

관동맥내 MultiLink 스텐트 시술후 추적 관동맥 조영술 소견

- 고압력 풍선확장술의 유용성을 중심으로 -

가

정옥성 · 승기배 · 김종진 · 문건웅 · 유기동
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Follow-up Angiographic Results after MultiLink Coronary Stent Implantation

- Is Excessive High Pressure Inflation Necessary for Optimal Stenting? -

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ABSTRACT

Background and Objectives : The objective of this study was to assess the in-hospital clinical outcome and 6 months follow-up angiographic results after flexible balloon expandable MultiLink coronary stenting. The impact of post-stenting excessive high pressure balloon dilation on late outcome is controversial. The other purpose was to investigate the impact of post-stenting high pressure balloon dilation (HPD group ≥ 14 atm) on clinical and angiographic outcome in comparison to moderate pressure dilation (MPD group <14 atm). **Materials and Method** : The MultiLink stents were implanted in 124 patients (mean age 58 ± 9 , M/F = 94/30) with 128 lesions. Post-stenting high pressure balloon dilation was performed to have less than 10% of residual stenosis and smooth instent lumen without IVUS guidance. **Results** : The indications for stenting were elective in 88 lesions (69%), suboptimal angioplasty results in 27 lesions (21%), and bail-out in 13 lesions (10%). The incidence of in-hospital major adverse cardiac events was 1.6% and major vascular complication rate was 3.2%. The follow-up angiography was performed in 86 patients (69%) at 7.9 ± 2.6 months. The angiographic restenosis rate was 22.7%. The acute gain of HPD group had a tendency to be higher than MPD group (HPD : MPD = 2.33 ± 0.51 mm : 2.22 ± 0.44 mm, $p = 0.08$) and the late loss of MPD group had a tendency to be lower than HPD group (MPD : HPD = 0.86 ± 0.73 mm : 0.95 ± 0.84 mm, $p = 0.09$). And the net gain and restenosis rate of both groups were similar respectively (HPD : MPD = 1.38 ± 0.94 mm : 1.36 ± 0.83 mm, $p = \text{ns}$, HPD : MPD = 22.5% : 22.9%, $p = \text{ns}$). **Conclusion** : The MultiLink coronary stent system is a safe and effective device with high procedural success rate and also has the acceptable angiographic restenosis rate for the treatment of coronary artery disease. The post-stenting excessive high pressure balloon dilation might not be necessary during the deployment of MultiLink stent. (**Korean Circulation J 1999;29(11):1169-1175**)

KEY WORDS : MultiLink stent · High pressure inflation · Restenosis rate.

: 1999 5 24

: 1999 11 8

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서 론

대상 및 방법

(Percutaneous Transluminal Coronary Angioplasty, PTCA) 가

1994 MultiLink 124

STRESS¹⁾ BENESTENT²⁾ 가 , 2 PTCA, , Q , , , 6

Palmaz - Schatz Gianturco Roubin 가 ACS MultiLink

(GUIDANT ,) (radial force)³⁾ 스텐트 시술방법 MultiLink Advanced Cardiovascular Systems(ACS) 가 (protective sheath) (delivery system)가 over - thewire 가 monorail 가 10,000 IU 3 500 mg 200 mg , 4 8 , 7 F 8 F

cardiac event, MACE)⁴⁾ (major adverse cardiac event, MACE) 16 acute gain 가 late loss : 1 : 1 1.2 : 1 net gain

PTCA⁵⁻⁷⁾ 가 가 MultiLink MACE, 6 (Schneider ,) Chubby 14 10% 가 14 (1 , high pressure balloon dilation group), 14 (2 ,

moderate pressure balloon dilation group)

관동맥 조영술상 분석 및 통계분석

nitroglycerin 0.2 mg

, 6

on-line QCA(quantitative coronary angio-graphic analysis)

가

50%

PC

SPSS

±

Student t - test

, p

0.05

결 과

대상환자

124

128

129

MultiLink

가

124

94 (76%),

30 (24%)

58 ± 9

58 (47%),

42 (34%), 2

24 (19%)

220 mg/dl

(Table 1).

관동맥 조영술상 병변의 특징과 스텐트 시술 결과

71 (57%),

53 (43%)

88 (69%)

27 (21%),

가 13 (10%)

MultiLink

가

가 58 가

1 . ACC/AHA

B1 B2

50 (39%)

가

(Table 2).

over - the - wire

Table 1. Clinical characteristics of the 124 patients

Characteristics	Number (%)
Age (year)	58 ± 9
Male/female	94/30
Risk factors	40 (32%)
Hypertension	24 (19%)
Diabetes mellitus	22 (18%)
Hypercholesterolemia (> 220 mg/dl)	51 (41%)
Current smoker	58 (47%)
Clinical diagnosis	42 (34%)
Stable angina	24 (19%)
Unstable angina	
Recent myocardial infarction (< 2 weeks)	
Number of diseased vessels (n)	
1	71 (57%)
2	40 (32%)
3	13 (11%)

Table 2. Angiographic characteristics of the 128 lesions

Characteristics	Number (%)
Artery dilated	
LAD	58 (45%)
LCX	27 (21%)
RCA	41 (32%)
LM and graft	2 (2%)
Lesion morphology (ACC/AHA)	
A	23 (18%)
B1	50 (39%)
B2	50 (39%)
C	5 (4%)
Indications	
Elective	88 (69%)
Suboptimal	27 (21%)
Bailout	13 (10%)
De novo lesion	115 (90%)
Restenotic lesion	13 (10%)

LAD : left anterior descending artery, LCX : left circumflex artery, RCA : right coronary artery, LM : left main coronary artery, ACC/AHA : American college of cardiology/American heart association

MultiLink 가

1

128

15 mm

129 가

3.0 mm가 66 , 3.25 mm

가 5 , 3.5 mm가 48 ,

4.0 mm가 10

25 mm

가

2 68

14 7.9±2.6 86 88 (69%)

(2), 60 14 20

(1). 40

22.7%

초기 병원내 중요 임상상

MultiLink (1), 48 (55%) 8 13 , 10.4±1.5

가 (2).

dissection , ,

4 % . 1

3.22±0.35 mm 2 3.06±0.36

mm , ,

major bleeding 2 가 . 1

1 pseudoaneurysm, 1 acute gain 2.33±0.51 mm 2 2.22±0.44

arteriovenous fistula (Table 3). mm (p=0.08) , 1 late loss 0.95

가 ±0.84 mm 2 0.86±0.73 mm

(p=0.09)

Table 3. Clinical outcome after multiLink stent implantation

	Number (%)
Procedural success	122 (98.4%)
Clinical events	
Death	1 (0.8%)
Non-fatal myocardial infarction	0 (0%)
Repeat PTCA	1 (0.8%)
Urgent CABG	0 (0%)
Major bleeding complications	4 (3.2%)

net gain 1.38±0.94 m

m, 1.36±0.83 mm .

1 2 22.5%, 22.9%

가 (Table 4).

고 안

MultiLink

6

Table 4. Angiographic follow-up results of multiLink stenting

	HPD group (n = 40)	MPD group (n = 48)	p-value
Pressure (atm.)	14.9 ± 0.66 (14 - 18)	10.4 ± 1.5 (8 - 13)	<0.001
B/A ratio	1.05 ± 0.08	1.07 ± 0.09	NS
Lesion length (mm) Pre RD (mm)	8.89 ± 5.45	8.71 ± 3.69	NS
Pre MLD (mm)	3.15 ± 0.37	3.05 ± 0.36	NS
Post MLD (mm)	0.89 ± 0.35	0.84 ± 0.37	NS
F/U MLD (mm)		3.06 ± 0.36	<0.05
Pre DS (%)	2.27 ± 0.91	2.20 ± 0.75	NS
Post DS (%)	71.7 ± 11.8	72.5 ± 12.7	NS
F/U DS (%)	1.8 ± 7.3	2.2 ± 9.8	NS
Acute gain (mm)	29.0 ± 20.3	27.9 ± 19.9	NS
Late loss (mm)	2.33 ± 0.51	2.22 ± 0.44	NS

HPD : high pressure dilation, MPD : moderate pressure dilation, atm. : atmosphere, B/A ratio : balloon/artery ratio, RD : reference diameter, MLD : minimal lumen diameter, DS : diameter stenosis, NS : non significant

4) 86 88 (69%) 7.9 ± 2.6
22.7%
5) 1 (40, 45%) acute gain 2.33 ± 0.051
mm 2 (48, 55%) 2.22 ± 0.44 mm
, 1 late loss 0.95 ± 0.84 mm 2
0.86 ± 0.73 mm
net gain

결론 :

MultiLink 가

가

중심 단어 : MultiLink

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