

LAD deferral is safer with iFR

Background

Title

Major Adverse Cardiac Events when an LAD lesion is deferred after physiological assessment by FFR or iFR: A sub-study of DEFINE FLAIR

Reference

Sen et al. Clinical events after deferral of LAD revascularization following physiological coronary assessment. JACC 2019; 73(4):444-53.

Methods

Within the DEFINE FLAIR population group (N=2492), LAD deferred patients (based on physiological assessment) were compared between iFR and FFR in this sub study. Outcomes are based on MACE at one year. Outcomes were adjusted for age and gender.

Population

N= 872 (421 guided by FFR, 451 guided by iFR).

Results

LAD lesion deferral

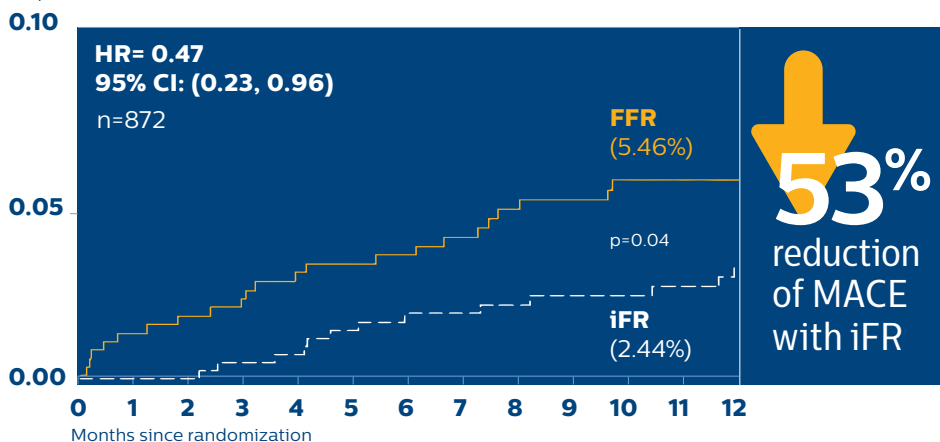
	iFR group (n=451)	FFR group (n=421)	p value
MACE (Cardiovascular death, myocardial infarction, unplanned revascularization)	11 (2.44%)	23 (5.46%)	0.04
All-cause death	4 (0.89%)	5 (1.19%)	0.69
Myocardial infarction	2 (0.44%)	9 (2.14%)	0.06
Unplanned revascularization	10 (2.22%)	21 (4.99%)	0.03

Non-LAD lesion deferral

	iFR group (n=343)	FFR group (n=327)	p value
MACE (Cardiovascular death, myocardial infarction, unplanned revascularization)	18 (5.25%)	17 (5.20%)	0.63
All-cause death	5 (1.46%)	4 (1.22%)	0.72
Myocardial infarction	5 (1.46%)	6 (1.83%)	0.89
Unplanned revascularization	15 (4.37%)	16 (4.89%)	0.97

Note: MI includes target vessel, non-target vessel, and peri-procedural MI. Unplanned revascularization includes TVR and non-TVR.

Proportion with MACE



This figure outlines the primary endpoint in patients with left anterior descending stenoses who were deferred according to intracoronary physiology. Adjusted hazard ratio: 0.46; 95% confidence interval: 0.22 to 0.95; p = 0.04.

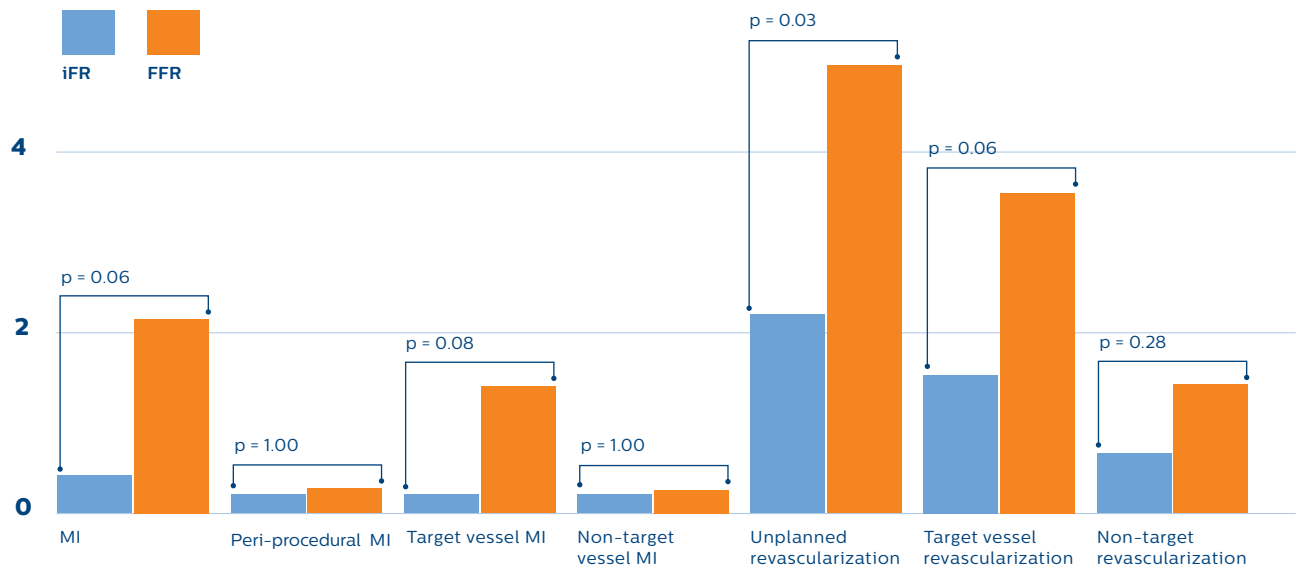
Unplanned revascularization is 56% lower with iFR

Event rate (%)
of LAD deferral

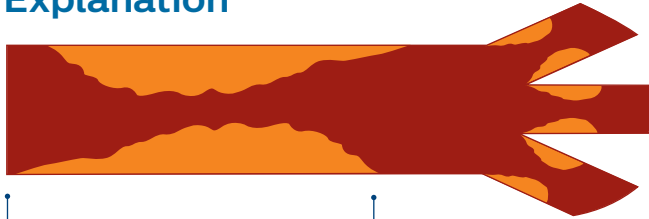
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Myocardial infarction

Unplanned revascularization



Explanation



iFR and FFR: FFR focuses on epicardial lesions

CFR: CFR examines the epicardial lesions and microvascular function

iFR and CFR agreement has been demonstrated to be significantly closer than that of FFR and CFR.¹ Therefore the proportion of patients in which iFR is normal and CFR abnormal is lower; possibly explaining the lower event rate in the iFR deferred patients.²

- CFR is the most powerful predictor of events^{3,4,5}
- FFR and CFR discordance can be as high as 40%⁶
- CFR and iFR have a higher concordance¹

Learn more about iFR outcomes data at www.philips.com/ifr

Learn about iFR co-registration and functional guidance at www.philips.com/ifrcoreg

1. Petraco R, van de Hoef TP, Nijjer S, et al. Baseline instantaneous wave-free ratio as a pressure-only estimation of underlying coronary flow reserve: results of the JUSTIFY-CFR Study (Joined Coronary Pressure and Flow Analysis to Determine Diagnostic Characteristics of Basal and Hyperemic Indices of Functional Lesion Severity-Coronary Flow Reserve). *Circ Cardiovasc Interv.* 2014;7:492-502.
2. Lee JM, Choi KH, Hwang D, et al. Prognostic Implication of Thermodilution Coronary Flow Reserve in Patients Undergoing Fractional Flow Reserve Measurement. *JACC Cardiovasc. Interv.* 2018;11:1423-1433.
3. Miller DD, Donohue TJ, Younis LT, et al. Correlation of pharmacological 99mTc-sestamibi myocardial perfusion imaging with poststenotic coronary flow reserve in patients with angiographically intermediate coronary artery stenoses. *Circulation* 1994;89:2150-2160.
4. Chamuleau SAJ, Tio RA, de Cock CC, et al. Prognostic value of coronary blood flow velocity and myocardial perfusion in intermediate coronary narrowings and multivessel disease. *J. Am. Coll. Cardiol.* 2002;39:852-858.
5. van de Hoef TP, van Lavieren MA, Damman P, et al. Physiological basis and long-term clinical outcome of discordance between fractional flow reserve and coronary flow velocity reserve in coronary stenoses of intermediate severity. *Circ Cardiovasc. Interv.* 2014;7:301-311.
6. Cook CM, Jeremias A, Petraco R, et al. Fractional Flow Reserve/Instantaneous Wave-Free Ratio Discordance in Angiographically Intermediate Coronary Stenoses: An Analysis Using Doppler-Derived Coronary Flow Measurements. *JACC Cardiovasc. Interv.* 2017;10:2514-2524.

