

METHOD OF CHECKING THE FUNCTION OF IMPLANTED ARTIFICIAL VALVE BY
PULSED DOPPLER ECHOCARDIOGRAPHY - IN VITRO STUDY

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Pulsed Doppler echocardiography /PDE/ not only discloses an image of heart structures but also gives information about the character of blood flow. We attempted to use this comprehensive method to verify the function of the implanted Björk-Shiley tilting disc prosthesis. This non-standard application of PDE had to be previously checked by a direct valve investigation under simple conditions in vitro so that the art and grade of valve deficiency could artificially be evoked as well as easily controlled. Therefore, a hydrodynamic model of the heart and systemic circulation with implemented valve prosthesis has been used.

Results:

PDE is extremely sensitive in detecting para- as well as intravalvular regurgitations. An insignificant valve insufficiency expressed by 10% of regurgitation fraction was reliably recognized.

Signs of turbulence regularly accompanying an obstruction of a natural valve are obscured by the flow disturbances which are inherent to the Björk-Shiley tilting disc valve. It is therefore difficult to make a reliable diagnosis of the obstruction based on the PDE alone.

Conclusions:

The study assisted the progress of the PDE role in the system of postoperative care in patients with implanted prosthetic valve. All results correspond with those acquired later by clinical application of PDE.