Journal of Interventional Cardiology

Special Issue on

Fractional Flow Reserve in Future PCI Management

CALL FOR PAPERS

Fractional flow reserve (FFR) is a catheter-based pressure wire measuring FFR during adenosine-induced hyperemia that allows accurate assessment of the coronary physiology and functional significance of coronary stenosis. FFR has been widely accepted as the gold standard in achieving an optimal percutaneous coronary intervention (PCI) strategy with superior patient's outcomes.

One of the pitfalls in traditional catheter-based FFR measurements is the prerequisite for maximum blood flow via adenosine administration. Despite the fact that adenosine administration is safe and simple, such agent could add procedural cost, reduce diagnosis flexibility, and result in patient's discomfort, hence, limiting the applicability of FFR in interventional cardiology. The concept of nonhyperemic pressure ratio (NHPR) has emerged as an alternative in future PCI management. Instantaneous wave-free ratio (iFR) is an early adopter of NHPR. By measuring the pressure ratio within a so-called "wave-free period" at diastole, iFR-guided PCI was clinically proven to be noninferior to the FFR-guided strategy. Other NHPR indices (including, but not limited to, Resting Full-cycle Ratio, RFR, and the diastolic Pressure Ratio, dPR), each with a slight difference in the measurement window, have shortly entered the market.

On the other hand, *in silico* applications of FFR derived from coronary imaging data, such as virtual FFR or Quantitative Flow Ratio, are novel alternatives to guide coronary revascularization using state-of-the-art computing technology. *In silico* FFR eliminates the use of both invasive wire and adenosine all together, hence reducing procedural risks and patient's discomfort. These technologies have attracted a great deal of interest recently with very promising clinical evidence supporting their roles in PCI decision making.

This special issue aims to encourage debates about the current status of FFR and NHPR and their suitability in future interventional cardiology. We invite clinicians and biomedical engineers to present multicenter pilot studies involving both FFR and NHPR. Papers comparing clinical applications of *in vivo* and *in silico* FFR and/or NHPR are particularly welcomed. This special issue also provides an excellent venue for comprehensive review articles on FFR and/or NHPR related research.

Potential topics include but are not limited to the following:

- The past, present, and future of FFR in PCI decision making: a state-of-the-art review
- The relationships between measurement window, patient stratification, and PCI strategy with nonhyperemic pressure ratio
- Short- and long-term patient outcomes following PCI guided by FFR with reduced to no adenosine administration
- Cost effectiveness of NHPR and *in silico* FFR compared with FFR during adenosine-induced hyperemia in PCI guidance
- The role of *in silico* FFR assessment to simplify interventional procedures and guide coronary revascularizations in patients with stable angina
- Acceptability and feasibility of *in silico* FFR as a point-of-care PCI decision support: reduced order models versus artificial intelligence

Authors can submit their manuscripts through the Manuscript Tracking System at https://mts.hindawi.com/submit/journals/jitc/ffrfi/.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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Submission Deadline
Friday, 28 February 2020

Publication Date
July 2020