

Real-World Outcomes in Intermediate-High- and High-Risk Pulmonary Embolism: A German Multicenter Comparison of FlowTrieve Thrombectomy Versus Conventional Therapy

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Background: Real-world evidence comparing catheter-directed thrombectomy with conventional therapy (CON) in acute pulmonary embolism (PE), particularly high-risk PE, remains scarce. As European guidelines undergo revision, further data supporting clinical benefit is urgently needed. We compared clinical and echocardiographic improvement and mortality following FlowTrieve (FT) thrombectomy versus CON in intermediate-high- and high-risk PE.

Methods: This retrospective, propensity-score-matched study included intermediate-high or high-risk PE cases treated between January 2019 and October 2025. Patients undergoing either FT or CON were collected from nine centers, participating in the multicenter German FlowTrieve Registry. Matching criteria were age, sex, BMI, and preexisting cancer. Clinical, laboratory, and echocardiographic parameters were assessed at baseline and 24 hours after treatment initiation.

Results: Of 744 patients available for analysis, 514 were matched, including 99 high-risk patients (44 CON, 55 FT). Baseline characteristics were well balanced. High-risk patients presented with tachycardia (113 ± 27 /min), tachypnea (26 ± 8 /min), hypotension (99 ± 27 mmHg), and elevated PESI scores (152 ± 39). Baseline RV/LV ratio (1.3 ± 0.4) and sPAP (42 ± 16 mmHg) were comparable between CON and FT. Clinical abnormalities were less grave in intermediate-high-risk patients. Both treatments significantly improved clinical and echocardiographic parameters, with numerically greater changes following FT. RV/LV ratios decreased significantly across all groups ($p < 0.001$). ICU length of stay in high-risk patients did not differ (6 ± 9 days, $p = 1.0$). However, in-hospital mortality was lower following FT overall (CON vs. FT: 11.0% vs. 5.8%, $p = 0.04$), driven primarily by high-risk patients (45.5% vs. 18.2%, $p = 0.004$). This difference was nonsignificant in intermediate-high-risk patients (3.8% vs. 2.5%, $p = 0.576$).

Conclusion: FT thrombectomy was associated with numerically greater clinical and echocardiographic improvements and lower in-hospital mortality, particularly in high-risk PE. These findings support further guideline reflection of large-bore thrombectomy as a viable treatment option for acute, especially high-risk PE.

