

급성 심근 경색 후 일차적 관동맥 성형술시 시행한 긴 혹은 다수 스텐트

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Long or Multiple Stenting in Primary Angioplasty

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ABSTRACT

Background : Primary stenting as a direct reperfusion procedure after acute myocardial infarction might reduce recurrent myocardial infarction and target vessel revascularization. However, result of long or multiple stenting in the long or tandem lesions were not known. **Method :** From Jan. 1996 to Dec. 1998, patients with acute myocardial infarction including cardiogenic shock were undergone primary stenting using long or multiple stent. The clinical end points were death, recurrent infarction, subsequent bypass surgery, or repeat angioplasty of the in-farct-related vessel. The results were compared with age, sex, lesion, and risk matched standard stenting group. **Result :** Baseline characteristics were similar for the 20 patients who underwent standard length stenting and the 13 patients who underwent long or multiple stenting. Stent diameter was similar in two group (3.4 ± 0.3 mm vs. 3.5 ± 0.4 mm, $p = 0.65$), but total stent length was longer in long or multiple stenting group (15.5 ± 1.8 mm vs. 40.1 ± 8.4 mm, $p = 0.01$). Average numbers of stent using in multiple stenting were 1.5 ± 0.7 . Stenting in the in-farct-related artery was successful in all patients randomized to stent treatment. At 6 months, the incidence of the primary end point was 25% (5/20) in the standard stent group and 31% (4/13) in the long or multiple stent group ($p = 0.5$). **Conclusion :** Outcomes of long or multiple stenting including mortality, recurrent myocardial infarction and target vessel revascularization was similar to standard stenting. Long or multiple stenting after acute myocardial infarction may possible procedure in some selective cases having long or tandem lesion. (Korean Circulation J 1999;29(12):1341-1349)

KEY WORDS : AMI · Long or multiple stenting · Primary angioplasty.

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서 론

시술 전 처치

(Primary PTCA)가¹⁻⁴⁾ Primary PTCA가⁵⁻¹⁰⁾ Primary PTCA 10% 50% PAMI(Primary Angioplasty in Myocardial Infarction)

300 mg

250 mg

900 mg

5000 U

5000 U

스텐트 시술

Primary PTCA¹¹⁾

2 cm

1

가 가

Table 1. Patient characteristic

	Group (N = 20)	Group (N = 13)
Age	57.4 ± 10.9	54.7 ± 7.8
Sex(M/F)	14/6	7/6
Hypertension	8	6
DM	3	8
Smoking	6	7
Prior MI	0	1
T-Chol>200	5	4
Admission Killip class		
	2	2
	8	4
	5	5
	5	2
Symptom onset to ER arrival(hr)	2.9 ± 1.2	3.2 ± 3.1
IABP support	4	6

Group : Standard stent group

Group : Long or multiple stent group

*p<0.05

DM : Diabetes mellitus MI : Myocardial infarction

T-Chol : Total cholesterol ER : Emergency room

IABP : Intra-aortic balloon counter pulsation

대상 및 방법

대 상 1996 1 1998 12 3 Primary PTCA (Primary Stent) 33 (2 cm) 20 (group I) 13 Primary PTCA , 10 40% , 50%

20 mm
2
cm
, 1 cm
12

결 과

대상 환자군 (Table 1)

33 20 mm
20 (Group I) 25 mm
2 13 (Group
II)
57.4 ± 10.9, Group II 54.77.8 (p = 0.56)
가
30%, Group II 45%

Group II
Killip class III, IV
group I 10 (50%), group
II 7 (54%)
50%
Group I 4 (20%),
Group II 6 (46%) (IA -
BP)

Group I 2.9 ± 1.2, Group II 3.2
± 3.1

중재적 시술 및 스텐트 시술 적응증

Group I 5 (25%), Group II 2 (15%)
Group I 3 (15%), Group
II 4 (30%)

25 mm
25 mm
가 1

Table 2. Angiographic finding

	Gup (N = 20)	Group (N = 13)
No. of vessels		
One	10	3
Two	8	6
Three	2	1
Infarct related Artery		
LM	1	0
LAD	10	4
Lcx	3	0
RCA	6	9
Infarct related Lesion location		
Proximal	16	8
Mid	3	4
Distal	1	1
Ref diam(mm)*	3.4 ± 0.3	3.5 ± 0.4
Lesion MLD(mm)*	0.7 ± 0.5	0.2 ± 0.3
Lesion DS(%)	78.8 ± 16.7	93.1 ± 11.8

Group : Standard stent group

Group : Long or multiple stent group

*p < 0.05

LM : Left main LAD : Left anterior descending

Lcx : Left circumflex RCA : Right coronary artery

MLD : Minimal luminal diameter

DS : Diameter stenosis Ref diam : Reference diameter

40%

(60%)
(66%)

혈관 조영 소견 (Table 2)

2 20 10
50% 13 10
77% 가 2

1
55%, 30%가

6 70%
(p = 0.25).

Table 3. Characteristic of stent

	Group (N = 20)	Group (N = 13)
Diameter	3.4 ± 0.3	3.5 ± 0.4
Total Length*	15.5 ± 1.8	40.1 ± 8.4
Number*	1.0 ± 0.0	1.5 ± 0.7
One	20	7
Two	0	4
Three	0	1
Name of stents		
Nir	12	11
Multilink	1	0
GFX	5	6
Micro	2	1
Magic wall	0	1

Group : Standard stent group

Group : Long or multiple stent group

*p<0.01

85%
38%
(p = 0.5).
3.4 ± 0.3 mm, 3.5 ± 0.4 mm
(p = 0.2)
(MLD) 0.7 ± 0.5 mm
, 0.2 ± 0.3 mm (p = 0.04)

스텐트의 종류 및 특성 (Table 3)

Nir 23, Multilink 1, GFX 11, Micro II 3, Magic wall 1

Group I 60%, Group II 58%, Nir
가 Gro -
up I 3.4 ± 0.3 mm, Group II 3.5 ± 0.4 mm

Group I 15.5 ± 1.8 mm, Group II가 40.1 ± 8.4 mm
(p = 0.01).

Group I 1 1
Group II 1.5 ± 0.7 가 (p = 0.01). Group I 20

Group II 가 8, 2
5 38% .

Table 4. Angiographic characteristic

	Group (N = 20)	Group (N = 13)
Initial TIMI flow		
0 / 1	13	11
2	6	2
3	1	0
Final TIMI flow		
0/1	0	1
2	3	3
3	17	9
Initial		
MLD(mm)	0.7 ± 0.5	0.2 ± 0.3
%DS(%)	78.7 ± 16.7	93.1 ± 11.8
Final		
MLD(mm)*	3.3 ± 0.3	3.4 ± 0.4
%DS(%)*	3.2 ± 2.8	5.1 ± 3.2

Group : Standard stent

Group : Long or multiple stent

TIMI : Thrombolysis in Myocardial Infarction

MLD : Minimal luminal diameter

%DS : %Diameter stenosis

*p<0.05

Table 5. In-hospital complication

	Group (N = 20)	Group (N = 13)
Death	1	1
Acute		
Occlusion	0	0
Subacute		
Occlusion	1	0
CABG	0	0
Stroke	0	0
Transfusion	3	2
Surgical groin repair	1	0

Group : Standard stent

Group : Long or multiple stent

CABG : Coronary artery bypass graft

시술 결과 (Table 4)

TIMI(Thrombolysis in Myocardial Infarction)
Group I 65%, Group II가 85%
0/1 .

Group I 17 85% TIMI 3
, Group II 69% 9
가 1

0.7 ±

0.5 mm, 0.2 ± 0.3 mm ($p=0.04$) Group I
 3.3 ± 0.3 m 가 2.9% t - PA
m, 3.4 ± 0.4 mm ($p=0.11$) 가 7.2%($p=0.03$)
721 Dan -
원내 주요 합병증(Table 5) chin ⁴⁾ 1
24 1 가 85.5%,
89.5%($p=0.18$)
7 VANQWISH(Veteran Affairs Non - Q
Wave Infarction Strategies in Hospital)¹⁸⁾
1 Group I 2 , Group II 3 (24% vs 19% ;
 $p=0.05$) 가가
추적 검사
6 가 PAMI Stent Pilot trial ¹¹⁾
21 1 12 240
3.0 4.0 mm, 가 32 mm
가 ,
3 1 , 0.8%, 1.7%,
, 1 1.3%
1
1 FRESCO(Florence Ran -
domized Elective Stenting in Acute Coronary Oc -
clusions)¹⁸⁾
고 찰 150
6 ,
가
12 - 15) 28% 9%
($p=0.03$).
가 GUSTO(Global Use of Strategies to 43% 17%
Open Occluded Coronary arteries) ($p=0.001$).
tPA
, ,
(9.6% vs 13.1% ;
 $p=0.06$).¹⁶⁾ PAMI ¹⁰⁾ 가

가 .

70% ,

가 ,

가 .

23)24)

TIMI 가

2 ,

33

. PAMI 20 13

stent trial

(30%

가 vs. 45%), (15% vs. 65%)

(30% vs. 69%)

95% 10%

19 - 21)

가 가

13 1.5 ,

40 mm

TIMI 0/1 65%,

13 85%

TIMI 3

1 17 85%, 9 69%

가,

가

20 mm . De Scheerder 22)

IIb/IIIa

IIb/IIIa An -

gioJet

25)26)

35% 6 25% (p = NS)

24 1

가

2 cm ,

가 1 cm

가 1 cm

5 ,

2

가 27)28)

가

. Antoniucci 29)

가

5 12 13 연구배경 :

6

13 1

23%

30)31)

6 3

3 50%

22)32)

방 법 :

1996 1 1998 12

33 12

20 m

m 20 20 m

m 2

13 6 , ,

33)34)

결 과 :

3

(p=0.25).

(55%),

70%가

(p=0.25).

(3.4±0.3 mm vs. 3.5

±0.4 mm, p=0.65),

(15.5±1.8 mm vs.

40.1±8.4mm, p=0.01).

1.5±0.7 6

가

50% Killip III, IV

25%(5/20),

31%(4/13) (p=0.5)

결 론 :

가

가

중심 단어 :

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