

Fujikura Fiber Optics Vietnam Ltd.(FOV)

Training Textbook: 000-1-TT-0015

Phiên bản: 1

# IVUS Catheter manufacturing

## Contents

- Heart attack and treatment
- IVUS Catheter structure
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- Brief project introduction

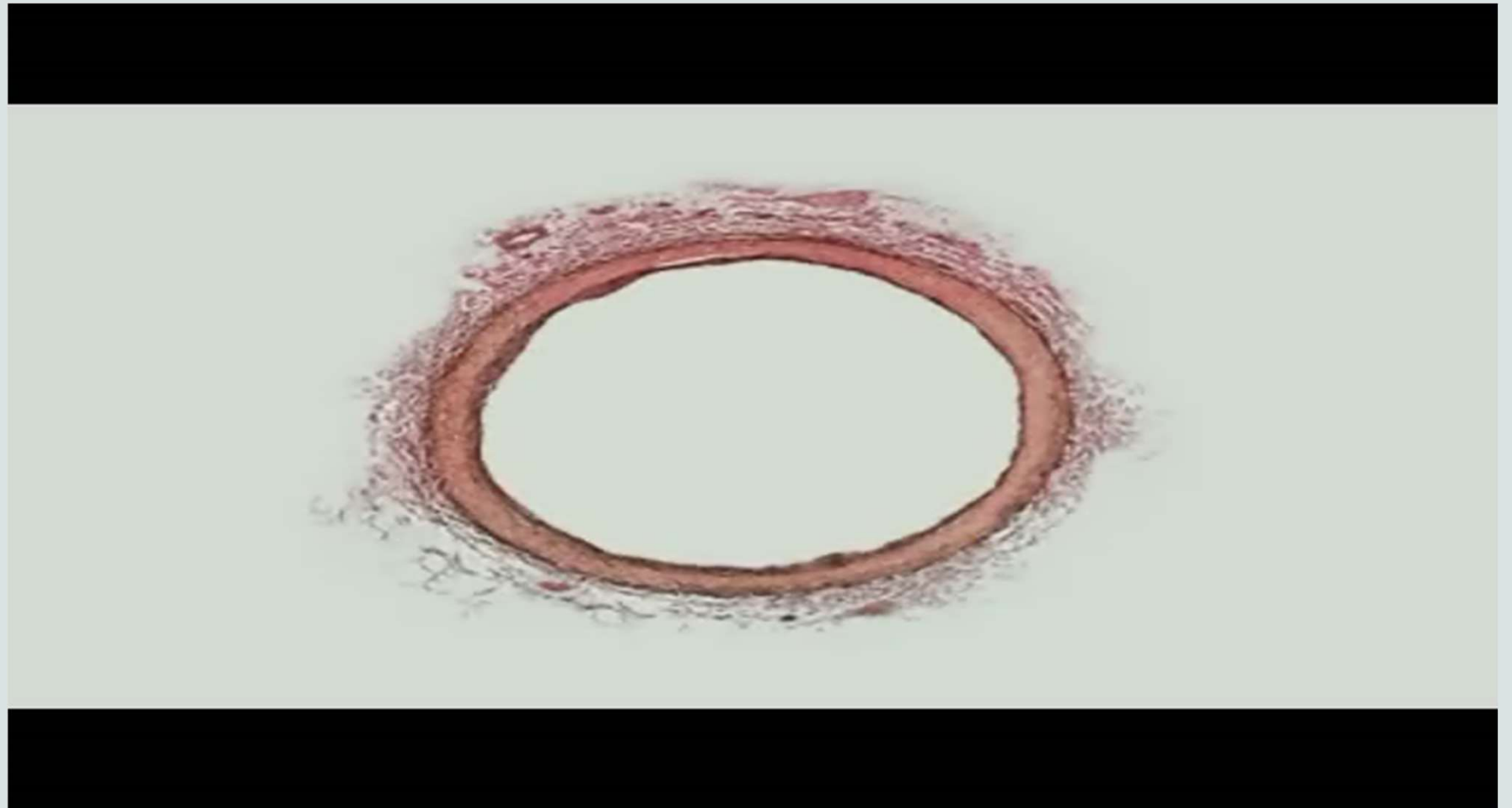
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# Heart attack and treatment

# What is a Heart Attack?

## Coronary Artery Disease

# Pathophysiology: Vulnerable Plaque

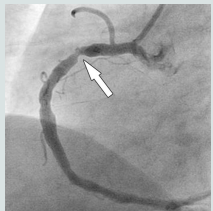


# Two treatment options for CAD

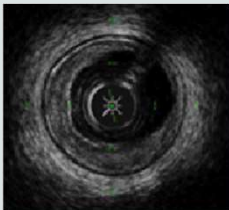


Open Heart Surgery

**Invasive  
CABG  
Surgery**  
(**C**oronary **A**rtery  
**B**ypass **G**raph)



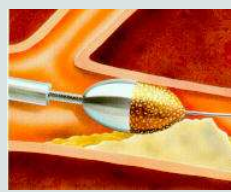
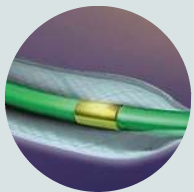
Angiogram



IVUS

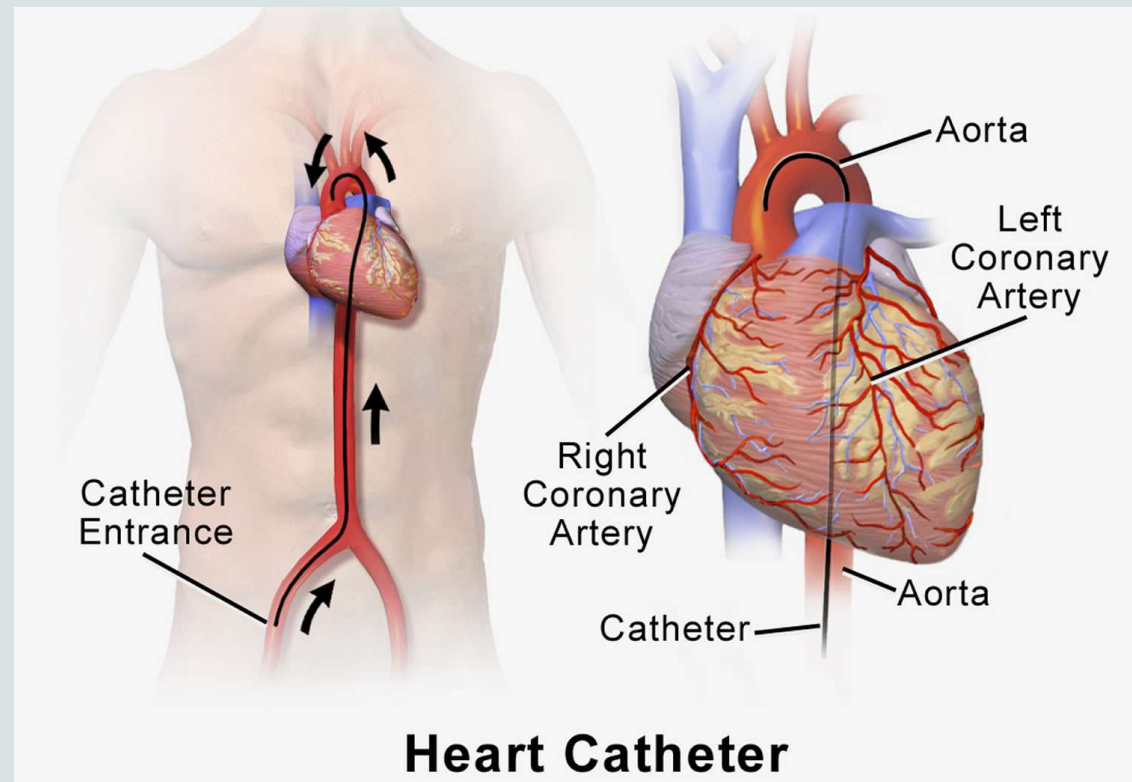
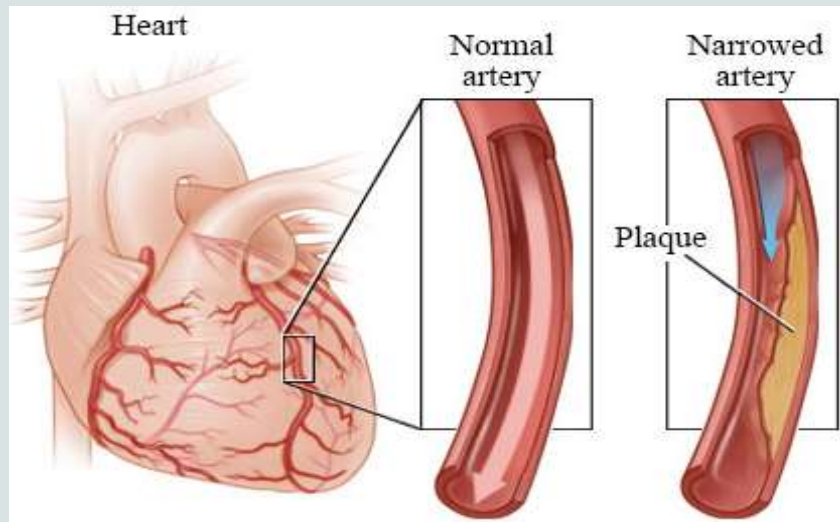
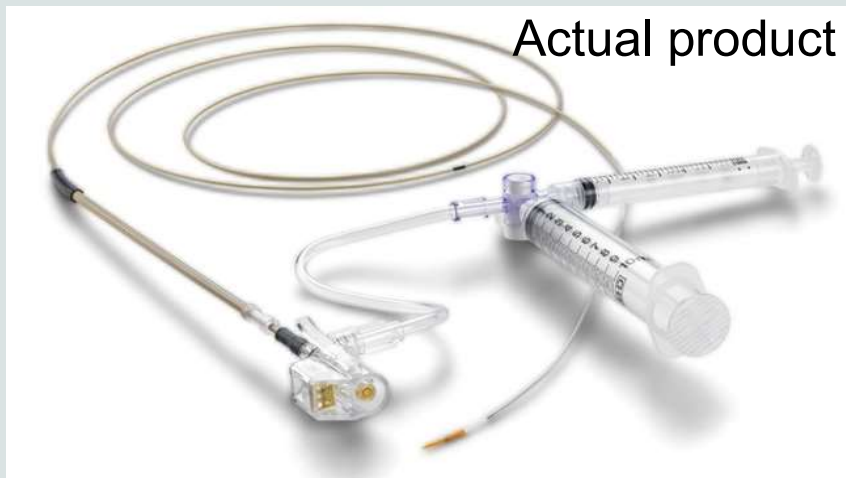


FFR



**Minimally Invasive  
PTCA**  
(**P**ercutaneous **T**ransluminal  
**C**oronary **A**ngioplasty)

# Product application



**Heart Catheter**  
Application: Coronary Artery Disease

# PTCA (Percutaneous Transluminal Coronary Angioplasty)

PTCA

(Percutaneous Transluminal Coronary Angioplasty)

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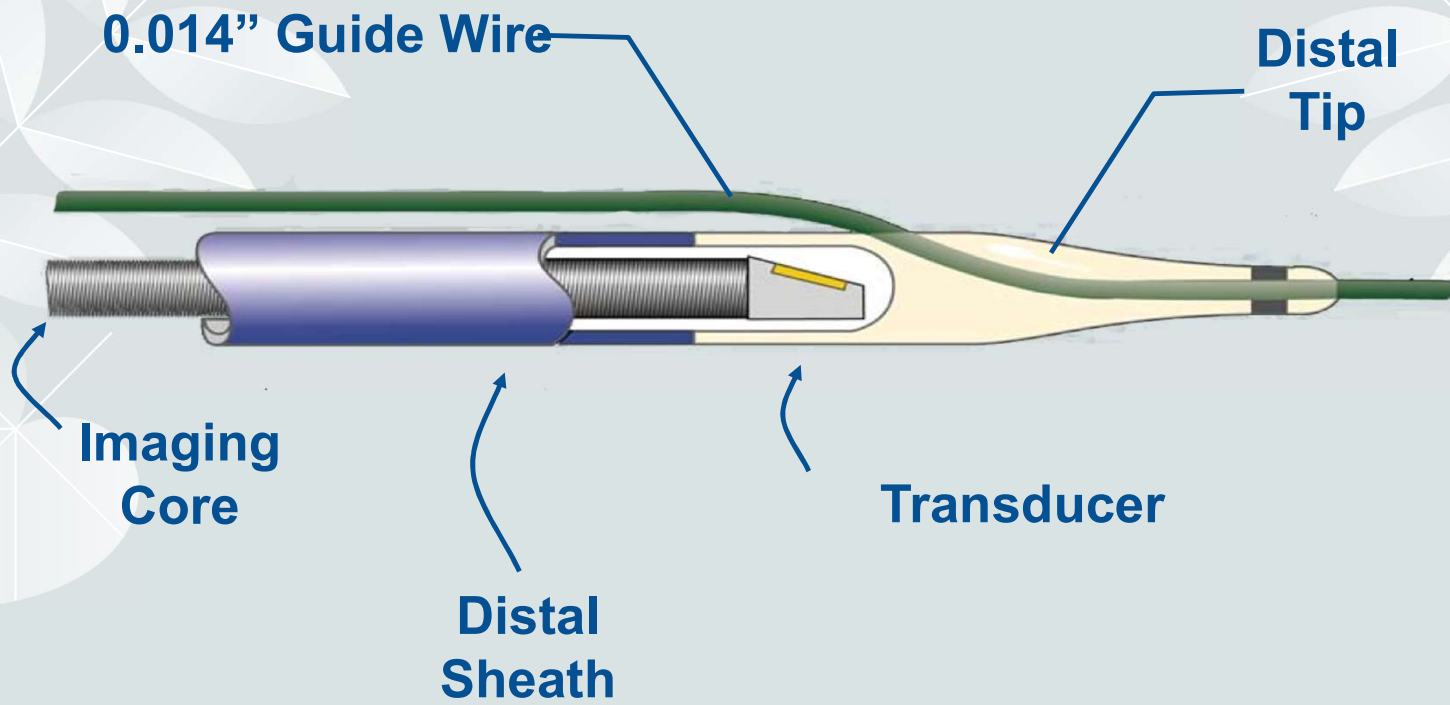
 ADAM



A decorative graphic of two stylized leaf branches, one above the other, rendered in a light gray color. The leaves are elongated and pointed, with thin veins visible.

# **IVUS Catheter structure**

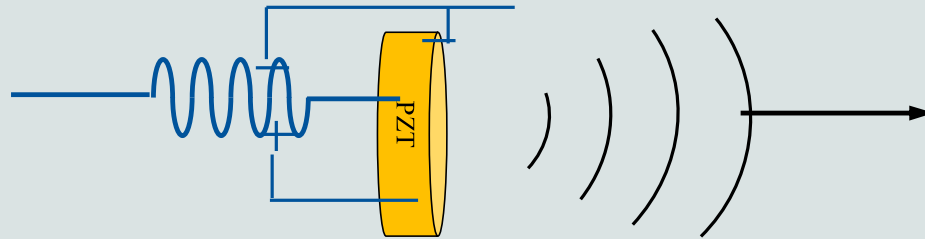
# Mechanical IVUS Catheter Features



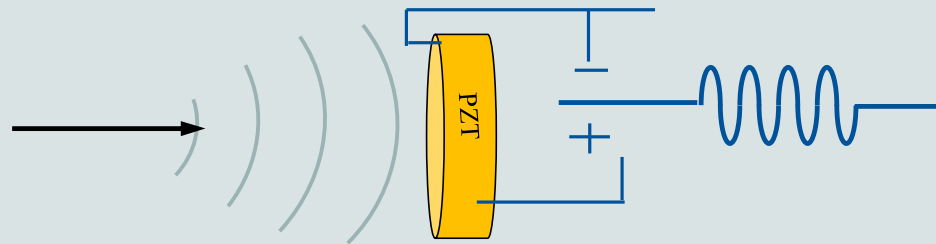
# Piezoelectric Effect

Ultrasound transducers use the piezoelectric effect to convert electrical energy into mechanical energy and mechanical energy back into electrical energy

Electrical to pressure  
(acoustic) wave  
transformation



Pressure (acoustic) wave to  
electrical transformation

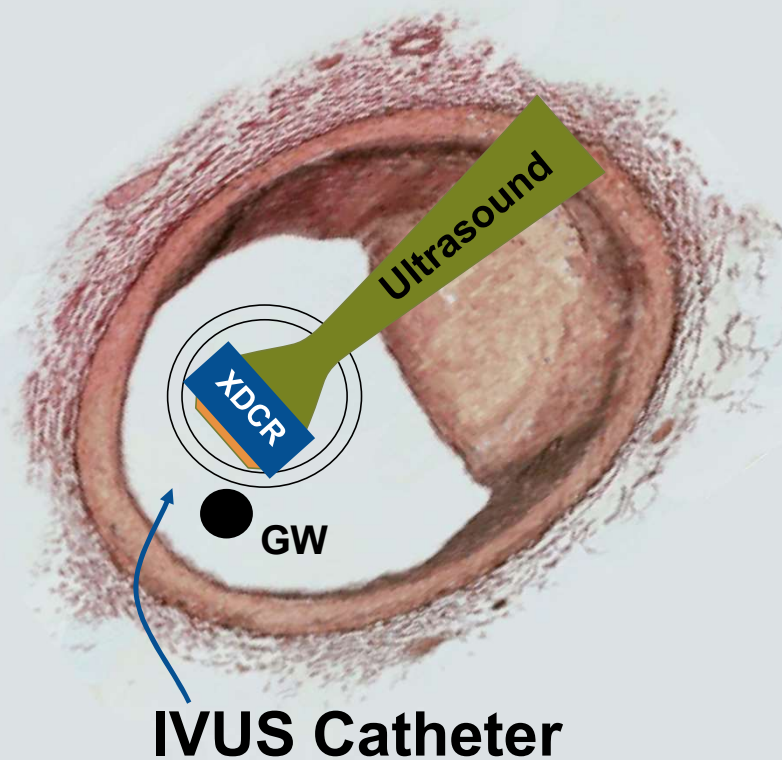




# **IVUS Catheter principle and advantage**

# IVUS Uses Standard Imaging Techniques

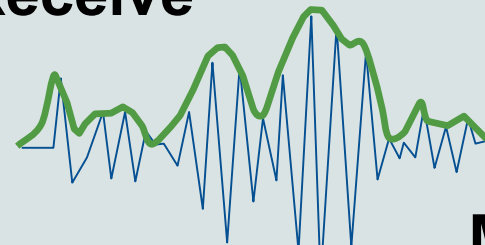
**Diseased Artery**



**Transmit**

A black waveform diagram representing the transmitted ultrasound signal, showing a sharp initial peak followed by several smaller, damped oscillations.

**Receive**

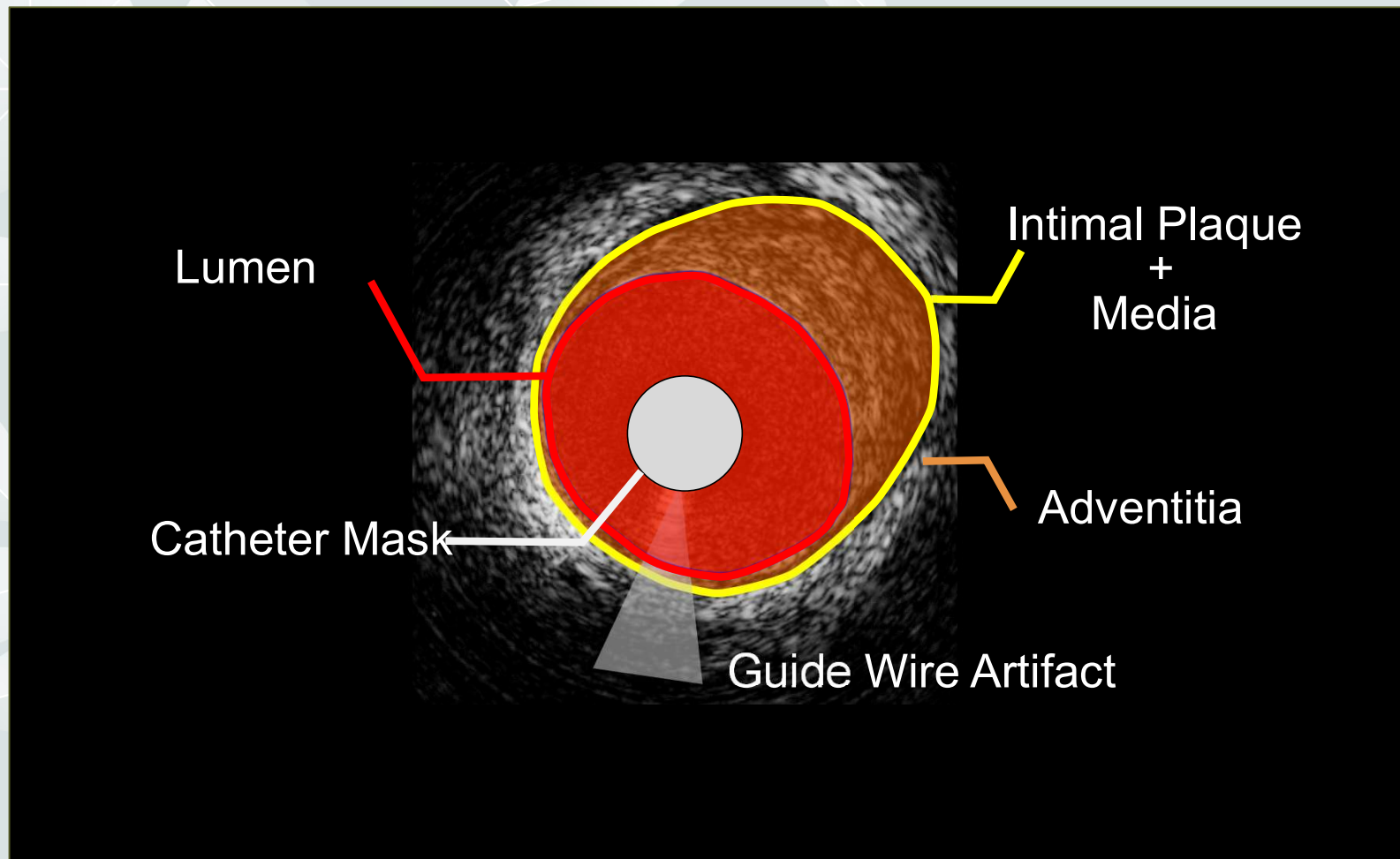


**Calculate  
Envelope**

**Map to  
Grayscale**



# Anatomy of an IVUS image



# IVUS is used to optimize outcomes

## \* Pre-Intervention

- Measure vessel size (diameter and length) to select stent size using one of several strategies.
- Identify proximal and distal reference segments or landing zones (largest lumen with least plaque) to select stent length.

## \* Post-Intervention

- Insure Adequate Expansion and Position.
  - Absolute stent cross-sectional area (CSA)
  - Stent CSA relative to a pre-defined reference
  - Full lesion coverage (correct placement)
- Identify and resolve edge complications

**Thank you for your  
kind attention!**





Biểu mẫu lịch sử thay đổi						
Ngày	Người thay đổi	Phiên bản	Mô tả		Lý do thay đổi	Người yêu cầu thay đổi
			Nội dung cũ	Nội dung mới		
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