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Morphologic Findings in Explanted Pericardial Bioprostheses in Young Patients

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Objectives:
Data of mid-term performance of bioprosthetic valves implanted in young patients who live in an underdeveloped area are lacking.

Design:
From April 2007 to December 2007, 126 bioprostheses were implanted in mitral (115 valves) and aortic (11 valves) position for rheumatic, infective or degenerative valve disease. Patients younger than 25 years were 77 in mitral group and 4 in aortic group. 26 bioprostheses were explanted for various causes necessitating replacement. Eight prostheses were explanted at 6 to 35 months postoperatively for severe primary tissue failure all in the younger than 25 years group and all in mitral group. Histomorphological analyses were performed in these valves.

Results:
Fibrous pannus growth is early and it heavily covers the inflow side of sewing ring and at least one third of leaflets in all studied bioprostheses as a sign of an increased tissue reactivity. Six prostheses were stenotic because of mild calcifications. Cusps tears were seen in two prostheses and thrombus depositions were observed in one valve. Generally leaflet pericardium is normal with areas of disrupted and homogenated collagen bundles. Inflammatory infiltration was present in all analyzed bioprostheses.

Conclusions:
Indications for the use of a bioprosthesis in children and young patients thus remain controversial. In the individual case, the advantages of a greater durability of mechanical prostheses must be weighed against the danger of anticoagulation. Until such time as a major breakthrough in preventing or considerably delaying calcification of bioprostheses occurs, mechanical valves appear to offer a better alternative in young patients.