Should Mitral Valve Replacement Age Guidelines Be Lowered Due to Better Bioprosthetic Mitral Valve Durability?

Objective: The current guideline-recommended choice of mechanical or bioprosthetic valve valve for MVR based on age remains controversial. We sought to determine whether a bovine pericardial valve coupled with emerging therapies for lifetime management would be the appropriate durable choice for MVR in younger patients.

Methods: This was a retrospective collaborative study of patients between 2 large university based cardiac surgery programs with well-established MV practices. Patients who underwent bovine pericardial MVR from 2004 to 2020 were included with follow-up through June 2022. Durability outcomes involving structural valve deterioration (SVD) were compared by age decile.

Results: Bovine pericardial MVR was performed in 1544 patients (age 66±13 years), with 652 (42%) < 65 years old. Indications for MVR were: MR>2+ 53% [n=813]; mitral stenosis 44% [n=650]; endocarditis 18% [n=277] and reoperation in 39% [n=602]. Concomitant procedures were AVR 28% [n=426]; TV 36% [n=550]; CAB 19% [n=290]. Thirty-day mortality was 5.4%. In follow-up (clinical: median [IQR] 75 [25-129] months; echo: median [IQR] 37 [12-75] months), reoperation for endocarditis and stroke were low (0.30 and 1.06 per 100 patient/years, respectively). The cumulative incidence of MV reintervention was 8.1% at 10 years and 14.0% at 15 years among all patients. Interestingly, there was no statistical difference in SVD at 5 years for patients grouped by ages 55-59, 60-64 and 65-69 (1.5, 0.7, 3.0%) (Figure). Among 90 patients with MV reintervention, 30-day mortality after reintervention was 4.7% (n=2) for 43 M ViV and 6.4% (n=3) among 47 explant patients.

Conclusions: These data demonstrate that bovine pericardial MVR is a durable option for younger patients and appropriate when considering lifetime management for MVR, especially with advancing technology. The opportunity to avoid anticoagulation and the associated risks with mechanical MVR may be of benefit to patients. Furthermore, these data may provide insight to the need to revisit and revise the current guidelines.

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Figure. Cumulative Incidence by Age of Mitral Valve Explant or Mitral Valve-in-Valve Reintervention Accounting for Competing Events (Death; Transplant; Ventricular Assist Device) Among 1544 Bioprosthetic Mitral Valve Implant Patients.