

만성 승모판 폐쇄부전증 환자에서 승모판 수선술과 승모판 대치술 후 좌심실 기능의 비교 및 수술 후 좌심실 기능의 예측지표*

**

조영석 · 이명묵 · 연태진 · 황경국 · 이무용 · 김효수 · 김기봉**
손대원 · 안 혁** · 오병희 · 박영배 · 최운식 · 이영우

= Abstract =

Comparison of Postoperative LV Function after Mitral Valve Repair and Mitral Valve Replacement and Predictor of Postoperative LV Function in Chronic Mitral Regurgitation

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Background : Long-term survival after surgical correction of mitral regurgitation is associated with preservation of left ventricular systolic function after operation. And mitral valve repair has been suggested to provide a better postoperative left ventricular systolic function. Accordingly, we intended to compare the operative results of mitral valve repair with those of mitral valve replacement and search for preoperative predictors of postoperative left ventricular systolic function.

Materials and Methods : The clinical features, echocardiographic measurements, and cardiac catheterization results of 75 patients operated between January 1984 and December 1994 for acquired pure mitral regurgitation were analyzed.

Results : Of the 75 patients, 39 patients had mitral valve repair, and 36 patients had mitral valve replacement. When the outcomes of mitral valve repair and mitral valve replacement were compared, left ventricular ejection fraction decreased significantly after surgery in both groups but postoperative left ventricular ejection fraction was greater in valve repair group than in valve replacement group. Data analysis of preoperative variables showed that echocardiographic left ventricular end-diastolic

diameter($p<0.05$), but not other clinical and echocardiographic variables, were predictors of postoperative left ventricular systolic function.

Conclusions : After surgical correction of chronic organic mitral regurgitation, left ventricular dysfunction is frequent and valve repair decreases the severity of left ventricular dysfunction. And the most powerful predictor of postoperative left ventricular systolic function is preoperative left ventricular end-diastolic diameter measured by echocardiography.

KEY WORDS : Mitral regurgitation · Mitral valve repair · Mitral valve replacement.

서 론

연구대상 및 방법

가 1984 1 1994 12
가 1-3)
가 가 ,
4)
5,6) .
6,7) , 가 가 .
75
가 39
8-10) 36
Table 1
39 : 가 36 : 39
(Functional class) -
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11-16)
17-23)
(Functional class)
(Functional class),
가
6,7)
가 가
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M - mode
M - mode

Table 1. Preoperative patient characteristics

Preoperative variable	Overall patients, n=75
M : F	36 : 39
Age, years	39 ± 14
Functional class - , %	52
Systolic BP, mmHg	113 ± 16
Atrial fibrillation, %	51
LVESD, mm	45 ± 9
LVEDD, mm	65 ± 10
LVEF, %	63 ± 14
LA diameter, mm	55 ± 11
LVEDP, mmHg	10 ± 5
Systolic PAP, mmHg	45 ± 22
Mean PAP, mmHg	30 ± 15
Cardiac index, L/min./m ²	2.9 ± 1.2
Cardiopulmonary bypass time, minutes	103 ± 62
Aorta cross clamp time, minutes	68 ± 35

M, male ; F, female ; BP, blood pressure ;
 LVESD, left ventricular end-systolic diameter ;
 LVEDD, left ventricular end-diastolic diameter ;
 LVEF, left ventricular ejection fraction ; LA, left atrium ;
 LVEDP, left ventricular end-diastolic pressure ;
 PAP, pulmonary artery pressure

. 37 ± 47 ()
 54 ± 90 ()
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 ±
 Student t- (paired or unpaired)
 (regression analysis) . p -
 0.05 .

결 과

63 ± 14(%)
 55 ± 14(%)
 가
 (p- =0.000), 8 ± 19(%) (Fig. 1).
 75 39

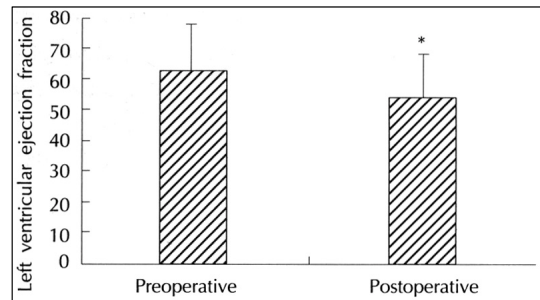


Fig. 1. Change in left ventricular ejection fraction before and after operation. In overall patients left ventricular ejection fraction decreased significantly after operation, from 63 ± 14(%) to 55 ± 14(%) , and the amount of decrease was 8 ± 19(%) . * : p<0.05

Table 2. Comparison of preoperative variables in mitral valve repair group and mitral valve replacement group

Preoperative variable	Mitral valve repair n=39	Mitral valve replacement n=36	P-value
Sex(M : F)	20 : 19	16 : 20	NS
Age, years	40 ± 14	39 ± 13	NS
Functional class - , %	56	48	NS
Systolic BP, mmHg	114 ± 16	113 ± 15	NS
Atrial fibrillation, %	38	66	NS
LVESD, mm	43 ± 10	47 ± 8	NS
LVEDD, mm	64 ± 11	67 ± 10	NS
LVEF, %	63 ± 14	63 ± 13	NS
LA diameter, mm	55 ± 10	56 ± 13	NS
LVEDP, mmHg	11 ± 6	9 ± 5	NS
Systolic PAP, mmHg	43 ± 19	47 ± 24	NS
Mean PAP, mmHg	30 ± 13	30 ± 17	NS
Cardiac index, L/min./m ²	3.0 ± 1.3	2.8 ± 1.0	NS
Cardiopulmonary bypass time, minutes	104 ± 38	103 ± 81	NS
Aorta cross clamp time, minutes	68 ± 27	69 ± 43	NS

M, male ; F, female ; BP, blood pressure ;
 LVESD, left ventricular end-systolic diameter ;
 LVEDD, left ventricular end-diastolic diameter ;
 LVEF, left ventricular ejection fraction ; LA, left atrium ;
 LVEDP, left ventricular end-diastolic pressure ;
 PAP, pulmonary artery pressure

36

(Table 2).

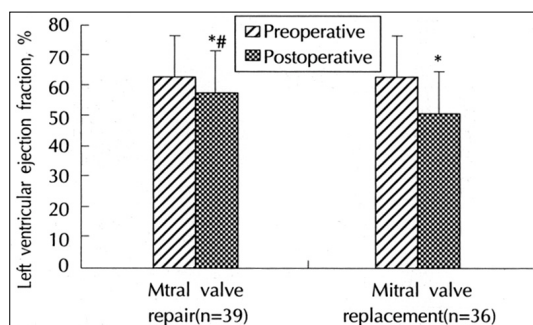


Fig. 2. Changes in left ventricular ejection fraction before and after operation in mitral valve repair and mitral valve replacement. In mitral valve repair group, postoperative left ventricular ejection fraction ($58 \pm 12\%$) was greater than that of mitral valve replacement group ($51 \pm 15\%$).
* $p < 0.05$ vs. preoperative value
$p < 0.05$ vs. mitral valve replacement group

Table 3. Surgical morphological findings at time of operation, n(%)

Morphological finding	Overall patients n=68	Mitral valve repair n=36	Mitral valve replacement n=32
Annular dilatation	15(22)	6(17)	9(28)
Leaflet prolapse			
Anterior	18(26)	13(36)	5(16)
Posterior	6(9)	5(14)	1(3)
Leaflet retraction			
Anterior	12(18)	7(19)	5(16)
Posterior	11(16)	7(19)	4(13)
Leaflet thickening			
Anterior	44(65)	23(64)	21(66)
Posterior	40(59)	21(58)	19(59)
Commissural fusion	23(34)	12(33)	11(34)
Chordae			
Rupture	2(3)	16(44)	5(16)
Elongation	14(21)	8(22)	6(19)
Thickening	18(26)	6(17)	12(38)
Papillary muscle			
Rupture	1(1)	0(0)	1(3)
Fusion	4(6)	3(8)	1(3)
Calcification	8(12)	4(11)	4(13)

Table 4. Histological findings of mitral regurgitation, n(%)

Histological etiology	Overall patients n=41	Mitral valve repair n=17	Mitral valve replacement n=24
Rheumatic	29(71)	19(79)	10(59)
Degenerative	10(24)	3(13)	7(41)
Endocarditic	2(5)	2(8)	0(0)

63 ± 14(%)
63 ± 13(%)
가
58 ± 12(%)
51 ± 15(%)
(p - = 0.027)(Fig. 2).
가
가
40%
10 (14.3%) 가
40% , 2
8
40% 가
(p - = 0.030).
가 65%, 59% 가
34%, 31% (Table 3).
가
가
41 71% 가
24% ,
(R = -
0.363, p - = 0.001)
0.450, p - = 0.000)
(Table 5),

13%, 79%,
8% ,
41%, 59% (Table 4).

Preoperative variable	Correlation with Postoperative LVEF	
	R-value	P-value
Age, years	0.019	0.437
Systolic BP, mmHg	- 0.164	0.083
LVEDS, mm	- 0.363	0.001
LVEDD, mm	- 0.450	0.000
LVEF, %	0.048	0.342
LA diameter, mm	- 0.108	0.179
LVEDP, mmHg	0.068	0.289
Systolic PAP, mmHg	0.097	0.215
Mean PAP, mmHg	0.074	0.275
Cardiac index, L/min./m ²	0.001	0.498
Cardiopulmonary bypass time, minutes	- 0.224	0.043
Aorta cross clamp time, minutes	- 0.212	0.054

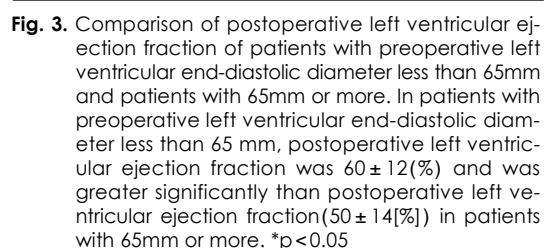


Fig. 3. Comparison of postoperative left ventricular ejection fraction of patients with preoperative left ventricular end-diastolic diameter less than 65mm and patients with 65mm or more. In patients with preoperative left ventricular end-diastolic diameter less than 65 mm, postoperative left ventricular ejection fraction was $60 \pm 12(\%)$ and was greater significantly than postoperative left ventricular ejection fraction ($50 \pm 14(\%)$) in patients with 65mm or more. $*p < 0.05$

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65(mm)
65(mm) (34)
60 ± 12(%) , 65(mm)
(41) 50 ± 14(%)
(p - = 0.002)(Fig. 3).

75 1
46
1457 ± 963()
54 ± 10(%) 1
55 ± 14(%) 가
(p - =0.82).

8 - 10)

가 30,31)

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12 - 16)

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randomized study

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8 - 10)

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75

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가

4 40%

8

79(%) 가

3 2

가 가

가

요 약

plane biplane Simpson M - mode single 연구배경 :

가 가 가 가

방 법 : 1984 1994

24% 71%, 75

79% 13% 가

37,38) 결 과 : 75 39 36

(p - <0.05), (p - <0.05).

<0.05)

결 론 :

가

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