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Predictors of long-term stenosis in bicuspid aortic valve repair

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Abstract
Objectives: The use of modern techniques for bicuspid aortic valve repair has been shown to provide safe and durable results against recurrent regurgitation. However, an emerging body of evidence is indicating that aortic stenosis might be an additional late complication of these procedures. To date, the pathogenesis and clinical impact of aortic stenosis after bicuspid aortic valve repair are poorly understood. Methods: A retrospective analysis of 367 patients with bicuspid aortic valve repair was performed to identify predictors of reoperation for stenosis. Bicuspid aortic valve repair was performed using a combination of procedures on the leaflet, annulus, and aortic root. Results: During a median follow-up of 8 years, reoperation for stenosis was required in 33 patients (9.0%). Freedom from reoperation for stenosis was 100%, 99.6%, 91.7%, and 74.9% at 1, 5, 10, and 15 years, respectively. The following factors were independently associated with reoperation for aortic stenosis: Leaflet or raphe resection with shaving was a protective factor (hazard ratio, 0.34; 95% confidence interval, 0.16-0.71; P = .004), whereas the use of expanded polytetrafluoroethylene for free-edge running suture (hazard ratio, 2.55; 95% confidence interval, 1.16-5.57; P = .019), supracoronary replacement of the ascending aorta in combination with valve repair (hazard ratio, 5.41; 95% confidence interval, 2.11-13.85; P = .001), and the need for a second aortic crossclamp (hazard ratio, 10.95; 95% confidence interval, 2.80-42.80; P = .001) were associated with increased risk of reoperation for aortic stenosis. Conclusions: While confirming previous findings, our analysis suggests that the inability to restore leaflet mobility and polytetrafluoroethylene for free-edge running suture are risk factors for stenosis. The so-called ascending phenotypes are probably more prone to stenosis. If the first attempt to repair is unsuccessful, the risk of late reoperation for aortic stenosis is high. © 2022 The American Association for Thoracic Surgery

Author Keywords
aortic valve; bicuspid; long term; reintervention; reoperation; stenosis; valve repair

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