

(Filterwire)

1

가 Filterwire 가
 , Filterwire 가
 : 2004 6 12 Filterwire
 24 25
 : 25
 100%), 0% , 100% 89% (70 -
 1 (1/25, 4%)가 . 4 (4/25, 16%) . 30
 , . 8
 Filterwire (8/25, 32%).
 : Filterwire 가 ,

가 가
 (1 - 7). , Filterwire 가
 , Filterwire 가
 가
 (8 - 12). (TCD) (13)
 (Diffusion weighted MR image) (14,
 15)
 (embolic protection devices) 2004 6 12 24 25
 Filterwire(Filterwire EX , Boston Scientific Vascular)
 가 20 , 가 4 , 63.3 (46 - 80)
 가
 , 25 70%
 (16, 17), . North American Symptomatic Carotid Endarterectomy
 Trial (NASCET) criteria 가 , 14 가 95%
 (near - occlusion), 11 70% (severe)
 . 3 (complete
 occlusion) , 2
 2006 8 22 2006 10 9

(Table 1).

가 (MR angiography) . 13 (SPECT) 가 , NASCET criteria , Filterwire 가 3 clopidogrel (Plavix) 75 mg aspirin 100 mg low - molecular heparin nadroparin calcium (Flaxiparine: Sanofi - Synthelabo, Korea) 2 - 3 가 (ACT, activated clotting time) 250 - 300 , heparin 3,000 - 5,000 IU 1,000 IU 가 . 8F (Envoy , Cordis Endovascular Corporation, U.S.A.) Filterwire

Table 1. Patient Demographic Characteristics

Patient characteristics	No. of patients
Total no. of patients (lesions)	24 (25)
Age range(yr) (mean age)	40 - 80 (63.3)
M:F	20:4
Degree of carotid stenosis (mean)	70 - 100% (89%)
Near-occlusion (>95%)	14
Severe (>70)	11
High risk criteria	
Contralateral carotid occlusion	2
Previous neck irradiation	1
Recent MI (within 3 month)	1
Comorbidities	
Coronary artery disease	1
Hypertension	6
Diabetes	7
Smoking	14
Hypercholesterolemia (>250 mg/dl)	1
Renal insufficiency (Cr >1.5 mg/dl)	2

(Filterwire) delivery sheath Filterwire , Filterwire 가 Filterwire 0.014 inch 2.5 - 4 mm (residual stenosis) 5 - 7 mm 가 Filterwire retrieval sheath , Filterwire 가 (Fig. 1). , aspirin 100 mg Plavix 75 mg , 2,850 IU Flaxiparine 3 가 3 T2 (T2 weighted image), (diffusion weighted image), (fluid - attenuated inversion recovery: FLAIR) 가 (Single photon emission computed tomography; SPECT) 가 Filterwire 20% 30 . 24 (transient

Table 2. The Results of CAS with Filterwire

Results	No. (%)
Technical success	25/25 (100)
Periprocedural complications	1/25 (4)
TIA, minor stroke	0
Major stroke	1
Filterwire related complications	0/25 (32)
Transient spasm of ICA	8
Dissection	0
Flow impairment	0
Visible debris within Filterwire	14/25 (56)
Yellowish material	11 (78.6)
Reddish debris	2 (14.3)
Atheromatous plaque	1 (7.1)
New lesions on Diffusion-weighted MR images	4/25 (16)

ischemic attack) , 30
(minor stroke) , 30
(major stroke) .
Filterwire
가 , 25

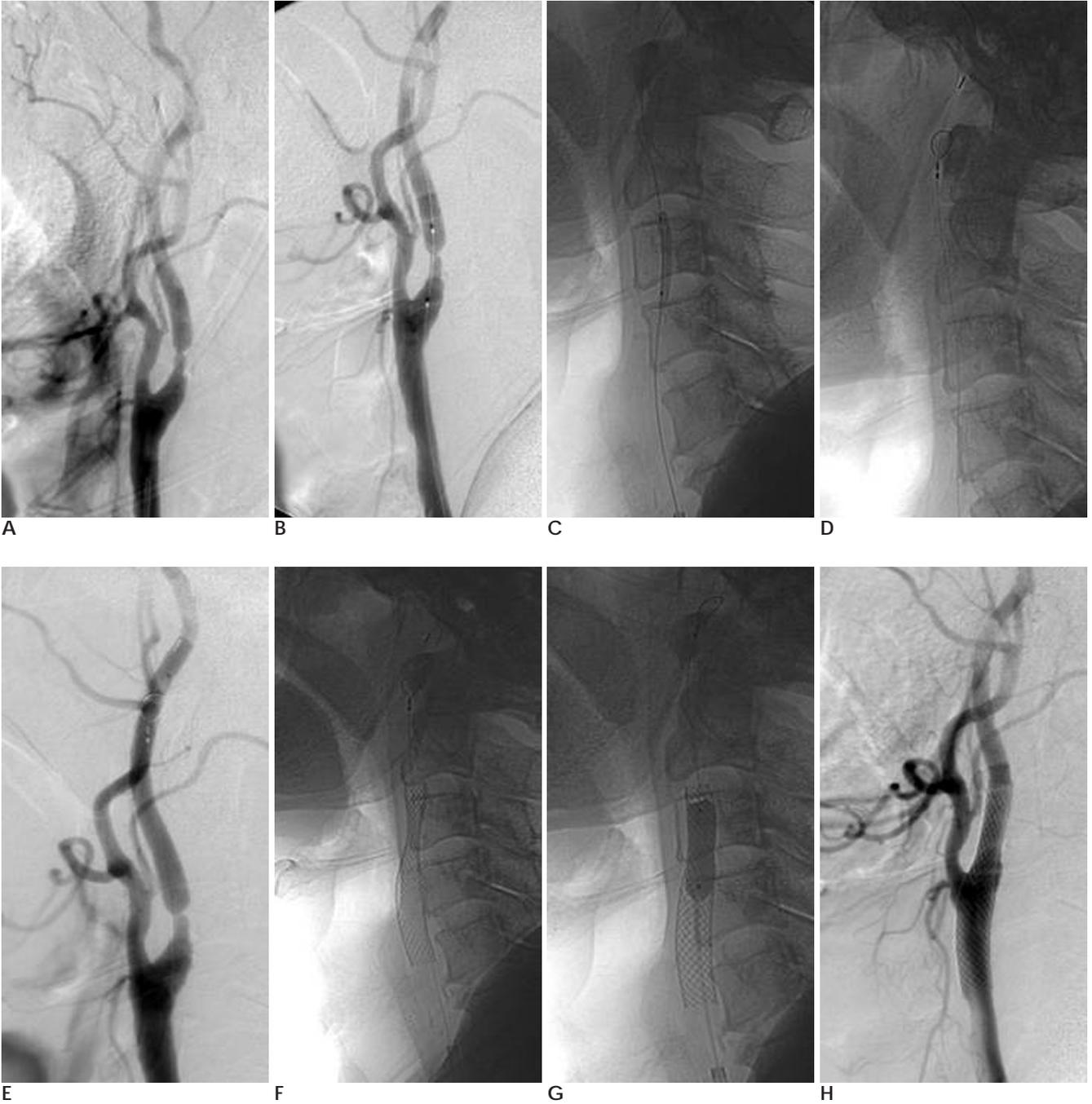


Fig. 1. Stenting procedure using Filterwire.
A. Angiography shows severe stenosis in left internal carotid artery.
B, C. Predilatation with low profile balloon is performed.
D, E. Filterwire and delivery sheath is passed across the lesion and Filterwire is deployed at distal internal carotid artery.
F, G. Stent is deployed and dilated.
H. Filterwire is removed and completion angiography is performed.

(Table 2), 89% (70 - 100%) , 0% , 100%

24	가	가	Filterwire	25
		가	, 8	Filterwire
	Filterwire			
	2.5 mm		. 14	Filterwire
(predilatation)		(major stroke)	(debris), 1	11
30				, 2
				(plaque)
				(cleft)
			(vacuole)	
			4	

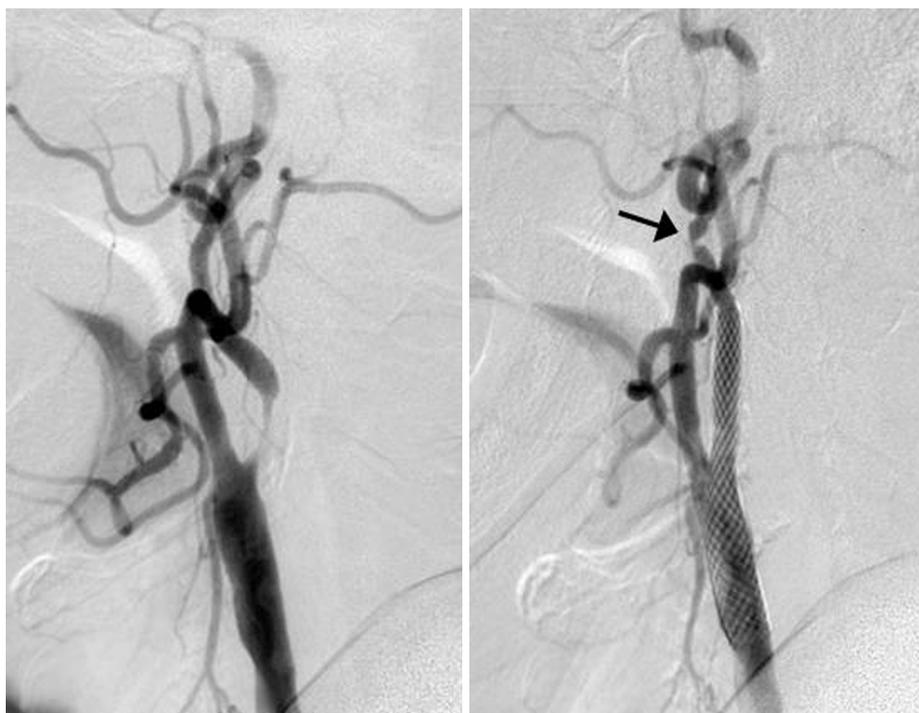
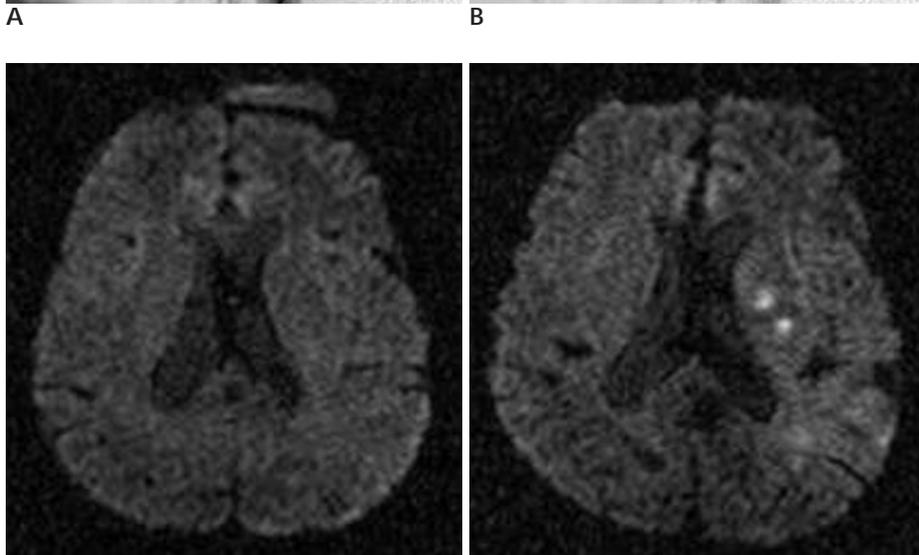


Fig. 2. Images obtained in a 72-year-old man with severe stenosis of left carotid artery.

A. Left lateral angiogram shows about 90% stenosis of the left internal carotid artery.

B. Left lateral angiogram shows the result after stent implantation. The transient vasospasm distal to the stent is noted (arrow).

C, D. Compared with preprocedural image (C), postprocedural diffusion-weighted MR image (D) shows two new lesions (<5 mm) in left basal ganglia, but these lesions were clinically silent.



C

D

(Fig. 2), (CAS) (CEA)
 4 . 4 2 (6.6% vs. 0.6%) 30
 , 1 (9.7% vs. 0.9%)
 13 가
 (SPECT) , 13
 (CBP; cerebral blood perfusion) Theron (19)
 (CVR; cerebral vasoreactivity) 가
 (Fig. 3). 가
 (CEA) 30 1.8%
 (CAS) 30 5.5%
 (mortality), (morbidity) 442 , Cremonesi (21)
 (re-stenosis rate) 3.4% 30
 6% , Jordan (18) 4%), 1 (1/25,
 Filterwire

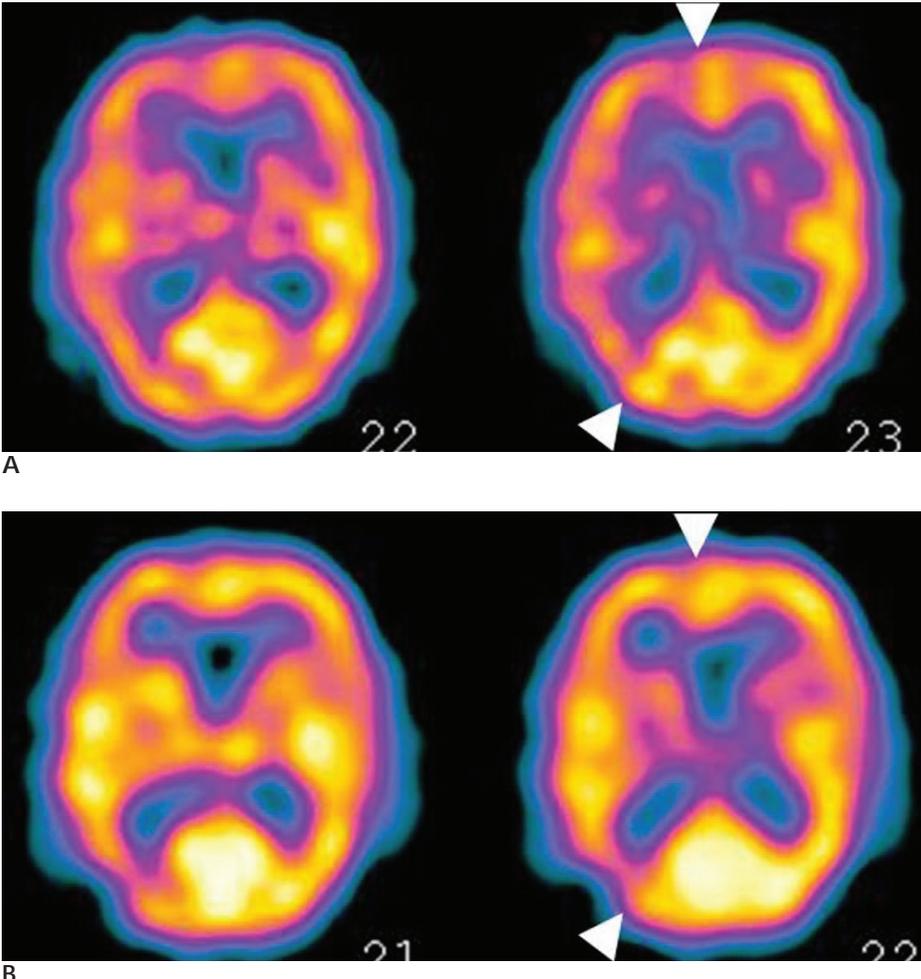


Fig. 3. SPECT image of 75-year-old man with severe stenosis of right internal carotid artery.
A. Pre-procedural images reveal decreased blood flow in right internal cerebral artery territory (arrowheads).
B. Post-procedural images show marked recovery of regional blood flow (arrowheads).

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Results of Carotid Artery Stenting using Filter Wire in 24 Consecutive Symptomatic Patients with Severe Stenosis¹

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Purpose: The aims of this study were to analyze the results of carotid artery stenting using distal protection with FilterWire, and evaluate the effectiveness of FilterWire for distal embolic protection.

Materials and Methods: Between June and December in 2004, elective carotid artery stenting using FilterWire was attempted in 25 lesions of 24 consecutive patients. All patients were symptomatic, with recurrent transient ischemic attacks (TIA) or a stroke. The cerebral ischemic lesions of embolic origin were evaluated before and after the procedure using magnetic resonance imaging, including diffusion-weighted images. Both pre- and post-procedural 99mTc-ECD SPECT were performed to assess the cerebral blood flows. Any visible debris within the FilterWire was sent for histological/cytological analyses.

Results: Technical success was achieved all 25 cases. The mean pre-procedural stenosis was 89% (range 70 - 100%), and that immediately after stent placement was nearly 0%. With the exception of only one major stroke (1/25, 4%), no periprocedural complications were encountered. On the diffusion weighted images, new lesions were observed in four patients (4/25, 16%), but these were clinically silent. FilterWire-related transient spasm occurred in eight of the 25 procedures (32%).

Conclusion: Carotid artery stenting, with FireWire distal protection, seems technically feasible, safe and effective in preventing procedural related embolic complications.

Index words : Carotid arteries, stenosis or occlusion
Arteries, transluminal angioplasty
Carotid arteries
Stents and prostheses

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