

CASE REPORT

OptoWire® and Resting Pd/Pa to Assess Complex Left Circumflex Bifurcation

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Case presentation

- 67-year-old male CAD risk factors, HTN, HLD, diabetes
- Angina, dyspnea, palpitations, diaphoresis
- EKG treadmill stress test positive with EKG stress showing ST depression
- Heart catheterization showed anomalous left from the RCA; LCx could not be engaged
- CT scan showed significant atherosclerotic disease of the anomalous LCx
- Referred for surgical evaluation
- Surgeons recommended PCI due to single vessel disease
- Repeat PCI

Excellent steerability, no drift

- Workhorse wire characteristics
- Absence of drift

Procedure and investigations

Angiography showed an anomalous left artery from the ostium of RCA with significant disease in the LCx.

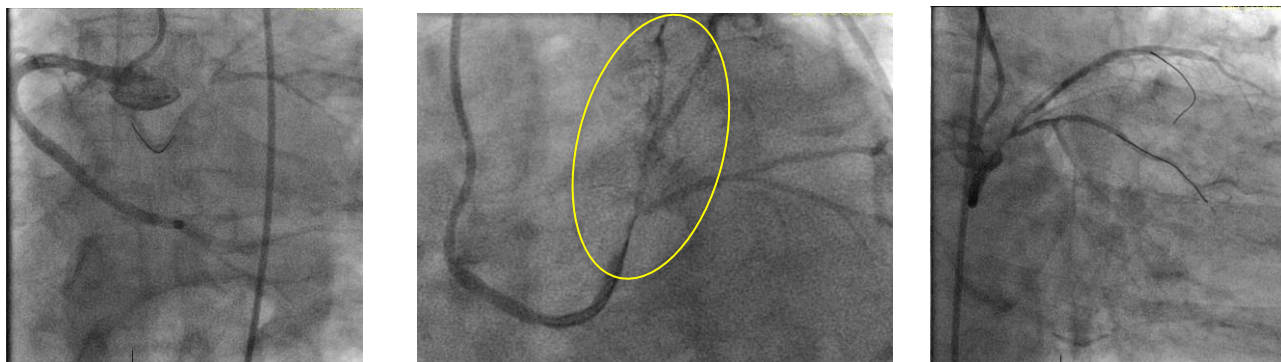


Figure 1 Initial angiograms (left, LAO cranial view and center, AP cranial view). Both OM branches wired with workhorse wires (Runthrough®) pre-PCI (right, RAO cranial view).

Two stents implanted across the LCx bifurcation.

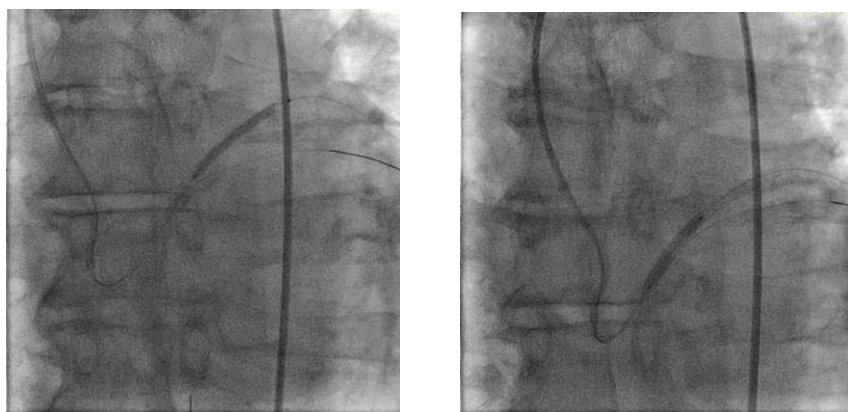


Figure 2: First stent left, OM1 branch1) and second stent (right, OM1 branch2).

After stenting the main LCx branch, angiography showed narrowing of the ostium of the side branch of the LCx. Balloon dilatation was performed but angiography still showed some residual ostial stenosis.

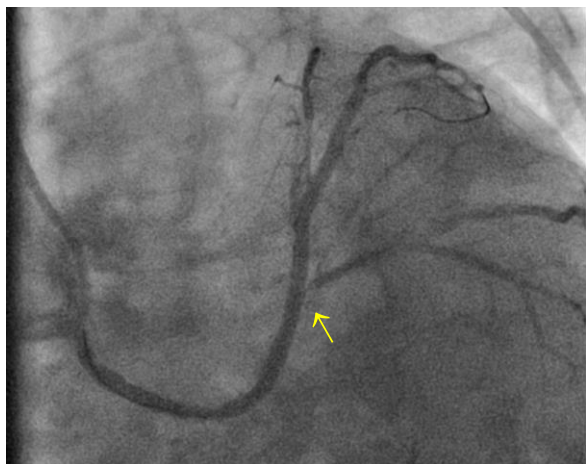


Figure 3: Pinched side branch after stenting the main branch.

We decided to confirm whether the jailed side branch narrowing was hemodynamically significant by measuring Pd/Pa at rest. We wired the side branch with *OptoWire Deux* which navigated easily through the difficult course of the anomalous vessel. Pd/Pa was 0.99, a normal value

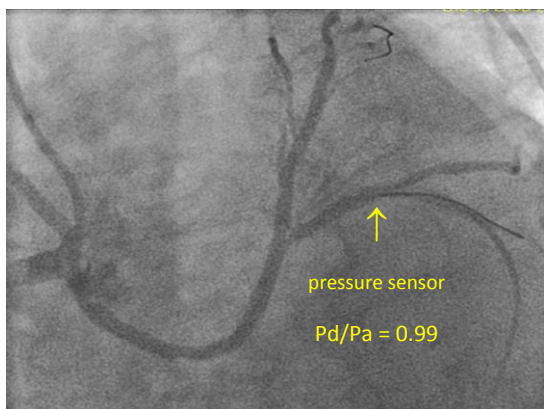


Figure 4: OptoWire in jailed side branch. Pd/Pa = 0.99.

Based on the non-significant Pd/Pa value in the jailed branch, we deferred further treatment of the side branch. We were confident in the Pd/Pa value by confirming no pressure signal drift at the end of the procedure. The patient had no further symptoms and was discharged the next day.

Discussion

Current treatment of coronary bifurcations often involves a provisional approach to the side branch with stenting of the main branch only to then assess the side branch. If the side branch is noted to be moderately stenosed after stenting, optimal treatment is unclear. Hemodynamic assessment such as Pd/Pa or FFR can aid in decision-making.

The workhorse-like characteristics of *OptoWire* enabled us to navigate through the difficult course of an anomalous vessel with ease. At the end of the procedure, there was no signal drift, adding confidence to our measurement. The Pd/Pa correlates well with FFR (see table 1). Final translational hemodynamic assessment supports excellent long term outcomes in our PCI patients.

	FFR	Pd/Pa	cFFR	iFR™
Cutoff value	0.80	0.91 ²	0.83 ⁴	0.89
Correlation vs FFR		81.5% ² 78.5% ³	85.8% ⁴	80.4% ² 79.9% ⁵

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Table 1: Pd/Pa, contrast-FFR and iFR cutoff values and correlation with hyperemic FFR.

Conclusions

The workhorse-wire characteristics of *OptoWire* make FFR measurements easier to perform, can serve as a routine PCI wire and yields consistent results in terms of pressure wave fidelity and lack of signal drift. Pd/Pa is a good hyperemia-free alternative that can be used to assess the hemodynamic severity of coronary lesions and that is available on all pressure guidewires.

Additional references

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