MITRAL VALVE REPLACEMENT IN HEAVILY CALCIFIED POSTERIOR ANNULUS

To the Editor:

I read with extreme interest the article by Hussain and colleagues¹ published in a recent issue of the *Journal*, describing their results in patients with severe mitral annular calcification undergoing mitral valve replacement (MVR).

Extensive calcium debridement of the posterior mitral annulus carries a high risk of circumflex artery injury, atrioventricular disruption, prosthetic valve dehiscence, periprosthetic leakage, stroke, and embolic events.² We have recently reported our approach² that involves partial debridement of the calcified posterior annulus, limited just to allow implantation of an appropriately sized prosthesis. We also have suggested transfer of the preserved anterior mitral leaflet and its subvalvular apparatus, and use of these structures to completely cover and reinforce the partially decalcified posterior mitral annular bed.² Thus, I absolutely agree with partial decalcification of the posterior annulus, which is a part of their technique. On the contrary, I have not found an aortotomy and transvalvular approach (across the aortic valve) to allow better placement of valve sutures in the region of the right fibrous trigone during MVR.³ Therefore, I do not support the idea that a proximal aortotomy should be performed routinely to optimize the exposure of the mitral valve

during suture placement in the region of the central fibrous body.

In 1995, Okita and associates⁴ presented 6 patients who underwent MVR and in whom a collar-reinforced prosthetic mitral valve (Xenomedica; Edward AG, Howr, Switzerland) was used. That valve was composed of a prosthetic mitral valve with a 1.5-cm-wide band of annular equine pericardium incorporated (from below) around the prosthetic sewing cuff. Technically, the first row of stitches (2-0 polyester pledgeted mattress sutures) were placed through the leaflet tissue adjacent to the annular calcification from the left ventricle to the left atrium and through the sewing cuff of the prosthetic valve. Although the stitches were placed first through the equine pericardium and then through the cuff, equine pericardium is sandwiched between the annular tissue and the cuff as a support—exactly the same basic principle as in the technique suggested by Hussain and colleagues.¹ A second row of running stitches were placed through the free edge of the equine pericardium and anchored to the supra-annular left atrial wall.⁴ Therefore, it seems that Hussain and colleagues¹ have used an in situ made, partially (from trigone to trigone posteriorly) collar-reinforced (with felt washer) prosthetic mitral valve.

A weak point of the suggested technique¹ should be considered. Although Hussain and colleagues¹ reported that valve sutures were placed through or around the residual calcium and annulus, with pledgets on the ventricular side, there is a possibility that some calcium fragments can be disengaged with myocardial contraction, and they are the possible origin of emboli using their technique.¹ We² and Goksel and associates⁵ have prevented that by transferring the anterior mitral leaflet that completely covered the whole region of the partially decalcified mitral annular bed (pledgeted mattress sutures² or Teflon strips⁵ were used to seal the anatomic free

edge of the anterior mitral leaflet to the left ventricular wall).

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Reply to the Editor:

We thank Dr Nezc¹ for his comments and appreciate the opportunity to add to the points we addressed in our recent editorial² by further clarifying our technique³ for surgically addressing mitral annular calcification (MAC). Dr Nezc agrees with us that calcium debridement is necessary in many of these patients to permit implanting a valve of acceptable size.

On the first point related to leaflet preservation, we are in full agreement with Dr Nezc.¹ We routinely release and salvage the posterior and anterior leaflets whenever possible and transpose the anterior leaflet posteriorly to support the posterior annulus. In these cases, the posterior leaflet usually is not usable because of heavy calcification.

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Nezic and colleagues⁴ suggestion that transposing the anterior mitral leaflet to cover the decalcified posterior annulus prevents calcium emboli is based on a single case report. Although in theory myocardial contractions can disengage calcium fragments, we observed no embolic events in our series of 20 patients.³ We perform generous irrigation repeatedly to clear the heart of loose pieces of calcium. In our minds, true sealing of the calcium is difficult to accomplish.

We disagree with Nezic's¹ point that the proximal aortotomy is "unnecessary." It remains our opinion that in patients with severe MAC, the proximal aortotomy makes the operation easier, faster, and more precise. An aortotomy provides direct exposure of the mitral valve annulus in areas not seen from the atrium, and this is particularly valuable in patients with severe MAC or endocarditis. It facilitates debriding calcium and placing valve sutures anteriorly and in the areas of the trigones. As we pointed out earlier,^{2,3} our technique does not routinely require adding an aortotomy.

Finally, Nezic¹ refers to a similar technique used by Okita and

colleagues.⁵ They used a collar-reinforced (equine pericardium) prosthetic valve in 2 patients with MAC: No decalcification was done from the posterior annulus, and the valve sutures were placed through the posterior leaflet tissue adjacent to the annulus. One of these patients had 1-2/4+ periprosthetic regurgitation at the posterolateral mitral annulus. On the basis of our experience with severe MAC, it is often impossible to implant a good sized valve without removing some calcium, and afterward, the posterior leaflet is most often gone. The felt washer adds more substance to the sewing ring, which prevented periprosthetic leaks in all 20 of our patients.³ Although Okita and colleagues' technique may be equally useful in selected cases of MAC, ours is probably easier when calcium debridement is required to implant an acceptably sized prosthesis. We also do not decalcify if not required for valve size, but still place the sutures through or around the calcium bar.

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