

## Synergistic value of hemodynamic assessment and intracoronary imaging for clinical decision making

서울대학교병원 내과<sup>1</sup>, 서울대학교병원 순환기내과<sup>2</sup>, 계명대학교 동산병원 순환기내과<sup>3</sup>, 인제대학교 일산백병원 순환기내과<sup>4</sup>, 아주대학교병원 순환기내과<sup>5</sup>, 울산대학교병원 순환기내과<sup>6</sup>, 강원대학교병원 순환기내과<sup>7</sup>

김영관<sup>1</sup>, 양석훈<sup>1,2</sup>, 남창욱<sup>3</sup>, 도준형<sup>4</sup>, 탁승제<sup>5</sup>, 신은석<sup>6</sup>, 이봉기<sup>7</sup>, 강지훈<sup>1,2</sup>, 한정규<sup>1,2</sup>, 양한모<sup>1,2</sup>, 박경우<sup>1,2</sup>, 김효수<sup>1,2</sup>, \*구본권<sup>1,2</sup>

**Background/Aims:** Relying only on a single modality, whether it is hemodynamic assessment or intracoronary imaging, provides limited insight into stenotic vessels. Comprehensive usage of both modalities is necessary to thoroughly understand lesion characteristics and appropriately select vessels that need intervention. We aimed to investigate the synergistic effect of Murray law-based quantitative flow ratio ( $\mu$ QFR) and intravascular ultrasound (IVUS).

**Methods:** Out of the 901 vessels in the IVUS-guided group of FLAVOUR study (NCT02673424), PCI was deferred for 375 vessels (357 patients). Baseline  $\mu$ QFR measurement and risk calculation using both  $\mu$ QFR and IVUS parameters were performed (259 vessels, 252 patients). Risk calculation was done using three high-risk categories which are quantitative high-risk plaque (MLA  $\leq 3.4\text{mm}^2$  or plaque burden  $\geq 70\%$ ; qn-HRP), qualitative high-risk plaque (attenuated plaque, plaque rupture, or remodeling index  $> 1.05$ ; ql-HRP), and  $\mu$ QFR  $\leq 0.80$ . The primary endpoint was 2-year target vessel failure (TVF).

**Results:** The mean baseline  $\mu$ QFR was  $0.89 \pm 0.07$  with 20 vessels being measured 0.8 or less. The hazard ratio (HR) for TVF of vessels with baseline  $\mu$ QFR  $\leq 0.8$  was 5.122 (95% confidence interval 0.994-26.4, p-value 0.051). Difference in IVUS parameters alone were not associated with increased risk of TVF. However, cumulative incidence of TVF showed a proportional increase in vessels that possessed a greater number of risks (Figure 1; p-value for trend = 0.032). For vessels with more than 2 risks, incidence of TVF was numerically higher compared with IVUS-guided PCI vessels (Figure 1; 3.30% for PCI vessels, 5.66% for vessels with 2 risks, 12.50% for vessels with 3 risks).

**Conclusions:** Vessels with increased risks, considering both  $\mu$ QFR and IVUS parameters, showed a proportional escalation in the cumulative incidence of 2-year TVF. Utilizing both hemodynamic and intracoronary imaging measurements will give a better understanding on adverse outcomes of vessels with intermediate stenosis and guide clinicians to make decisions.

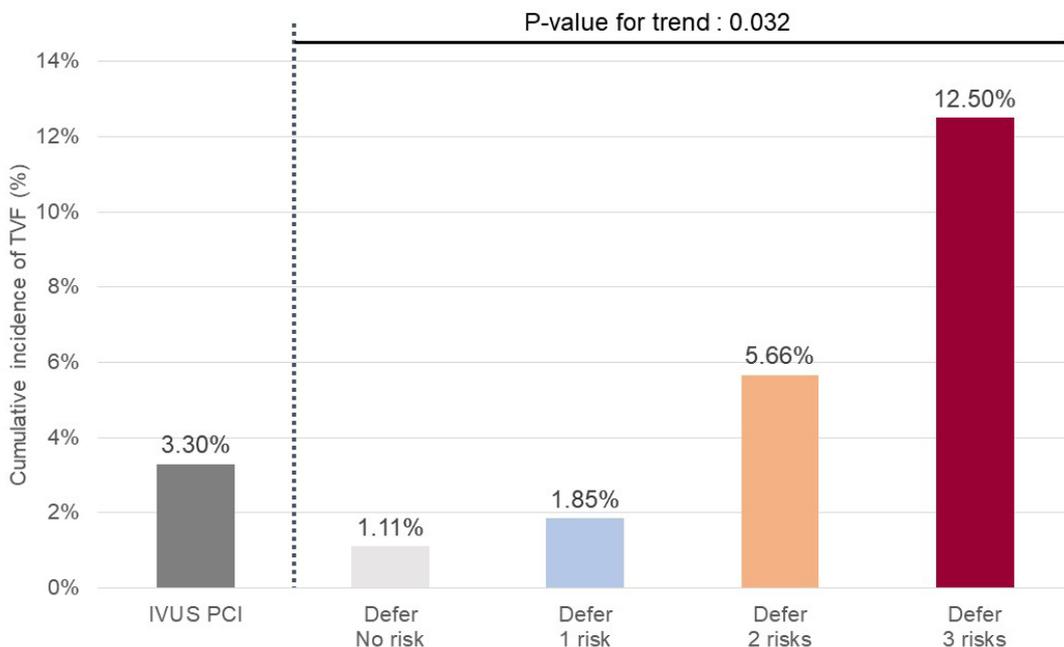


Figure 1. Cumulative incidence of TVF according to number of high-risk categories