LETTERS TO THE EDITOR

Morphology of critically stenotic aortic valves

To the Editor:

The study reported by Mosca and his colleagues¹ in the January issue of the JOURNAL is an important contribution to the ongoing debate concerning the optimal treatment of critically stenotic aortic valves. It is clear from the reported discussion that the subject generated significant debate when presented at the annual meeting of The American Association for Thoracic Surgery. It seems to me, however, that Dr. Mosca's group failed to address one significant issue, namely, the morphologic characteristics of the stenotic valves.

In his closing comments, Mosca states that dilation "causes rupture of the stenotic valves along the fused commissures." This may be the case for bifoliate and trifoliate valves, but what of the so-called unicuspid and unicommissural valves? In our experience,² these valves are the majority in autopsied examples of critical aortic stenosis. They are also, probably, the hardest variants to treat, either by surgery or by balloon dilation, because they have an annular attachment of their solitary leaflet with, in consequence, no fused commissures to rupture. Because of the morphologic variability, with its potential consequences for treatment, it is important to know the numbers of each anatomic variant in the reported series.³ In her response to a previous letter on this topic, Bu'Lock⁴ emphasized the problems in diagnosing valve morphology preoperatively and pointed to the potential value of transesophageal echocardiography or intravascular ultrasonography. Does the team from Ann Arbor have any information on morphologic characteristics of the valves in their patients treated by surgery as opposed to balloon dilation?

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REFERENCES

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2. McKay R, Smith A, Leung MP, Arnold R, Anderson RH. Morphology of the ventriculoarterial junction in critical aortic stenosis. *J THORAC CARDIOVASC SURG* 1992;104:434-42.
3. Anderson RH. Balloon dilatation (valvoplasty) as first line treatment for severe stenosis of the aortic valve in early infancy: medium term results and determinants of survival [Letter]. *Br Heart J* 1994;72:300.
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Reply to the Editor:

Dr. Anderson's comments raise the question of the importance of the aortic valve structure in determining the outcome of infants treated for critical aortic stenosis. We did not perform transesophageal echocardiography or intravascular ultrasonography on any of these patients, and because the valves were never visualized we have no data on their structure. In fact, we have found the use of echocardiography in describing these valves to be unrewarding. Many surgeons would agree that even under direct inspection the valves frequently appear as amorphous masses of tissue, with no recognizable commissures. Although the exact morphologic characteristics would be of academic interest, the lack of this information does not detract from the data presented. Essentially all patients responded well with satisfactory relief of aortic stenosis and minimal aortic insufficiency, regardless of the technique used (balloon valvuloplasty or transventricular dilation). Assuming that a high prevalence of unicuspid valves would be predicted, as described by Dr. Anderson, this morphologic subtype was likely represented in our group as well. However, there appears to be no significant difference in outcome. It is likely that knowledge of the exact morphologic characteristics of the valves is more important when an open surgical valvotomy is performed.

In describing the mechanisms of relief of stenosis in unicuspid valves, McKay and colleagues¹ state that tissue above the apex of the interleaflet triangle of the aortic valve is "probably" the strongest part of the leaflet. They then imply that blunt dilation would tend to split the leaflet opposite this point, or through the right coronary cusp. However, this is based on an assumption and is not borne out by our results and the results of others with closed dilation for critical aortic stenosis. It seems logical to us that even a unicuspid valve should have a point of attachment along which it can be opened.

Our patients with critical aortic stenosis responded well as a group. We believe that a closed valvotomy, done properly by either technique described in our manuscript, is effective and reproducible regardless of the morphologic characteristics of the valve.

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REFERENCE

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