

## Long Lesion의 관동맥 협착에서 Long Stent

- 3가지 다른 Stent의 비교 -

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## Coronary Stenting for Long Lesions : Comparison of Three Different Types of Stent

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## ABSTRACT

**Background :** Coronary stenting is known to reduce the rates of restenosis in focal lesions, but the efficacy of stents for long lesions have not been thoroughly defined. To evaluate the immediate and follow-up results of three different types of stents in lesions longer than 20mm, consecutive series of patients (pts) were reviewed. **Methods :** Between February 1996 and January 1997, 123 patients (male 68.3%, mean age 57 ± 10 years) with a total of 130 lesions underwent long stent : stenting. Excluding multiple stents and unplanned use for acute closure fifty-three pts (56 lesions) were treated with the Microstent (M- ); 30 pts (31 lesions) received the Less Shortening Wallstent (WA) ; and 40 pts (43 lesions) were treated by the Gianturco-Roubin stent (GR- ). **Results :** With the clinical success defined as <30% residual stenosis without death, CABG, Q-wave MI was achieved in 93% with the M- , 94% with the WA and 95% with the GR- . Stent thrombosis occurred 0% in M- , 1.5% in WA and 2.3% in GR- . Clinical success and stent thrombosis rates were not different between the three types of stents. Follow-up (FU) quantitative angiography was obtained from 34 pts (64%) in M- , 25 lesions (83%) in WA and 26 pts (65%) in GR- after 6 months. Restenosis rate defined as <50% diameter stenosis at FU was 26% in M- , 32% in WA and 38% in GR- ; there was no significant difference between the three stents. Target lesion revascularization (TLR) defined as CABG or target lesion PTCA at FU was 17.6% in M- , 12% in WA and 23.1% in GR- . Restenosis rate correlated closely with lesion length (p-value = 0.03, Odds ratio = 1.096) and small post-stent luminal diameter (p-value = 0.002, Odds ratio = 0.063) in a multivariable analysis. **Conclusion :** Coronary stenting for long lesions can be safely performed with acceptable complication rates using any of the three types of stents. Restenosis and late outcome was not related to type of stent. (Korean Circulation J 1998;28(4):553-559)

**KEY WORDS :** Long lesion · Long stent · Microstent · Less Shortening Wallstent · Gianturco-Roubin stent.

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서 론

revascularization(TLR) stent

stent

, suboptimal result

<sup>1-3)</sup>

<sup>4)5)</sup>

stent가

스텐트 시술방법 및 약물요법

Stent

8F

175 cm 0.014 inch

, stent

가

<sup>6-8)</sup>

st -

<sup>9-14)</sup>

ent

stent

subacute stent thrombosis가

<sup>15)16)</sup>

non - compliant balloon catheter

stent가

stent

가 가

(20 mm

. Stent

) stent

aspirin

, stent

6

(100 mg po qd), ticlopidine(250 mg po bid)

2

3

ticlopidine stent

4

, aspirin

대상 및 방법

heparin 10,000

, activating

clotting time(ACT)

ACT가 300

sec

heparin

가

대 상

1996 2

1997 1

long stent

24

123

heparin

1,000

가

stent

long stent

자료의 분석 및 통계

stent

1 , 3

empty catheter

electric caliper

, 가

6

123

130

stent가

±

84 (68.3%),

39 (31.7%)

Chi - square test

logistic regression anal -

57 ± 10

6.5 2.3

ysis

결 과

38

85

임상양상

(69%).

stent

stent

32 (24%),

50%

. Target lesion

58 (45%), 40 (31%)  
 25%, 51%,  
 55% 가 220 mg/dl 가  
 25% (Table 1).  
 관동맥 조영소견  
 51 (39%),  
 79 (61%)  
 53 , 23 ,  
 51 , 1 2  
 (Table 2). stent Microstent 가  
 56 , less shortening Wallstent가 31 Gi-  
 anturco-Roubin stent가 43 (Table 3).  
 stent M- 3.0 mm  
 가 67.9%, WA 3.5 mm 가 54.8%

**Table 1.** Clinical characteristics of the patients

	Number (%)
Sex (male/female)	84(68.3)/39(31.7)
Age	57 ± 10
Risk factors	
Diabetes mellitus	33 (25)
Hypertension	66 (51)
Hypercholesterolemia (> 220 mg%)	33 (25)
Smoking	71 (55)
Clinical diagnosis	
Stable angina	40 (31)
Unstable angina	58 (45)
Acute MI	32 (24)

**Table 2.** Angiographic characteristics of the lesions

	Number (%)
Angiographic diagnosis	
One vessel disease	51 (39)
Two vessel disease	40 (31)
Triple vessel disease	38 (29)
Left main	1 ( 1)
Lesion sites	
LAD	53 (41)
LCX	23 (18)
RCA	51 (39)
Graft vessels	2 ( 1)
Left main	1 ( 1)

GR- 3.0 mm 가 65.1% . Stent  
 M- 28.3±2.7 mm, WA 33.9±  
 9.3 GR- 40 mm (Table 4).  
 M- 가 23±7 mm, WA가 25±6 mm  
 GR- 가 30±10 mm GR- 가 stent  
 (p-  
 value=0.002). M- 가 3.17±  
 0.40, WA가 3.16±0.39, GR- 가 3.03±0.44 .  
 M- 가 0.69±0.35, WA가  
 0.74±0.55, GR- 가 0.69±0.43 .  
 M- 가 3.13±0.41, WA가  
 3.10±0.42, GR- 가 2.79 ±0.41 GR- 가  
 stent (p-value=0.002).  
 M- 가 1.96±  
 0.81, WA가 1.83±0.83, GR- 가 1.63±0.89  
 GR- 가  
 . Acute gain M- 가 2.44±  
 0.60, WA가 2.36±0.70, GR- 가 2.10±0.52  
 stent . Late loss M- 1.15  
 ±0.68, WA 1.27±0.69, GR- 1.22±0.77  
 stent (Table 5).

**시술성공률 및 급성 합병증**

94% 7 가 stent  
 , 1  
 . M- 가 93%, WA가 94% GR-

**Table 3.** Types of stent

	Number (%)
Microstent	56 (43.1)
Less shorting Wallstent	31 (23.8)
Gianturco-Roubin stent	43 (33.1)

**Table 4.** Stent size and length

	M-	WA	GR-
	Number (%)		
Diameter (mm)			
3.0	38 (68)	11 (35)	28 (65)
3.5	14 (25)	17 (55)	12 (28)
4.0	4 ( 7)	2 ( 7)	3 ( 7)
4.5	0 ( 0)	1 ( 3)	0 ( 0)
Length (mm)			
Mean ± SD	28.3±2.7	33.9±9.3	40±0

**Table 5.** Angiographic results

	M-	WA	GR-
Lesion length (mm)*	23 ± 7	25 ± 6	30 ± 10
Ref. Diameter (mm)	3.17 ± 0.40	3.16 ± 0.39	3.03 ± 0.44
Pre MLD (mm)	0.69 ± 0.35	0.74 ± 0.55	0.69 ± 0.43
Post MLD (mm)**	3.13 ± 0.41	3.10 ± 0.42	2.79 ± 0.41
FU MLD (mm)	1.96 ± 0.81	1.83 ± 0.83	1.63 ± 0.89
Acute gain (mm)	2.44 ± 0.60	2.36 ± 0.70	2.10 ± 0.77
Late loss (mm)	1.15 ± 0.68	1.27 ± 0.69	1.22 ± 0.77
Restenosis (%)	26	32	38
TLR (%)	17.6	12.0	23.1

\* p-value = 0.002 for GR- vs M- or WA  
 \*\* p-value = 0.002 for GR- vs M- or WA

**Table 6.** Procedural success rate

Overall	94 %
M -	93 %
WA	94 %
GR-	95 %
Failed coronary artery	
LAD	3
LCX	3
RCA	2

가 95% stent  
 . 가  
 3 , 가 3 2 (Ta-  
 ble 6).  
 stent 5 (3.8%)  
 1 , 4 . Stent M- 가  
 , WA가 2 GR- 가 3  
 (Table 7).

**추적 관찰결과**

6.5 ± 2.3  
 123 85 가 (69%).  
 M- 64%(34 / 53 ), WA 83%(25 / 30  
 ), GR- 65%(26 / 40 ) . 85  
 27 32%  
 . stent M- 26%, WA  
 32%, GR- 38% . TLR  
 M- 17.6%, WA 12%, GR- 23.1%  
 (Table 5).

stent

**Table 7.** Procedure related complications

	Number (%)
Acute closure	1 (0.7)
Subacute closure	4 (3.1)
Stent migration	0
Q-myocardial infarction	0
Emergency CABG	0
Bleeding requiring transfusion	0

**Table 8.** Factors affecting restenosis in multiple logistic regression analysis

	P-value	Odds ratio
Post-stent MLD	0.002	0.063
Lesion length	0.03	1.096

(p - value = 0.002, Odds ratio  
 = 0.063)  
 (p - value = 0.03, Odds ratio  
 = 1.096)  
 . stent  
 1 mm 가 0.063 ,  
 1 mm 15.87  
 . 가 1 mm  
 1.096 가 .

**고 안**

가  
 .  
 6-8) 1980 ACC / AHA  
 type A, B, C  
 가 10 20 mm type B  
 ,  
 20 mm type C  
 .  
 balloon catheter 가  
 가 가  
 .  
 9-14)  
 subacute stent thrombosis가  
 15)16)  
 ,  
 가

12)13)

stent , GR - 40 mm  
stent . stent  
가 ,<sup>22)23)</sup>  
Wallstent stent 가 가 1995  
가 4.5%<sup>17)</sup> 1996 ,  
long balloon catheter가 ,  
long balloon catheter 69%  
<sup>18)19)</sup> 가  
single long stent ,  
, 35% stent , 3가  
<sup>20)21)</sup> 94% stent가 stent GR -  
가<sup>21)24)</sup>  
M - GR - WA가 stent  
가  
stent WA  
. Stent  
/ stent GR - stent가  
, 가  
<sup>8)19)</sup> stent stent ,  
93%, 94%, 95% 가 . St - stent GR - stent  
ent 7  
stent GR - 가 stent radial force  
1 24 recoil .  
late loss가 stent 가  
. Stent 가  
5 (3.8%)  
stent stent (p - value = 0.0015,  
(1.2%) stent Odds ratio = 0.063) (p - value = 0.035,  
가 long stent .  
stent 5 3  
3가 stent  
stent가 ,  
stent가 stent 가 stent  
가 stent  
stent stent apposition  
M - 24 mm, 30 mm  
, WA 24 mm 56 mm .

요 약

연구배경 : stent  
 stent  
 가 20  
 mm 가 stent  
 6  
 방 법 :  
 1996 2 1997 1  
 long stent  
 123 ( 68.3%, 57 ± 10 ),  
 130 Microstent - 가  
 53 (56 ), less shorting Wallstent  
 가 가 30 (31 ), Gianturco - Roubin  
 stent - 가 가 40 (43 )  
 stent  
 long stent  
 결 과 :  
 1) 50%  
 Q - wave M -  
 93%, WA 94%, GR - 95%  
 Stent M - 0%, WA 1.5%, GR -  
 2.3% stent  
 2) 6.5 M - 34 /  
 53 (64%), WA 25 / 30 (83%), GR - 26 /  
 40 (65%) M -  
 26 %, WA 32%, GR - 38%  
 M - 17.6%, WA 12%, GR -  
 23.1%  
 결 론 :  
 long stent  
 가 stent

중심 단어 :

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