

Dindo D, Breitenstein S, Hahnloser D, et al. "Kinetics of D-dimer after general surgery." Blood Coagulation & Fibrinolysis. 2009;20(5):347–352.

Summary Table: Kinetics of D-dimer After General Surgery

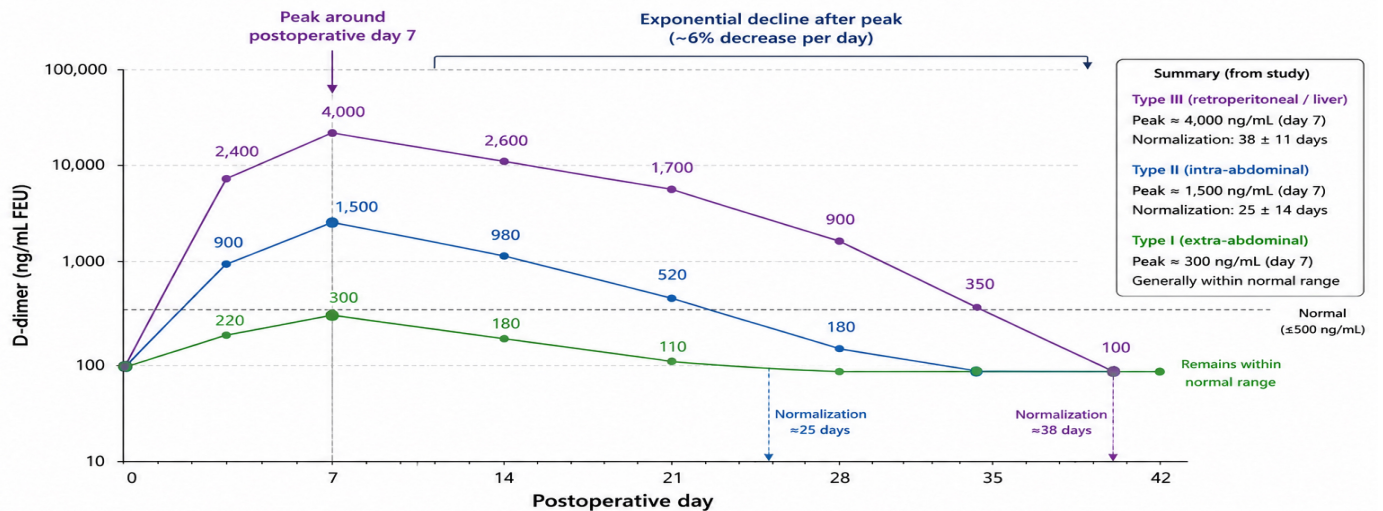
Study Component	Findings
Objective	To characterize postoperative D-dimer kinetics and determine when D-dimer testing becomes reliable again for excluding venous thromboembolism (VTE) after surgery.
Design	Prospective observational study.
Patients	154 general surgical patients (108 in derivation cohort, 46 in validation cohort).
Surgical Classification	Type I: Surgery not entering abdominal cavity; Type II: Intra-abdominal surgery; Type III: Retroperitoneal or liver surgery.
Peak D-dimer Timing	D-dimer levels peaked approximately postoperative day 7 .
Type I Surgery	Peak D-dimer $\approx$ 300 ng/mL (100–500); generally remained within normal range.
Type II Surgery	Peak D-dimer $\approx$ 1,500 ng/mL (200–7,800); returned to normal after 25 $\pm$ 14 days .
Type III Surgery	Peak D-dimer $\approx$ 4,000 ng/mL (500–14,400); normalized after 38 $\pm$ 11 days .
Clearance Rate	After the peak, D-dimer declined exponentially at approximately 6% per day .
Independent Predictors of Higher Peak D-dimer	1. Greater surgical severity/type 2. Longer operative time 3. Elevated preoperative D-dimer level.
Clinical Implication	Postoperative D-dimer elevation is predictable and persists for weeks after major abdominal surgery; interpretation of D-dimer for suspected VTE must consider time since surgery and surgical magnitude.
Key Conclusion	D-dimer testing has limited utility immediately after surgery but may regain value for VTE exclusion once expected postoperative elevations have resolved according to the type of operation.

Practical Clinical Reference

Surgery Type	Peak D-dimer	Peak Day	Approximate Time to Normalization
Type I (minor, extra-abdominal)	$\sim$ 300 ng/mL	Day 7	Usually remains normal
Type II (intra-abdominal)	$\sim$ 1,500 ng/mL	Day 7	$\sim$ 25 days
Type III (retroperitoneal/liver)	$\sim$ 4,000 ng/mL	Day 7	$\sim$ 38 days
D-dimer decline after peak	$\sim$ 6% per day	—	Exponential clearance

Kinetics of D-dimer After General Surgery: Three Types of Surgery

Illustrative model based on Dindo et al. Blood Coagulation & Fibrinolysis. 2009;20(5):347–352.



D-dimer (ng/mL)	Day 0	Day 3	Day 7 (Peak)	Day 14	Day 21	Day 28	Day 35	Day 42
Type I	100	220	300	180	110	100	100	100
Type II	100	900	1,500	980	520	180	100	~100
Type III	100	2,400	4,000	2,600	1,700	900	350	100

- Data points are illustrative, modeled using peak values (day 7), mean time to normalization and an exponential decline (~6% per day) reported in the study.
- FEU = Fibrinogen Equivalent Units.

Clinical implication: Postoperative D-dimer elevation is expected and persists for weeks after major abdominal surgery. Interpretation for suspected VTE must consider the type of surgery and time elapsed since the operation.