Prof. Dr. Norsarahaida Saidina Amin

Mathematical Modelling of Blood Flow at an Arterial Bifurcation

Abstract

This presentation focuses on the development of a mathematical model for blood flow at an arterial bifurcation. Based on clinical observations, coronary bifurcation lesions strongly disturb blood flow and treatment by stenting could cause further lesions that would aggravate the condition. This situation represents an area of ongoing challenge in interventional cardiology. The discussion includes how the proposed model is developed from appropriate fundamental physical principles and suitable boundary conditions, from where the governing equations are formulated. The mathematical and computational challenges on obtaining the solution where an analytical solution is almost impossible and the need for advanced numerical techniques which could speed up computation and convergence are highlighted. The commercialization effort for an alternative product which is non-invasive and cheap for diagnostic purposes is also outlined.