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Comparative analysis of thrombosis recurrence in arteriovenous fistula (AVF) and arteriovenous graft (AVG): A retrospective single-center study

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Objectives : This retrospective, single-center study evaluated thrombosis recurrence in patients who underwent endovascular or open surgical thrombectomy between November 1, 2022, and February 20, 2025. The primary objective was to compare 30-day recurrence rates between arteriovenous fistulas (AVF) and arteriovenous grafts (AVG) and determine whether AVGs were associated with a higher risk of early thrombosis.
Methods : A total of 913 thrombectomy procedures were analyzed (361 AVF and 552 AVG), with 184 cases experiencing recurrence. Patient demographics, procedural parameters, and recurrence rates were assessed (Table 1). Recurrence was classified into <30 days, 30–60 days, 60–90 days, and >90 days/no recurrence. Kaplan-Meier survival analysis was performed to evaluate thrombosis-free survival, and statistical comparisons were conducted using the chi-square test and log-rank test.
Results : The mean age was 76.6 ± 161.5 years (AVF) and 72.4 ± 46.4 years (AVG). Clinical success rates were 99.4% for AVF and 100% for AVG (Table 1). The 30-day recurrence rate was significantly higher in AVG (10.14%) than in AVF (4.16%) ($p < 0.0001$, Table 2). Kaplan-Meier analysis (Figure 1) showed significantly lower thrombosis-free survival in AVG patients ($p < 0.0001$). AVG patients exhibited a steeper decline in survival within 30 days, while AVF demonstrated greater long-term patency across all recurrence intervals.
Conclusions : AVG patients had a higher risk of early thrombosis recurrence compared to AVF patients, despite a 100% procedural success rate. The increased thrombosis risk in AVG may be due to reduced compliance and altered hemodynamics of prosthetic grafts. AVF should be prioritized when feasible to enhance vascular access longevity. Further research is needed to optimize AVG patency and identify predictors of early thrombosis recurrence.

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Table 1. Patient characteristics and clinical parameters

Category	AVF	AVG
Sex (Male), (%)	57.9%	56.2%
Age (Mean, SD)	76.6 (161.5)	72.4 (46.4)
Endovascular thrombectomy, (%)	98.9%	99.3%
Open thrombectomy, (%)	1.1%	0.7%
Alteplase (Yes, %)	36.6%	5.3%
Radiation Exposure Time (Mean, SD), (s)	557.8 (463.6)	503.4 (344.1)
Clinical Success (%)	99.4%	100.0%

Table 2. Comparison of AVF and AVG in Primary Recurrence(<30days)

Type	Total cases	Primary recurrence	Recurrence rate
AVF	357	15	4.20%
AVG	552	56	10.14%

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Kaplan-Meier Analysis of Thrombosis Recurrence in AVF vs AVG