Computational analysis of flow through a two-dimensional model of a mechanical bileaflet aortic heart valve

Mashhour Bani Amer*, L. Al-ibbini, H. Al-issa

Biomedical Engineering Departme , Jordan University of Science & Technology
P.O.Box 3030, 22110 Irbid, JORDAN.
**E-mail: m-b-amer@just.edu.jo*

Abstract

Flow behavior through prosthetic heart valves capable of providing first-line information about valve performance. Computational fluid dynamic (CFD) models of the mechanical heart valves are presented in this paper describing steady and laminar flow characteristics in a bileaflet aortic heart valves models that are investigated over a range of systolic flow rates. The purpose of this study is to evaluate the performance of the bileaflet heart valve computationally. Velocity, stream function, pressure drop and shear stress distributions obtained from CFD were used to give an overall picture of the flow field. Some comparisons with experimental and invasive direct measurements are also included. In conclusion, the approach described herein might offer a way towards the alterations of blood flow associated with heart valve prostheses.