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Establishment and Evaluation of a Comprehensive Interventional Nephrology Fellowship Program

In Soo Kim, Hyungseok Lee, Young Rim Song, Jwa Kyung Kim, Jung Nam An, Sung Gyun Kim
Department of Internal Medicine-Nephrology, Hallym University Sacred Heart Hospital, Korea, Republic of

Objectives : The scope of interventional nephrology presented by the International Society of Nephrology (ISN) and the American Society of Diagnostic and Interventional Nephrology (ASDIN) encompasses renal ultrasonography and biopsy, peritoneal dialysis catheter-related procedures, vascular access ultrasonography, tunneled hemodialysis catheter-related procedures, vascular mapping, and arteriovenous access-related endovascular procedures. This article presents single-center outcomes of the procedures performed by nephrology fellows over the past year.
Methods : In 2023, diagnostic and therapeutic procedures, deemed essential for nephrology practice, were conducted by two nephrology fellows under the supervision and documentation of an experienced interventional nephrologist. At the weekly vascular access meeting, vascular surgeons and nephrology fellows discussed the pre-operative vessel mapping findings and ESKD (End-Stage Kidney Disease) Life-Plan, and then provided feedback on the outcomes.
Results : The annual frequency, success rate, and complications of procedures performed by fellows as primary operators demonstrated excellent outcomes (Table 1). There were four procedure-related major complications. A case of pseudoaneurysm with hematoma occurred due to an introducer injury. A tunneled dialysis catheter was inserted aberrantly in the subclavian artery, which was corrected by endovascular treatment. Two persistent arteriovenous fistulae after native kidney biopsy were encountered, which were treated by coil embolization. The other minor complications were successfully salvaged with endovascular management by the primary operators during the procedure time. Most importantly, vessel mapping for arteriovenous access creation was regarded as a crucial practice because the longevity of arteriovenous access and the quality of life of hemodialysis patients largely depend on the outcome of initial arteriovenous access creation. The primary failure rate of arteriovenous access was only 0.7% (N=1), in which case due to central vein occlusion.
Conclusions : Recently, the Interventional nephrology fellowship training curriculum has become a common requirement for nephrology fellowships worldwide. Our data show that nephrology fellows can be successfully trained as competent interventionalists.

Table 1.png

Procedures by nephrology fellows	Cases (N)	Success rate (%)	Major adverse events (N)
PD catheter insertion/revision	31	96.8	0
PD catheter removal	17	100.0	0
Tunneled HD catheter placement	185	99.5	1
PTA ± stent deployment	136	99.3	0
Percutaneous thrombectomy	98	96.9	1
Kidney biopsy	native 96 graft 23	100.0	2
Vascular mapping for AV access creation	143	99.3*	1

(N, number; PD, peritoneal dialysis; HD, hemodialysis; PTA, percutaneous transluminal angioplasty; AV, arteriovenous; NA, not available)

*Success rate of vascular mapping means successful use within 6-8 weeks after access placement