

# Intracoronary Pressure Evaluation in a Case with Myocardial Bridging of Left Anterior Descending Coronary Artery

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# Myocardial bridging

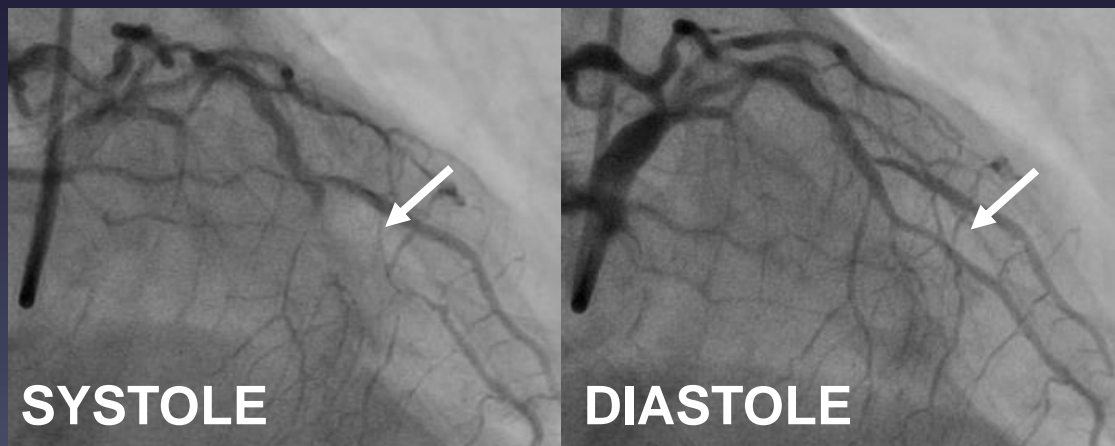
- ✓ Myocardial bridging is a common anatomic variant, predominantly involving the left anterior descending artery (LAD), with a prevalence of 18 – 56 % on autopsy.
- ✓ Although myocardial bridging have been considered a benign condition, it is sometimes associated with myocardial ischemia.



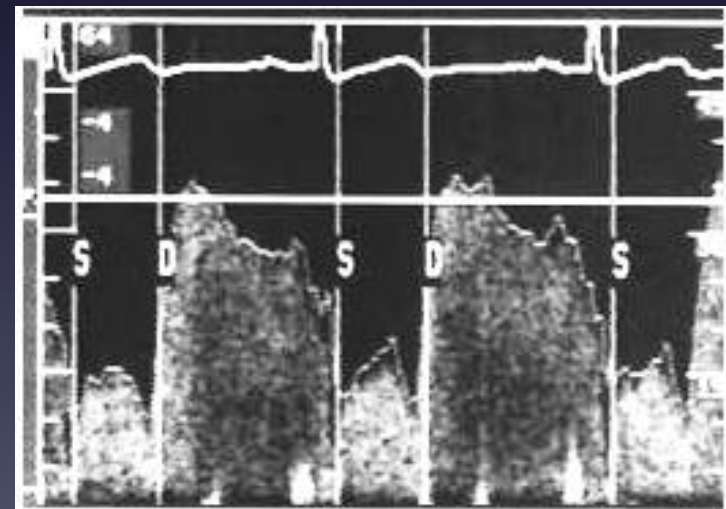
# Myocardial ischemia and coronary flow

- ✓ Myocardial bridging is characterized by **systolic narrowing** on angiogram by its milking effect.
- ✓ However, it is well recognized that coronary flow occurs predominantly during the **diastolic** phase of the cardiac cycle. Therefore, it is unlikely that this systolic phenomenon could by itself results in myocardial ischemia.

## Angiography



## Coronary Flow



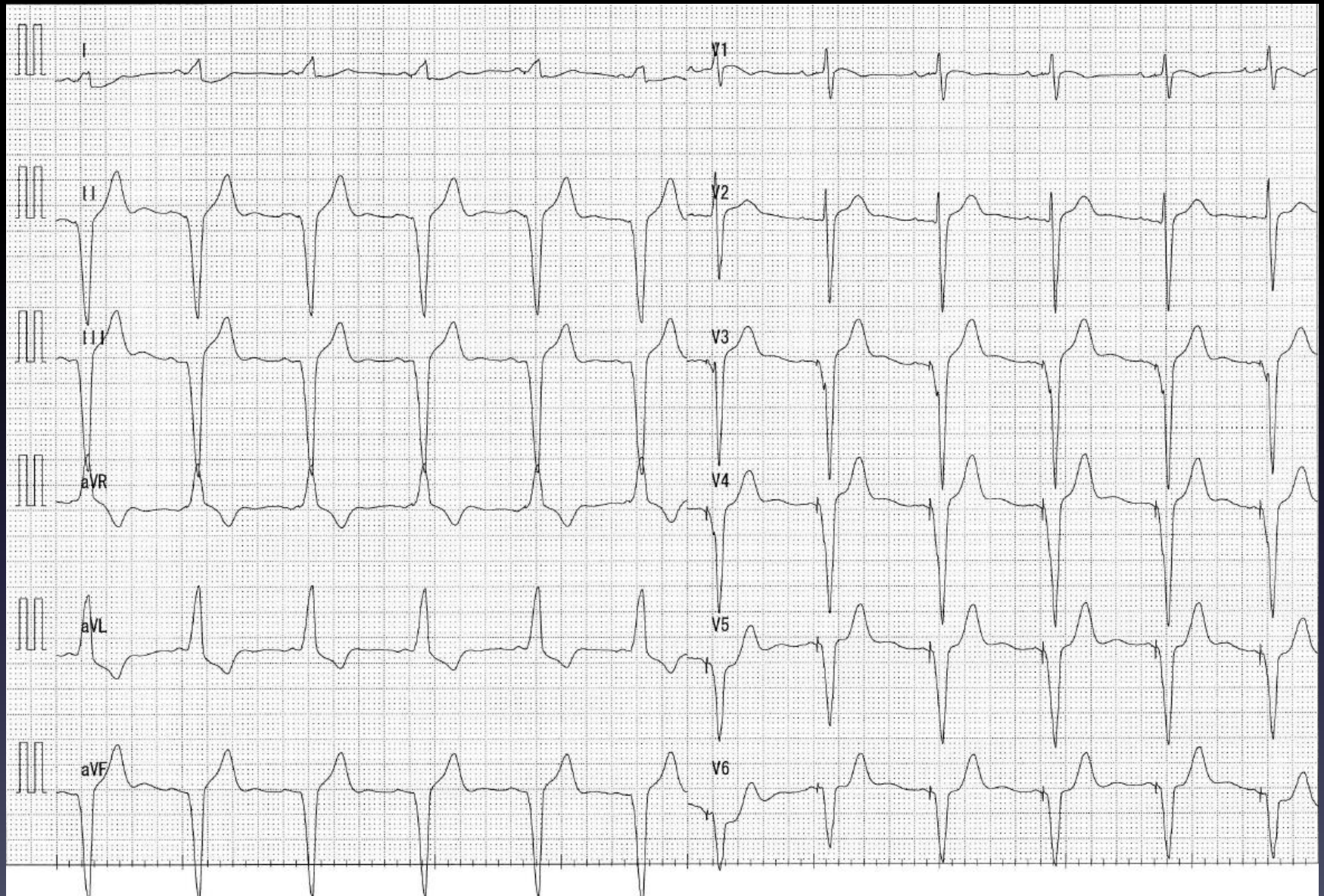
# Case

A 81-year old man with a history of percutaneous coronary intervention (PCI) for inferior myocardial infarction and DDD pacemaker implantation for a complete AV block was admitted to our hospital for cardiac catheterization. Although he had no chest pain, stress nuclear study revealed inducible myocardial ischemia in the apex.

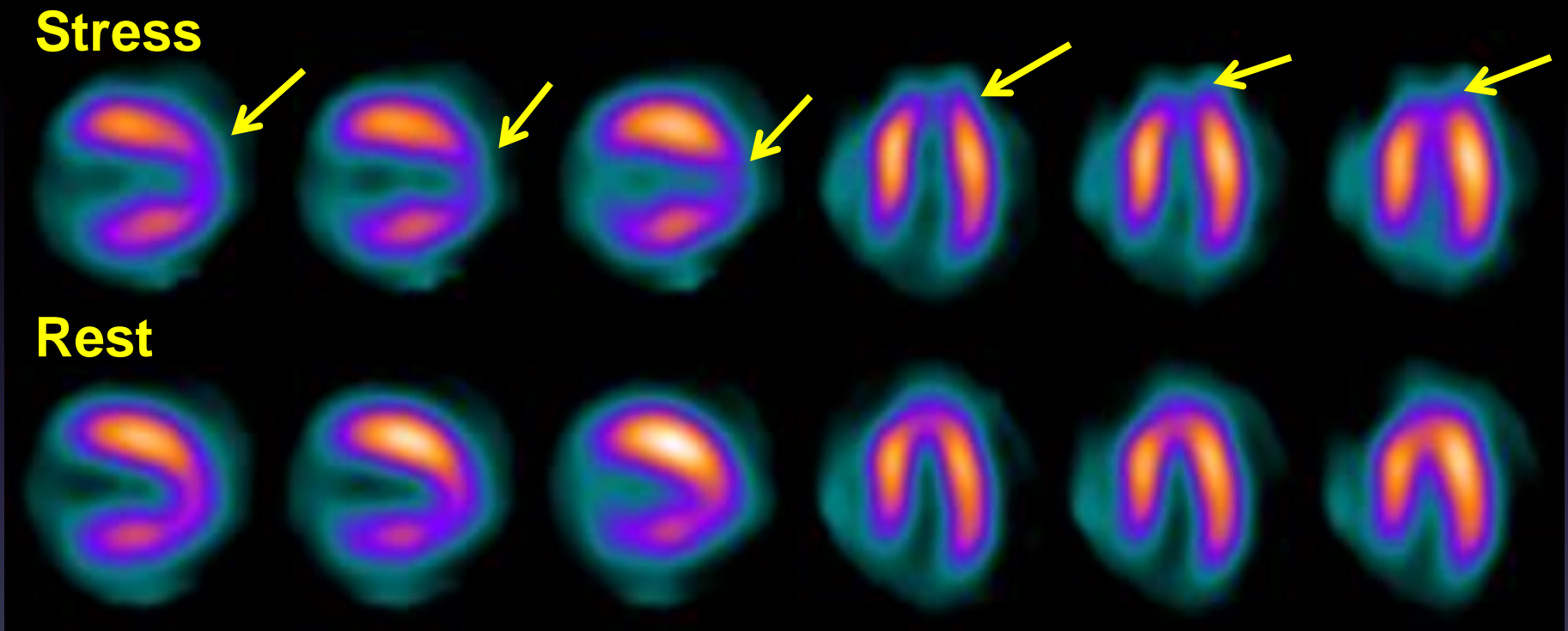
On physical examination, the blood pressure 150/70 mmHg, the pulse 70bpm, and the oxygen saturation 96% while the patient was breathing ambient air. Chest auscultation revealed no murmur.



# Electrocardiogram on admission

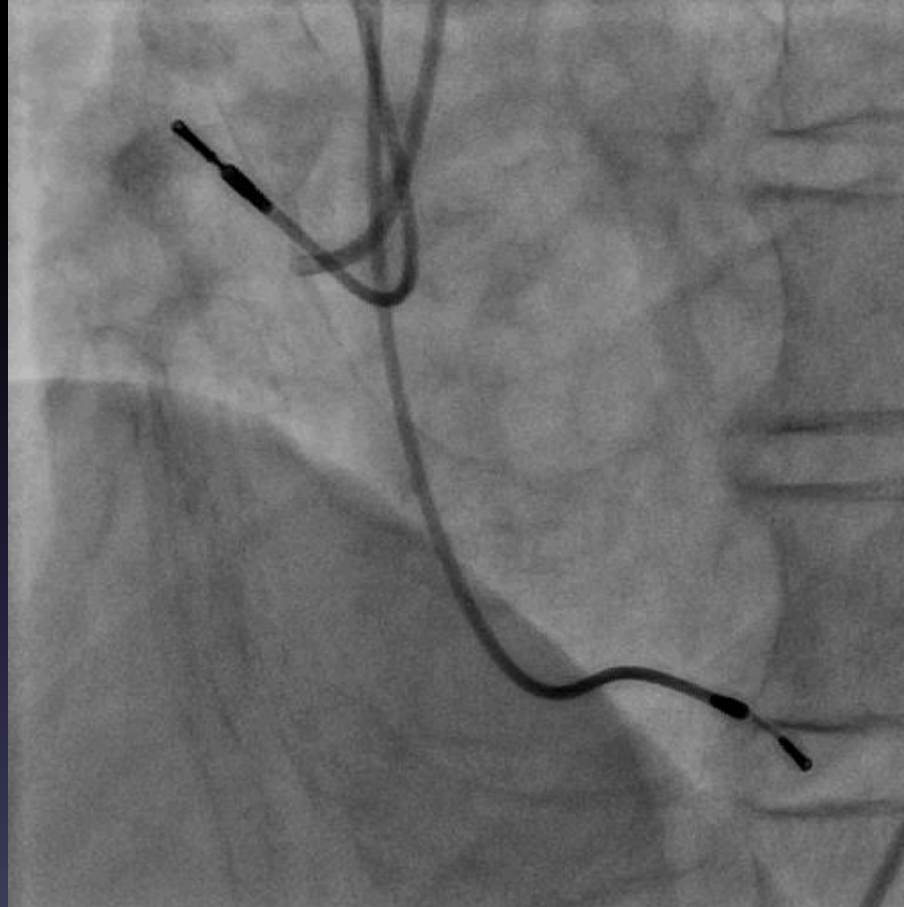


# Adenosine stress nuclear test

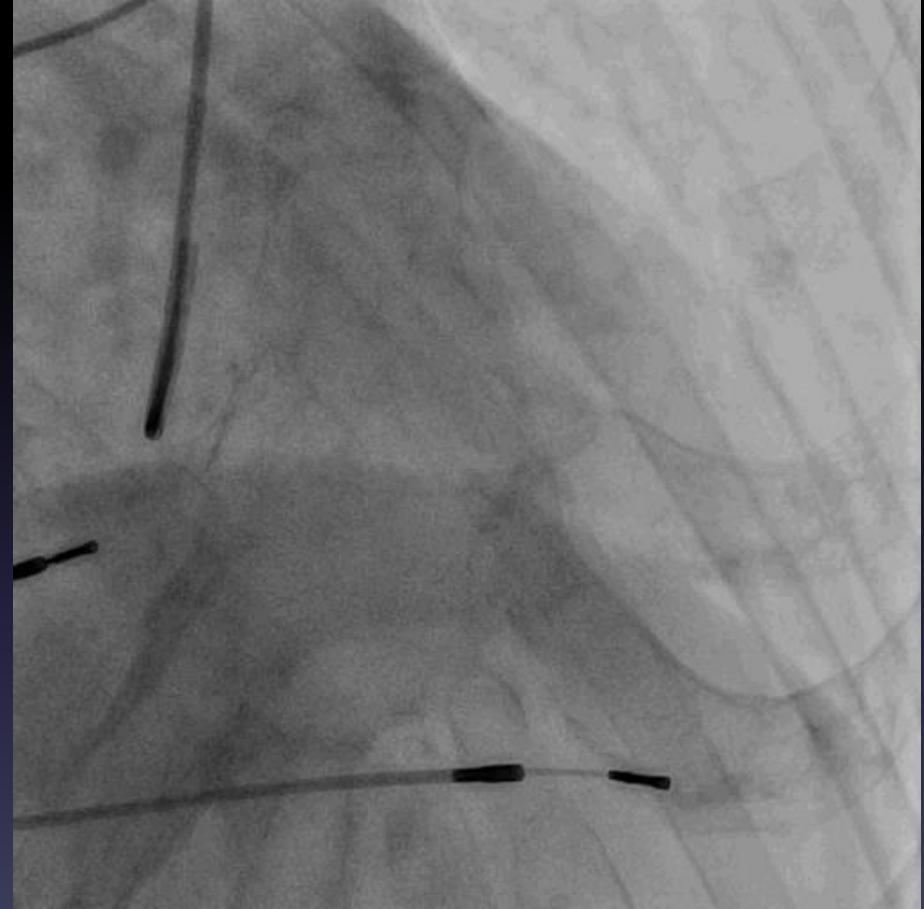
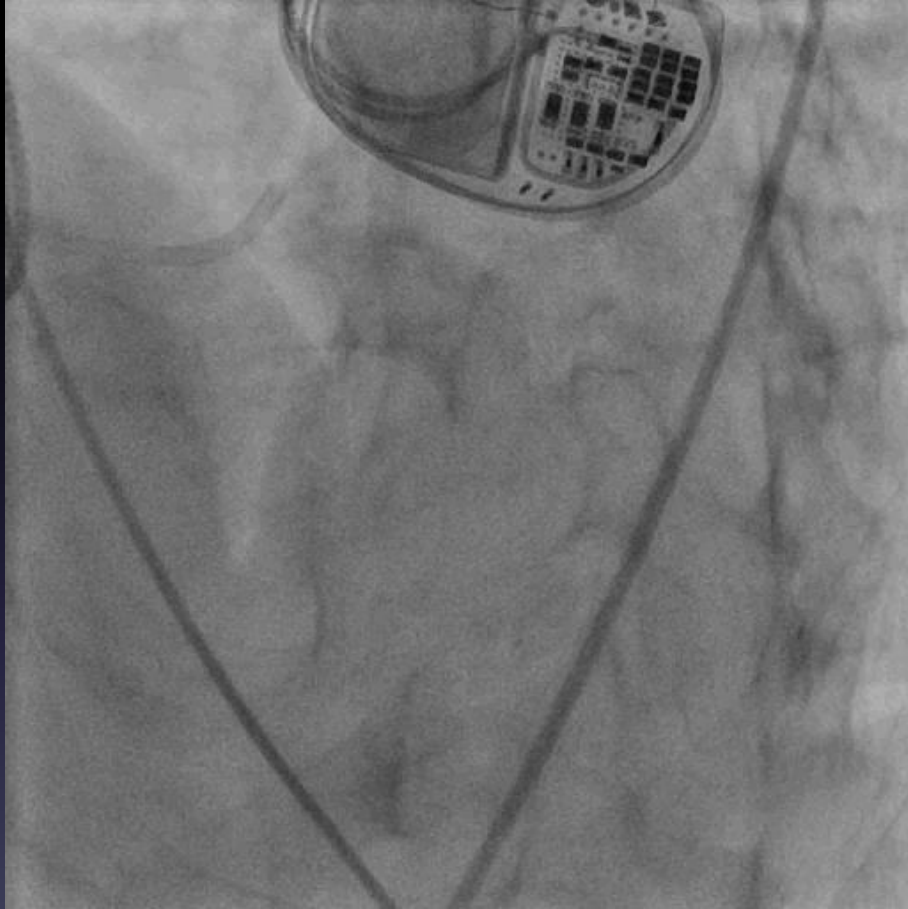




# Right coronary angiography

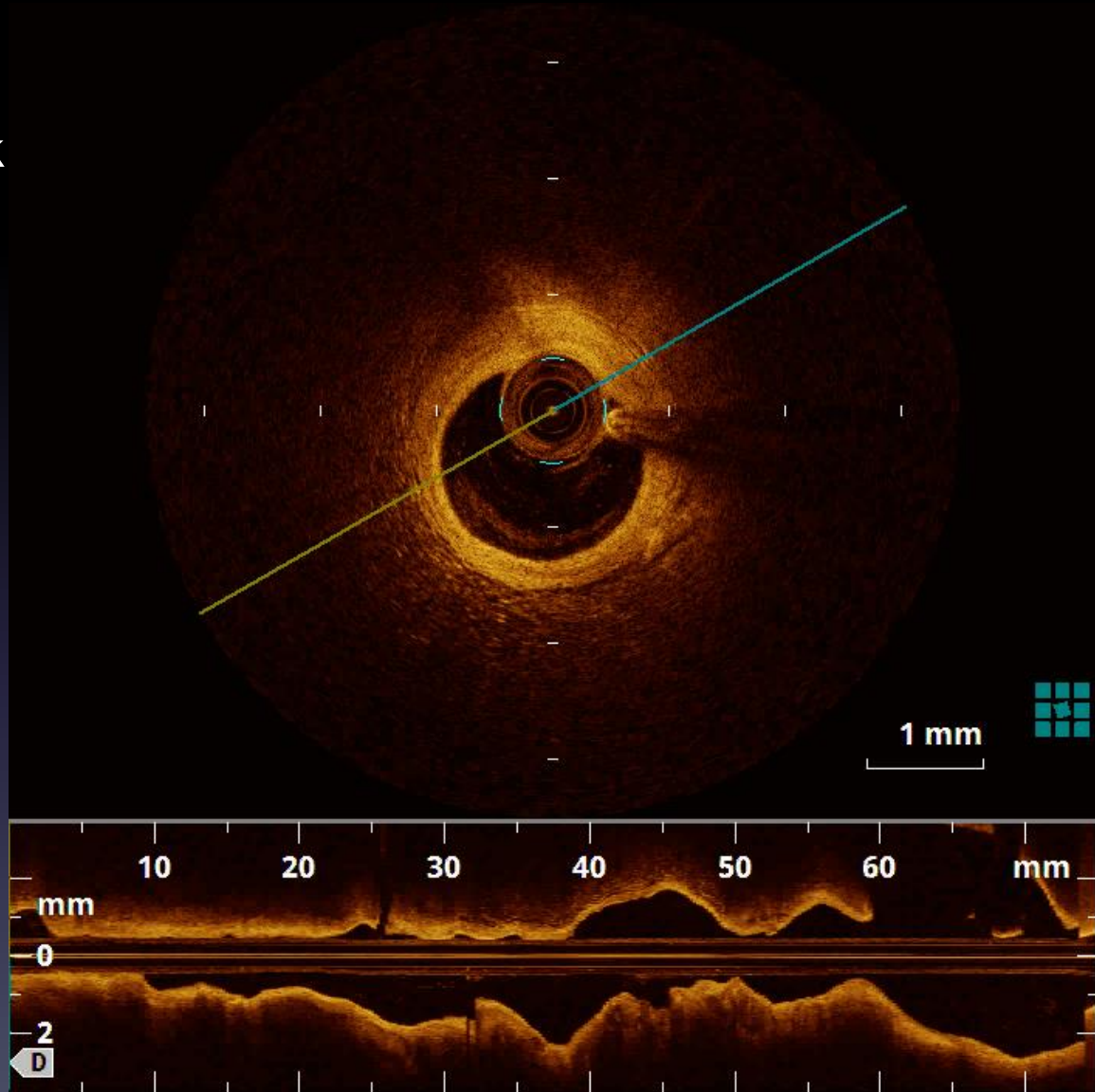
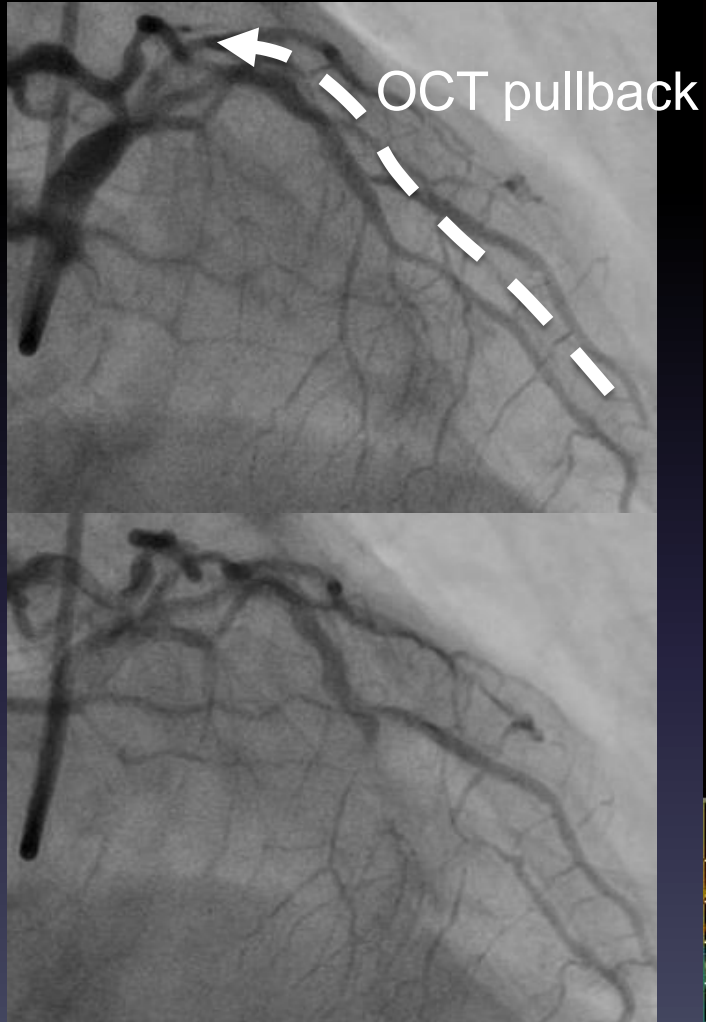


# Left coronary angiography





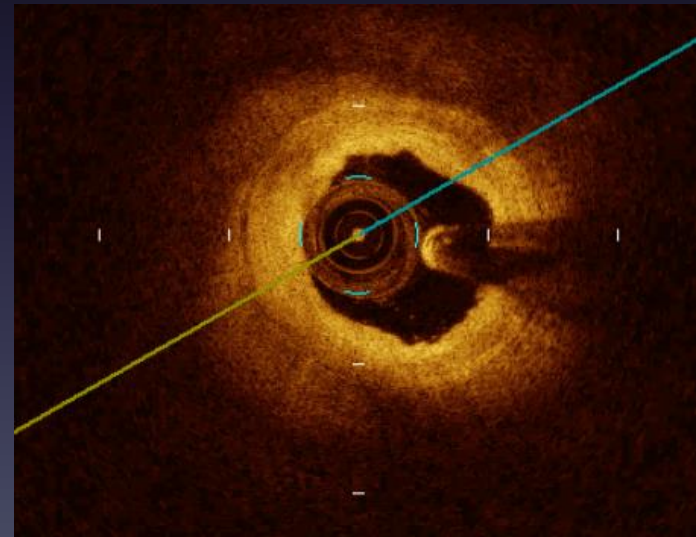
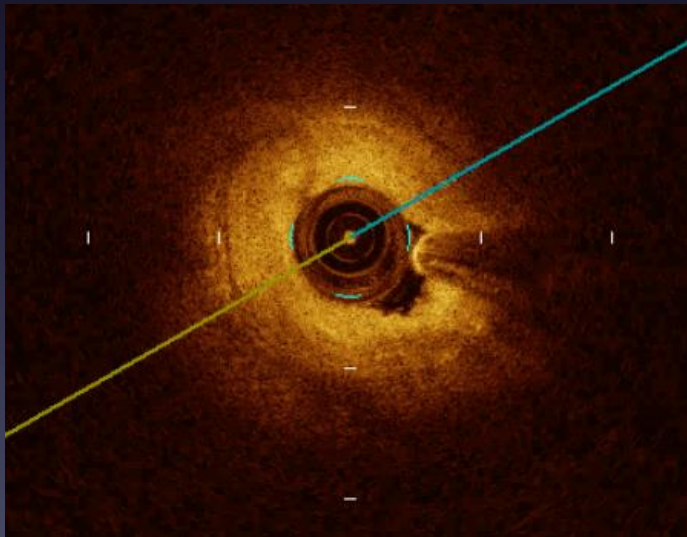
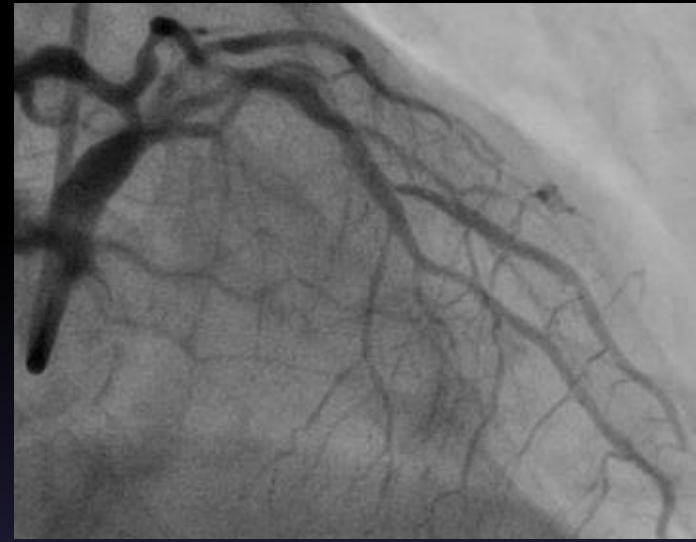
# Optical coherence tomography



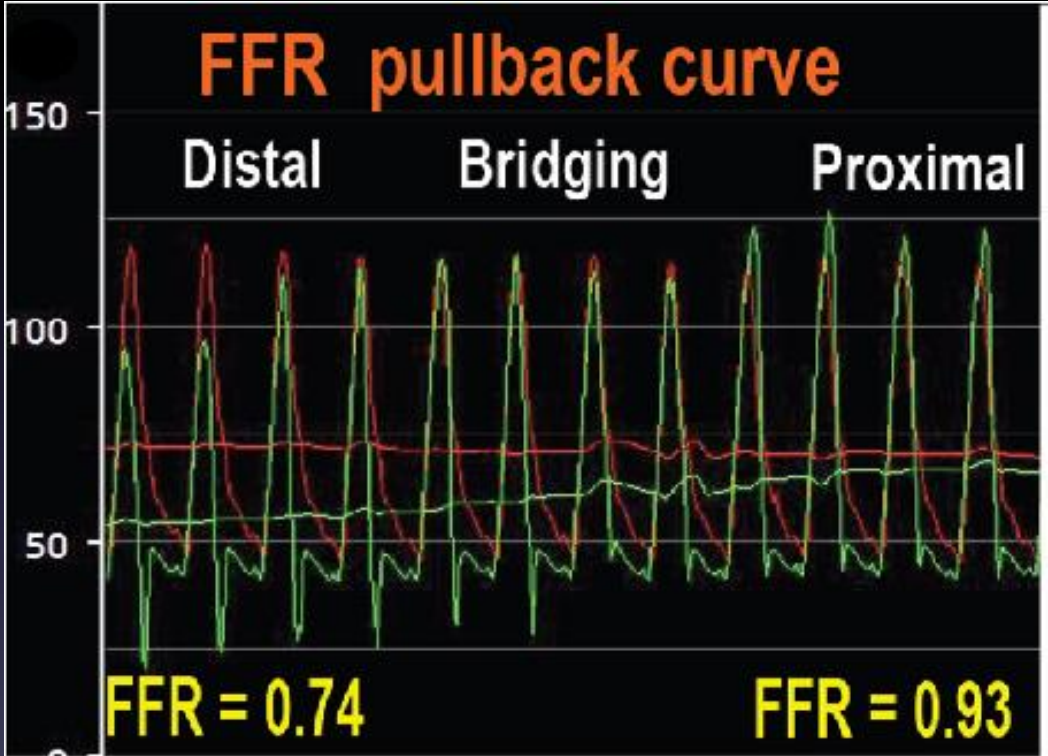
# Myocardial bridging

Systole

Diastole



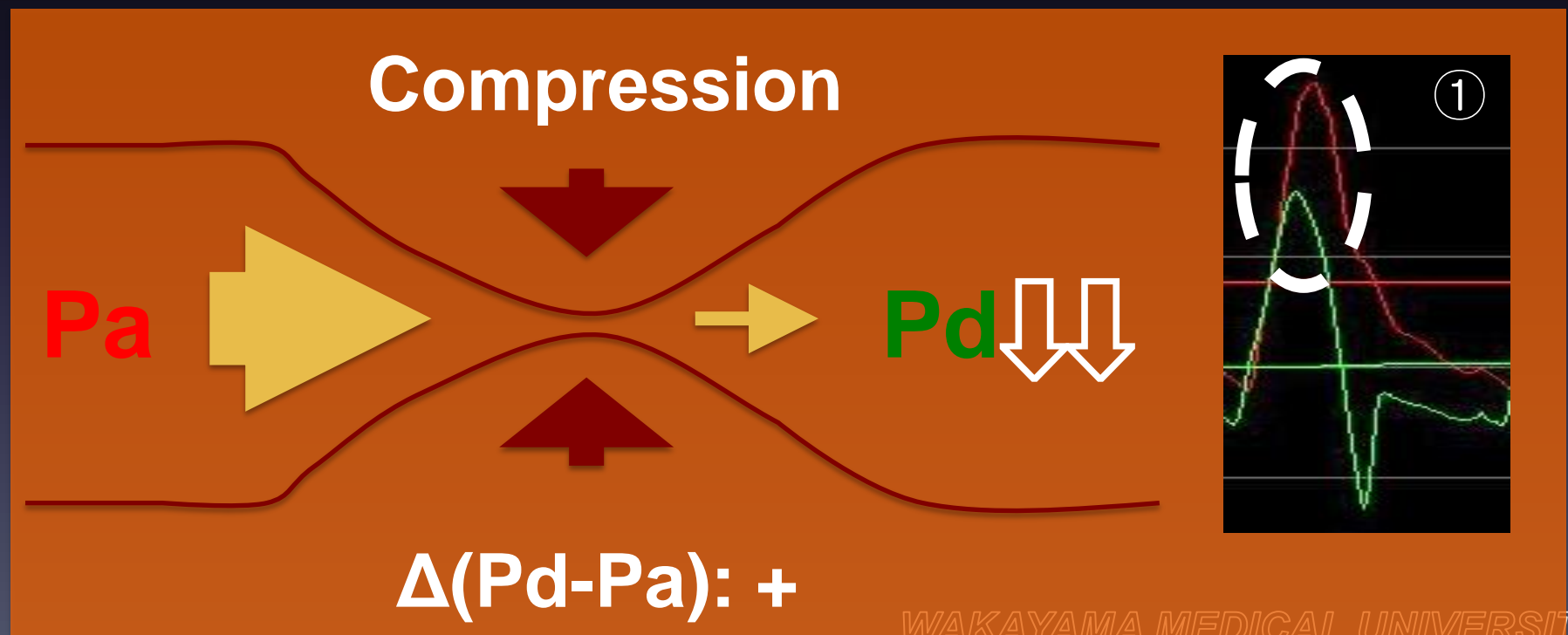
# Intracoronary pressure measurements



## Intracoronary pressure (distal to bridging)

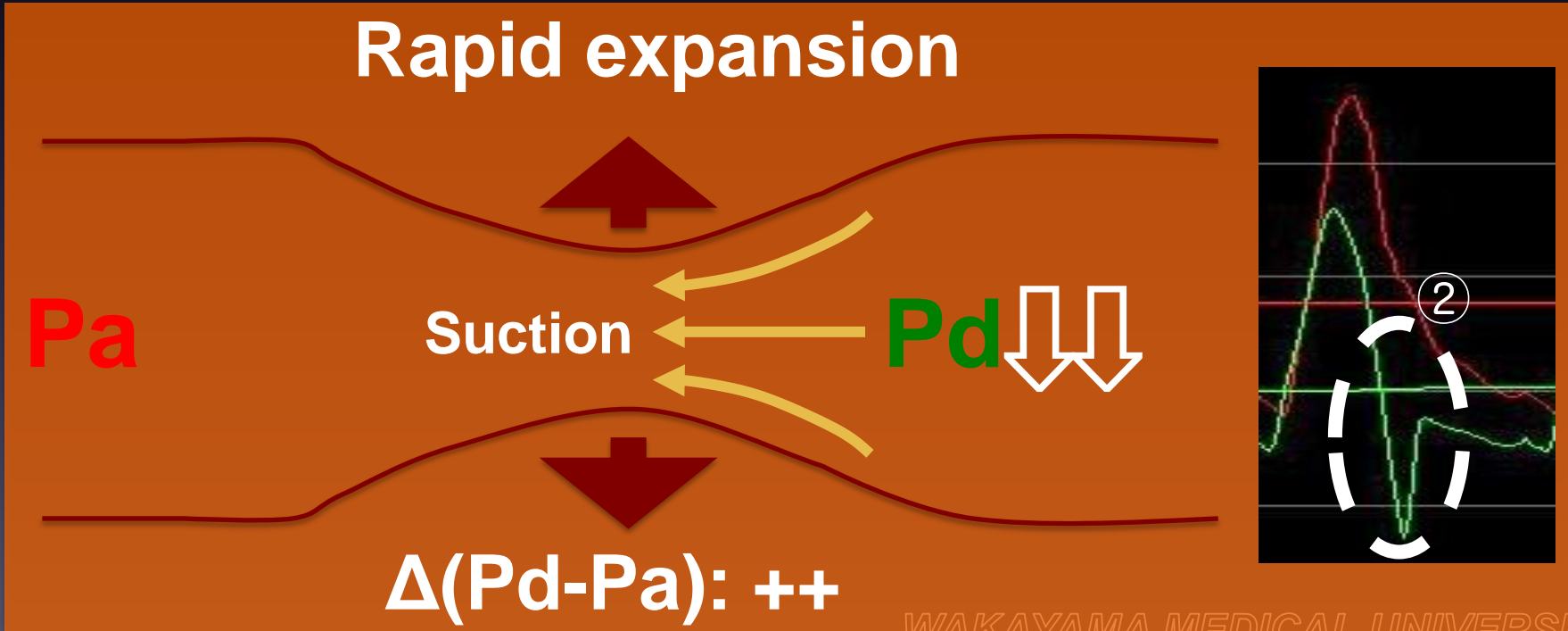


# Pressure gradient across MB Systole





# Pressure gradient across MB Early diastole



# Pressure gradient across MB Late diastole



Incomplete expansion



$$\Delta(Pd-Pa): +$$

# Conclusion

- ✓ We had a patient with myocardial ischemia in apex, which was caused by myocardial bridging in mid LAD.
- ✓ Coronary compression in systole, rapid coronary expansion in early diastole, and incomplete coronary expansion in late diastole were considered as the mechanisms generating pressure gradient across myocardial bridging and inducing myocardial ischemia.