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Successful Treatment of Recurrent Renal Artery Stenosis in a Patient with Moyamoya Disease by Aorto-Renal Bypass with Autogenous Vein Graft

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A 20-year-old male patient was transferred to our vascular clinic with recurrent renal artery stenosis (RAS). At 12 years of age, he had visited a neurosurgery clinic with transient left hemiparesis and dizziness after eating ramyun. Magnetic resonance imaging revealed bilateral internal carotid artery (ICA) stenosis and small infarctions in the right temporal to occipital lobe compatible with Moyamoya disease (MMD). Transfemoral carotid angiography

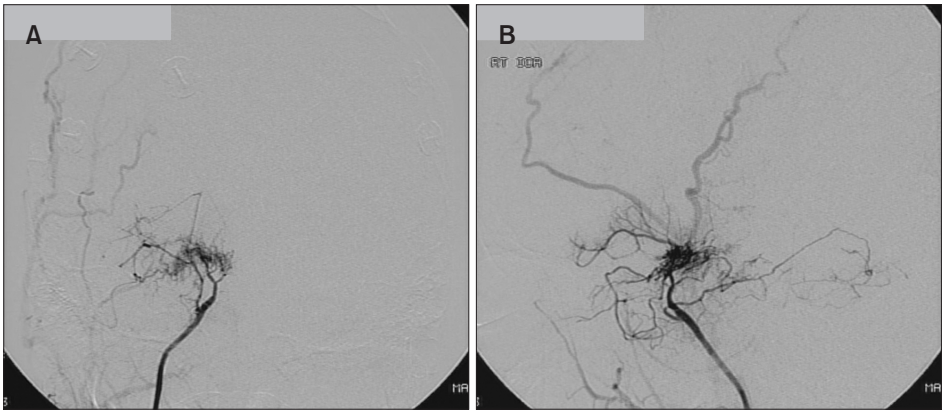

Fig. 1. Transfemoral carotid angiography showed bilateral internal carotid artery (ICA) stenosis. (A) Left ICA, (B) right ICA.

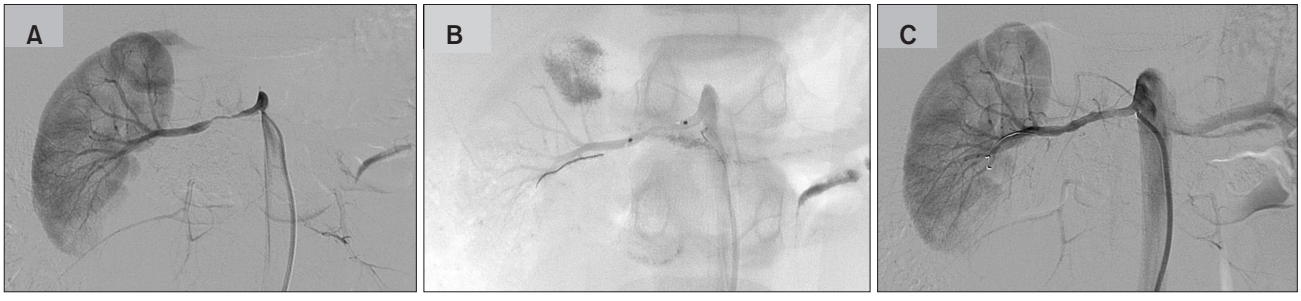

Fig. 2. (A) Digital subtraction angiography showed severe stenosis of the right renal artery. (B) Balloon angioplasty was performed. (C) Completion angiography showed a well-dilated renal artery with good renal perfusion.

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confirmed both ICA stenosis (Fig. 1) and right RAS (Fig. 2). Neurosurgeons performed four indirect bypass (encephalo-duro-arterio-synangiosis) operations to improve brain perfusion. For the RAS, balloon angioplasty was performed successfully (Fig. 3). However, when he was 19 years of age, the disease progressed to severe right RAS and new-onset left RAS. Balloon angioplasty of the left renal artery was performed. However, 6 months later, left RAS redeveloped (Fig. 4). The right kidney was severely atrophic, and a quantitative dimercaptosuccinic acid (DMSA) scan showed no function of the right atrophic kidney (Fig. 5). Therefore, to treat the renovascular hypertension (RVHT) and preserve the renal mass of the single left kidney, we performed a right nephrectomy and aorto-left renal bypass graft with a reversed saphenous vein. Aspirin 100 mg was administered, and the graft remained patent at the 2-year follow-up.

MMD is a progressive cerebrovascular disorder showing steno-occlusion of the bilateral internal carotid arteries that results in smoke-like vascular networks at the base of the brain. Choi et al. [1] reported 8.3% cases of RVHT among 72 MMD patients and concluded that RVHT may be more commonly associated with MMD than previously believed. Therefore, careful blood pressure monitoring should be performed in MMD and diagnostic procedures for RVHT should be followed in hypertensive patients with MMD. Experience with pediatric MMD cases in Seoul National University Hospital was published elsewhere [2,3]. This case highlights the progressive nature of RAS when refractory to balloon angioplasty in MMD. Regular careful imaging follow-up is important in RVHT in MMD.

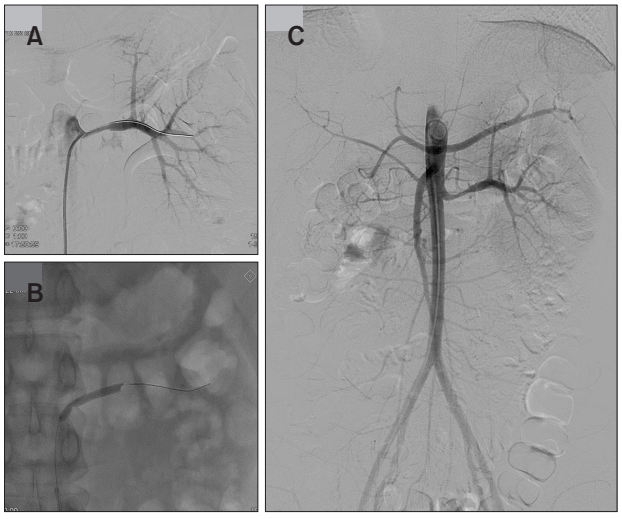
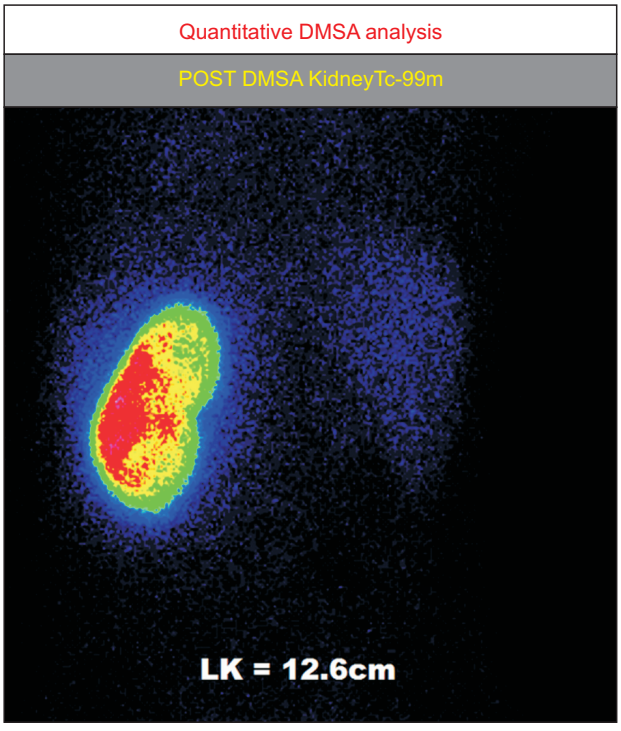


Fig. 3. (A) Digital subtraction angiography showed severe stenosis of left renal artery. (B) Balloon angioplasty was performed. (C) Completion angiography showed mild residual stenosis with good renal perfusion.



	Left kidney	Right kidney	Both kidney
Absolute uptake	44.7%	0.0%	44.7%
Posterior relative uptake	100.0%	0.0%	100.0%
Mean relative uptake	100.0%	0.0%	100.0%

Fig. 5. Quantitative dimercaptosuccinic acid (DMSA) scan showed no function of the right atrophic kidney. LK, left kidney.

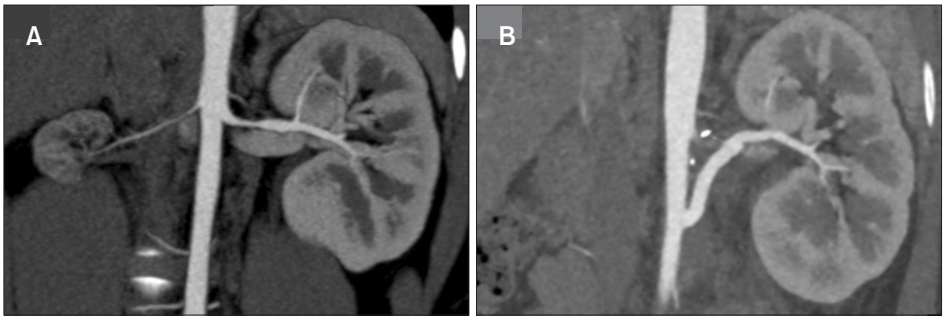


Fig. 4. (A) Computed tomography angiography (CTA) revealed severe stenosis of the right renal artery with an atrophic kidney and recurrent stenosis of the left renal artery. (B) CTA showed the patent left aorto-renal bypass graft with good renal perfusion.

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