

## 긴 관동맥병변에서 긴 스텐트삽입에 대한 임상경과 및 재협착율

김영학 · 박성욱 · 정상식 · 박훈기 · 이상곤  
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### Long Stent Implantation in Long Coronary Lesions : Immediate and Follow-up Results

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#### ABSTRACT

**Background :** The results of new devices for long coronary stenotic lesion is disappointing. We evaluate the feasibility and efficacy of single long coronary stenting for long coronary stenosis, we implanted two types of long stents, newly developed less shortening Wall stent and Gianturco-Roubin II stent. **Methods :** This study reports on the use of stents in 106 patients with 109 lesions with long lesion. Long coronary disease was defined as a lesion length longer than 20 mm. After the implantation of the stent, the stented coronary segment was dilated further with high pressure balloon inflation to achieve angiographic optimization. **Results :** The mean age was  $59 \pm 9$  years. Mean stent length was  $35 \pm 11$  mm. Vessel distribution was 2 (2%) left main, 66 (61%) LAD, 10 (9%) LCX and 31 (28%) RCA. Implanted stents were 57 (52%) Gianturco-Roubin II stents and 52 (48%) Wall stents. Procedural success was achieved in 109 (100%) lesions. The MLD at lesion site increased from  $0.8 \pm 0.4$  mm to  $3.2 \pm 0.5$  mm. Procedure associated complications included 4 non-Q myocardial infarction. Angiographic follow up at 6 months was performed on 78 (72%) eligible lesions. There was one myocardial infarction and no death during follow up period. Restenosis by 50% diameter stenosis criteria was present in 39 (50%) of lesions. The target lesion revascularization was performed in 21 (19%) lesions. **Conclusions :** Stent implantation for long coronary disease is associated with excellent procedural success rates and low complication rates in the majority of patients. However, the restenosis rate is high regardless of the stent used. Further study needs to be done to improve the long-term clinical outcome. (Korean Circulation J 1998;28(6):902-908)

**KEY WORDS :** Long coronary disease · Coronary stent.

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## 서 론

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(percutaneous transluminal coronary angioplasty, PTCA) (intimal dissection) (acute closure) 1-5) 가 6) PTCA (rotator coronary atherectomy),<sup>7)</sup> (directional coronary atherectomy),<sup>8)</sup> (laser) (coronary stent) 가 9)10)

106 Table 1 Table 2 109 1, 3, 6 6 스텐트 시술 10,000 (activated clotting time) 250 5,000 가 (predilation) PTCA 가 1 : 1 Gianturco - Roubin II Wall 5 10 mm 가 1 : 1 Wall

## 방 법

대상 환자 1996 6 12 가 106 109 (elective stenting), (abrupt closure), (threatened closure) PTCA가 (suboptimal result) (infarct - related artery) 7 10 1) thallium SPECT 가 2) 가 20 mm 3) 70% 4)

**Table 1.** Baseline clinical characteristics of the 106 patients

	Wall stent	GR II stent
Number (%)	49 (46)	57 (54)
Age (year)	58 ± 10	60 ± 8
Gender (Male/Female)	39/13	43/14
Risk factors (%)		
Hypertension	16 (31)	20 (35)
Diabetes mellitus	13 (25)	14 (25)
Hyperlipidemia	2 ( 4)	4 ( 7)
Current smoker	27 (52)	31 (54)
Myocardial infarction (%)		
Healed	9 (18)	5 ( 9)
Acute	12 (24)	14 (25)
Unstable angina (%)	25 (51)	25 (44)
Number of narrowed coronary arteries (%)		
1	21 (43)	23 (40)
2	17 (35)	20 (35)
3	11 (22)	14 (25)

GR II = Gianturco-Roubin II stent

**Table 2.** Angiographic and procedural characteristics of the 109 lesions

	Wall stent	GR II stent
Number (%)	52 (48)	57 (52)
Lesion location (%)		
Left main coronary artery	0	2 ( 3)
Left anterior descending coronary artery	30 (58)	36 (63)
Left circumflex coronary artery	4 ( 7)	6 (11)
Right coronary artery	18 (35)	13 (23)
Infarct-related artery (%)	10 (19)	9 (16)
Indications for stenting (%)		
Elective	44 (85)	38 (67)
(de novo/restenosis)	(42/2)	(36/2)
Suboptimal results	5 (10)	9 (16)
Bail-out procedure	3 ( 5)	10 (17)
(threatened closure/acute closure)	(3/0)	(10/0)
Maximal inflation pressure (atm)	14 ± 3	14 ± 3
Length of stent (mm)	38 ± 11 <sup>§</sup>	32 ± 9

GR II stent = Gianturco-Roubin II stent   <sup>§</sup>Size after implantation measured by quantitative angiographic analysis

가 (acute gain) (late loss) 50%

aspirin ticlopidine

Ticlopidine 1

250 mg Aspirin 통계 분석

200 mg ±

12 wa - t

rfarin X<sup>2</sup> p

0.05 가

혈관 조영상 분석

nitroglycerin 0.2 mg

결과

(guiding catheter) Wall Gianturco - Roubin II (Table 1)

(ACC/AHA) 가 (Table 2).

(percent diameter stenosis), Wall

(minimal luminal diameter) (reference QCA

artery) (quan - Table 3

titative coronary angiography, QCA) mm

QCA , 12% 5 ± 14%

가 0.8 ± 0.4 mm 3.2 ± 0.5 mm 가

Wall , Q

QCA

3 4 Q 1  
3 Q Wall  
diagonal br - Gianturco - Roubin II  
anch 3 acute marginal branch 1 가 Wall

**Table 3.** Quantitative angiographic measurements pre-intervention, post-stent implantation and at follow-up

	Wall stent	GR II stent
Number of lesions followed by angiography	38	40
Reference vessel diameter	3.5 ± 0.5	3.3 ± 0.4
Percent diameter stenosis		
Baseline	77 ± 13	75 ± 12
Final	3 ± 14	6 ± 15
Follow-up	55 ± 25	56 ± 23
Minimum luminal diameter (mm)		
Baseline	0.8 ± 0.5	0.8 ± 0.4
Final	3.4 ± 0.5	3.1 ± 0.4*
Follow-up	1.5 ± 0.9	1.4 ± 0.8
Acute gain (mm)	2.5 ± 0.6	2.3 ± 0.5*
Late loss (mm)	1.7 ± 0.9	1.6 ± 0.7
Target lesion revascularization (%)	10 (19)	11 (19)
Angiographic restenosis (%)	21 (55)	18 (45)

GR II = Gianturco-Roubin II stent \*p<0.01

**Table 4.** Baseline clinical and procedural characteristics of the 78 restenotic lesions

	Restenosis	No restenosis
Number	39	39
Age (year)	59 ± 10	58 ± 8
Sex (Male/Female)	33/6	29/10
Risk factors (%)		
Diabetes mellitus	12 (31)	6 (15)
Hypertension	14 (36)	7 (18)
Hyperlipidemia	2 ( 5)	2 ( 5)
Current smoking	20 (51)	23 (59)
Type of stent (%)		
Wall stent	18 (46)	22 (56)
Gianturco-Roubin II stent	21 (54)	17 (44)
Lesion location (%)		
Left anterior d escending artery	21 (54)	26 (67)
Left circumflex artery	5 (13)	3 ( 8)
Right coronary artery	13 (33)	10 (25)
Infarct-related artery (%)	7 (18)	8 (21)
Indications for stenting (%)		
Elective	30 (77)	32 (80)
Suboptimal results	4 (10)	3 ( 8)
Bail-out procedure	5 (13)	4 (10)

**Table 5.** Quantitative coronary angiographic measurements of the restenotic vs. non-restenotic lesions

	Restenosis	No restenosis
Maximal inflation pressure (atm)	13 ± 3	14 ± 3
Reference vessel diameter (mm)	3.3 ± 0.4	3.4 ± 0.4
Length of stent (mm)	36 ± 12	32 ± 10
Percent diameter stenosis (%)		
Baseline	76 ± 12	75 ± 14
Final	4 ± 15	3 ± 13
Follow-up	71 ± 16	34 ± 14
Minimum luminal diameter (mm)		
Baseline	0.8 ± 0.4	0.9 ± 0.5
Final	3.1 ± 0.5	3.3 ± 0.4
Follow-up	0.9 ± 0.5	2.2 ± 0.5
Acute gain (mm)	2.3 ± 0.6	2.4 ± 0.6
Late loss (mm)	2.2 ± 0.6	1.0 ± 0.5*

\*p<0.01

가 (Table 3). (target (peripheral artery) Itoh Wall lesion revascularization rate) 6 75 , 78 (72%) 가 24 31 가 55 ± 24% 가 1.5 ± 0.8 mm 39 (50%) 가 21 (19%) 100% 18 Itoh 14) 가 21 (54%), 5 (13%) 13 5 , 11) 14 , 1 1 가 Itoh 가 14) 4 (Table 4 and 5). 3 가 가 가 Gianturco - Roubin 15 - 19) Wall 10)11) 가 21 53% 14 34% 20 - 22) Wall 12)13) 55%

Ozaki 가 .  
Wall 30% 가  
<sup>23)24)</sup> Ozaki 가  
가 요 약  
연구배경 :  
<sup>25)26)</sup> Gianturco - Roubin II 가  
가 Wall ( 20 mm)  
가  
Colombo Palmaz - Sc - 방 법 :  
hatz 106 ( : 79, : 599 ) 109  
, , Gianturco - Roubin II stent(57) Wall  
<sup>27)</sup> 가 stent(52)  
<sup>28)</sup> 결 과 :  
, 2(2%) , 66(61%)  
, 10(9%) 31(28%)  
가 가 35±11 mm  
100% , 0.8±  
0.4 mm 3.2±0.5 mm 가  
Q 4 (4%)  
가 가 6 78(72%)  
( 50%)  
가 39(50%)  
Wall Gi - 1  
anturco - Roubin II  
Wall 가 (ra -  
dial force) (acute recoil) 가  
QCA  
Wall  
중심 단어 :

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