
Many Pressure Wires in the Cath Lab: *Pros and Cons*

William F. Fearon, MD
Professor of Medicine
Director, Interventional Cardiology
Stanford University School of Medicine



Disclosure Statement of Financial Interest

Within the past 12 months, I or my spouse/partner have had a financial interest /arrangement or affiliation with the organization(s) listed below

Affiliation/Financial Relationship

Grant/ Research Support:

Consulting Fees/Honoraria:

Major Stock Shareholder/Equity Interest:

Royalty Income:

Ownership/Founder:

Salary:

Intellectual Property Rights:

Other Financial Benefit:

Company

Abbott, Medtronic, CathWorks,

NIH R61 HL139929-01A1 (PI)

Minor Stock Options: HeartFlow



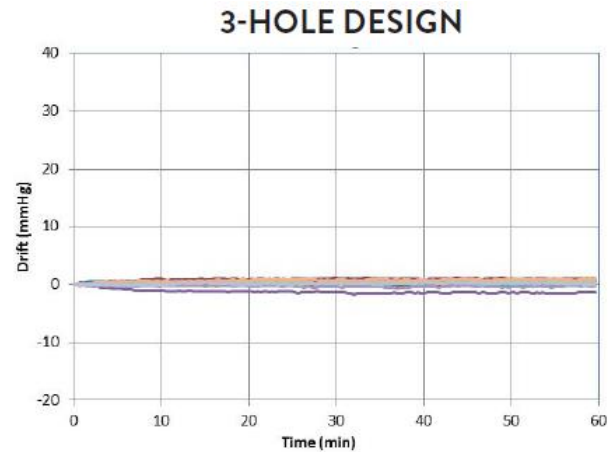
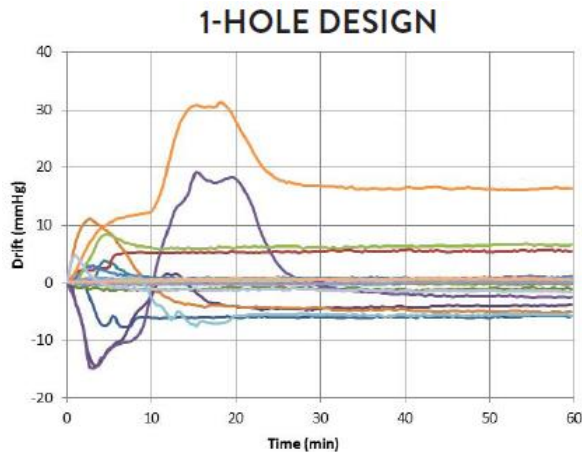
Various Pressure Wires and MicroCatheter Systems

- Traditional Wires
 - Abbott Vascular
 - Philips-Volcano
- Next Generation Wires
 - Boston Scientific
 - Opsens
- Microcatheter system
 - Acist

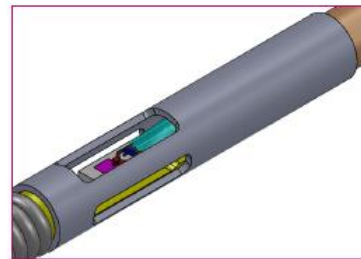


Abbott Pressure Wire X

- Unique Features
 - Less drift



Previous Sensor Jacket with single "window"



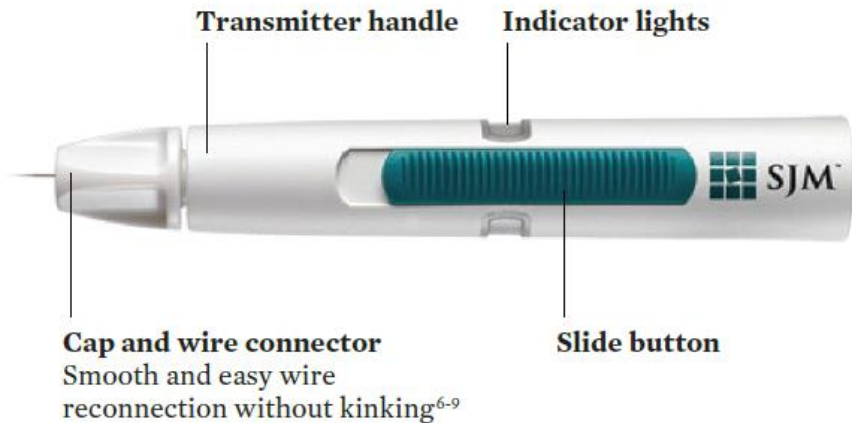
Updated Sensor Jacket with multiple, larger "windows"



Abbott Pressure Wire X

■ Unique Features

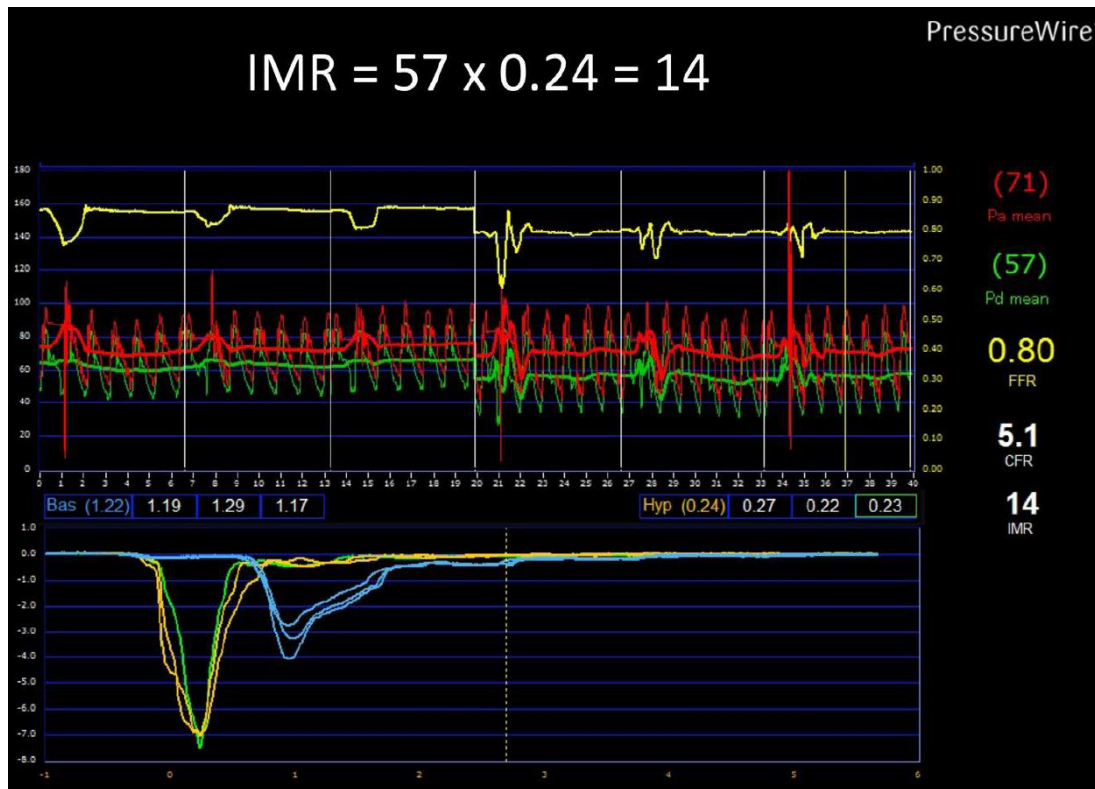
- Wireless technology



Abbott Pressure Wire

■ Unique Features

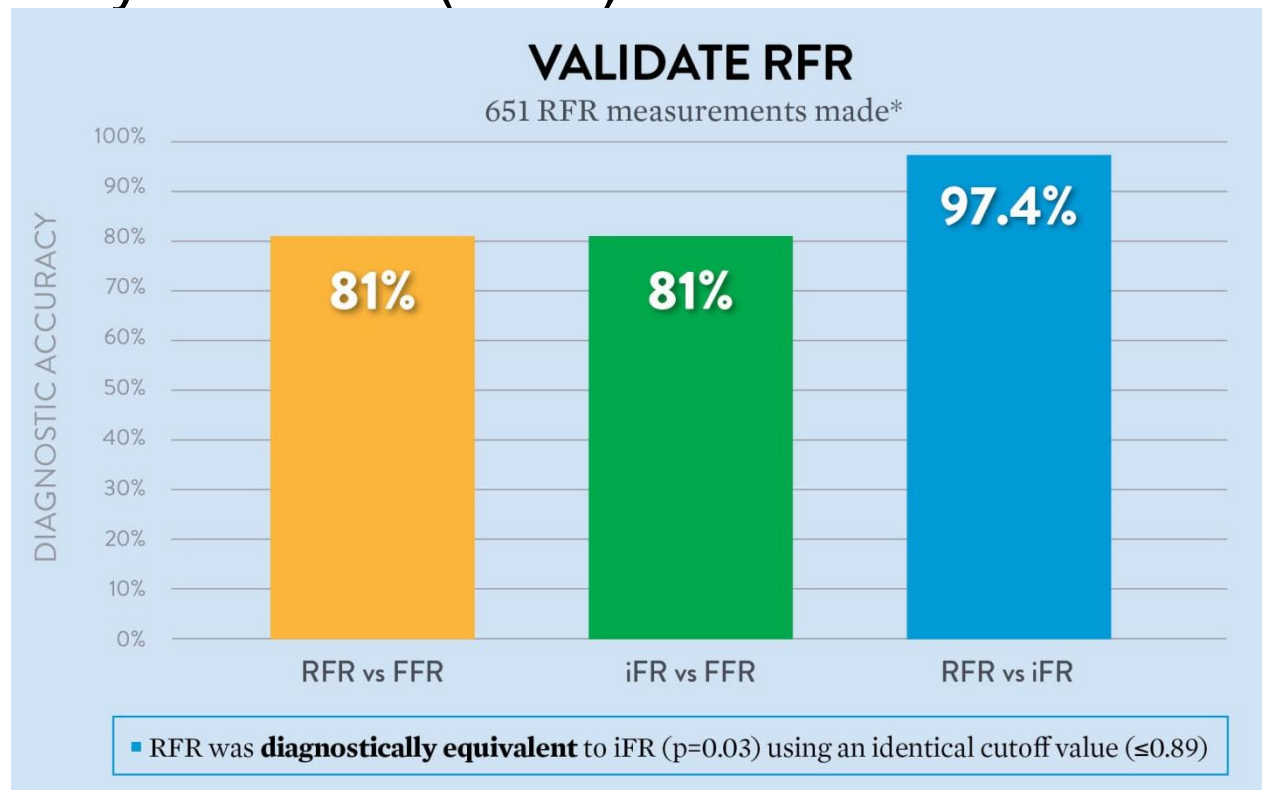
- Thermodilution allows calculation of IMR and CFR



Abbott Pressure Wire

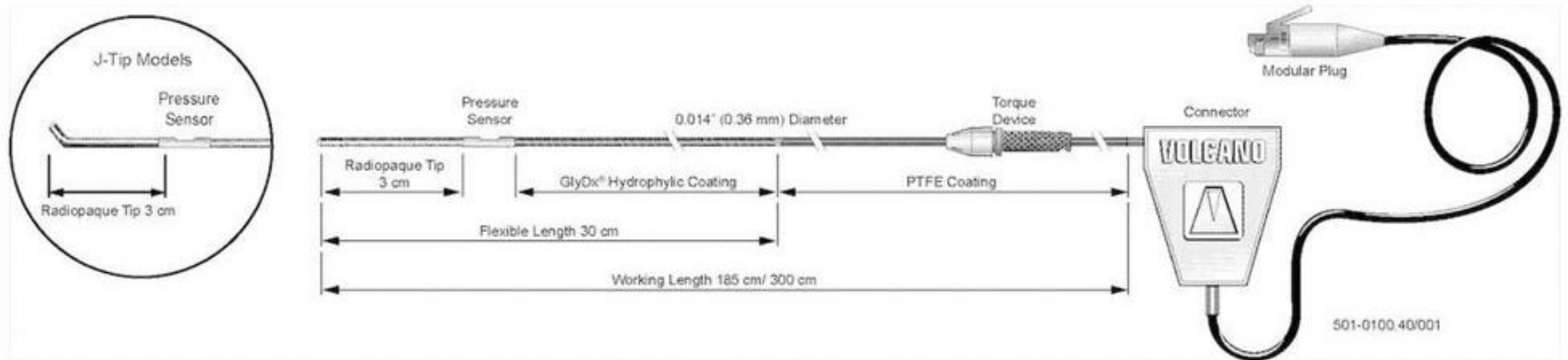
■ Unique Features

- FDA approves resting index called Resting Full-cycle Ratio (RFR)



Philips-Volcano Verrata Wire

- Unique Features
 - iFR technology



Familiar Frontline Tip

Verrata has an industry standard flat-tip construction for easy shaping & shape retention.



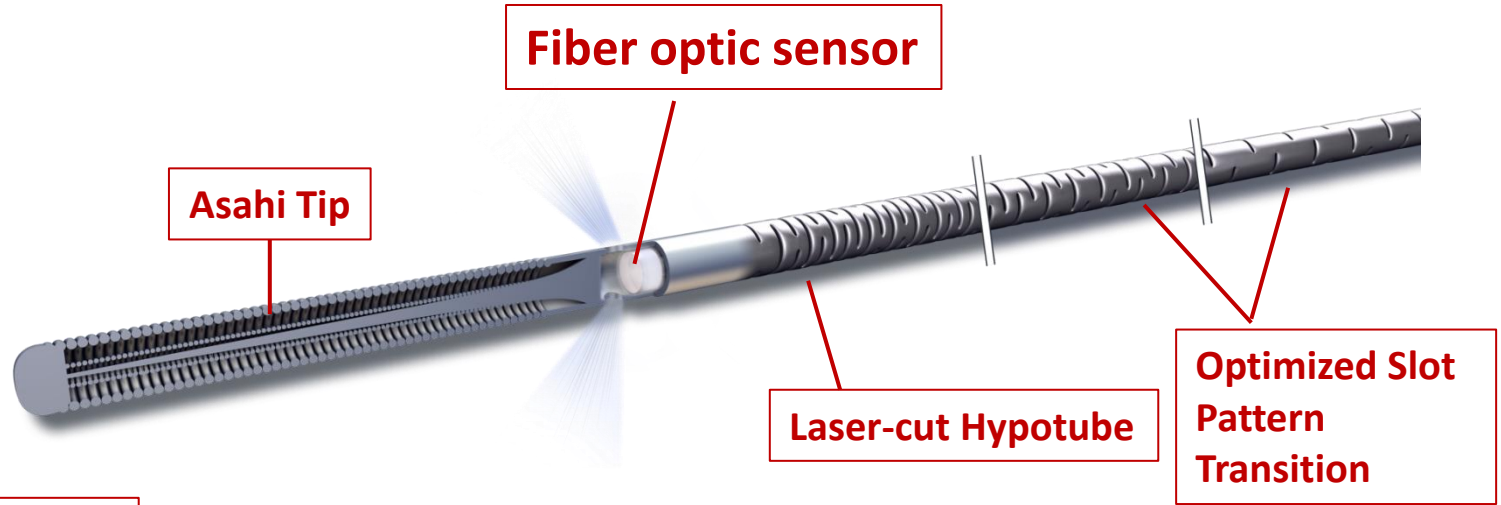
Philips-Volcano Combo Wire

■ Unique Features

- Dual-tipped Doppler/Pressure sensor



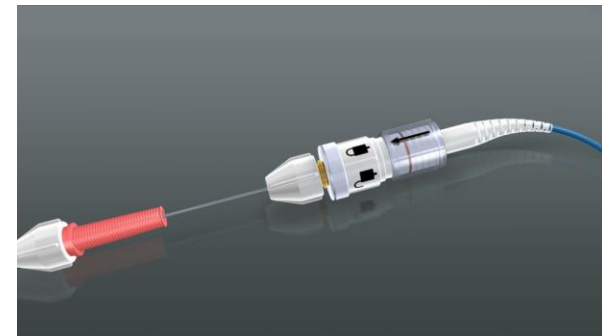
Boston Scientific Comet Wire



Diameter: 0.14"

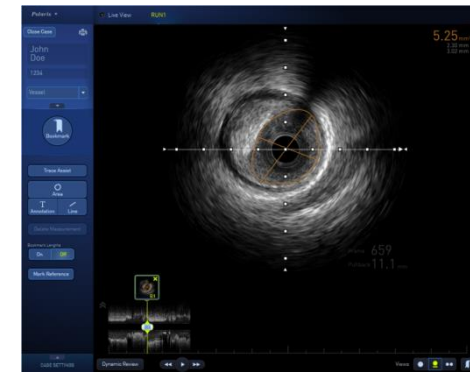
Potential Advantages of Comet Wire

- **Less drift with fiber optic technology**
- **Behaves like a workhorse wire**
- **Easy integration in the cath lab**



Polaris Multi-Modality System

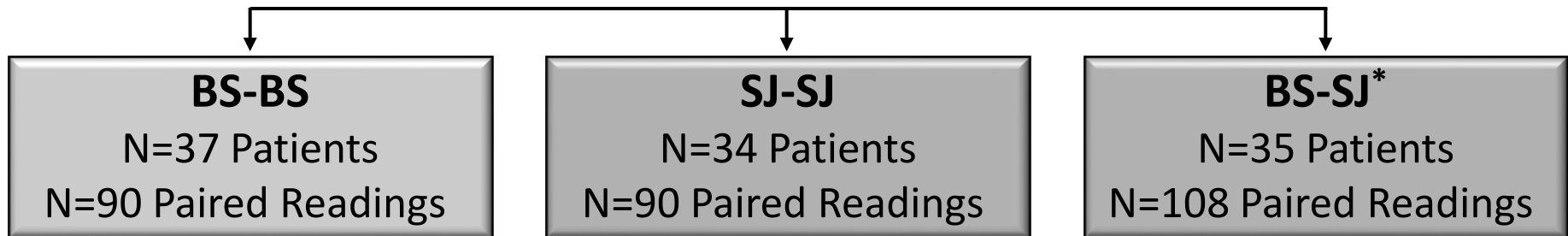
- Intuitive software to decrease procedure time
- Hardware which integrates into the Polaris multi-modality FFR/IVUS system



The COMET Trial

Randomized Comparison of Simultaneous Data from the Boston Scientific (BS) COMET™ and the St Jude Medical (SJ) Pressure Wire

In cases in which FFR was clinically indicated, patients were randomized to one of 3 paired wire options



The COMET Trial

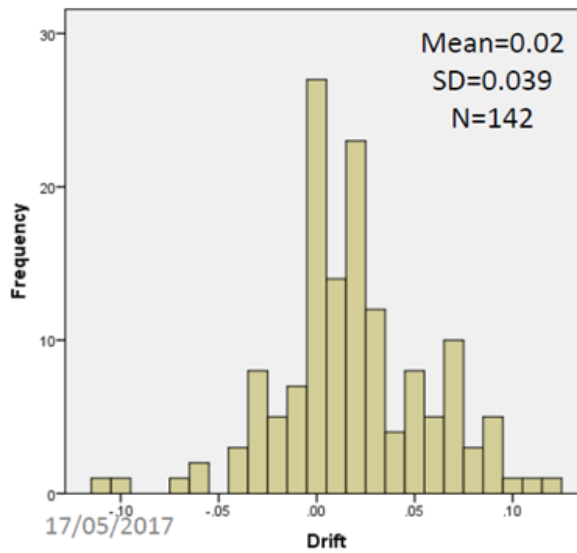
The Degree of Drift with Each Wire

Observed Absolute Δ from Pd/Pa =1.0 at equalization

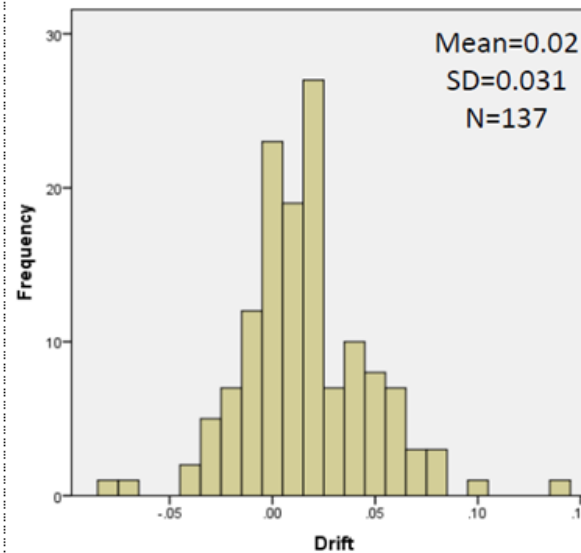
Boston	Median = 0.02	IQR (0.01 – 0.05)
St Jude	Median = 0.02	IQR (0.01 – 0.04)

(p = 0.14 Mann-Whitney test)

Boston Comet

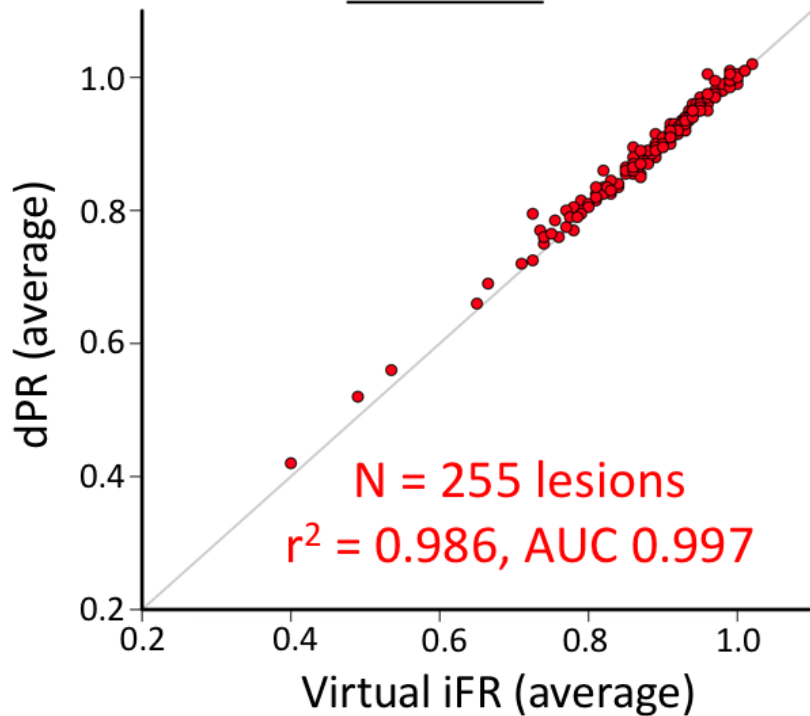


St Jude

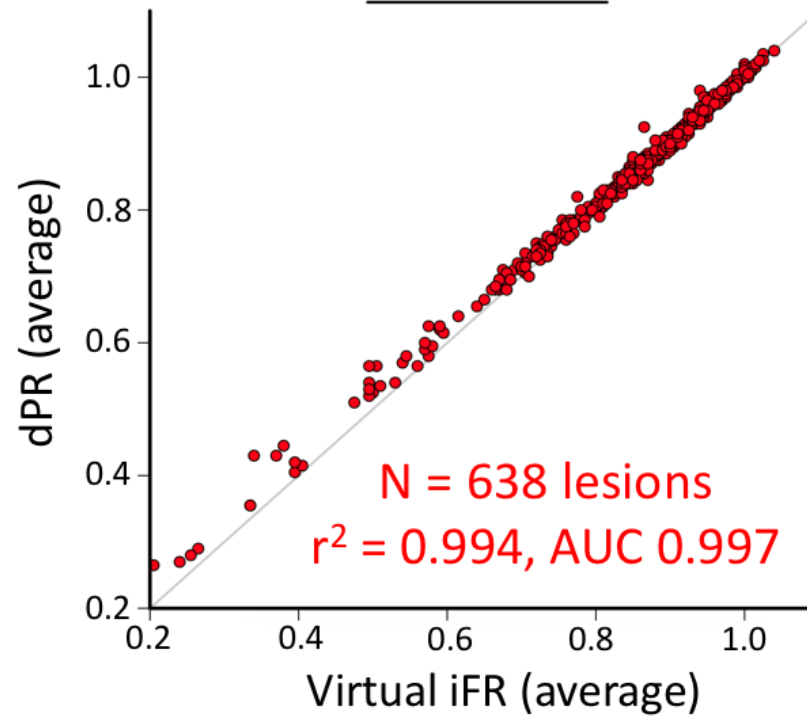


Boston Scientific dPR vs iFR

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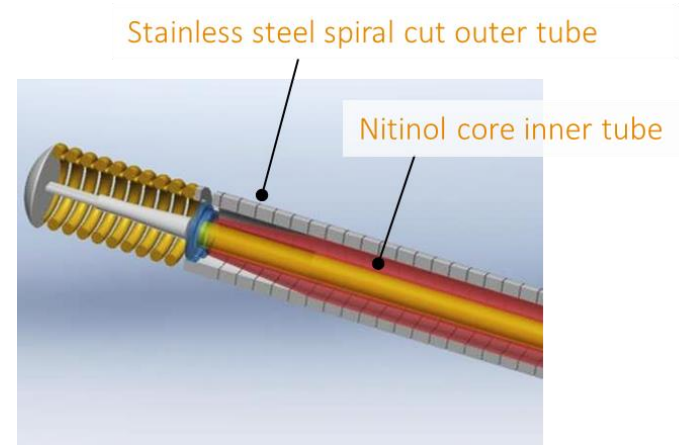
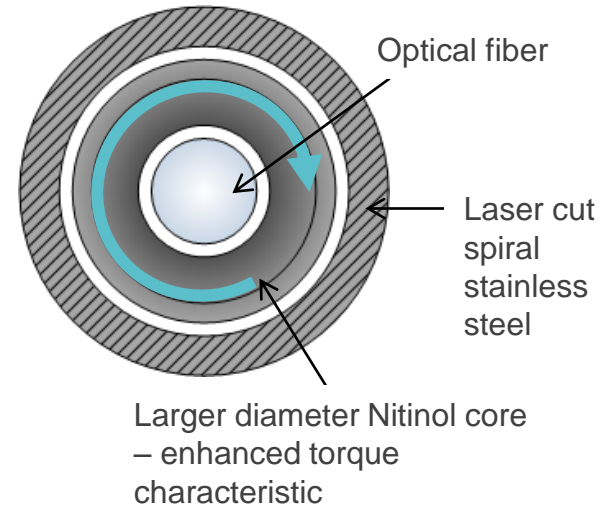


CONTRAST



Opsens OptoWire

- Symmetrical and concentric guide wire construction closely mimic the full body of standard PCI guidewire for torque response.
- The use of Nitinol for improved torquability and kink resistance.
- The combination of laser cut stainless steel tube and Nitinol core tube provides excellent support.



Opsens OptoWire

■ Unique Features

- Back end of wire not affected by saline or blood

Optical contact not affected by saline and blood.



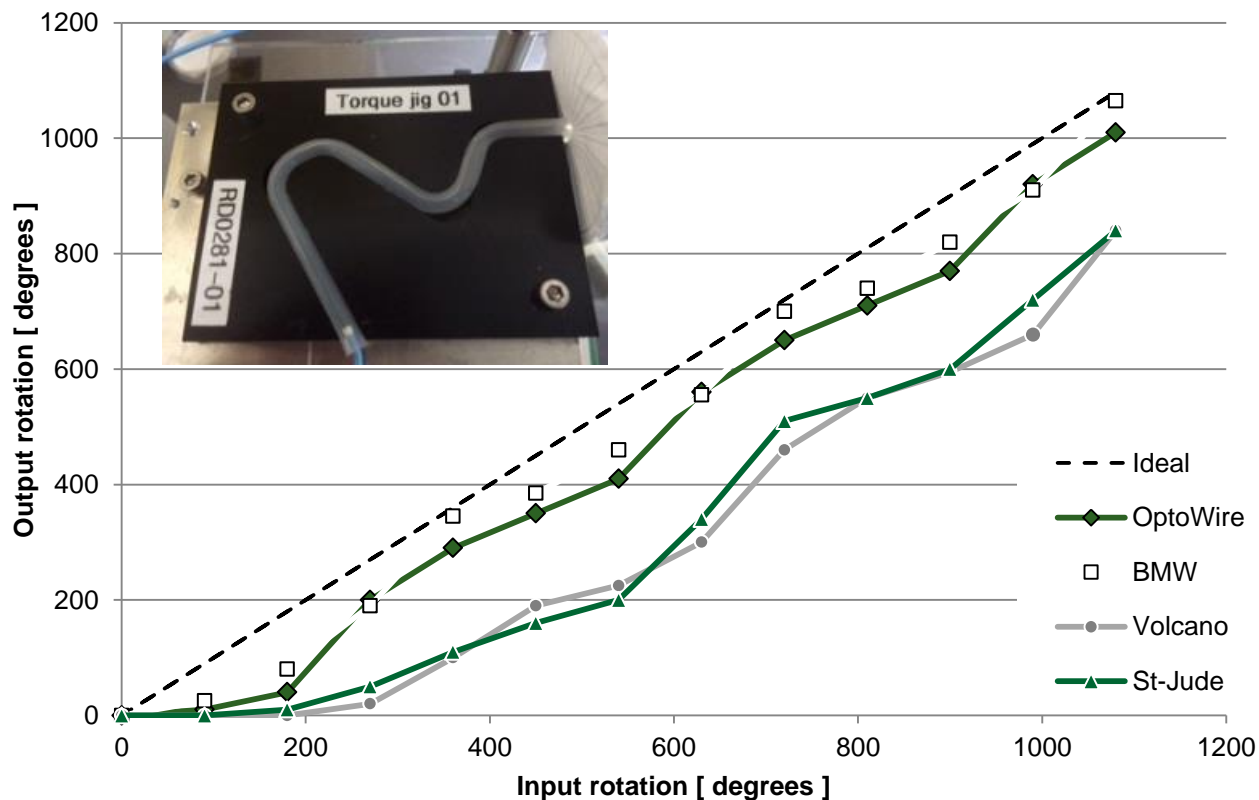
- ***Freedom to Disconnect*** without fear
 - Disconnect the guidewire from its cable and utilize like your standard PCI guidewire without fear of signal lost or drift.
- ***Freedom to perform PCI procedures on OptoWire***
- ***Confident reconnect*** for multi vessels and post PCI FFR.



Opsens OptoWire

■ Unique Features

- Improved torqueability



*OptoWire
Torque
transmission
compared with
two existing
pressure guide
wires and
BMW.*



Opsens OptoWire

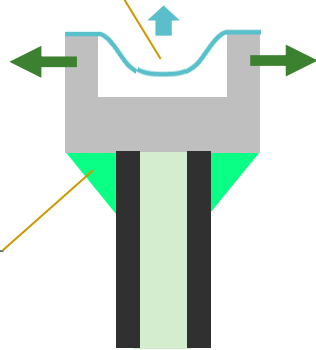
■ Unique Features

- Less drift?

1st Generation Fiber Optic Pressure Guidewire (Acist & Boston Scientific)

No compensation for thermal expansion between diaphragm and glass base

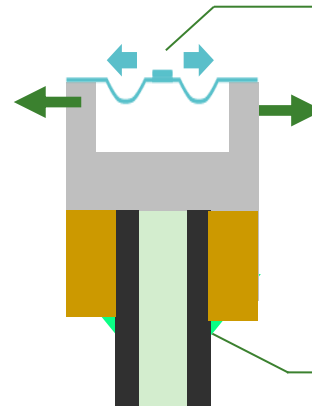
Sensor is maintained by adhesive = high sensitivity to moisture



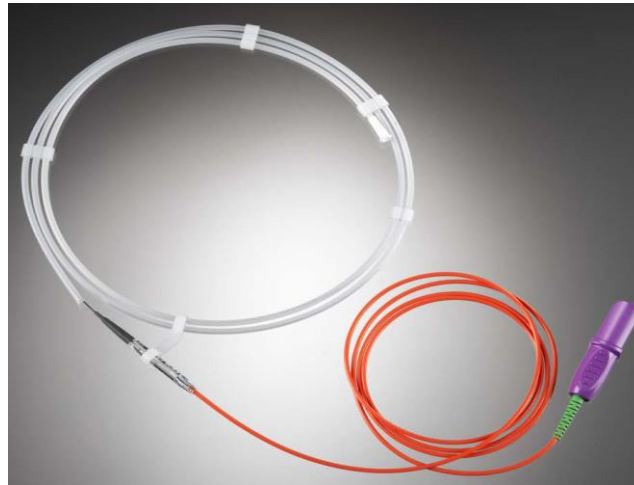
2nd Generation Fiber Optic Pressure Guidewire (Opsens Medical)

Temperature dot compensation to reduce temperature effect and improve pressure sensitivity

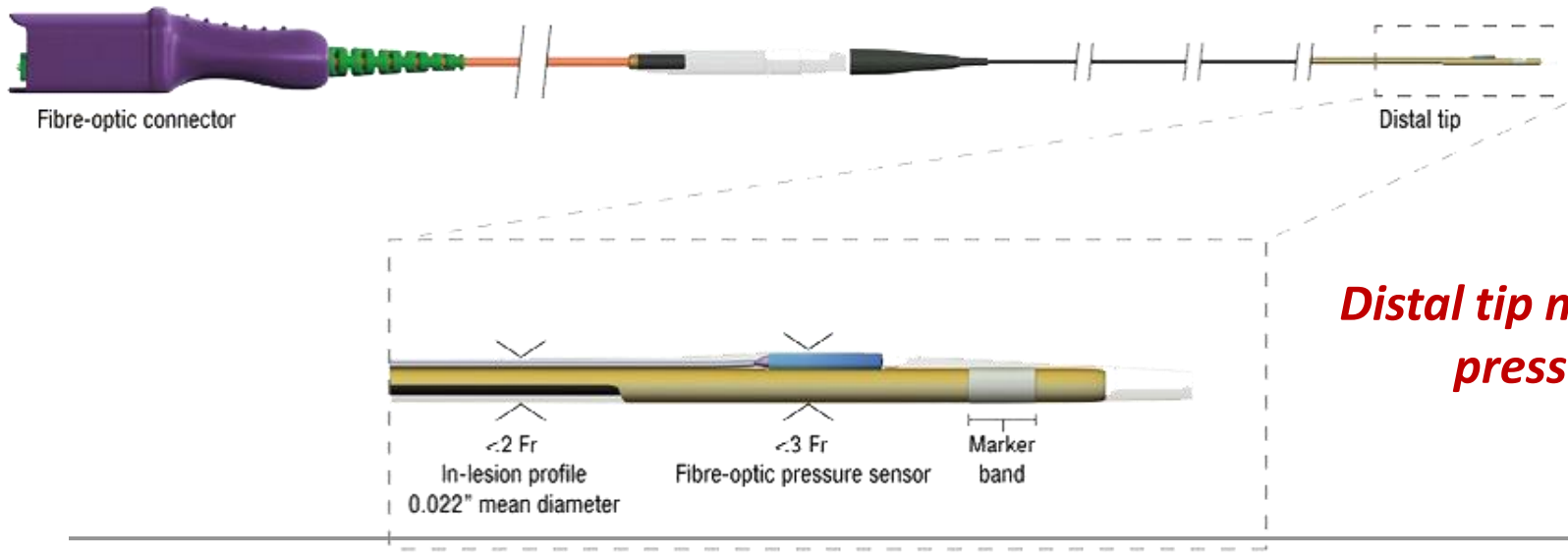
Minimal adhesive usage



Acist: Navvus Microcatheter

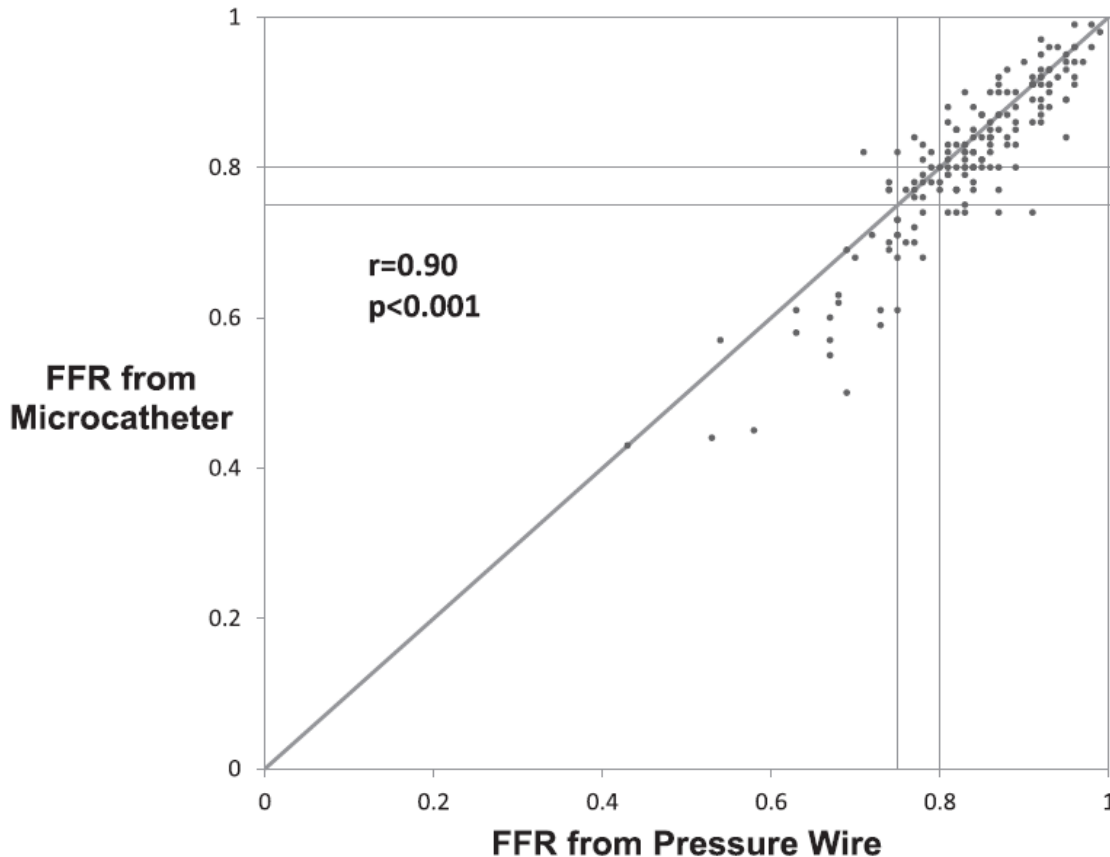


*Purple connector
attaches to console*



ACIST-FFR Trial

169 patients had FFR measured with the microcatheter and compared with FFR measured with a pressure wire



The mean FFR from the microcatheter was lower than the pressure wire (0.81 vs. 0.83, $p<0.001$), but in only 3% of cases was the microcatheter FFR <0.75 while the pressure wire FFR was >0.80 .



Acist: Navvus Microcatheter

- Unique Features

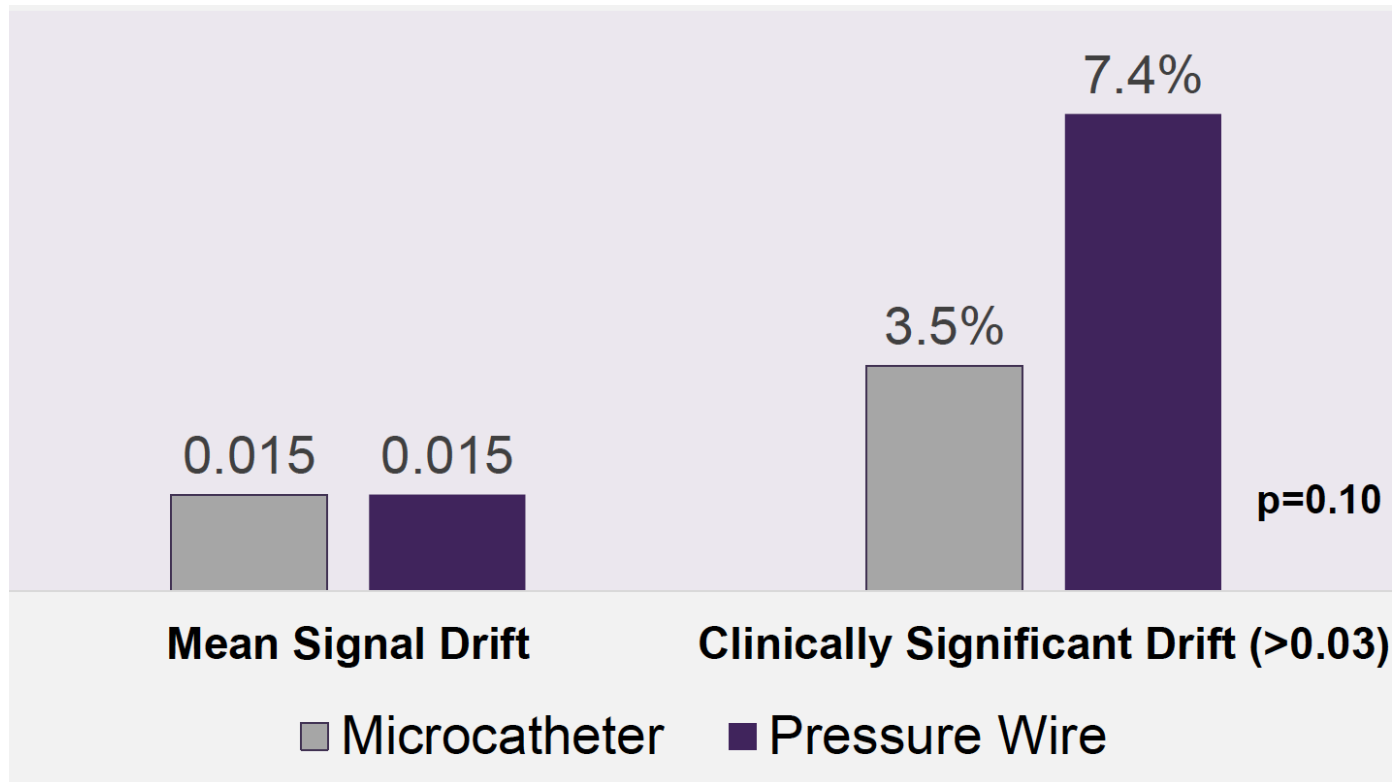
- Delivers over workhorse wire allowing easy pullback and post-PCI assessment



Acist: Navvus Microcatheter

■ Unique Features

- Optical sensor may result in less drift



Comparing FFR Systems

Feature	Abbott	Acist	Boston	Opsens	Philips
Sensor	Piezo-Resistive	Optical	Optical	Optical	Piezo-Resistive
Torqueability	-	N/A	+	++	-
System	Guidewire	Microcath	Guidewire	Guidewire	Guidewire
Drift	-	+/-	+/-	++	-
Reconnection	-	N/A	+	++	-
Display	++	+	+	+	+
Data	++	-	-	-	+
Pressure/Flow	++	-	-	-	++
Co-Registration	-	-	-	-	++
Resting Index	RFR	dPR	DFR	dPR	iFR



Thank You!

