Aortic leaflet stress in surgery for genetically determined root aneurysms: biomechanical insights

To the Editor

We are grateful to Tasca, Selmi and colleagues for their comparative biomechanical study of valve sparing root replacement by Sleeve or David techniques.[1] We believe that their results and our own studies of flow and wall stress after personalised external aortic root support (PEARS) are complementary.[2-5] We have not studied the aortic valve leaflets but their observations add further reassuring information.[1] In the 1990s when surgeons were achieving consistently good results with the modern Bentall, one of the unknowns in adopting a valve sparing approach was whether the valve leaflets were prone to tissue failure. The leaflets have proved durable but this study indicates that preserved leaflet-sinus continuity may be a favourable feature of the Sleeve compared with David. This advantage is likely to apply with PEARS in which all the relationships are completely unchanged and the vascular endothelium is intact. Simplifying and reducing complications seem to be worthwhile and achievable goals. Considering our own biomechanical results,[2-5] our animal studies[6;7] and autopsy findings[8] we are optimistic that the PEARS mesh/aorta composite will offer the stability required to allow long term aortic valve function.

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