

Pullback pressure gradient optimizes patient selection for coronary interventions: a retrospective observational study

 Ana Reschner Planinc¹,
 Kristina Marić Bešić²,
 Boško Skorić²,
 Eduard Margetić²,
 Luka Perčin²,
 Denis Došen²,
 Davor Radić²,
 Zvonimir Ostojić²,
 Marijan Pašalić²,
 Tomislav Krčmar²,
 Davor Miličić²,
 Joško Bulum²,
 Hrvoje Jurin^{2*}

¹Special Hospital for Respiratory Diseases, Zagreb, Croatia

²University Hospital Centre Zagreb, University of Zagreb School of Medicine, Zagreb, Croatia

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***ADDRESS FOR CORRESPONDENCE:** Hrvoje Jurin, Klinički bolnički centar Zagreb, Kišpatićeva 12, HR-10000 Zagreb, Croatia. / Phone: +385-1-2367-466 / E-mail: hrvoje.jurin@gmail.com

ORCID: Ana Reschner Planinc, <https://orcid.org/0000-0002-6723-6822> • Kristina Marić Bešić, <https://orcid.org/0000-0002-4004-7271> • Boško Skorić, <https://orcid.org/0000-0001-5979-2346> • Eduard Margetić, <https://orcid.org/0000-0001-9224-363X> • Luka Perčin, <https://orcid.org/0000-0003-0497-6871> • Denis Došen, <https://orcid.org/0000-0003-3490-5505> • Davor Radić, <https://orcid.org/0000-0002-9132-1568> • Zvonimir Ostojić, <https://orcid.org/0000-0003-1762-9270> • Marijan Pašalić, <https://orcid.org/0000-0002-3197-2190> • Tomislav Krčmar, <https://orcid.org/0000-0003-4689-1673> • Davor Miličić, <https://orcid.org/0000-0001-9101-1570> • Joško Bulum, <https://orcid.org/0000-0002-1482-6503> • Hrvoje Jurin <https://orcid.org/0000-0002-2599-553X>

Introduction: Pullback pressure gradient (PPG) is a novel, emerging method in distinguishing coronary artery disease (CAD) patterns, as either being focal, intermediate or diffuse.¹⁻³ In this small retrospective observational study we aimed to show the role of PPG in tailored decision-making (OMT vs PCI).

Patients and Methods: We included stable CAD patients who underwent PPG measurements in order to recognize CAD patterns as either focal or diffuse. In all patients the manual Fractional Flow Reserve (FFR) pullbacks were used for PPG measurements. The FFR was performed on Abbott™ CoroFlow†v3.6 Cardiovascular System. Besides demographics, we collected data on comorbidities, laboratory parameters (LDL cholesterol, creatinine, glomerular filtration rate), medications, and symptoms. FFR index, PPG, coronary anatomy and significance of lesions was reported from coronary angiography reports. Descriptive statistics were used for characterization of the patient cohort.

Results: In total, 13 patients with stable CAD were included (mean age 66.7 ± 10.2 years, 62% males). Nearly all had arterial hypertension (12/13) and hyperlipidemia (11/13), while less than half reported smoking (5/13). Only 6/13 patients had haemodynamically significant stenosis according to FFR (positive FFR <0.80). Three out of six patients with positive FFR had diffuse pattern of CAD according to PPG (<0.5) and were managed conservatively with further optimization of their medical therapy. Out of the remaining patients with positive FFR, 2 had focal, and 1 had mixed CAD pattern, and all underwent PCI. Post-PCI FFR varied by disease pattern. Patient with mixed pattern CAD achieved a final FFR of 0.65, while patients with focal disease obtained optimal revascularization with final FFR 0.84 and 0.91 clearly confirming the positive predictive value of PPG. Medical therapy was further optimised in 7 patients with negative FFR, among which PPG showed focal disease in 3, while remaining patients had diffuse disease.

Conclusion: In our cohort, combined FFR and PPG prevented potentially unnecessary interventions in half of the patients that were managed conservatively despite positive FFR. This small observational study supports emerging data that optimal decision making in PCI should incorporate both ischemic burden (FFR) and disease pattern (PPG).

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LITERATURE

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