)	0.002
Black race	1,218 (26.9)	1,206 (26.6)	0.006
BMI, mean ± SD	26.9 ± 5.3	27.1 ± 5.7	0.026
Type 2 diabetes mellitus	245 (5.4)	247 (5.5)	0.002
Hypertension	395 (8.7)	414 (9.1)	0.015
Liver disease	184 (4.1)	183 (4.0)	0.001
Chronic lower respiratory disease	614 (13.6)	603 (13.3)	0.007
Overweight or obesity	831 (18.3)	878 (19.4)	0.027
History of thrombosis or embolism	80 (1.8)	50 (1.1)	0.056
Any antiplatelet therapy	337 (7.4)	323 (7.1)	0.012
Therapeutic anticoagulation	610 (13.5)	559 (12.3)	0.034

Table. Venous Thrombotic Outcomes in Pregnancies With and Without MPN				
Venous Thrombotic Outcome	Pregnancy with MPN (n=4,529)	Pregnancy without MPN (n=4,529)	Effect Estimate (95% CI)	P Value
	n (%)	n (%)	aRR (95% CI)	P value
Cumulative VTE	123 (2.7)	36 (0.8)	3.2 (2.2–4.6)	<0.001
Deep vein thrombosis (DVT)	64 (1.4)	28 (0.6)	2.1 (1.3–3.3)	0.001
Pulmonary embolism (PE)	55 (1.2)	14 (0.3)	3.6 (2.0–6.6)	<0.001
Other venous thrombosis*	11 (0.2)	0 (0.0)	—	0.001
*Other venous thrombosis includes venous thrombotic events not classified as deep vein thrombosis or pulmonary embolism.				
Abbreviations: MPN, myeloproliferative neoplasm; VTE, venous thromboembolism; DVT, deep vein thrombosis; PE, pulmonary embolism; aRR, adjusted relative risk; CI, confidence interval.				

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