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Age Is Not a Limiting Factor for Preemptive Arteriovenous Fistula Creation Before Hemodialysis to Improve Patient Survival

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Objectives : Preemptive creation of an arteriovenous (AV) access before initiating hemodialysis reduces catheter dependency and provides clinical benefits. However, its effectiveness in elderly patients, particularly in the very elderly, such as octogenarians (> 80 years old), remains unclear. This study aimed to evaluate whether initiating hemodialysis with an AV access provides a survival benefit for elderly and very elderly patients, including octogenarians and nonagenarians (> 90 years old), using data from the Korean National Health Insurance Service (NHIS) database.
Methods : We retrospectively analyzed patients who started hemodialysis between 2012 and 2021, categorized by initial vascular access: arteriovenous fistula (AVF), arteriovenous graft (AVG), or central venous catheter (CVC). Patients who initiated hemodialysis with an AV access were compared with those who started with a CVC and later underwent AV access creation. Subgroup analyses were conducted based on age, sex, and diabetes.
Results : Among 68,393 patients, 29,381 (42.96%) were in the initial AV group and 39,012 (57.04%) were in the CVC to AV group. Overall, the initial AV group had better survival than the CVC to AV group (adjusted hazard ratio [HR] 1.388, 95% confidence interval [CI] 1.353–1.424, p<0.001). In patients aged <80 years, the initial AV group showed a significant survival advantage (p<0.001). Among octogenarians, both initial AVF and AVG improved survival compared to CVC to AVF (HR 1.297, 95% CI 1.208–1.392, p<0.001) and CVC to AVG (HR 1.232, 95% CI 1.122–1.354, p<0.001), particularly in diabetic patients. In nonagenarians, initial AVF showed no survival benefit (HR 0.928, 95% CI 0.673–1.279, p=0.648), whereas initial AVG improved survival (HR 1.593, 95% CI 1.064–2.386, p=0.024).
Conclusions : Preemptive AV access creation should be considered for elderly and very elderly pre-dialysis patients, particularly diabetic octogenarians. Age should not be a limiting factor for AV access creation before hemodialysis.

Figure1.png

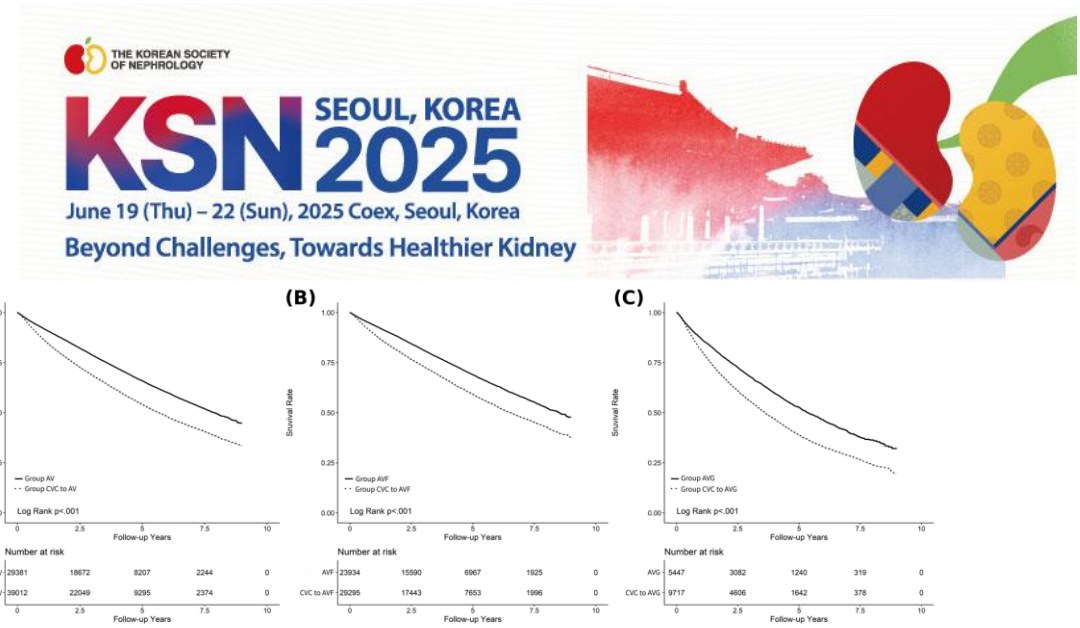

Figure 1. Kaplan-Meier Survival Analysis: (A) AV vs. CVC to AV, (B) AVF vs. CVC to AVF, (C) AVG vs. CVC to AVG

Figure1.png

Table 1. Adjusted Hazard Ratios (HRs) of Mortality Across Age Groups: CVC to AVF/AVG vs. Initial AVF/AVG.

Age groups	HR (95% CI)	P value
CVC to AVF vs. initial AVF		
Age < 65 years	1.385 (1.309-1.466)	<0.001
65≤ Age < 70	1.397 (1.286-1.518)	<0.001
70≤ Age < 80	1.339 (1.274-1.406)	<0.001
80≤ Age < 90	1.297 (1.208-1.392)	<0.001
90≤ Age	0.928 (0.673-1.279)	0.648
CVC to AVG vs. initial AVG		
Age < 65 years	1.395 (1.251-1.555)	<.001
65≤ Age < 70	1.489 (1.288-1.722)	<.001
70≤ Age < 80	1.424 (1.317-1.539)	<.001
80≤ Age < 90	1.232 (1.122-1.354)	<.001
90≤ Age	1.593 (1.064-2.386)	0.024