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Comparison between the Frequency of Interventional Procedures for Flow-related Dysfunction in Tapered Grafts and Straight Grafts: Analysis Based on the Korean National Health Insurance Database from 2011 to 2018

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Objectives : A tapered graft has been commonly used for arteriovenous graft placement in patients with a poor inflow artery. However, there's controversy over whether using a tapered graft increases the need for interventional procedures to maintain access patency, without offering additional benefits in preventing steal syndrome. This study evaluated the frequency of interventional procedures for flow-related dysfunction in incident hemodialysis patients based on the type of graft configuration.
Methods : We retrospectively analyzed the claim data from the National Health Insurance System of Korea from 2011 to 2018. We extracted incident hemodialysis patients aged over 18 years who had an arteriovenous graft as their initial arteriovenous access. Patients were divided into two groups according to the graft configuration (4 – 6 mm tapered graft vs. 6 – 6 mm straight graft). Primary endpoints were percutaneous transluminal angioplasty (PTA), percutaneous thrombectomy, stent deployment, or surgical revision with or without thrombectomy.
Results : In a total of 14,060 patients, 5,624 (40.0%) were tapered grafts, and 8,436 (60.0%) were straight grafts (Table 1). PTA, percutaneous thrombectomy, and surgical revision with or without thrombectomy were more frequent in the tapered graft group than straight graft group (PTA, 2,306 [41.00%] vs. 3,262 [38.66%]; P < 0.001, percutaneous thrombectomy, 1,056 [18.77%] vs. 1,263 [14.97%]; P < 0.001, surgical revision, 1,583 [28.14%] vs. 1,976 [23.42%]; P < 0.001). The frequency of stent deployment was not significantly different between both groups (tapered graft, 432 [7.68%] vs. straight graft, 634 [7.51%], p = 0.084). The selection of graft configuration was found to be center-dependent, indicating that the choice of graft configuration was predominantly influenced by the vascular surgeon's preference rather than the condition of the patient's arterial system.
Conclusions : When a tapered graft was used in arteriovenous graft placement, interventional procedures for flow-related dysfunction were significantly increased compared to a straight graft.

table1.png

	Tapered graft group (4 – 6 mm)	Straight graft group (6 – 6 mm)	P value
Total patients	14,060		
Patients	5,624 (40.0%)	8,436 (60.0%)	
PTA	2,306 (41.00%)	3,262 (38.66%)	< 0.001
Percutaneous thrombectomy	1,056 (18.77%)	1,263 (14.97%)	< 0.001
Surgical revision ± thrombectomy	1,583 (28.14%)	1.976 (23.42%)	< 0.001
Stent deployment	432 (7.68%)	634 (7.51%)	0.084