Should the ascending aorta be replaced less frequently in patients with bicuspid aortic valve disease?

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I read with interest the recent article by Girdauskas et al. [1] concerning the risk of late aortic events after aortic valve replacement in bicuspid aortic valve (BAV) patients with ascending aortic dilatation. The risk of late aortic events was low in their study group, with a freedom from adverse events of 95% at 10 years and 93% at 15 years, and freedom from aortic interventions of 97 and 94%, respectively. The authors note that the actual follow-up with serial aortic imaging, either computed tomography or magnetic resonance angiography, was only 23%, however. Thus, their paper may seriously underestimate the actual need for re-operation in the study cohort. Furthermore, the method of follow-up was telephone interview rather than formal testing or evaluation. What is the actual rate of progression of aortic dilatation in the study population? How many of the patients now have asymptomatic and undiagnosed aortic aneurysms >5 cm? If one estimates a modest, particularly for BAV patients, progression of the aortic diameter at 0.5 mm per year, then in 11.5 years (the mean follow-up) the approximate growth will be 5.75 mm. If the aortic diameter starts at 45 mm, then in 11.5 years the diameter will be 50.75 mm. Thus, it is likely that at 11.5 years, patients would just begin developing clinically relevant aortic aneurysms with resultant aortic complications and surgical referrals.

This article highlights an important and controversial area in aortic surgery. The current guidelines from the American College of Cardiology/American Heart Association (ACC/AHA) recommend repair of the aortic root or replacement of the ascending aorta if the diameter of the aortic root or ascending aorta is >4.5 cm, for patients with BAV undergoing AVR [2]. This is a Class I, level C recommendation based on several supportive reports, including the study by one of the authors, Borger et al. [3]. More recently, Dr Svensson’s group [4] has also provided support for ‘proactive’ repair of the ascending aorta in BAV patients undergoing AVR with an aortic size >4.5 cm, although the rates of late aortic complications in both the valve alone and the valve-aorta surgical groups were both similarly low. The present authors state that of the 18 BAV patients in Dr Borger’s 2004 study who developed an ascending aortic aneurysm requiring redo surgery, there were 11/18 (61%) who underwent aortic valve replacement for structural valve deterioration. The authors also note that ‘it may be difficult to retrospectively determine patients who underwent replacement of the ascending aorta as the principal reason for their reoperation’ [1]. However, in Dr Borger’s 2004 study, the average size of the ascending aorta for the 18 patients requiring reoperation was 58 ± 9 mm [3]. Thus, the majority of the 18 BAV patients do meet ACC/AHA guideline criteria for replacement of the ascending aorta at the threshold of 5.0 cm [2], whether or not one considers this as a ‘primary’ or ‘secondary’ reason. Are the authors, including Dr Borger, now recommending that the guidelines be changed and that we operate on the ascending aorta less frequently in patients with BAV? If so, what threshold of aortic size would the authors recommend?

Finally, there have been a few small studies that advocate reduction aortoplasty to treat mild to moderate dilatation of the ascending aorta in patients with BAV [5]. This approach is controversial and arguably unsettling, as it would assume the connective tissue abnormalities found in the aortic wall of BAV patients emanate from primarily a haemodynamic, as opposed to a genetic, etiology. The lead author’s recent review summarizes quite thoroughly the genetic vs haemodynamic argument, vis-à-vis, BAV [6]. Based on their recent data, would the authors advocate reduction aortoplasty for BAV patients with aortic sizes 4.5–5.0 cm who undergo AVR?

REFERENCES