Pitfalls & Practical Tips

ST. JUDE MEDICAL

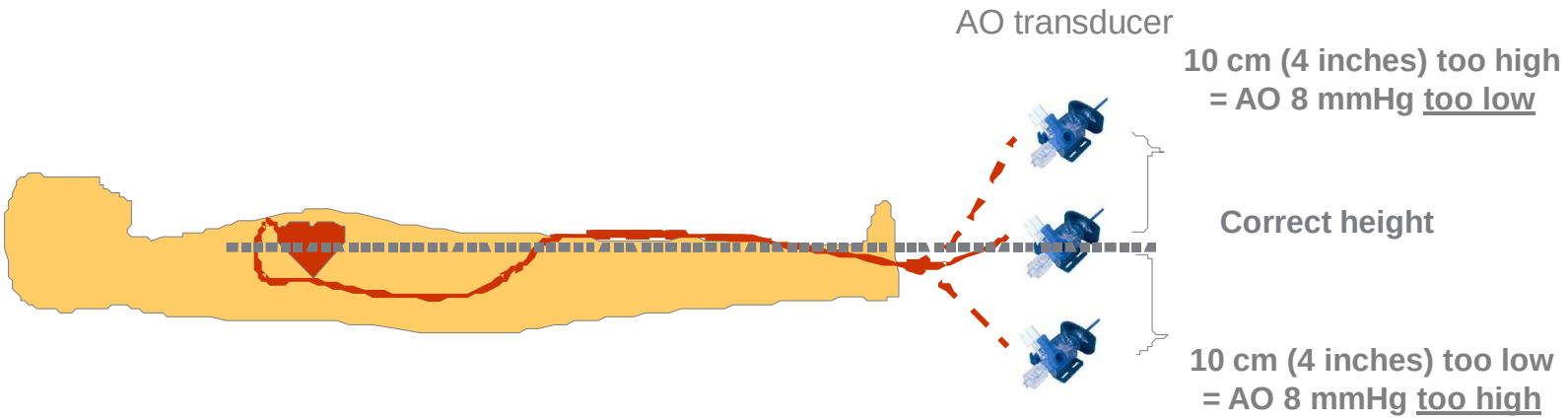
MORE CONTROL. LESS RISK.

Pitfalls & Practical Tips

- **Transducer Height and AO Pressure**
- Equalization
- Guidewire Introducer Needles
- Guide Catheter (wedging, damping & side holes)
- PressureWire™ Drift
- Artifacts
- Mean-beat Setting
- Sensor Element Against Vessel Wall
- Suboptimal Hyperemia

Importance of Transducer Height and AO Pressure

Position the AO transducer at patient's heart level (midaxillary line)



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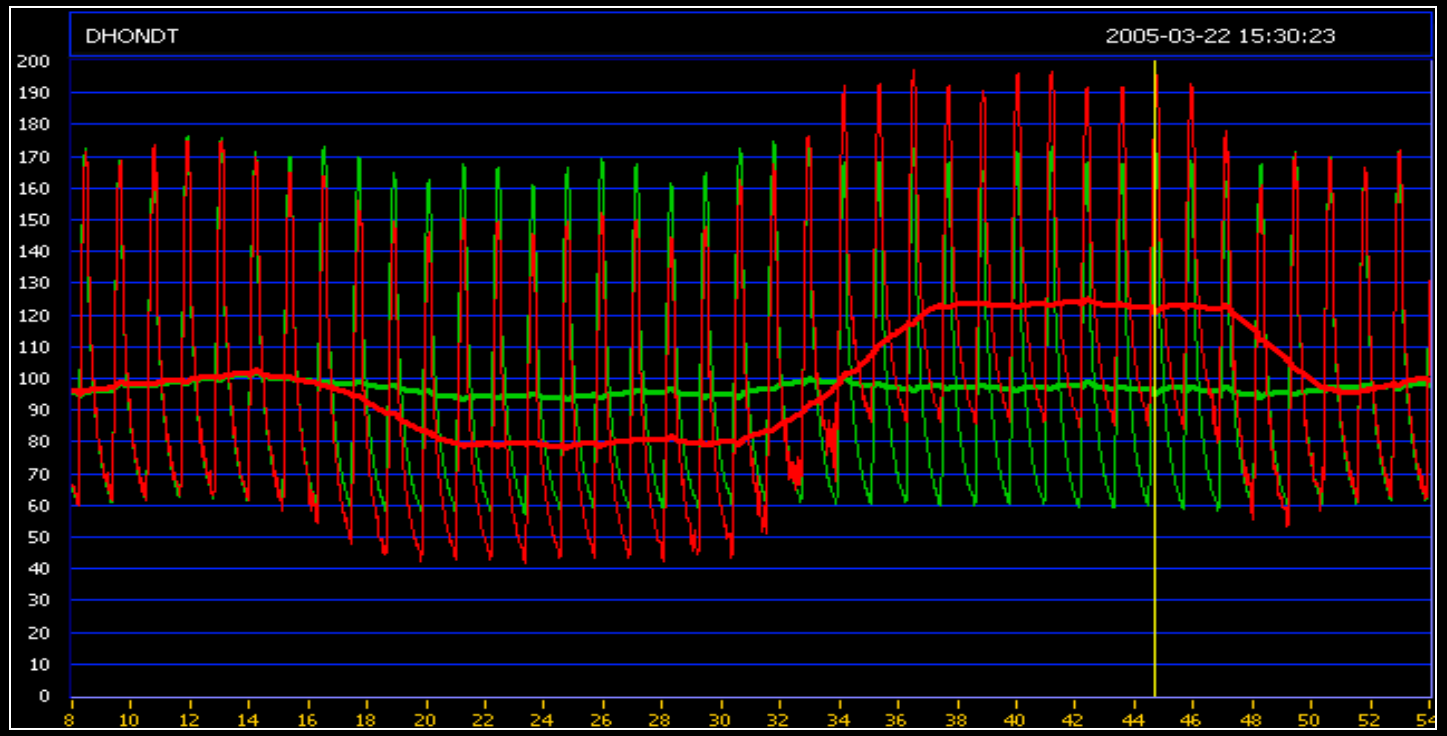
Effect of Moving the Aortic Transducer



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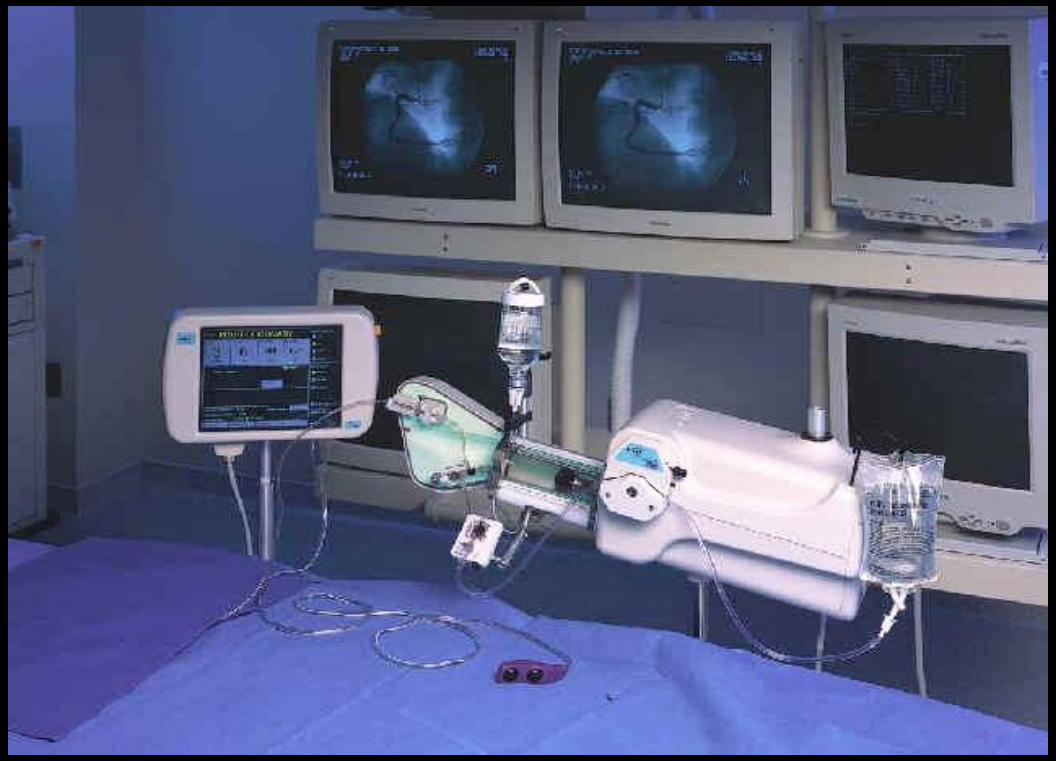
AO and the ACIST™ Contrast Injector



Important:
These instructions do not replace the ACIST instructions for use.
Always refer to the complete instructions for use when operating the ACIST device.

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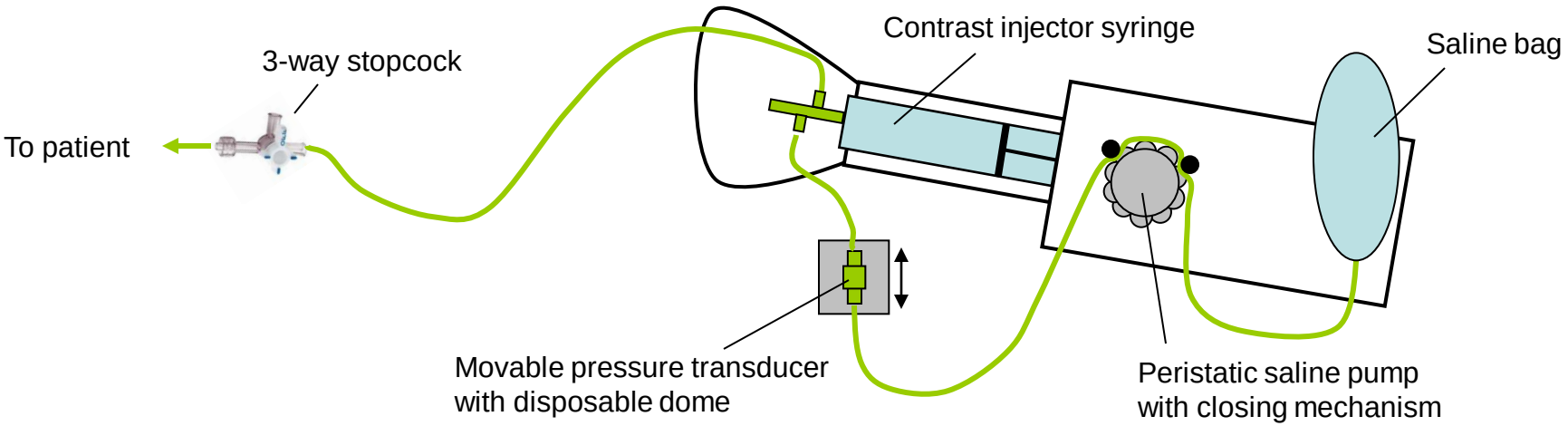

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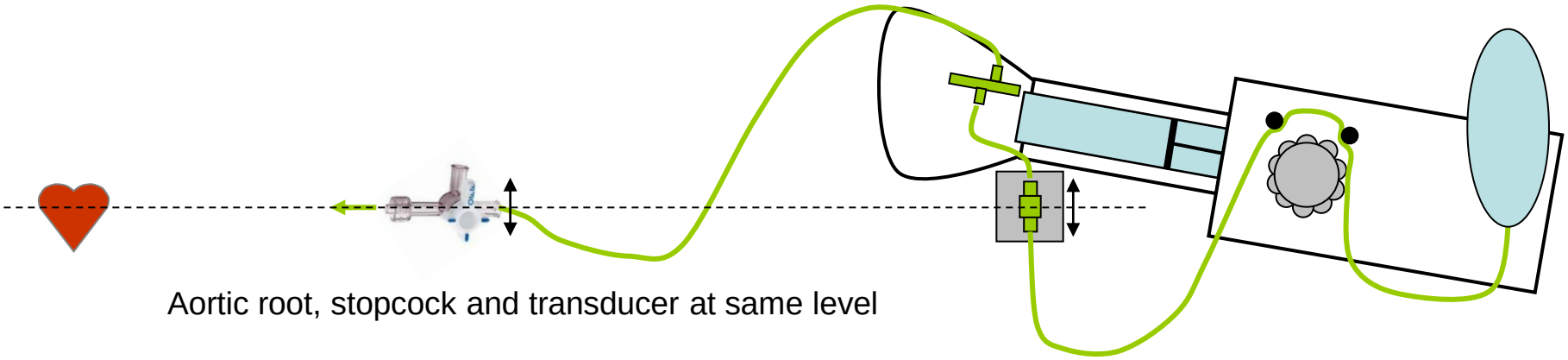
AO and the ACIST Contrast Injector

The following steps should be performed each time you:
- calibrate AO
- equalize pressures before FFR measurement
- measure FFR
- verify equal pressures at the end of the measurement

1. **Flush tubing with saline**
2. **Place the transducer at the same level as the patient's heart (midaxillary)**
3. **Place the 3-way stopcock at the same level as the transducer**



Aortic root, stopcock and transducer at same level

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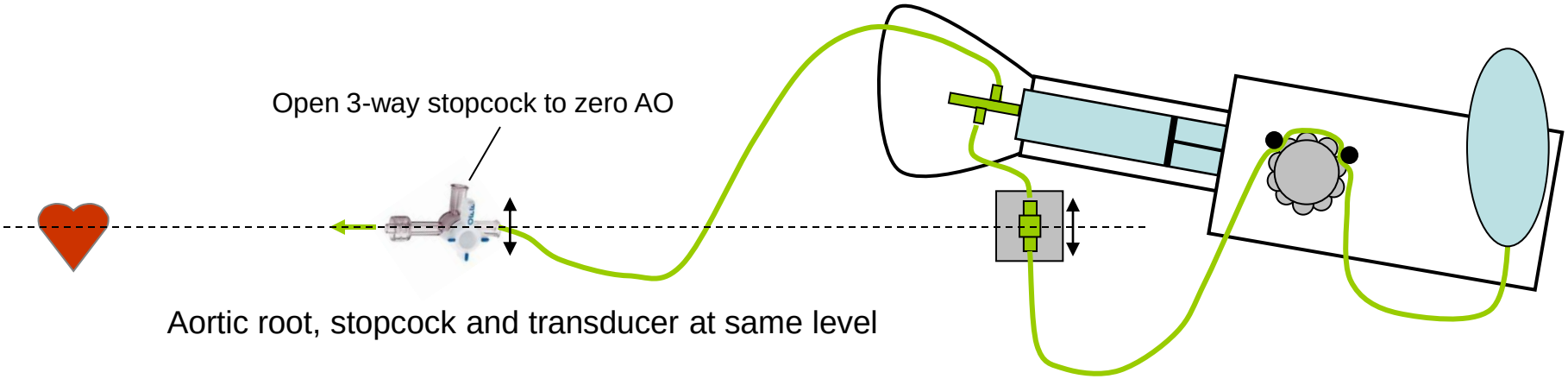
AO and the ACIST Contrast Injector

Calibrating the AO Transducer



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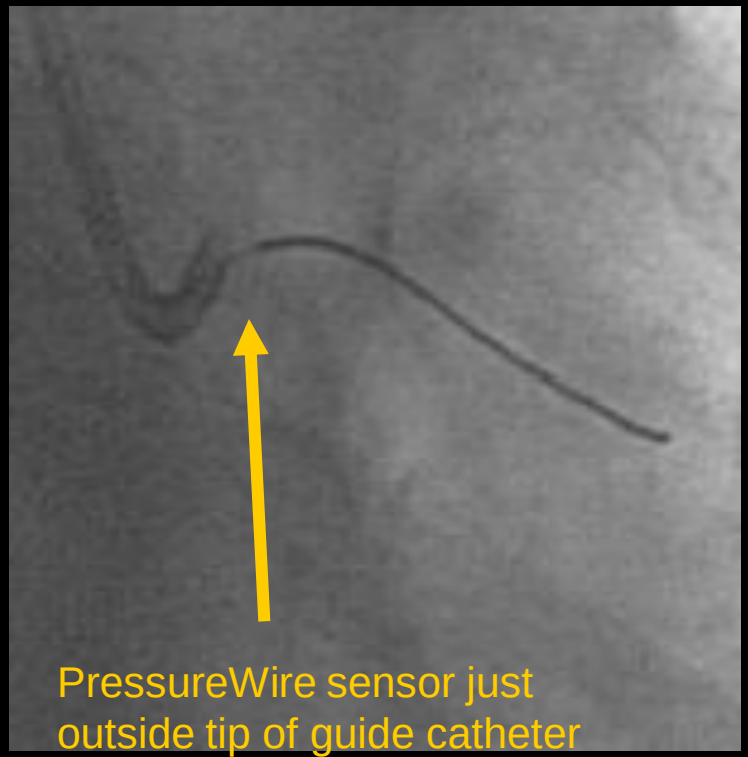
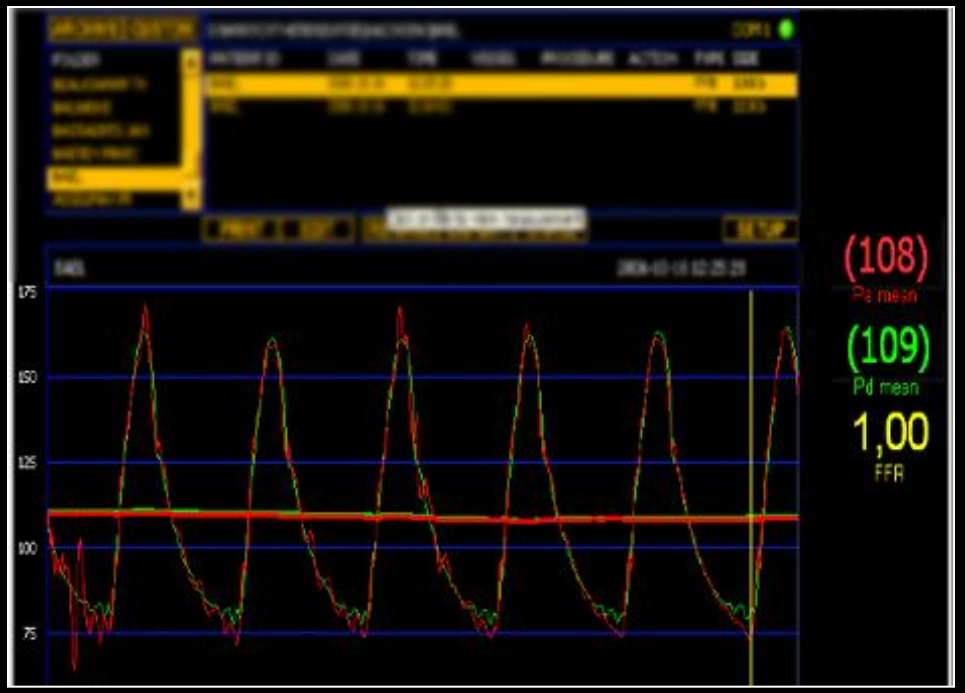
Equalization





Equalization between the aortic pressure transducer and PressureWire sensor must always take place with PressureWire sensor just outside the tip of the guide catheter.

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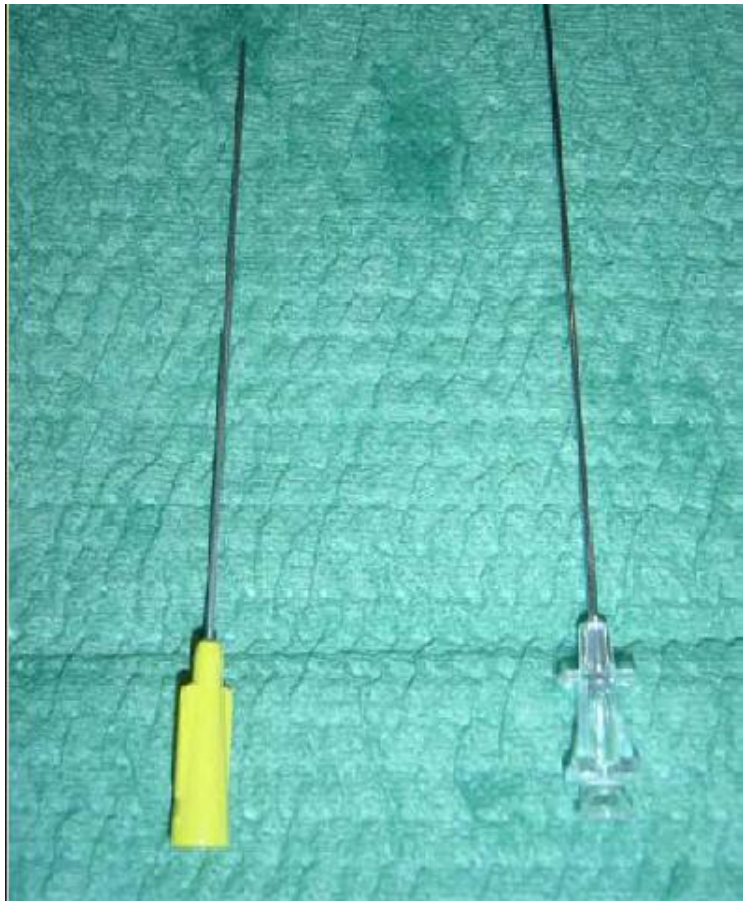
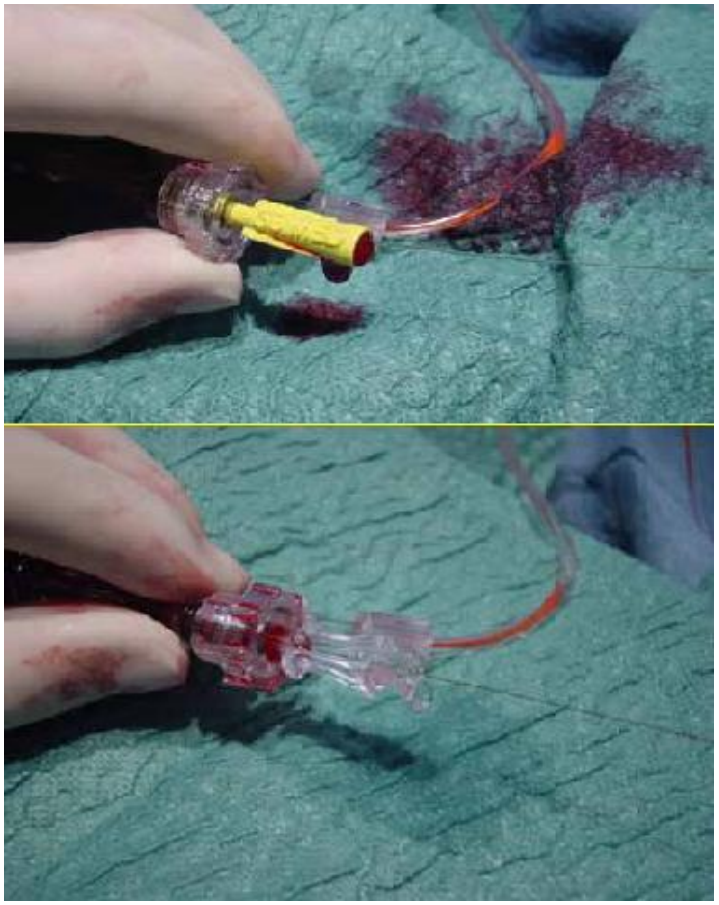
Guidewire Introducer Needles





There is more leakage from larger bore needles (shown in yellow) than small ones (clear).

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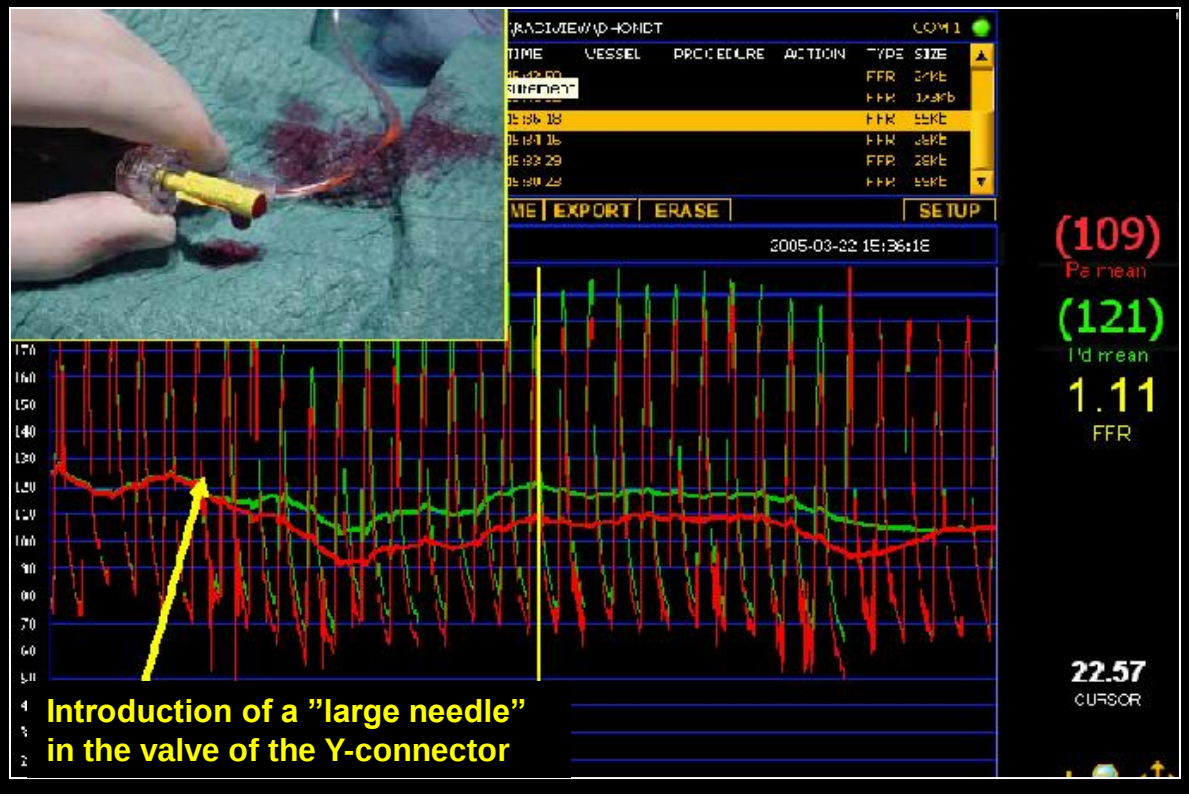
Effect of Large Needle



In this example, using a large bore, the yellow needle causes a drop in aortic pressure of approximately 10 mmHg.

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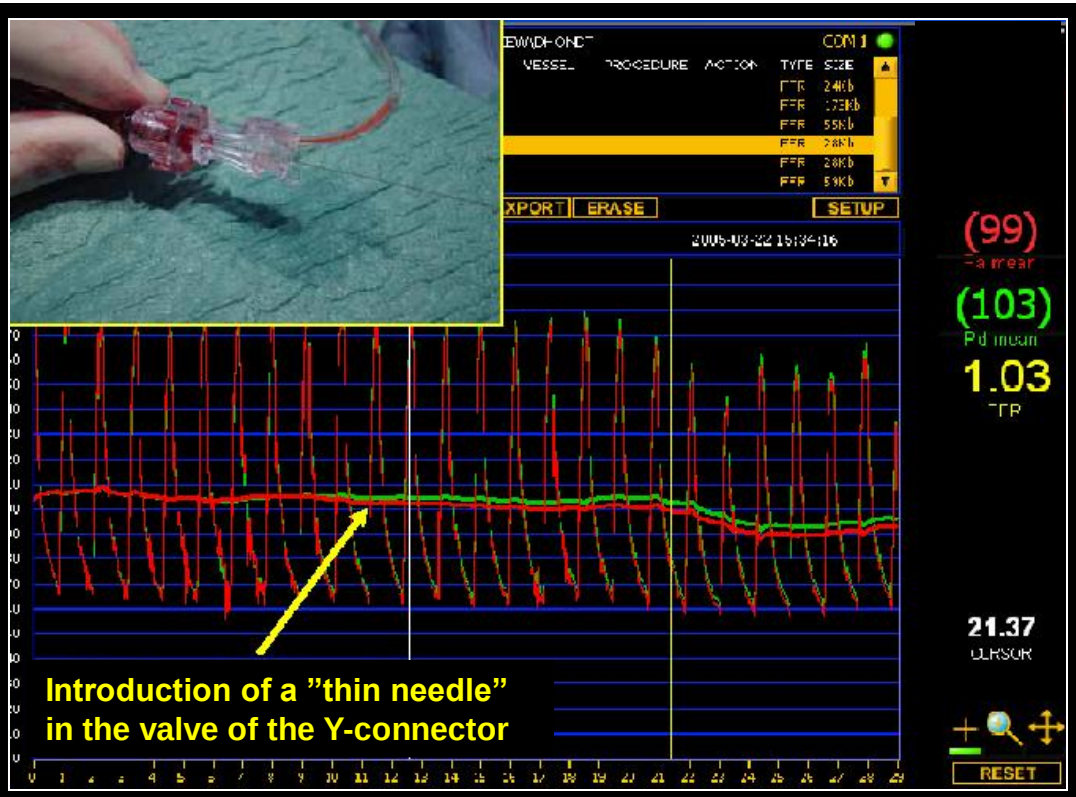
Effect of Thin Needle



In this case, the introducer needle has a small lumen, which creates minimal pressure leakage.

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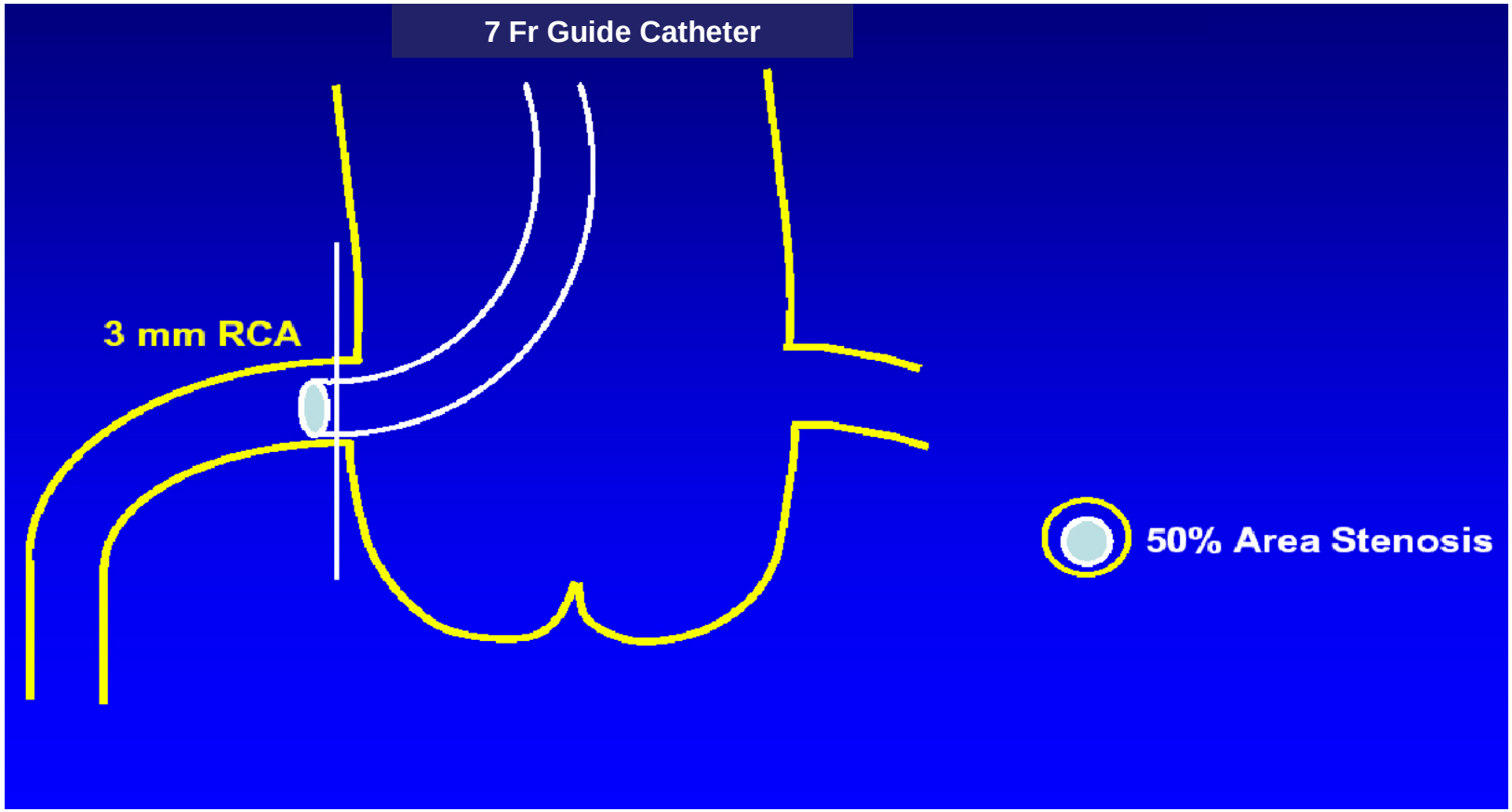
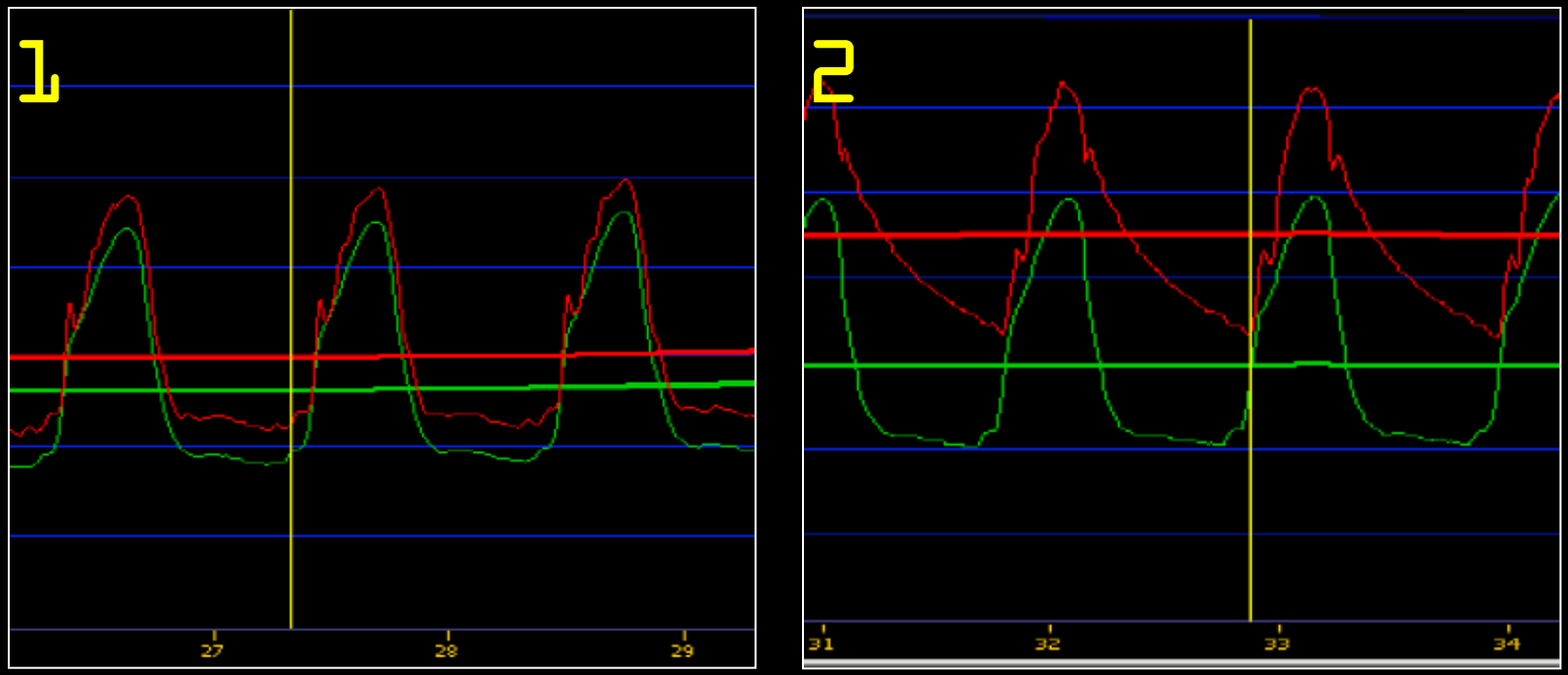
Wedging of Guide Catheter



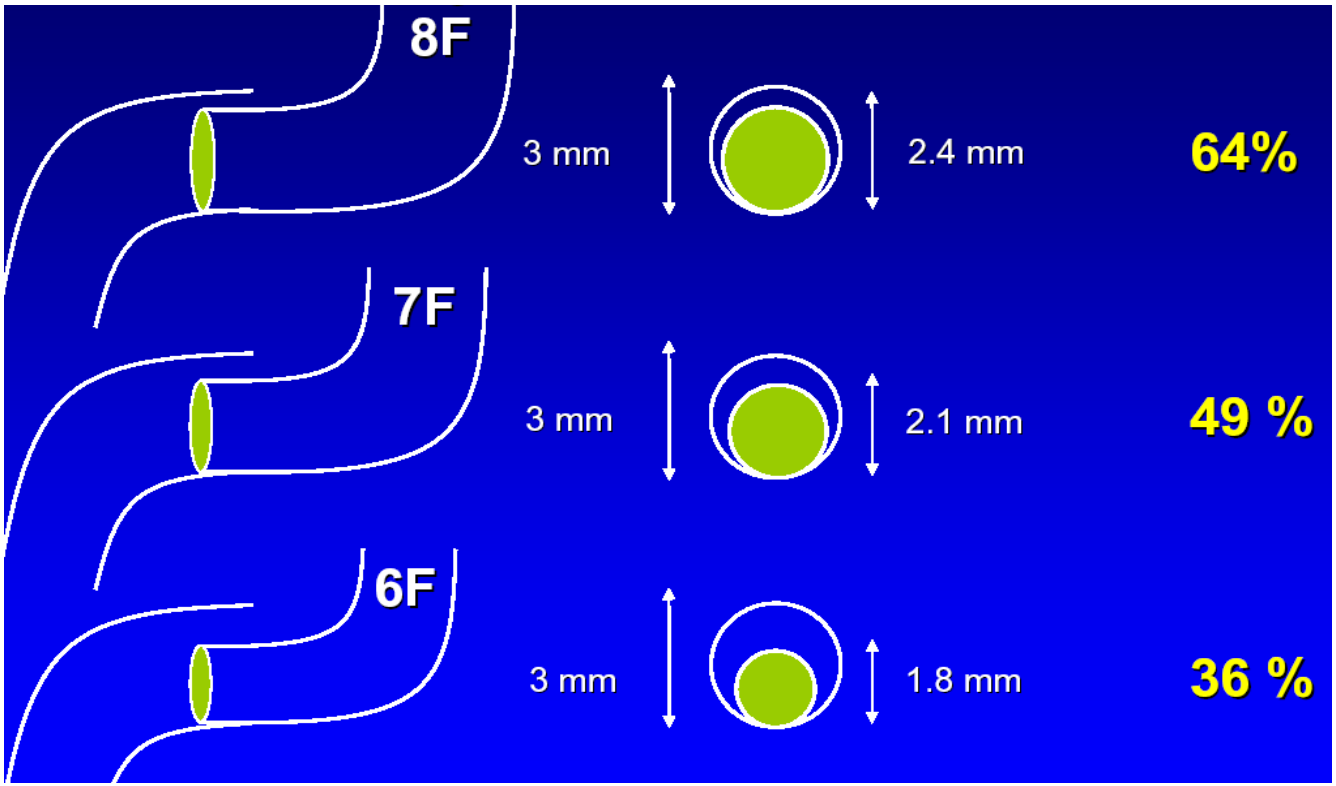
The presence of a guide catheter in the coronary ostium induces some degree of "stenosis" depending on the relative size of the guide and the coronary ostium.

Deep-Seated (Wedged) Guide Catheter



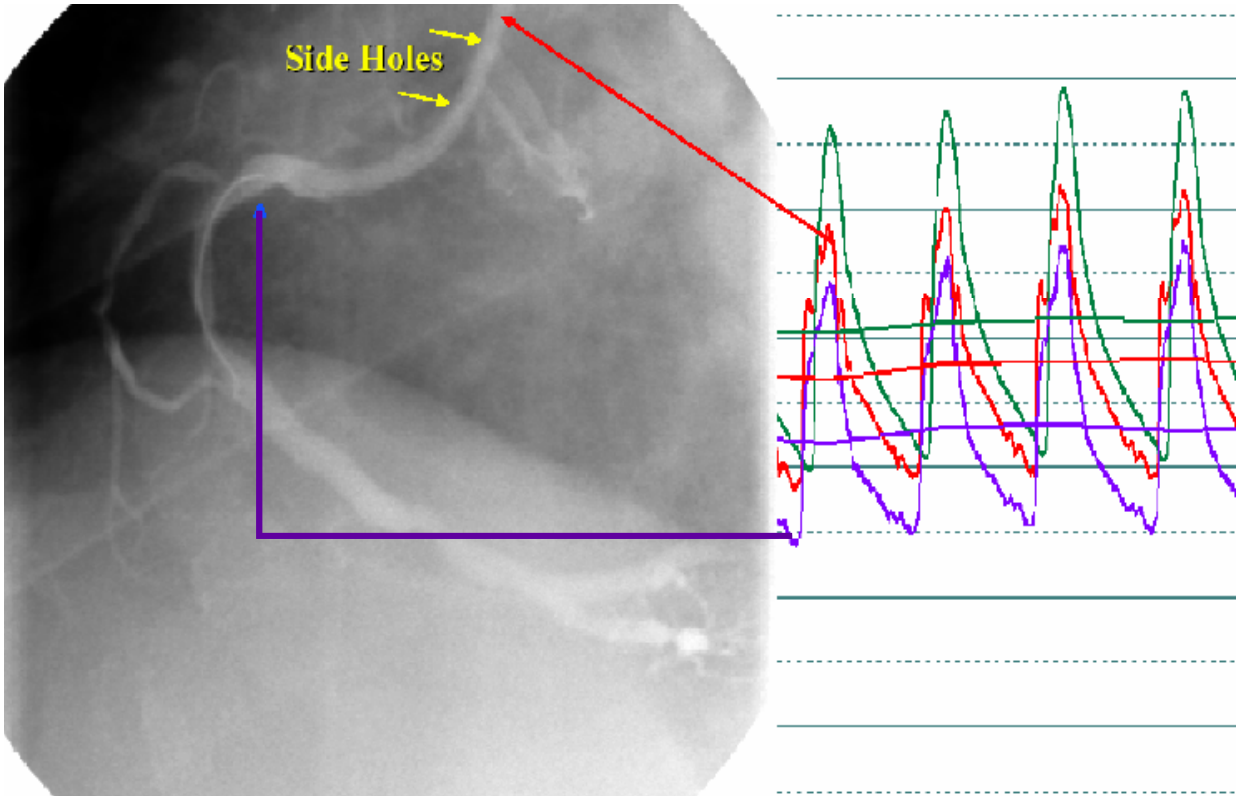
A deep-seated (wedged) guide catheter in the ostium of the right or left main vessels can cause damping of the aortic waveform. Waveform 1 shows the effect with the catheter inserted and waveform 2 shows the effect when the catheter is withdrawn into the aorta, revealing an immediate pressure gradient.

Guide Catheter in Ostium = Stenosis



This is a schematic representation of the space occupied by different sizes of guide catheters in an ostium 3 mm in diameter (radius = 1.5 mm).

Effect of Guide Catheter with Side Holes



If a guide catheter with side holes is used, the pressure signal recorded through the catheter does not necessarily correspond to the pressure in the proximal segment of the coronary artery since it is influenced by both coronary pressure (through the distal end of the catheter) and by aortic pressure (through the side holes).

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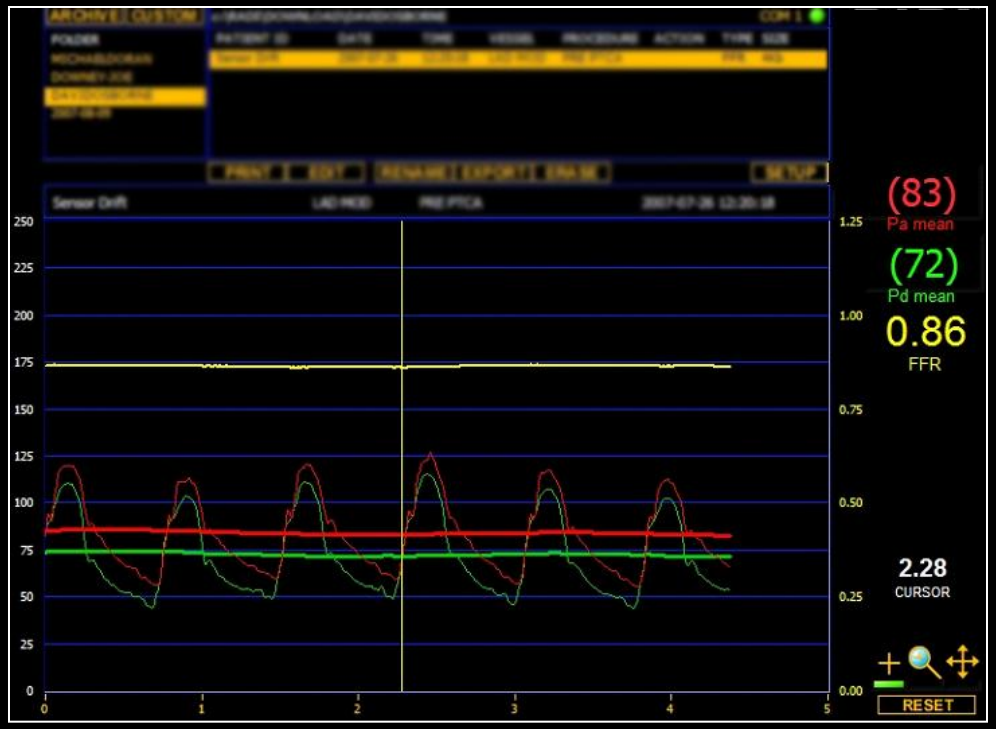
Drift Waveform

Drift



After a long procedure, differences may sometimes occur between aortic and distal pressures even if this difference does not correspond to a true pressure gradient.

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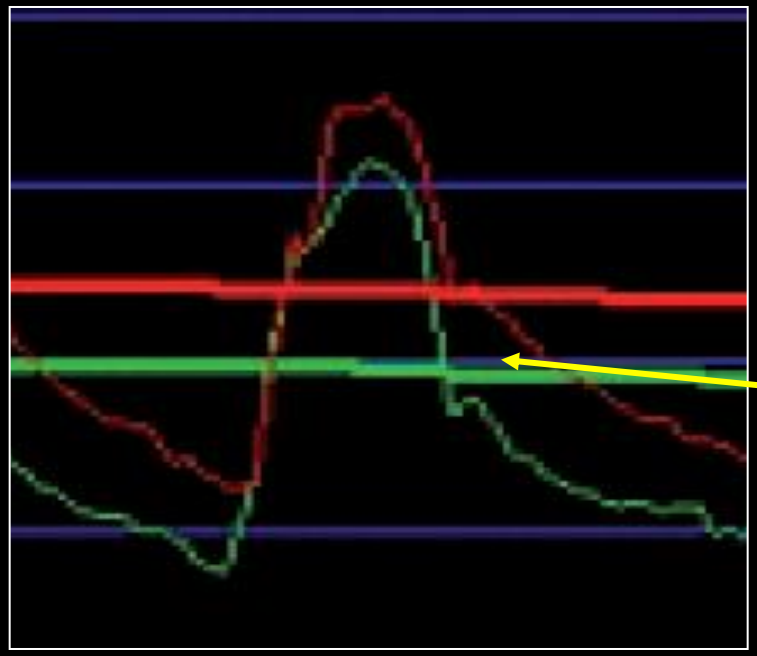
Drift Waveform



Drift in right coronary artery: aortic notch maintained

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Flush Artifact

RadiAnalyzer Xpress selects artifact

Actual FFR is 0.83

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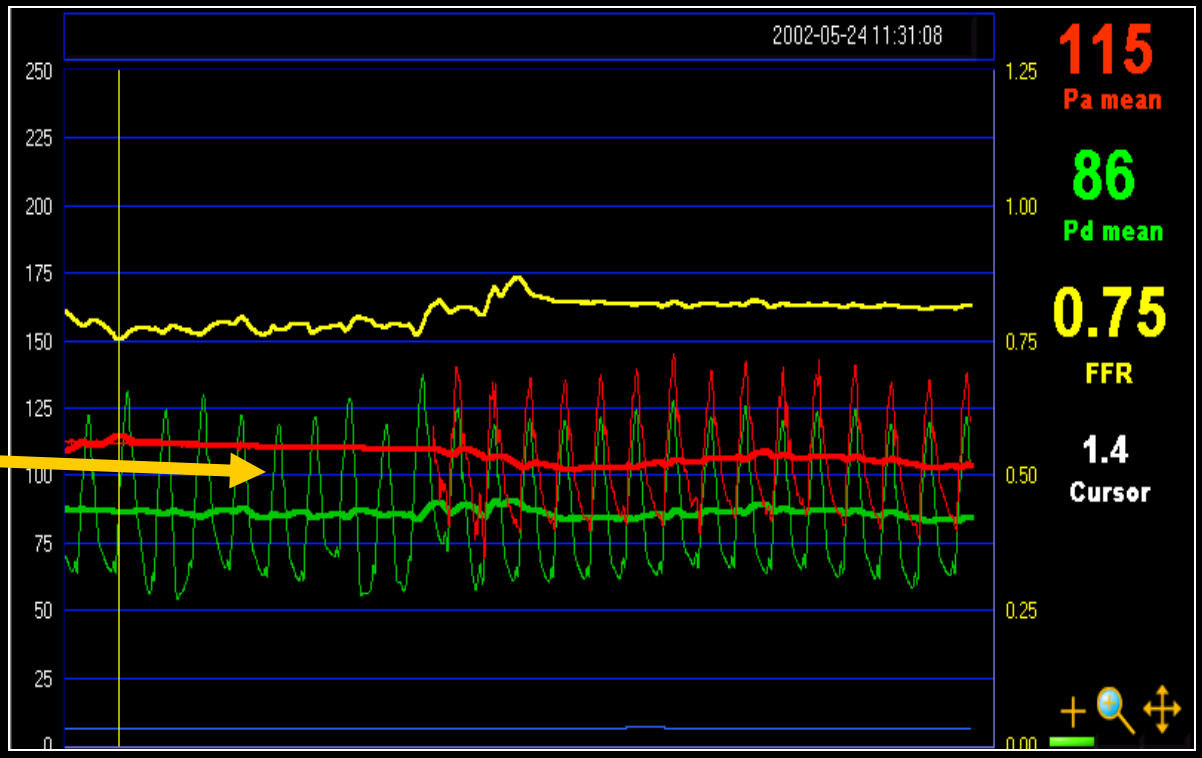
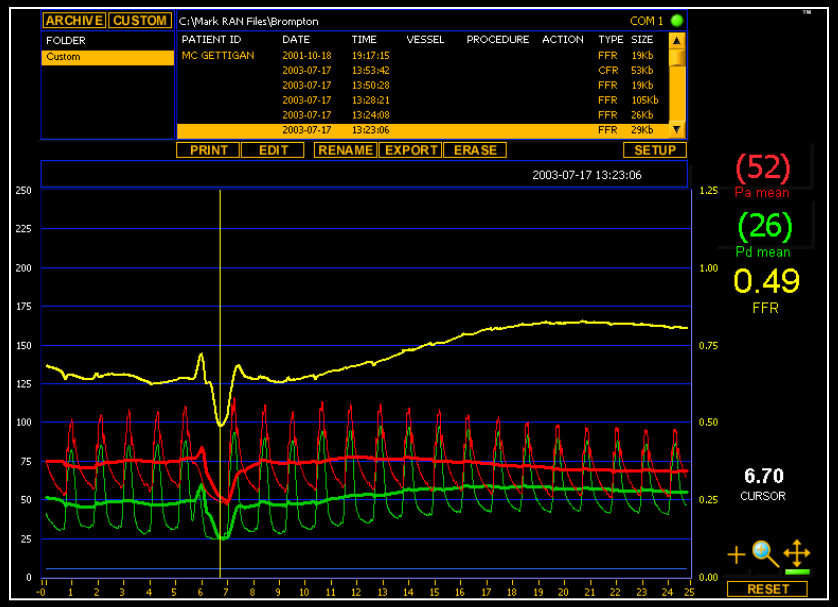
Blunted Flush Artifact

No red phasic signal but mean signal remains



One-Beat Artifact



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Move Cursor to Show Correct FFR

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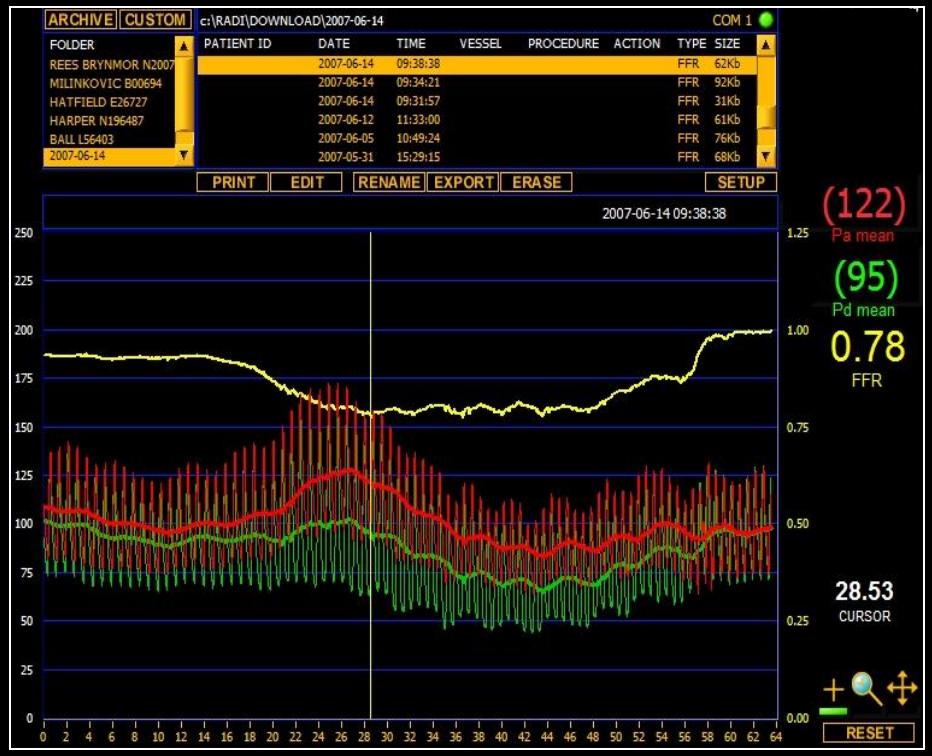
Changing Mean-beat



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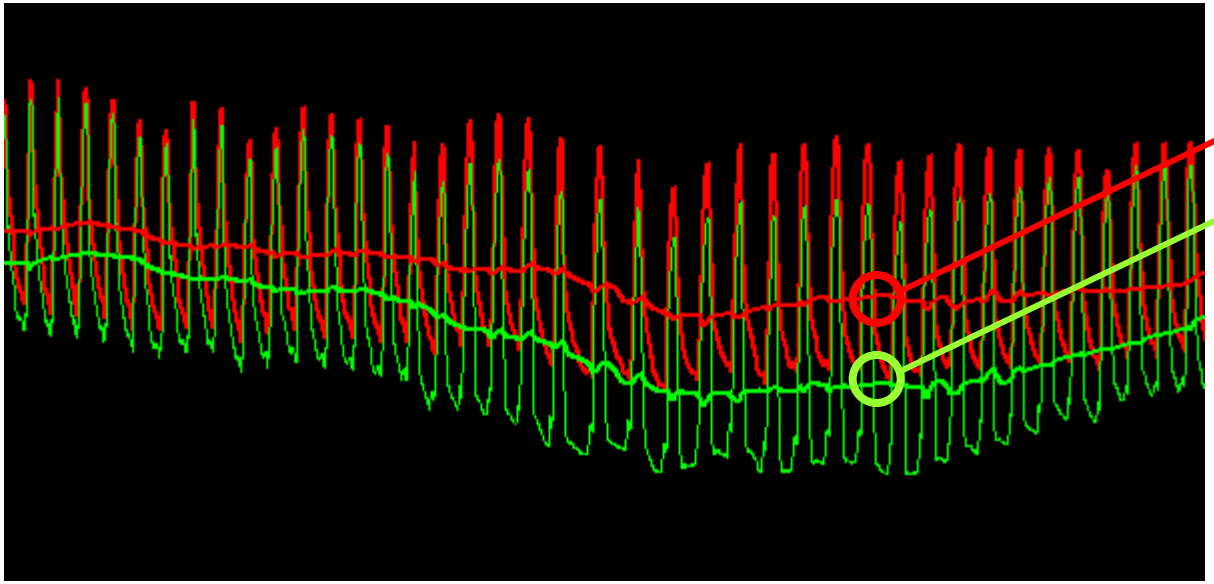
FFR Procedure

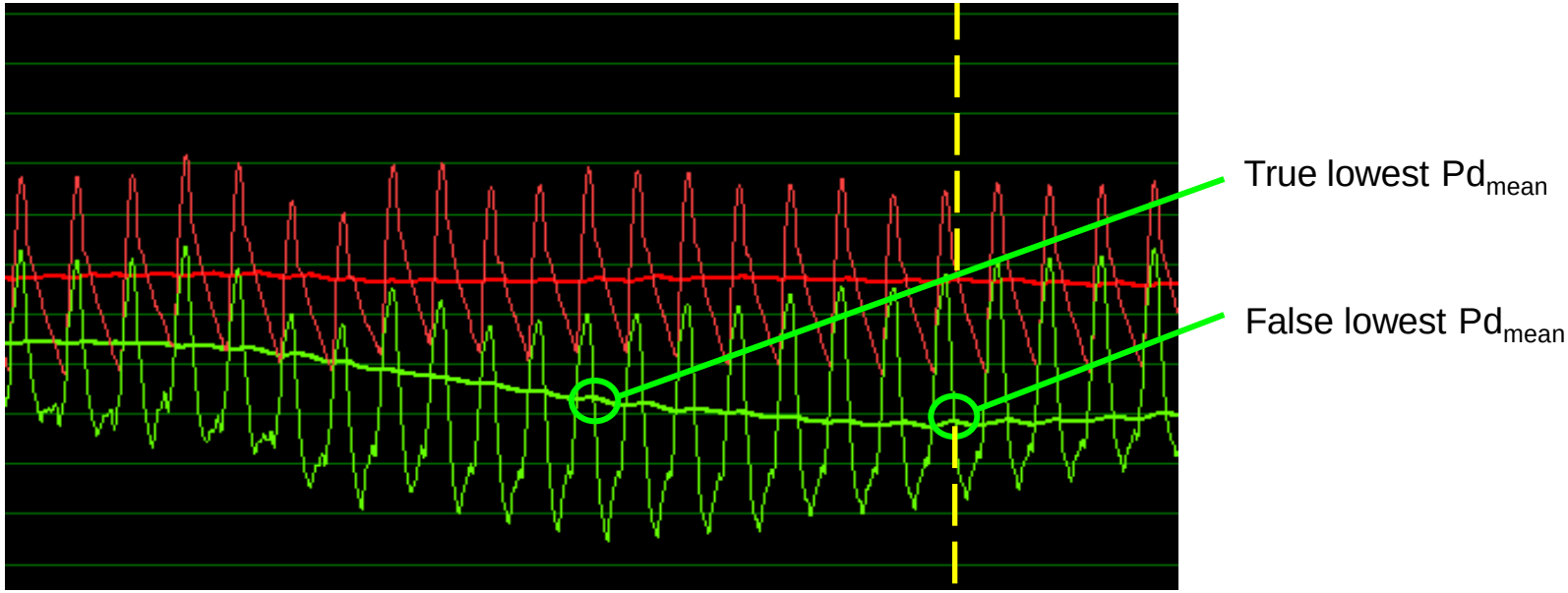


- FFR is calculated at the location of the greatest difference between Pa and Pd mean pressures during maximum hyperemia.

Pitfalls

Slow Mean Pressure

- Caused by a mean pressure setting that is too slow and a short-lasting hyperemic agent
- May overestimate lowest Pd and thus underestimate functional significance
- Avoid by using long-lasting hyperemic agent or changing RadiAnalyzer Xpress setting to a maximum of 3 beats



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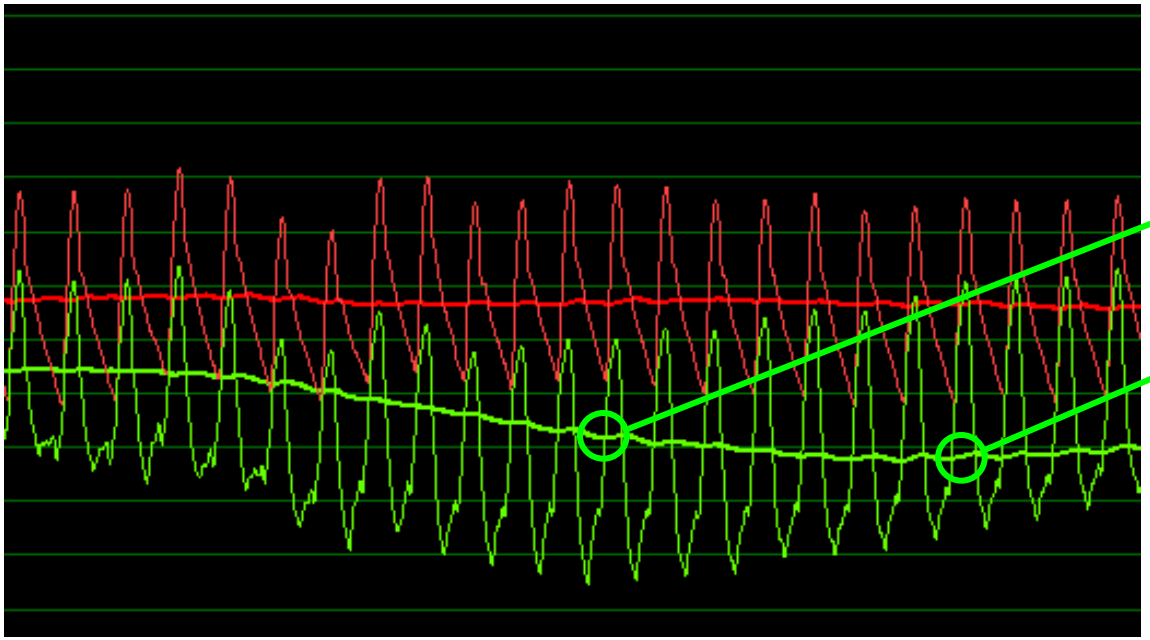
Pitfalls

Recognizing Slow Mean Pressure

- Balance point: divides the pressure curve into two equally weighted halves



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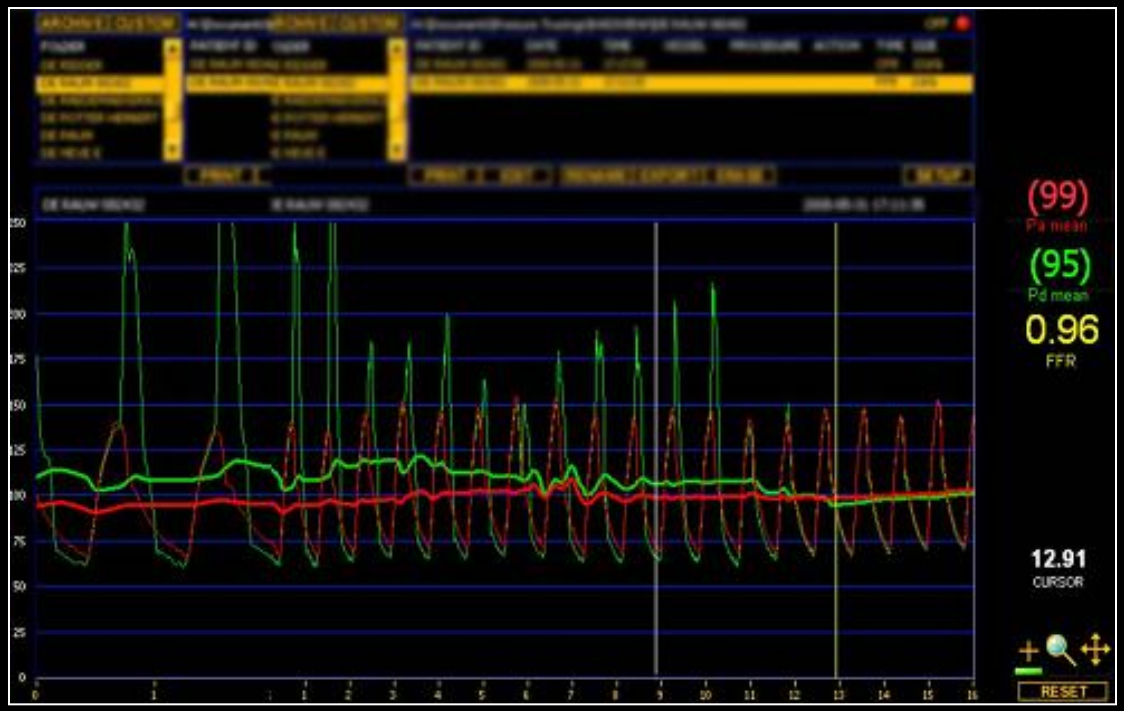
Sensor in Contact with Vessel Wall



When the PressureWire sensor element itself is against the vessel wall, an artifact can be seen in the form of a brief but pronounced increase (“spike”) in the pressure signal measured by the wire.

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Suboptimal Maximal Hyperemia

Fluctuating Pd/Pa line = steady state NOT achieved and likely sub-optimal maximal hyperemia

Steady-State Maximal Hyperemia

Horizontal Pd/Pa line = steady state and likely maximum hyperemia

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Rx Only

Please review the Instructions for Use prior to using these devices for a complete listing of indications, contraindications, warnings, precautions, potential adverse events and directions for use.

Product referenced is approved for CE Mark.

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