Late Thrombosis of the Aortic Björk-Shiley Prosthesis

To the Editor:

Thrombosis of prosthetic cardiac valves has remained a serious hazard ever since artificial valves have been used. Despite the excellent hemodynamic performances of the Björk-Shiley prosthesis in the aortic position, this prosthetic valve has not been proved free of clotting problems, as demonstrated by the article of Fernandez et al in the July 1976 issue of *Chest*.

The mechanism of thrombosis of a valve is certainly a complex one; however, two major factors contribute to the problem: (1) lack of adequate anticoagulative therapy, and (2) implantation of small-sized prostheses. It is evident that five of the patients reported by Fernandez et al had a prosthesis of size 23 or less. Especially in the aortic position, the smaller aperture may become inefficient for flow in small-sized Björk-Shiley valves, resulting in stasis at this part of the prosthesis. This can especially happen after insufficient decalcification of the aortic annulus and, furthermore, in patients with severe subaortic muscular hypertrophy or when the prosthesis has been inserted in a slightly tilted position in regard to the aortic annulus. To allow sufficient flow on both sides of the tilting disk, it is important, whenever possible, to insert a prosthesis of size 25 or more. This is practically always feasible after careful and complete decalcification of the aortic annulus and the subvalvular area. If necessary, the aortic annulus can be split in front of the commissure between the left and right coronary cusps.

Among some 300 isolated aortic valvular replacements using the Björk-Shiley prosthesis, we have seen only two patients with a clotted prosthesis, both not taking anticoagulant drugs. That careful anticoagulative therapy is mandatory, even with the hemodynamically excellent Björk-Shiley prosthesis, had been advocated already in early reports about the experience with this type of prosthesis.²,³

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REFERENCES


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It has been well established that inadequate anticoagulation is a factor that contributes to thrombosis of the aortic Björk-Shiley prosthesis. Inadequate removal of calcific deposits may also be a factor. In our experience a critical factor that has not been emphasized is the positioning of the prosthesis. In our opinion, the relation of the smaller aperture of this tilting-disk valve to the surrounding structures is of crucial importance. In all of our seven cases of thrombosed aortic Björk-Shiley prostheses, the valve was positioned with the smaller aperture toward the septum (1970 to October 1973).

Since that date, the prosthesis has been positioned...