

(angiographic success) :
30% TIMI flow 2
(acute stent thrombosis) :
24 TIMI 0
1
(>90%) (subacute stent thrombosis) :
24 2
TIMI 0 1
(angiographic restenosis) :
50%
(bleeding complication) : 2
pints
스텐트 시술방법
대 상
1995 9 1999 10 가
181 premounted system hand crimped
168 (92. bare stent
8%) 12 14
6 , 2) 30% 가
nitroglycerin
30 , 12
2 0.1 mV ST
2
0.2 mV ST
가 , 가 2.5 mm
2
, 6
용어 정의
(thrombus) :
, (large thrombus) :
2 자료 분석 및 통계

가 5 (3%)

가 88 (52%) 가

online 79 (47%), 1 (0.6%) Ki-

system(Hicor, Siemens) llip class IV 4 class III

Thrombolysis In Myocar - 11 (6.5%) ,

dial Infarction(TIMI) 0 3 192 ± 150

15) Rentrop 16) 84 ±

± 36 (Table 1).

Student t - test

Kaplan - Meier ,

p 0.05

조영술상 특성

가 85 (50%)

65 (39%), 16

(9%) 2 (1.2%)

84 (50%), 59 (35%),

25 (15%) large thro -

mbus 38 (23%)

TIMI flow grade 0 I 105 (63%)

(Table 2).

결 과

환자의 특성

168 가 120 (71%),

가 48 (29%) , 60 ± 11

104 (62%), 78 (46%),

17 (10%), 29 (17%)

시술 결과 및 병원내 합병증

168 191 가

Table 1. Baseline clinical characteristics (n = 168)		Table 2. Baseline angiographic characteristics (n = 168)	
Age (yr)	60 ± 11	No of diseased vessel	
Male (%)	122 (72.6)	One (%)	84 (50)
Risk factor		Multivessel (%)	84 (50)
Smoking (%)	104 (62.9)	Infarct-related artery	
Hypertension (%)	78 (46.4)	LMCA (%)	2 (1.2)
Diabetes mellitus (%)	29 (17.2)	LAD (%)	85 (50.5)
Hyperlipidemia (%)	17 (10.1)	RCA (%)	65 (38.6)
History of MI (%)	5 (3)	LCx (%)	16 (9.5)
ECG infarction location		TIMI flow	
Anterior (%)	88 (52.3)	0/I (%)	105 (62.5)
Inferior (%)	79 (47)	II/III (%)	63 (37.5)
Lateral (%)	1 (0.6)	Collateral flow	
Killip>III	11 (6.5)	0 (%)	137 (81.5)
Systolic blood pressure (mmHg)	126 ± 27	I (%)	19 (11.3)
Diastolic blood pressure (mmHg)	79 ± 17	II (%)	11 (6.5)
Symptom onset to ER visit (min)	192 ± 150	III (%)	1 (0.6)
Door to reperfusion time (min)	84 ± 36	Large thrombus (%)	38 (22.6)
LVEF on initial echocardiography (%)	47 ± 11	Max. pressure (atm)	13.6 ± 2.1
Peak CPK (U/L)	3208 ± 1883	Balloon size (mm)	3.6 ± 0.5
MI : myocardial infarction		LMCA : left main coronary artery, LAD : left anterior descending, LCx : left circumflex, RCA : right coronary artery	

heparin-coated Jo가 115
Nir 24, Palmaz-Schatz
20, Cook 20, GFX 7, Micro 3, Cordis 1,
Wiktor 1.

3.37 ± 0.47 mm, 14.31 ± 7.38 mm,
 1.1 ± 0.47 , $94.36 \pm 11.03\%$, $2.86 \pm 6.34\%$,
 0.21 ± 0.40 mm
 3.26 ± 0.45 mm 가 ($p < 0.01$)(Table 3).
4 slow flow
nitroglycerine verapamil
가 TIMI flow
III, 99.5%.
5 (3%) 가 4
1
3 (2%), 1
(Table 4). 133 (79%)
 13 ± 2.5

Table 3. In-hospital outcomes (n=168)

Angiographic success	167/168 (99.5%)
Death	5 (3%)
Stent thrombosis	0
Bleeding	3 (2%)
Re-MI	0
TLR	0
PredischARGE angiogram (n=133)	
In stent thrombus	0
Limitation of flow	0

MI : myocardial infarction, TLR : target lesion revascularization

Table 4. Quantitative coronary analysis

	Pre	Post	6 month F/U
RD (mm)	3.37 ± 0.47		3.31 ± 0.46
MLD (mm)*	0.21 ± 0.40	3.26 ± 0.45	2.09 ± 0.83
DS (%)*	94.36 ± 11.03	2.86 ± 6.34	37.70 ± 23.58
Lesion length (mm)	14.31 ± 7.38		
Late loss index			0.41 ± 0.27
Angiographic F/U			105/168 (62.5%)
Restenosis			23/105 (21.9%)

RD : reference diameter, MLD : minimal luminal diameter, DS : diameter stenosis, * : $p < 0.01$ pre vs post and F/U

TIMI III 가

장기 추적 결과

168 161 1
가 7
6
(3.6%) 2 3 (1
, 2), 3 2 (1 ,
1), 7 1 (;)
2 (1.2%) 2 4
1 , 1
17 (10.1%) PTCA 14, CABG 3
(Table 5).
1 11 (6.5%)

Table 5. Cumulative major adverse cardiac event at follow-up

	6 months	1 year
Any MI	2 (1.2%)	2 (1.2%)
TLR	13 (7.7%)	17 (10.1%)
PTCA	12	14
CABG	1	3
Death	11 (6.5%)	11 (6.5%)
Any of these event	26 (15.3%)	30 (17.8%)

TLR : target lesion revascularization, PTCA : percutaneous transluminal angioplasty, CABG : coronary artery by-pass graft

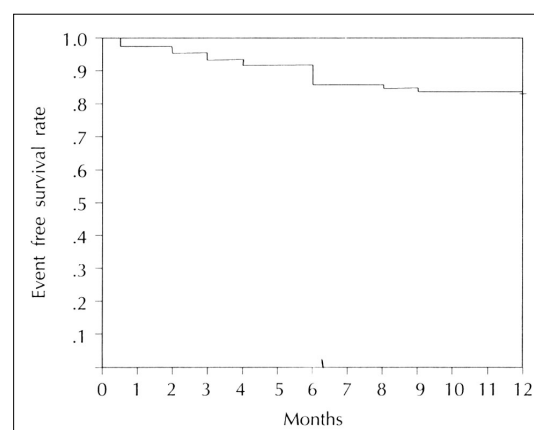


Fig. 1. Kaplan-Meier event free survival curves for Death, Reinfarction and TLR.

가 17 (10.1%), 2 (1.2%) Chae ²⁶⁾ 1, Shin ²⁷⁾
) (Fig. 1). 가
 3 가 6 recoil ²⁸⁾
 6 105 (62.5%) scaffolding ²⁹⁾
 6.4 ± 2.1
 23 (21.9%, 5) (Ta - 가
 ble 3) 7 가 가 ³⁰⁾ as -
 고 찰
 168 heparin coated stent ¹³⁾¹⁴⁾
 115 가 drug
 99. 5% , 6
 21.9% . 1
 82.2% coated stent
 가
 가 가 ¹⁷⁾¹⁸⁾
 TIMI 3 flow 55% ¹⁹⁾ 7%, 1%
 가 ¹⁻⁵⁾ 4% 17%
 (2 10%)가 ²⁰⁾²¹⁾ (80%) 95% PASTA ³²⁾
 30 50% 21%, 1 49%, 22%
 20% 가
 가 ⁴⁾⁸⁾ , heparin coated stent
 Grines ³³⁾ PAMI STENT
 6 12.4%, 20.1% 1 17%,
 24.8% 6 21.9%, 6 1
²²⁾²³⁾ Kaul , ²⁴⁾ Romeo 15.3% 17.8%
²⁵⁾
 가 glycoprotein IIb/IIIa inhibitor
 Ne -

umann 5) 1 11 (6.5%),
platelet aggregates distal embolization 17 (10.1%), 2 (1.2%)
1 82.2%
³⁴⁾³⁵⁾ CA -
DILLAC, ADMIRAL glyco - 6) 6 105 (62.5%)
protein IIb/IIIa 6.4 ± 2.1
23 (21.9%)
결 론 :

요 약

연구목적 :

중심 단어 :

REFERENCES

방법 및 대상 :

1995 9 1999 10 6
181 가
168 6 1
(, ,) 2
, 6
결 과 :
1) 120 , 48 ,
60 ± 11 Killip III
11 (6.5%)
2) 85 (50%),
65 (39%), 16 (9%),
2 (1.2%) 84
(50%) large thrombus 38 (23%)
3) TIMI flow III
99% 133 (79%)
13 ± 2.5
4) 5 (3%)
3 1

- 1) Zijlstra F, Boer MJ, Hoorntje JC, Reiffers S, Reiber JH, Suryapranata H. *A comparison of immediate coronary angioplasty with intravenous streptokinase in acute myocardial infarction*. *N Engl J Med* 1993;328:680-4.
- 2) Grines CL, Browne KF, Marco J, Rothbaum D, Stone GW, O'Keefe J, et al. *A comparison of immediate angioplasty with thrombolytic therapy for acute myocardial infarction*. *N Engl J Med* 1993;328:673-9.
- 3) De Boer MJ, Suryapranata H, Hoorntje JC, Reiffers S, Liem AL, Miedema K, et al. *Limitation of infarct size and preservation of left ventricular function after primary coronary angioplasty compared with intravenous streptokinase in acute myocardial infarction*. *Circulation* 1994; 90:753-61.
- 4) Stone GW, Grines CL, Browne KF, Marco J, Rothbaum D, O'Keefe J, et al. *Predictors of in-hospital and 6-month outcome after acute myocardial infarction in the reperfusion era: The Primary Angioplasty in Myocardial Infarction (PAMI) trial*. *J Am Coll Cardiol* 1995;25:370-7.
- 5) Gibbons RJ, Holmes DR, Reeder GS, Bailey KR, Hopfenspirger MR, Gersh BJ. *Immediate angioplasty compared with the administration of a thrombolytic agent followed by conservative treatment for myocardial infarction*. *N Engl J Med* 1993;328:685-91.
- 6) Stone GW, Grines CL, Browne KF, Marco J, Rothbaum D, O'Keefe J, et al. *Implications of recurrent ischemia after reperfusion therapy in acute myocardial infarction: a comparison of thrombolytic therapy and primary coronary angioplasty*. *J Am Coll Cardiol* 1995;26:66-72.
- 7) Nakae I, Fujita M, Fudo T, Iwase T, Tanaka T, Takami S, et al. *Relation between preexistent coronary collateral circulation and the incidence of restenosis after successful primary coronary angioplasty for acute myocardial infarction*. *J Am Coll Cardiol* 1996;27:1688-92.
- 8) Brodie BR, Grines CL, Ivanhoe R, Knopf W, Taylor G, O'keefe J, et al. *Six month clinical and angiographic follow-up after direct angioplasty for acute myocardial inf-*

- arction. *Circulation* 1994;90:156-62.
- 9) Nakagawa Y, Iwasaki Y, Kimura T, Tamura T, Yokoi H, Hamasaki N, et al. Serial angiographic follow-up after successful direct angioplasty for acute myocardial infarction. *Am J Cardiol* 1996;78:980-4.
- 10) Serruys PW, de Jaegere P, Kiemeneij F, Macaya C, Rutsch W, Heyndrickx G, et al. A comparison of balloon-expandable stent implantation with balloon angioplasty in patients with coronary artery disease. *N Eng J Med* 1994;331:489-95.
- 11) Fischman DL, Leon MB, Baim DS, Schatz RA, Savage MP, Penn I, et al. A randomized comparison of coronary stent placement and balloon angioplasty in the treatment of coronary artery disease. *N Eng J Med* 1994;331:496-501.
- 12) Ahmad T, Webb JG, Carere RR, Dodek A. Coronary stenting for acute myocardial infarction. *Am J Cardiol* 1995;76:77-80.
- 13) Rodriguez AE, Fernandez M, Santaera O, Larribau M, Bernardi V, Castano H, et al. Coronary stenting in patients undergoing percutaneous transluminal coronary angioplasty during acute myocardial infarction. *Am J Cardiol* 1996;77:685-9.
- 14) Saito S, Hosogawa G, Kim K, Tanaka S, Miyake S. Primary stent implantation without coumadin in acute myocardial infarction. *J Am Coll Cardiol* 1996;28:74-81.
- 15) TIMI Study Groups. The Thrombolysis in Myocardial Infarction (TIMI) Trial: Phase I finding. *N Engl J Med* 1985;312:932-6.
- 16) Cohen M, Rentrop KP. Limitation of myocardial ischemia by collateral circulation during sudden controlled coronary artery occlusion in human subjects: a prospective study. *Circulation* 1986;74:469-76.
- 17) Lavie CJ, Gersh BJ, Chesebro JH. Reperfusion in acute myocardial infarction. *Mayo Clin Proc* 1990;65:549-64.
- 18) Tiefenbrunn AJ, Sobel BE. The impact of coronary thrombolysis on myocardial infarction. *Fibrinolysis* 1989;3:1-6.
- 19) The GUSTO Angiographic Investigators. The effects of tissue plasminogen activator, streptokinase, or both on coronary artery patency, ventricular function, and survival after acute myocardial infarction. *N Eng J Med* 1993;329:1615-22.
- 20) Rothbaum DA, Linnemeier TJ, Landin RJ, Steinmetz EF, Hillis JS, Hallam CC, et al. Emergency percutaneous transluminal coronary angioplasty in acute myocardial infarction: a 3 year experience. *J Am Coll Cardiol* 1987;10:264-72.
- 21) Free M, O'Neill WW, Safian RD. Dissection and acute closure. In free M, Grines CL, Safian RD (eds): *Manual of Interventional Cardiology*. 2nd ed. Birmingham: Physician Press;1996. p.369-98.
- 22) Schatz RA, Baim DS, Leon M, Ellis SG, Goldberg S, Hirshfeld JW, et al. Clinical experience with the Palmaz-Schatz coronary stent: Initial results of a multicenter study. *Circulation* 1991;83:148-61.
- 23) Agrawal SK, Ho DS, Liu MW, Iyer S, Hearn JA, Cannon AD, et al. Predictors of thrombotic complication after placement of a flexible coil stent. *Am J Cardiol* 1994;73:1216-9.
- 24) Kaul U, Agarwal R, Jain P, Wasir HS. Safety and efficacy of intracoronary stenting for thrombus containing lesions. *Am J Cardiol* 1996;77:425-7.
- 25) Romeo M, Medinala, Suarez de Lezo J. Elective stent placement in acute coronary syndromes induced by thrombus containing lesion. *J Am Coll Cardiol* 1996;27(Suppl A):69A.
- 26) Chae JK, Choi KH, Moon SK, Kim WH, Ko JK. Mid-term clinical & angiographic outcomes of primary stenting in acute myocardial infarction. *Korean Circulation J* 1999;29:28-35.
- 27) Shin SC, Yang DH, Bae HS, Kwak TH, Cho YK, Chae SC, et al. The early result of primary NIR stenting in acute myocardial infarction. *Korean Circulation J* 2000;30:563-70.
- 28) Serruys P, de Jaegere P, Bertrand M, Kober G, Marquis JF, Piessens J, et al. Morphologic change in coronary artery stenosis with the Medtronic Wiktor stent: initial results from the core laboratory for quantitative angiography. *Cathet Cardiovasc Diagn* 1991;24:237-45.
- 29) de Jaegere PP, Strauss BH, van der Giessen WJ, de Feyter PJ, Serruys PW. Immediate changes in stenosis geometry following stent implantation: comparison between a self-expandable and balloon-expandable stent. *J Interv Cardiol* 1992;5:71-8.
- 30) Badimon L, Badimon JJ. Mechanisms of arterial thrombosis in nonparallel streamlines: platelet thrombi grow on the apex of stenotic severely injured vessel wall: experimental study in the pig model. *J Clin Invest* 1989;84:1134-44.
- 31) Suryapranata H, van't Hof AW, Hoorntje JC, de Boer MJ, Zijlstra F. Randomized comparison of coronary stenting with balloon angioplasty in selected patients with acute myocardial infarction. *Circulation* 1998;97:2502-5.
- 32) Saito S, Hosokawa G, Tanaka S, Nakamura S. Primary stent implantation is superior to balloon angioplasty in acute myocardial infarction: final results of the primary angioplasty versus stent implantation in acute myocardial infarction (PASTA) trial. *Cathet Cardiovasc Interv* 1999;48:262-8.
- 33) Grines CL, Cox DA, Stone GW, Garcia E, Mattos LA, Giambartolome A, et al. Coronary angioplasty with or without stent implantation for acute myocardial infarction. *N Eng J Med* 1999;341:1949-56.
- 34) Brener SJ, Barr LA, Burchenal JE, Katz S, George BS, Jones AA, et al. Randomized, placebo-controlled trial of platelet Glycoprotein IIb/IIIa blockade with primary angioplasty for acute myocardial infarction. *Circulation* 1998;98:734-41.
- 35) Neumann FJ, Blasini R, Schmitt C, Alt E, Dirschinger J, Gawaz M, et al. Effect of Glycoprotein IIb/IIIa receptor blockade on recovery of coronary flow and left ventricular function after the placement of coronary-artery stents in acute myocardial infarction. *Circulation* 1998;98:2695-701.