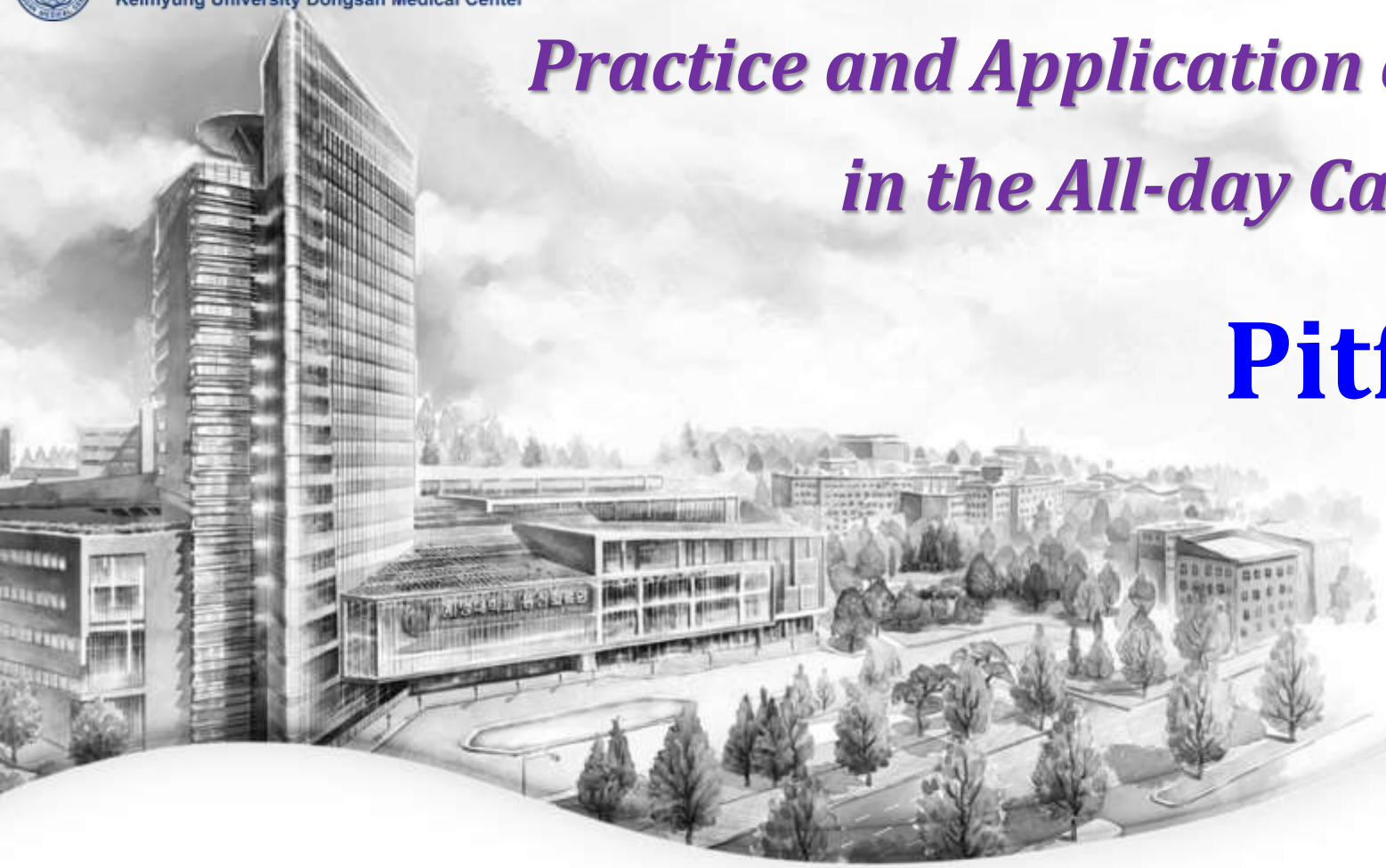
계명대학교 동산의료원
Keimyung University Dongsan Medical Center

Practice and Application of FFR in the All-day Cathlab:

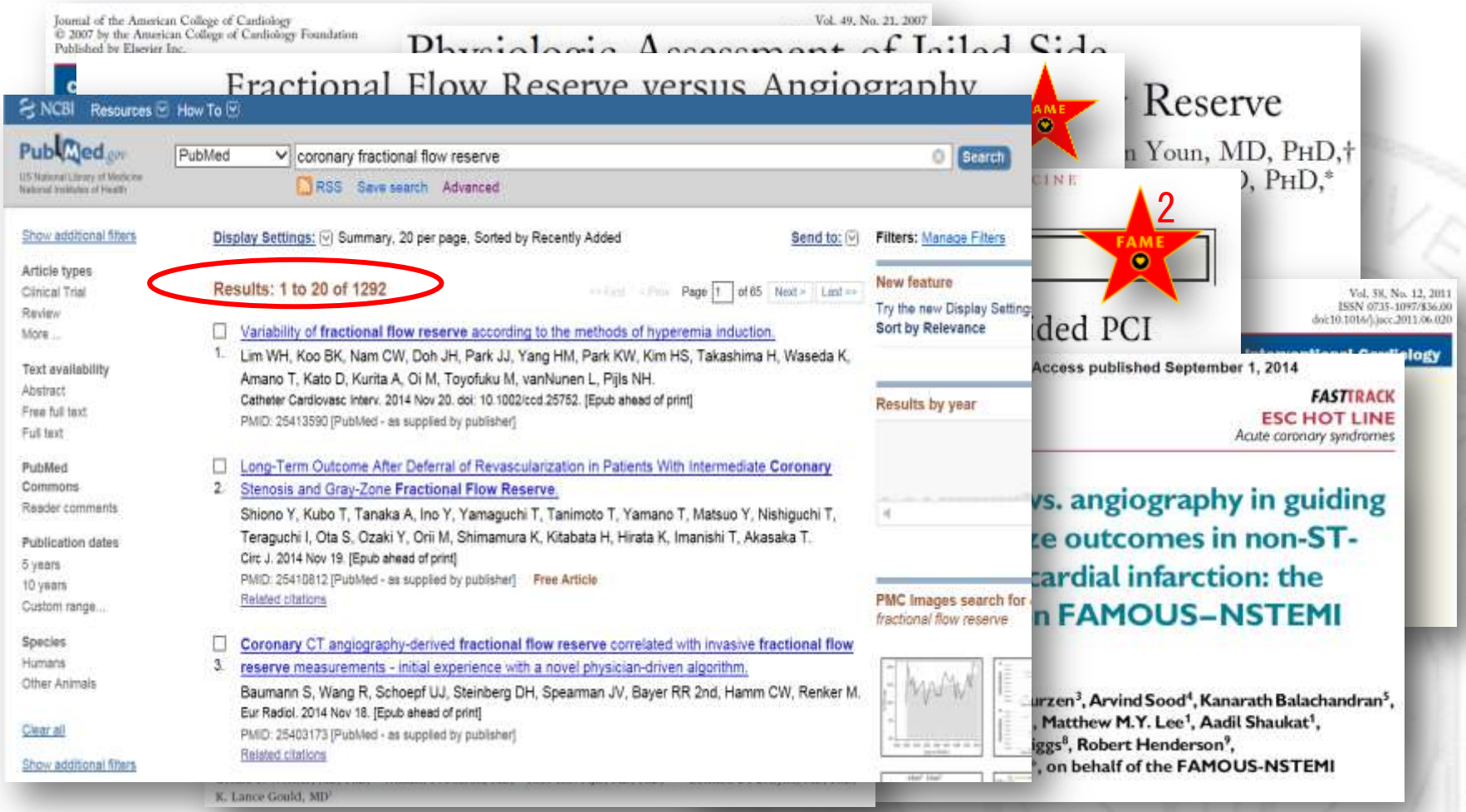
Pitfalls



Keimyung University Dongsan Medial Center

NAM, Chang-Wook MD, PhD

Evidences of FFR-guided PCI



To get these results and benefits in your daily practice, you need to have a confidence with your FFR measurement.

Keimyung University, Korea

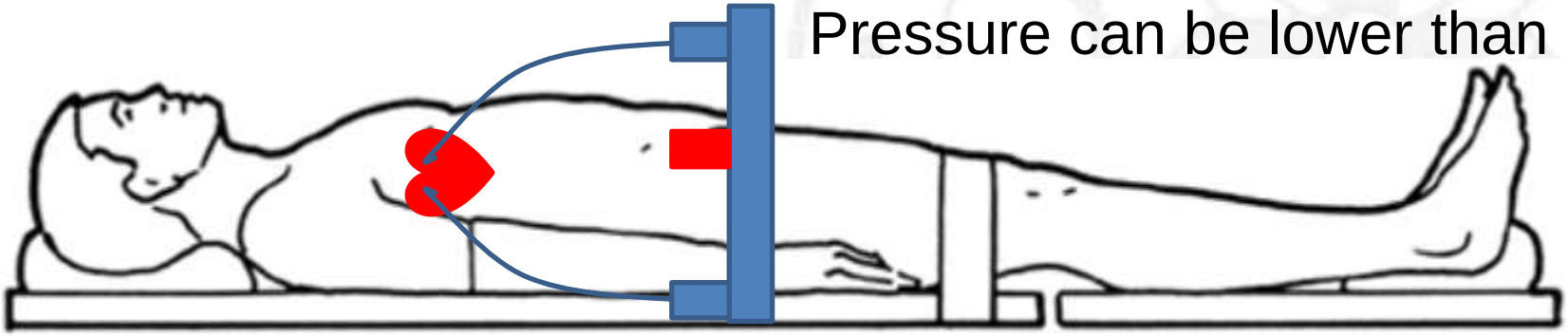
10-point Check List for Your Practice

1. **General setting for FFR:**
   Infusion pump, IV connection site,
   Level of fluid filled pressure transducer, etc
2. **Issues for guiding catheter**
   Size, Side-holes, Pressure artifact, etc
3. **Remove introducer from Y-connector**
4. **Start with equalization**
5. **Damping during pullback**
6. **Drift**
7. **Whipping**
8. **Spasm/Accordion effects**
9. **Location of pressure sensor**
10. **Issues for hyperemia**

1. General setting for FFR

Each cath lab has their own ways for FFR setting

Infusion pump
IV connection site
…
Level of pressure transducer

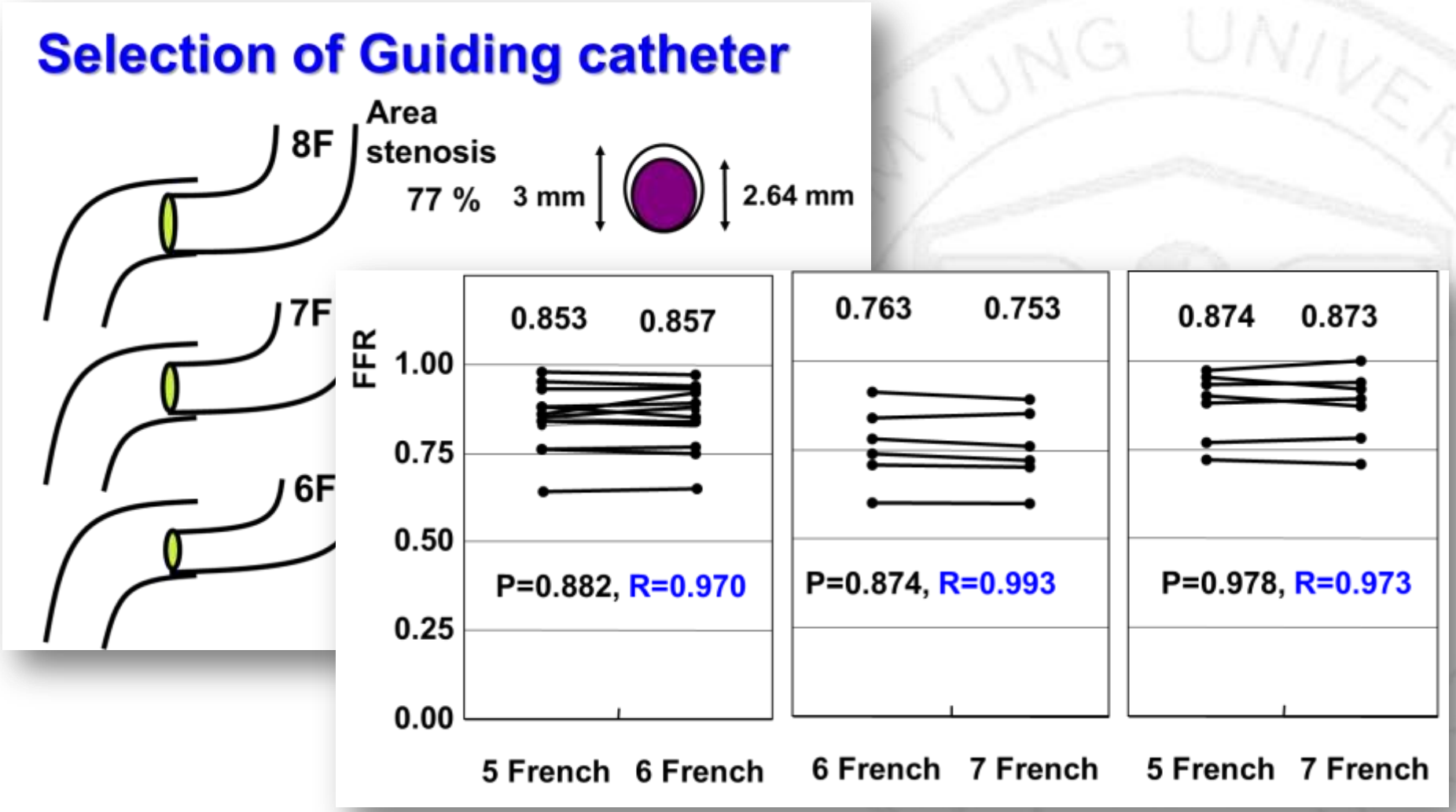


Pressure can be lower than real

Pressure can be higher than real

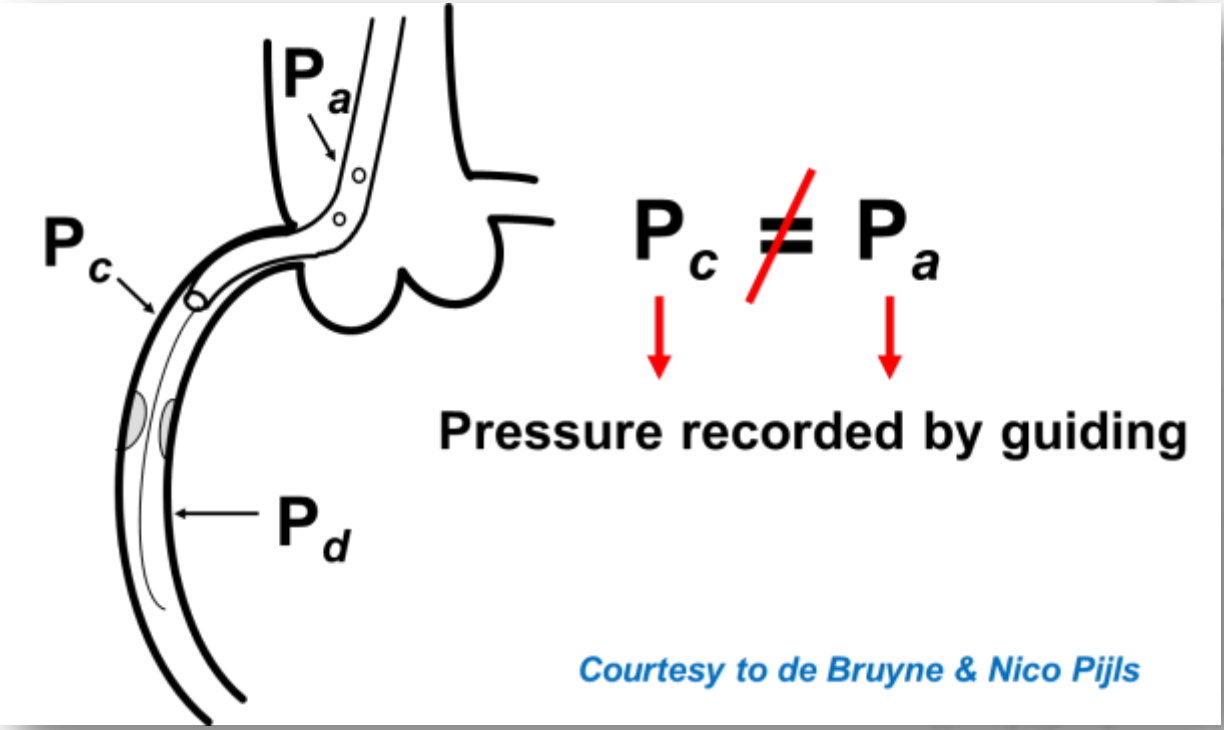
2. Issues for guiding catheter

- **Size of guiding catheter**



2. Issues for guiding catheter

- Size of guiding catheter
- **Side hole guiding catheter**

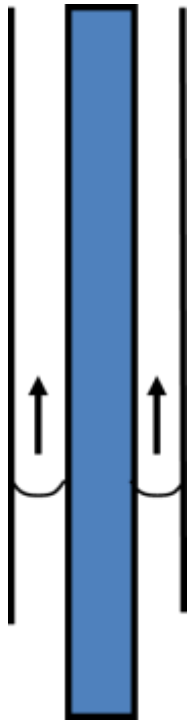


If you have to use side hole guiding catheter,

1. Remove catheter tip out of coronary ostium
2. Use continuous IV adenosine for hyperemia

2. Issues for guiding catheter

- Size of guiding catheter
- Side hole guiding catheter
- **Pressure artifact due to capillary force**



Pressure artifacts by capillary forces in small size guiding catheter (≤ 5Fr), or residual contrast in catheter

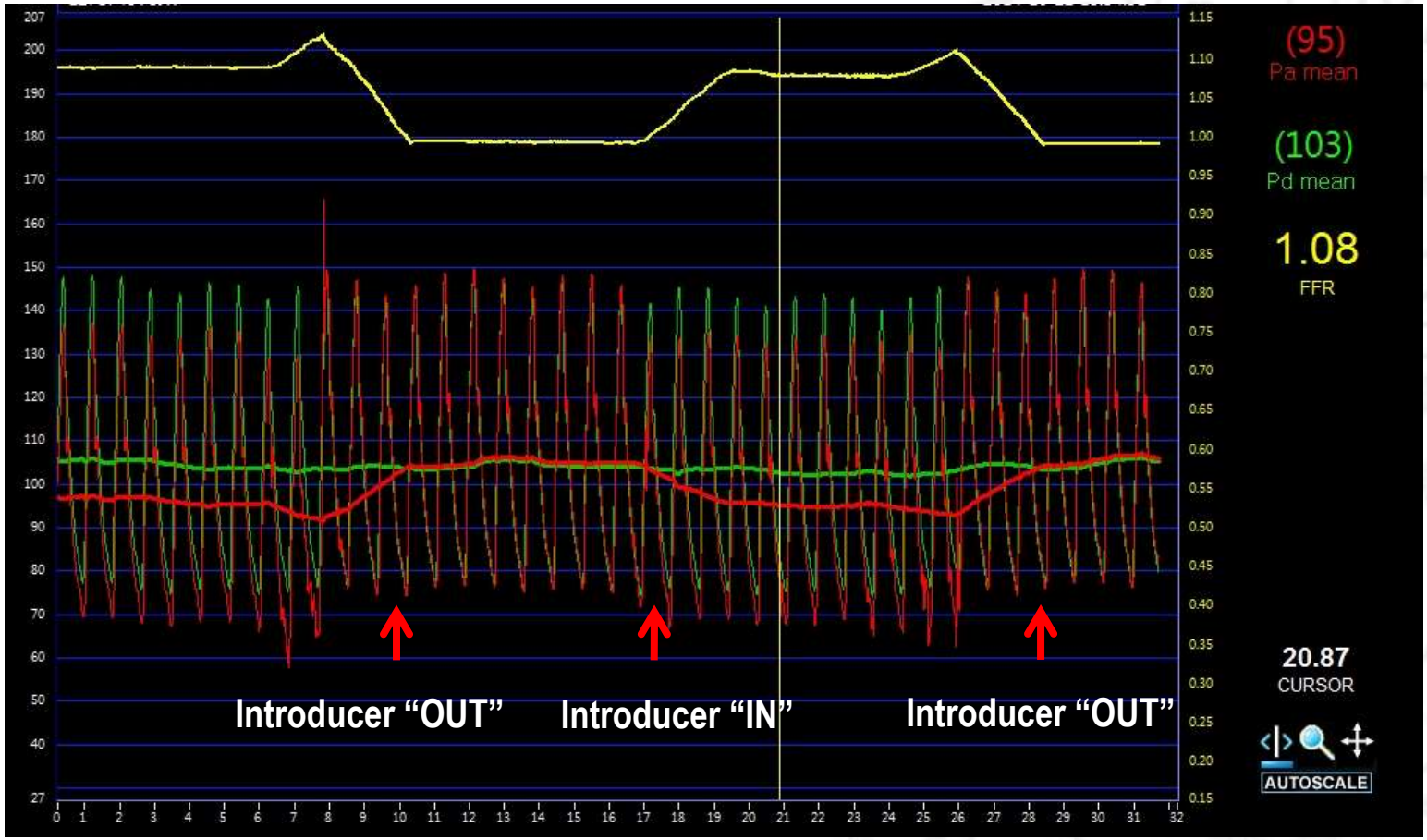
Manual saline flushing before FFR measurement

3. Remove introducer from Y-connector

Don’t measure FFR with an “INTRODUCER” in place

3. Remove introducer from Y-connector

Pressure difference can be augmented by hyperemia

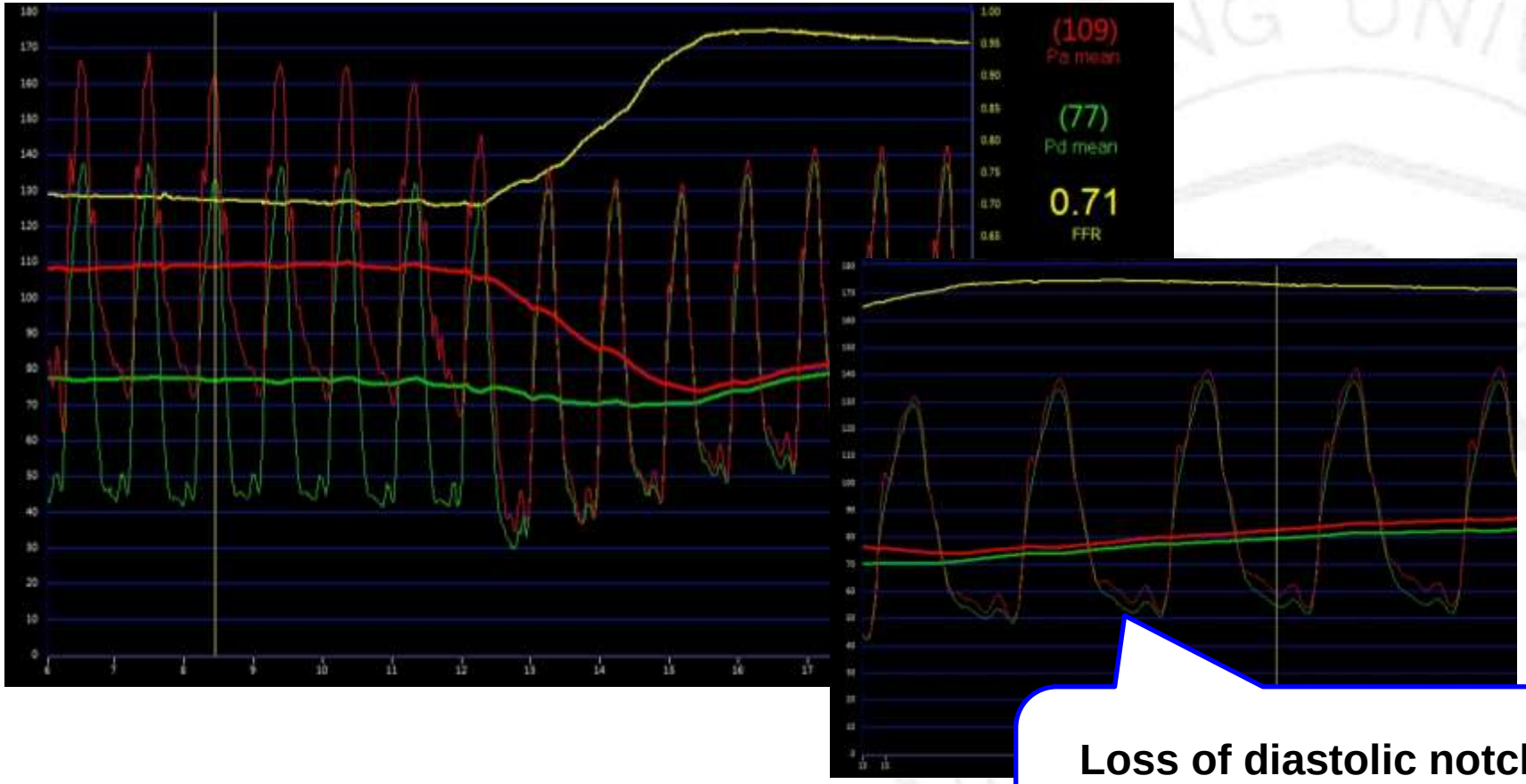


4. Start with equalization

Initial difference can make a different decision…

5. Damping during pullback

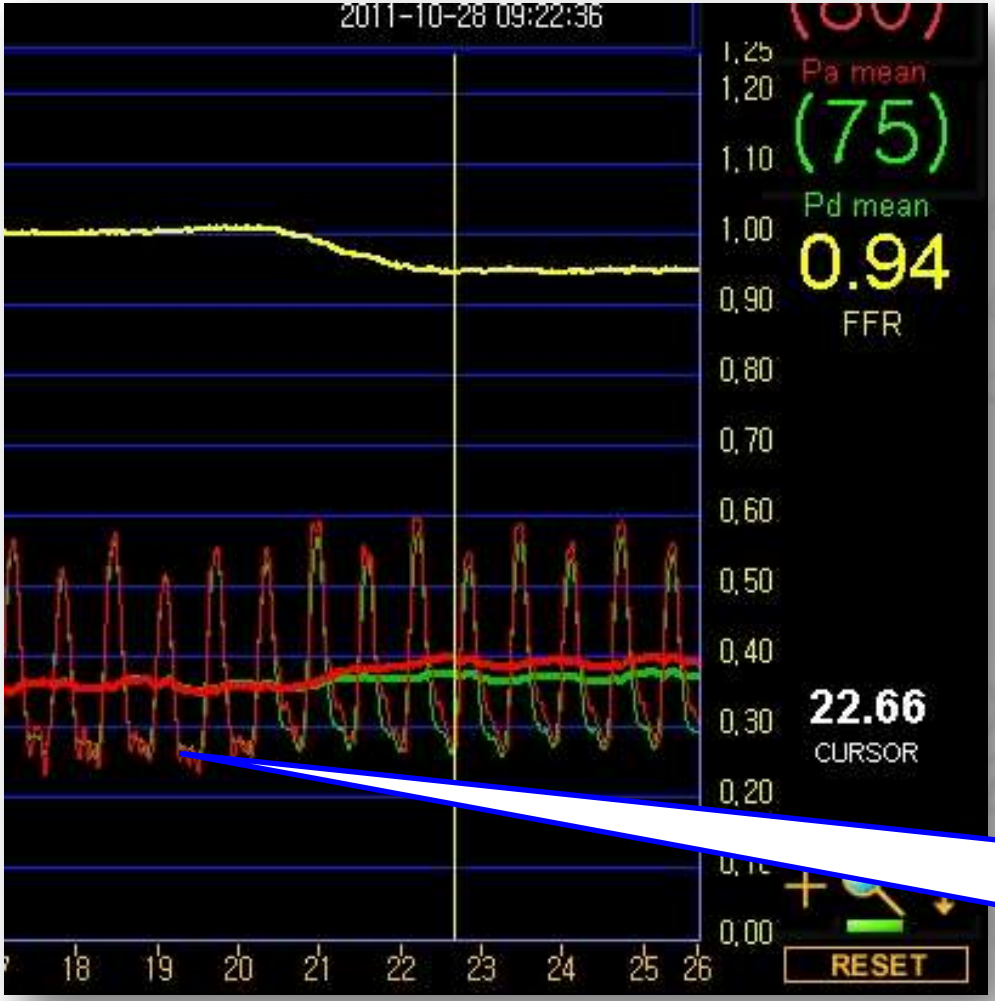
Focus not only FFR value, but also pressure curve…

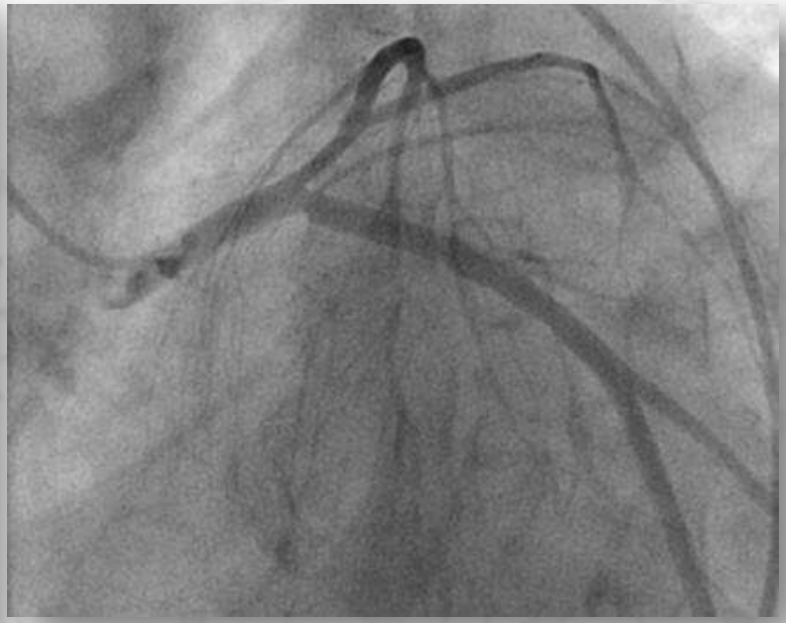


Loss of diastolic notch and ventricularization of Pa pressure

5. Damping during pullback

Frequent pitfall during pullback, even if with 5 Fr catheter





Loss of diastolic notch and ventricularization of Pa pressure

6. Drift

Artificial gradient due to “DRIFT”

Shape of pressure curves is identical

Aortic notch in the distal curve in Pd

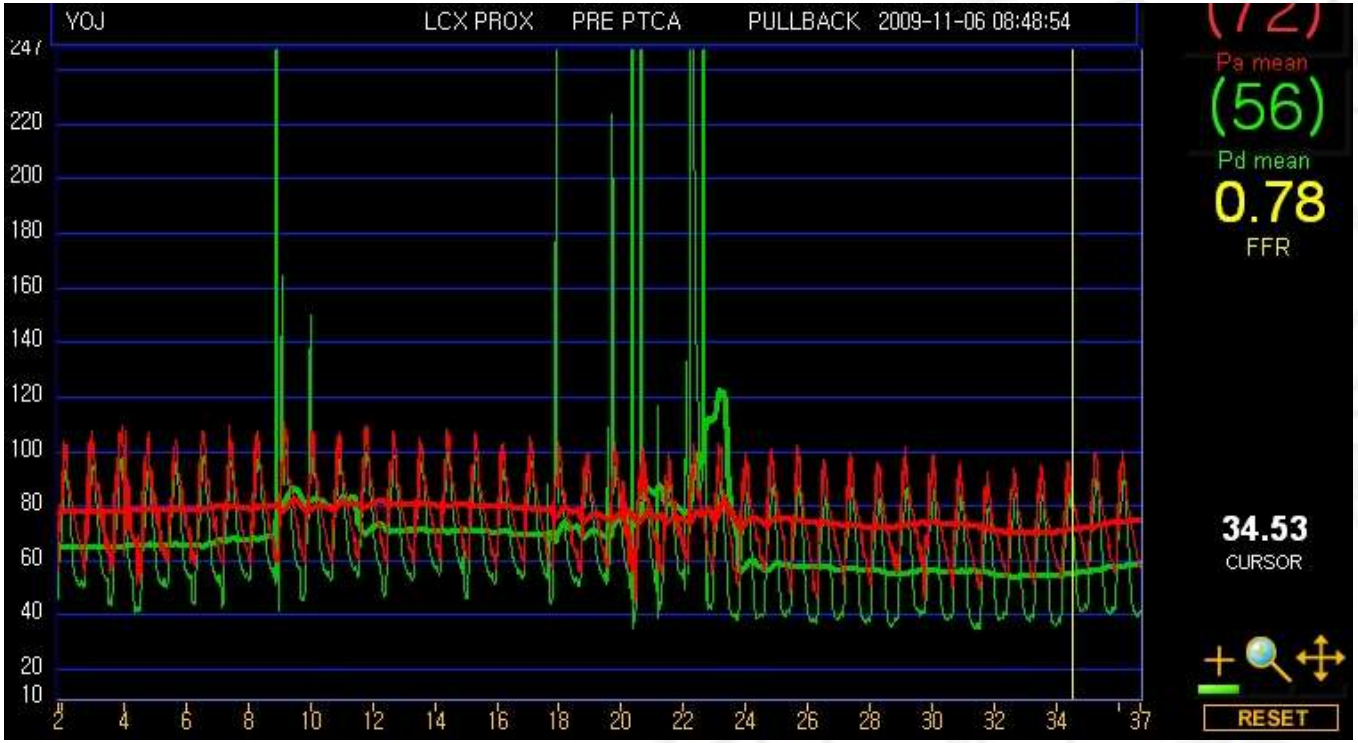
Increase of diastolic gradient in Pd

If drift is suspected “re-equalization” is necessary.

FFR tracings from Dr Koo

7. Whipping artifact

Coronary vessel wall hits the PW sensor

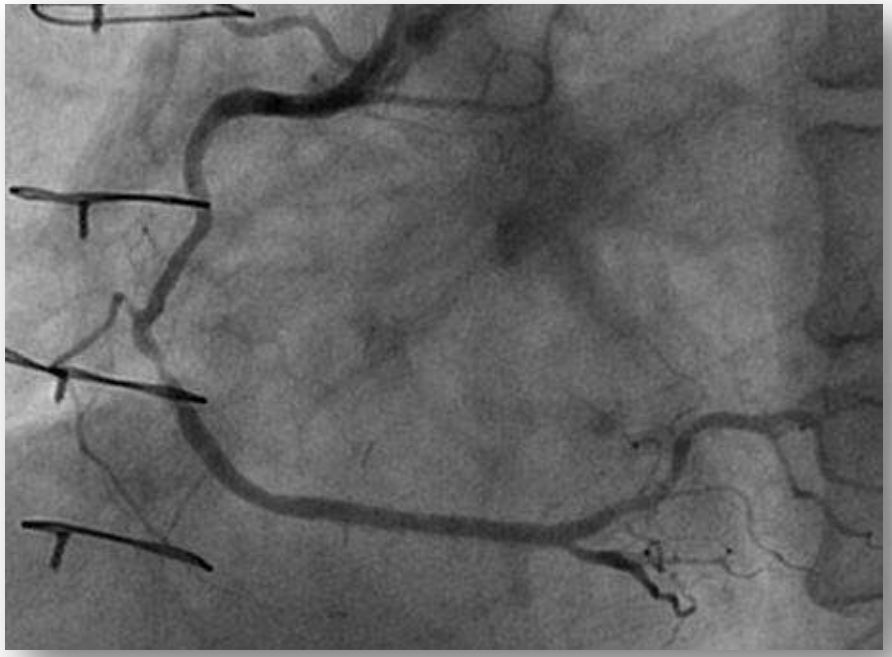


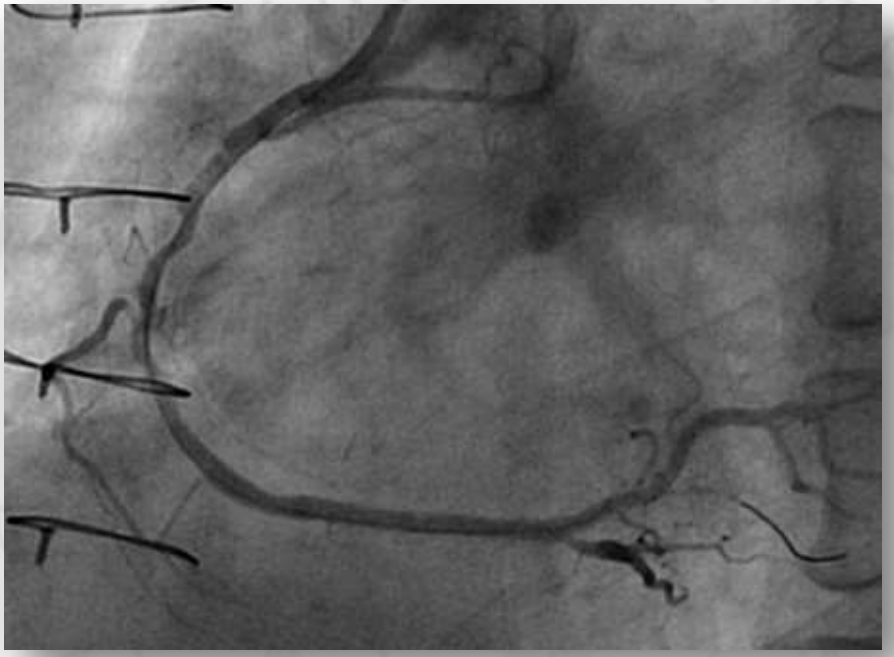
Move the PW sensor just a few millimeter

FFR tracings from Dr Koo

8. Spasm/Accordion effects

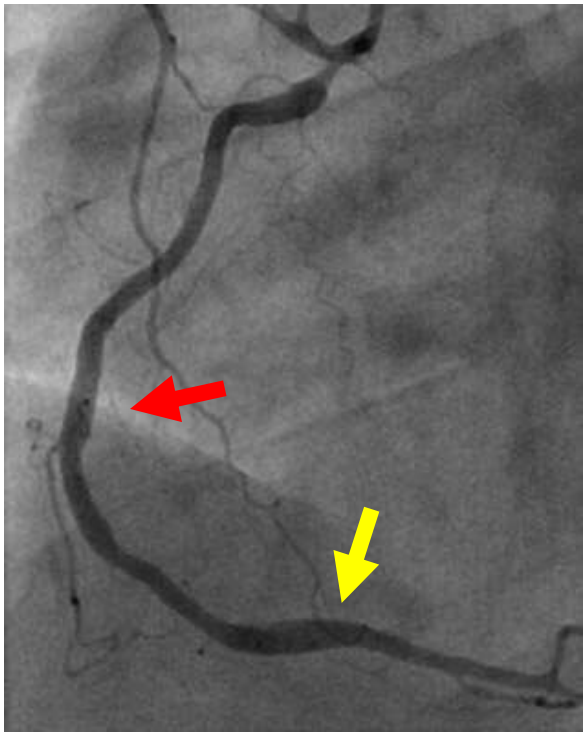
Pseudo-stenosis can make a wrong FFR value

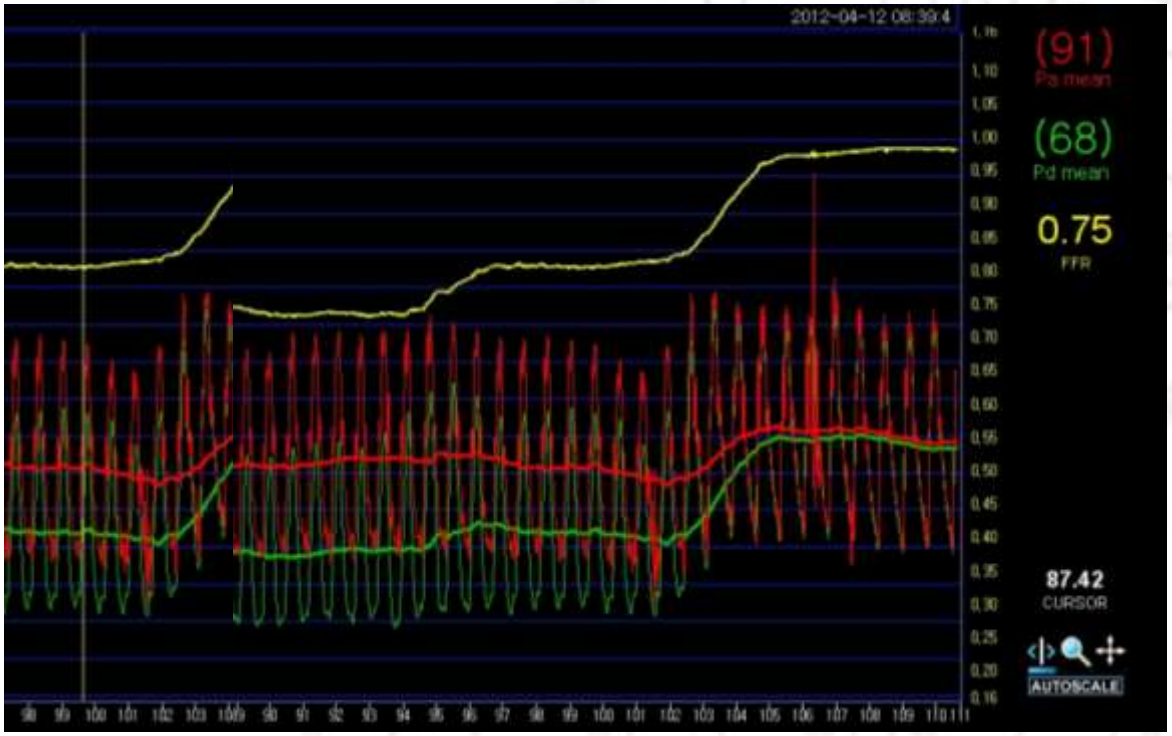




9. Location of pressure sensor

When you evaluate tandem lesion… even if mild 2nd lesion

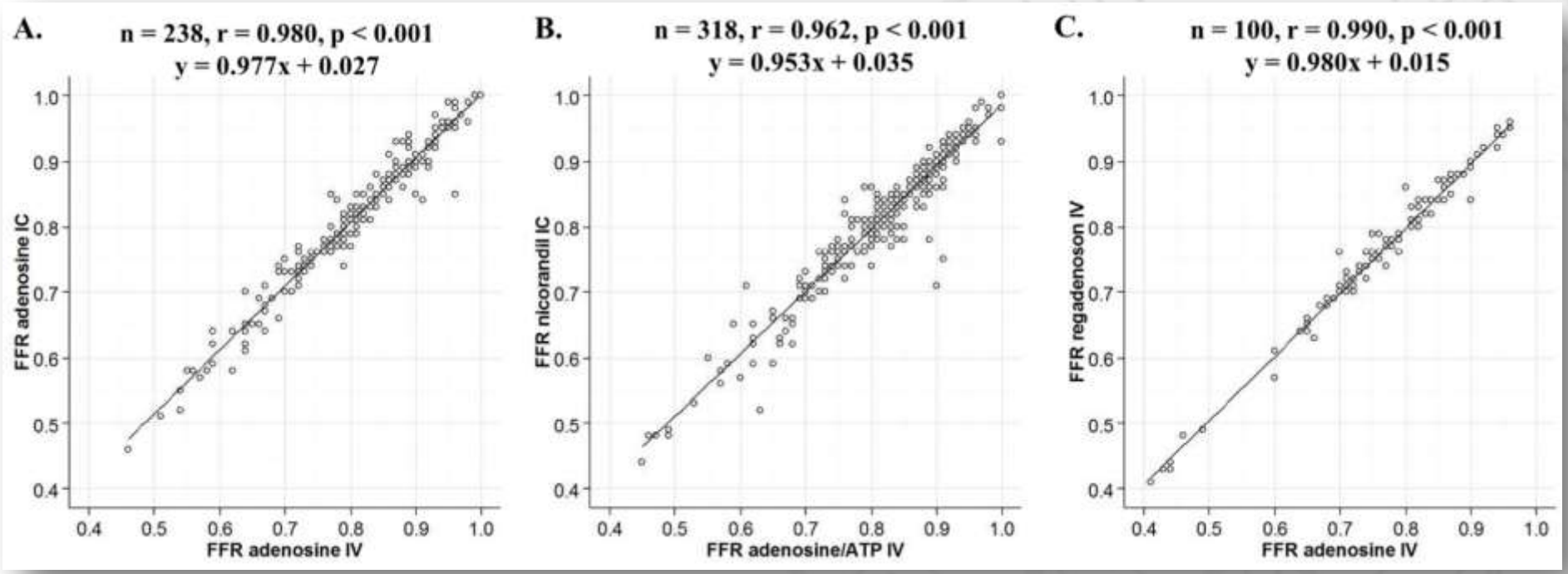




Measure FFR of all stenoses together from distal

10. Issues for hyperemia

Major premise in the concept of FFR is "Measuring pressure under maximal hyperemia"



IV adenosine/ATP ~ IC adenosine ~ IC nicorandil ~ IV regadenoson

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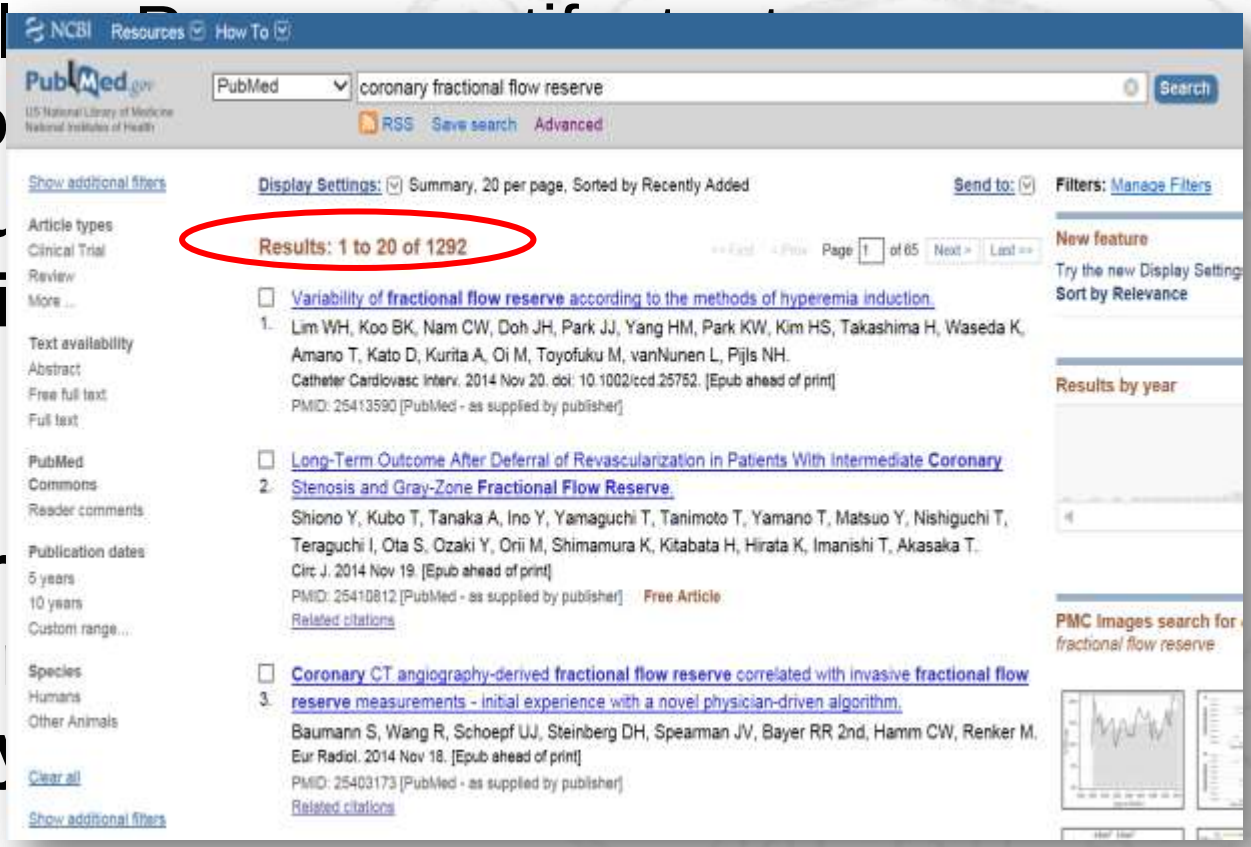

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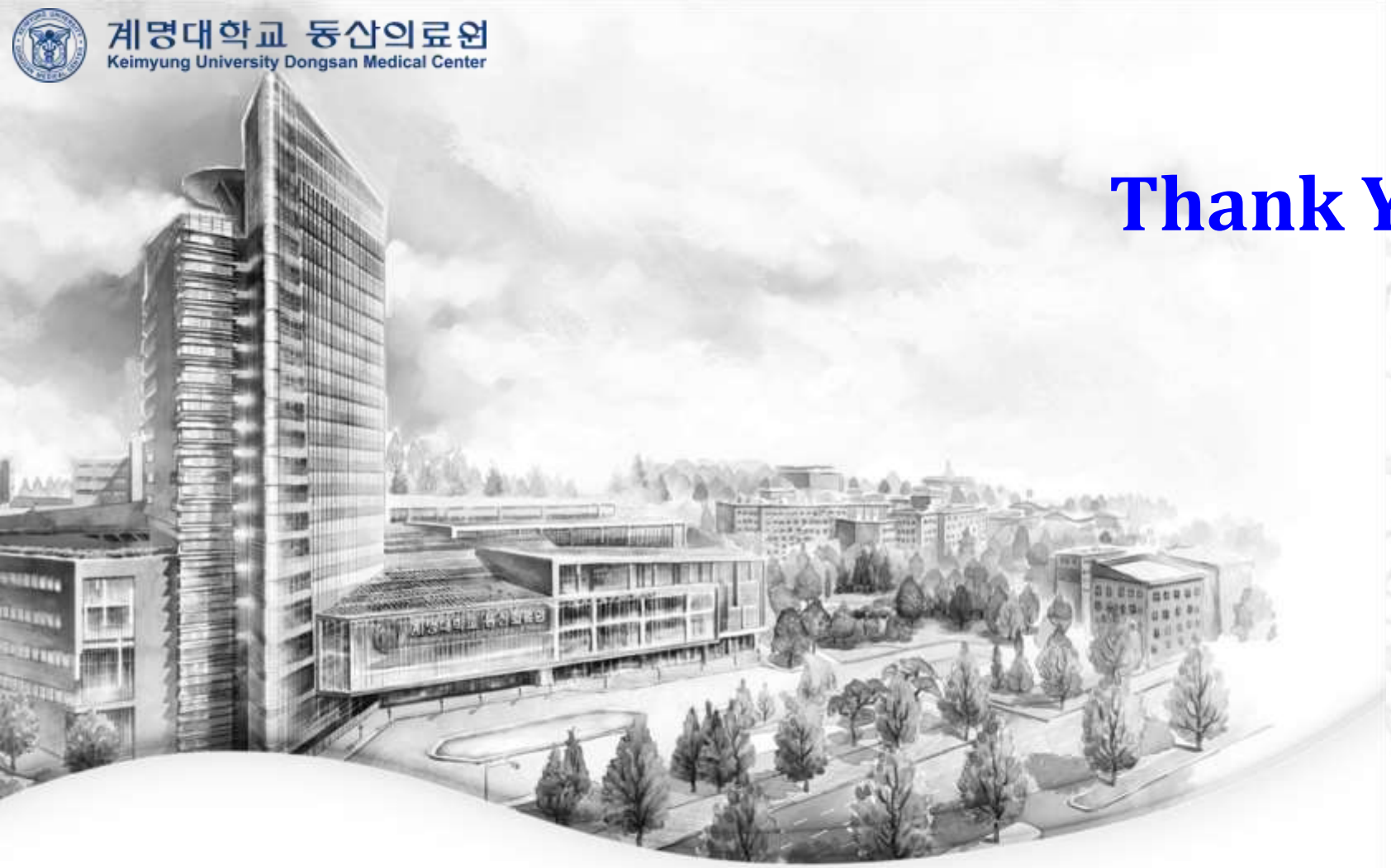

Thank You

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