

Risk of Reoperation Following Rheumatic Mitral Repair: Long-term Longitudinal Analysis

Objective:

Several studies have shown excellent mid-term results of rheumatic mitral valve (MV) repair. However, long-term follow-up data from reasonably sized cohorts are scarce. This study aimed to conduct longitudinal outcome analyses of rheumatic MV repair focusing on the risks of MV reoperation.

Methods:

We evaluated 337 consecutive patients (age 48.5 ± 15.0 years, 236 females) who underwent MV repair for rheumatic MV disease from 2000 to 2022 in a tertiary referral center in South Korea. The primary outcome was MV reoperation. The Fine-Gray models were used for longitudinal risk analyses of MV reoperation with death as the competing risk.

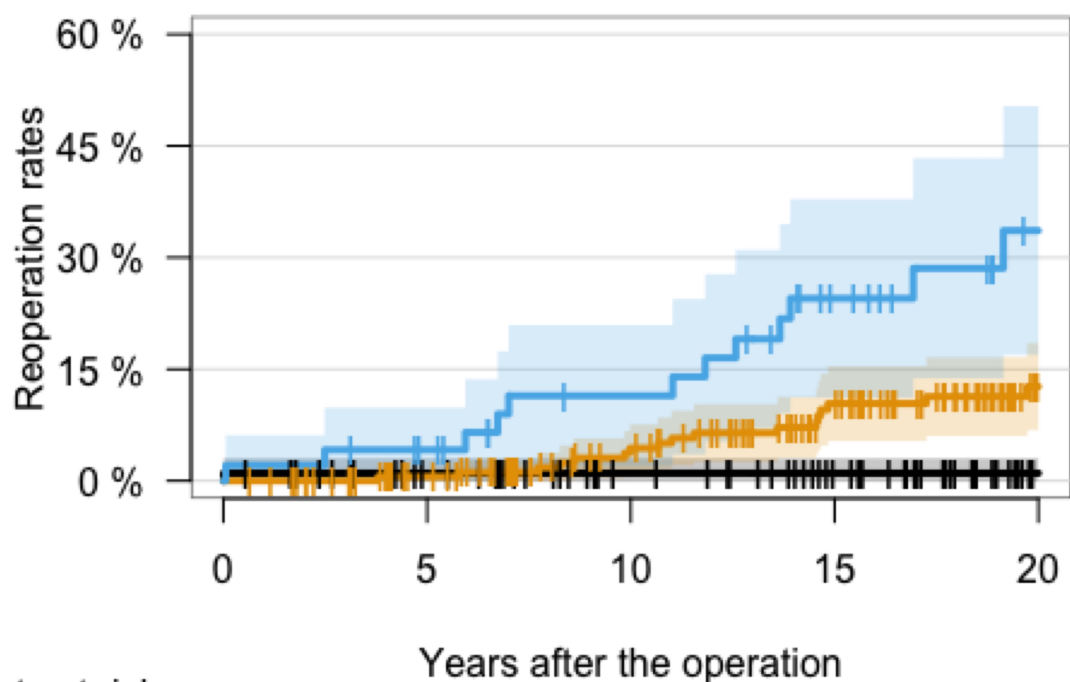
Results:

MV procedure involved ring-annuloplasty (273, 81.0%), commissurotomy (105, 31.2%), release of subvalvular apparatus (13, 3.9%), leaflet peeling (50, 14.8%), chorda procedures (103, 30.6%) and anterior leaflet augmentation (14, 4.2%). Early mortality rate was 1.5% (5/337). During the 20 years follow up period, 52 patients (15.4%) died, resulting in an estimated 20-year survival rate of 78.9% (95% CI, 73.6-84.5) Over a median follow-up period of 15.2 years (Q1-Q3, 7.7-19.4 years; total 4629.71 patient-years), 32 patients required MV reoperation due to development of regurgitation in 15, stenosis in 14 and mixed steno-regurgitation in 3. The cumulative risks of reoperation at 10 and 20 years were 4.5% (95% CI, 2.1-6.9) and 12.7% (95% CI, 8.3-17.2), respectively. Multivariable competing risk analyses revealed the following 4 risk factors for reoperation: tricuspid regurgitation velocity > 3.4 m/s (HR 3.26, 95% CI 1.44-7.35, $p = 0.005$), presence of mitral stenosis $>$ mild at baseline (HR 4.39, 95% CI 2.05-9.4, $p < 0.001$), leaflet augmentation procedure (HR 5.84, 95% CI 1.97-17.34, $p = 0.001$) and procedures on chordae (HR 2.99, 95% CI 1.41-6.33, $p = 0.004$). The 20-year reoperation rates were 1.0% (95% CI 0.0-3.0), 12.7% (95% CI 6.8-18.5), 33.6% (95% CI 16.9-50.3) in the patients without any risk factors, with one risk factor, and with more than one risk factors, respectively. ($p < 0.001$, Figure).

Conclusion:

The long-term durability of rheumatic MV repair was acceptable, and significant risk factors were pulmonary hypertension, baseline mitral stenosis and procedural factors including leaflet augmentation and chorda procedures. These findings suggest that repair should be preferred over valve-replacement in patients without these risk factors.

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	0	5	10	15	20
Patients at risk					
Without Risk	97	84	67	52	21
N. of Risk factor 1	192	169	140	103	48
N. of Risk factor >1	48	43	32	21	9