Cardiac Catheterization PCS Webinar

Presented By:
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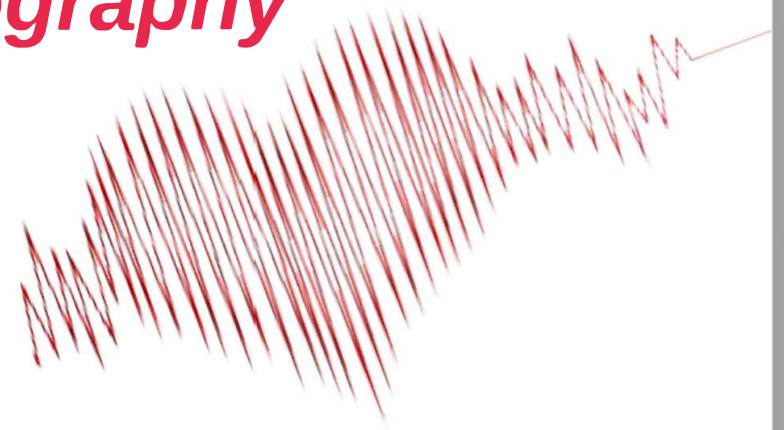
AHIMA Approved ICD-10-CM/PCS Trainer
Senior Manager, Quality Audit and Review
Ovation Revenue Cycle Services

Agenda

- Cardiac Catheterizations
- Coronary Arteriography
- Aortogram
- Ventriculogram
- Coronary Stents
- Coding Updates
- In-Stent Stenosis
- Coronary Artery Bifurcations
- Case Study



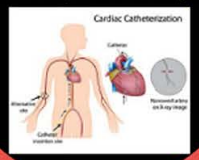
Cardiac Catheterization

ECG

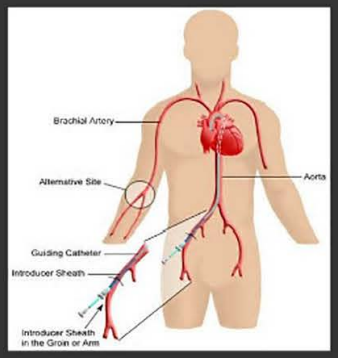
62 bpm

Left Cardiac Catheterization

- Performed to evaluate if you have disease of the heart muscle, valves or coronary arteries.



A very small hollow tube, or catheter, is advanced from a blood vessel in the groin or arm through the aorta into the heart.

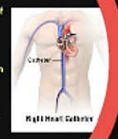


ECG

62 bpm

Right Cardiac Catheterization

- In a 'right' cardiac catheterization, the catheter enters the right side of the heart.
- The catheter is a long thin hollow tube that is placed through a central venous catheter and is then guided through the chambers of the heart and into the pulmonary artery, the main artery that carries blood to your lungs. This catheter measures pressures inside your heart and lungs and checks how well the heart is working.



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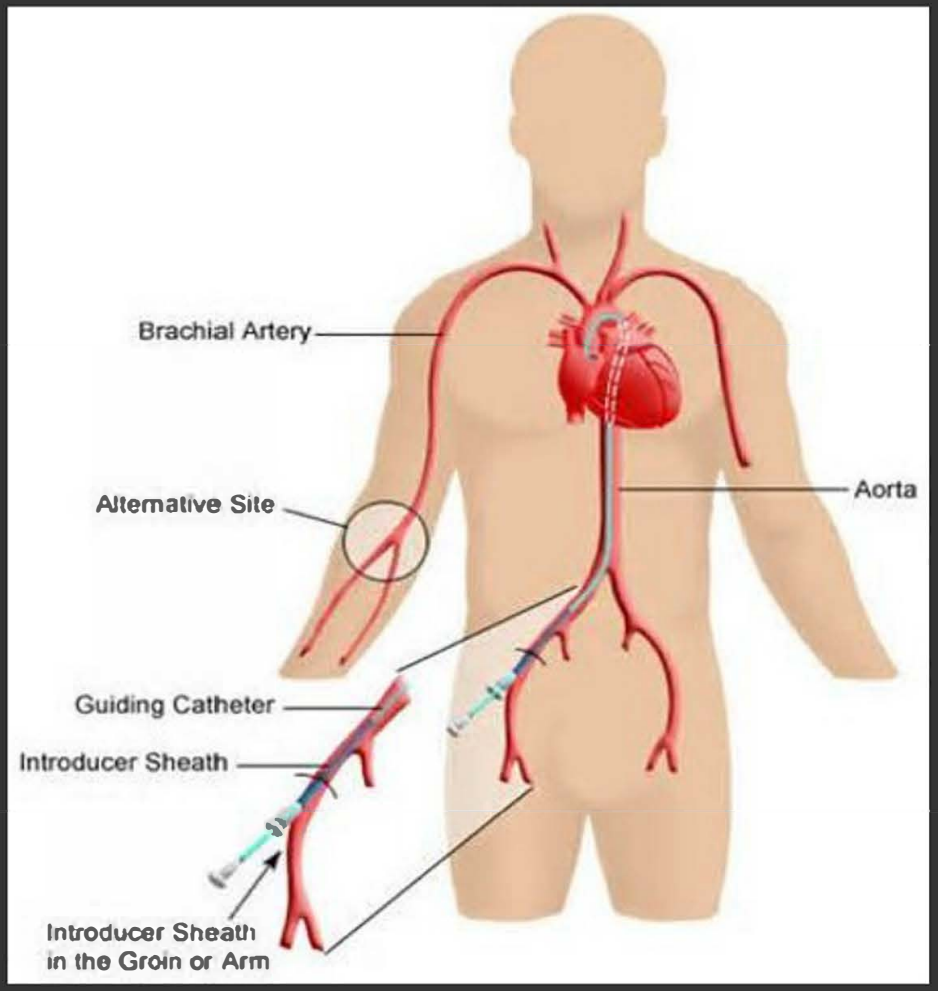

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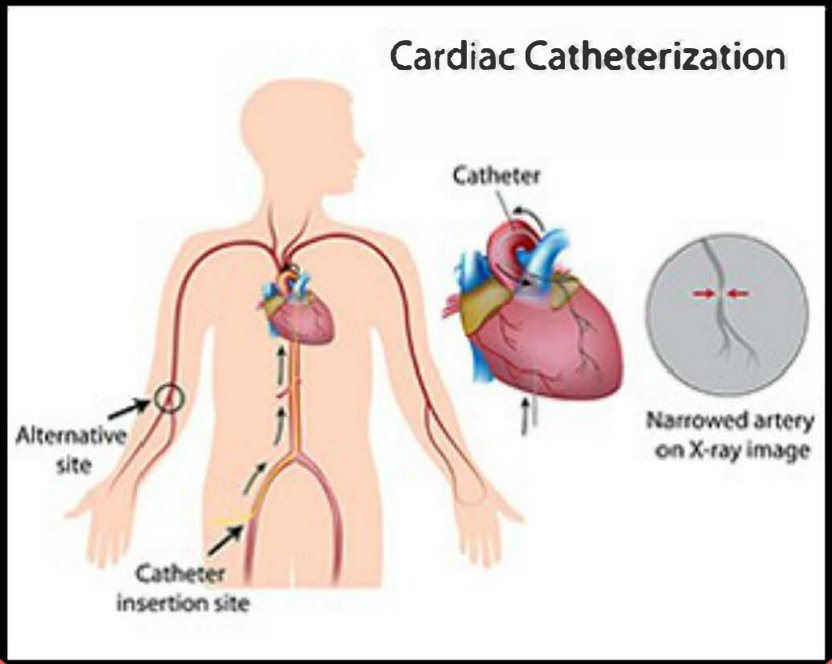

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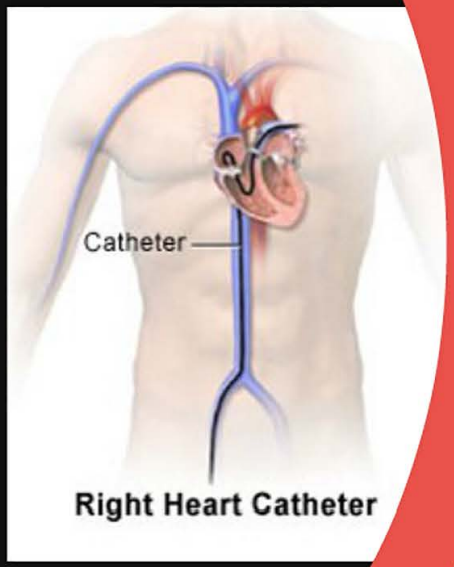

Right Heart Catheter

Diagnostic Cardiac Catheterization

ICD-10-PCS

Section (Character 1) Measurement and Monitoring
Body System (Character 2) Physiological Systems
Operation (Character 3) Measurement

Clear All | 4 A 0

Section 4 Measurement and Monitoring
Body System A Physiological Systems
Operation 0 Measurement - Determining the level of a physiological or physical function at a point in time

Body System	*Approach*	*Function / Device*	*Qualifier*
0 Central Nervous	0 Open	0 Acuity	0 Central
1 Peripheral Nervous	3 Percutaneous	1 Capacity	1 Peripheral
2 Cardiac	4 Percutaneous Endoscopic	2 Conductivity	2 Portal
3 Arterial	7 Via Natural or Artificial Opening	3 Contractility	3 Pulmonary
4 Venous	8 Via Natural or Artificial Opening Endoscopic	4 Electrical Activity	4 Stress
5 Circulatory	X External	5 Flow	6 Right Heart
6 Lymphatic		6 Metabolism	7 Left Heart
7 Visual		7 Mobility	8 Bilateral
8 Olfactory		8 Motility	9 Sensory
9 Respiratory		9 Output	A Guidance
B Gastrointestinal		B Pressure	B Motor
C Biliary		C Rate	C Coronary
D Urinary		D Resistance	D Intracranial
F Musculoskeletal		F Rhythm	F Other Thoracic
H Products of Conception, Cardiac		G Secretion	Z No Qualifier
J Products of Conception, Nervous		H Sound	
Z None		J Pulse	
		K Temperature	
		L Volume	
		M Total Activity	
		N Sampling and Pressure	

Ovation
Revenue Cycle Services
Provider-Proven Results

Measurement of Cardiac Sampling and Pressure, Left Heart, Percutaneous Approach

Clear All | 4 | A | 0 | |

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○ B Gastrointestinal		○ B Pressure	○ B Motor
○ C Biliary		○ C Rate	○ C Coronary
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		○ L Volume	
		○ M Total Activity	
		● N Sampling and Pressure	

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Measurement of Cardiac Sampling and Pressure, Right Heart, Percutaneous Approach

Clear All | 4 | A | 0 | | | | |

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		○ M Total Activity	
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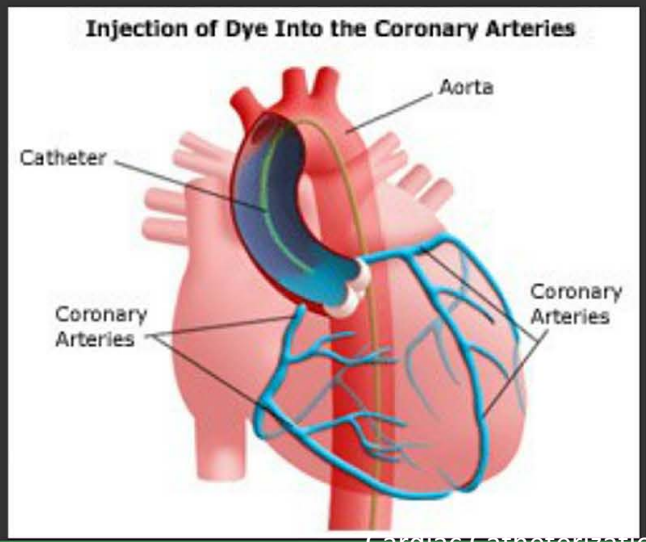
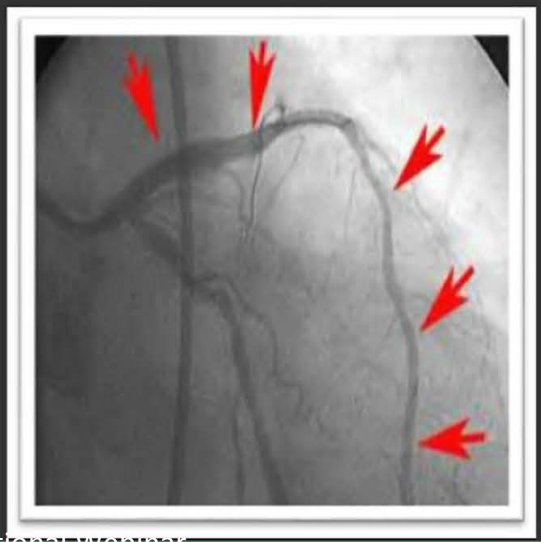
Coronary Arteriography (also known as Angiography)

- Coronary angiography is a procedure that uses a special dye (contrast material) and x-rays to see how blood flows through the arteries in your heart.

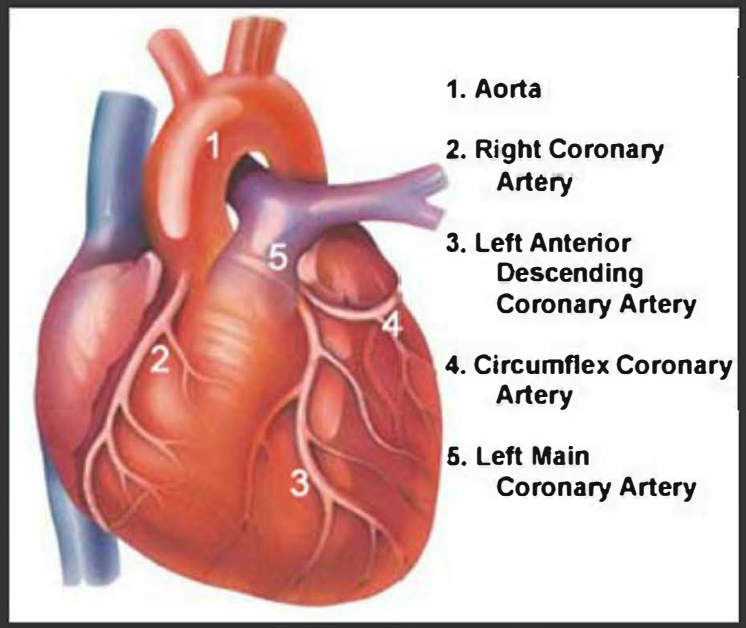
- Once the catheter is in place, dye (contrast material) is injected into the catheter. X-ray images are taken to see how the dye moves through the artery. The dye helps highlight any blockages in blood flow.



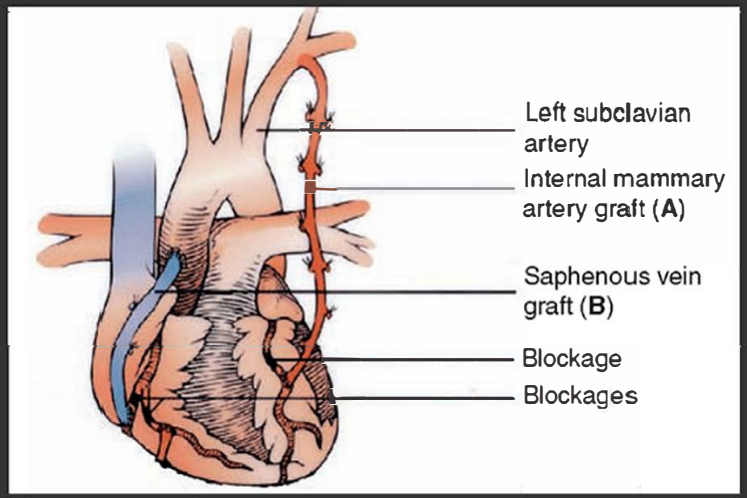


Coronary Arteriography (also known as Angiography)

- Coronary angiography via left heart catheterization is used to evaluate coronary artery anatomy:
  - Done with Fluoroscopy or Plain Radiography
  - Done on single or multiple arteries
  - Done using contrast: High Osmolar, Low Osmolar, or Other Contrast



LIMA



Coronary Arteriography

Types of Contrast:

Agent	Trade Mark	Osmolality
Diatrizoate	Hypaque 50	High
Metrizoate	Isopaque 370	High
Ioxaglate	Hexabrix	High
Iopamidol	Isovue 370	Low
Iohexol	Omnipaque 350	Low
Ioxilan	Oxilan 350	Low
Iopromide	Ultravist 370	Low
Iodixanol	Visipaque 320	Low
Ioversol	Optiray 320	Low

Coronary Arteriography

- Imaging section
- Heart
- Fluoroscopy = B21 (Radiography = B20….)

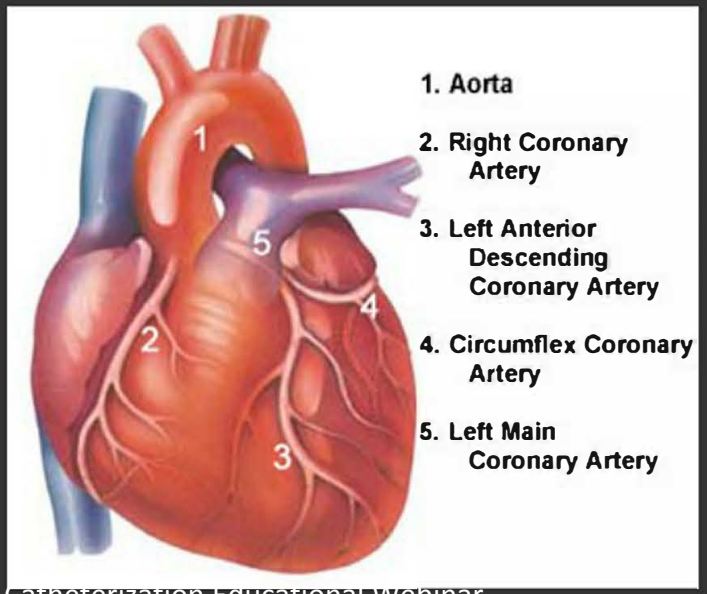
PCS Table B 2 1

Section	B Imaging
Body System	2 Heart
Type	1 Fluoroscopy

Body Part	Contrast	Qualifier	Qualifier
○ 0 Coronary Artery, Single	? ○ 0 High Osmolar	○ 1 Laser	○ 0 Intraoperative
○ 1 Coronary Arteries, Multiple	? ○ 1 Low Osmolar	○ Z None	○ Z None
○ 2 Coronary Artery Bypass Graft, Single	○ Y Other Contrast		
○ 3 Coronary Artery Bypass Grafts, Multiple			
○ 4 Heart, Right			
○ 5 Heart, Left			
○ 6 Heart, Right and Left			
○ 7 Internal Mammary Bypass Graft, Right			
○ 8 Internal Mammary Bypass Graft, Left			
○ F Bypass Graft, Other			

Aortogram (also known as Aortography)

- Aortic angiography via left heart catheterization is used to assess aortic regurgitation, coarctation, patent ductus arteriosus, and dissection.
  - Done with fluoroscopy or plain radiography
  - Done using contrast: High Osmolar, Low Osmolar, Other Contrast



Aortogram (also known as Aortography)

Clear All | B | 3 | 1 | 0 | | Z | Z |

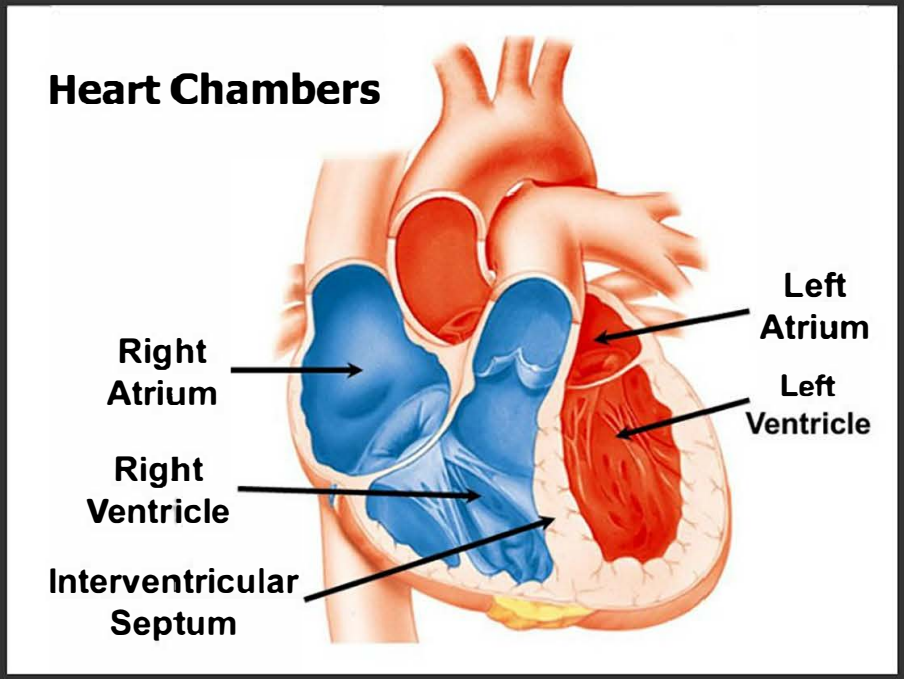
Section	**B**	Imaging
Body System	**3**	Upper Arteries
Type	**1**	Fluoroscopy - Single plane or bi-plane real time display of an image developed from the capture of external ionizing radiation on a fluorescent screen. The image may also be stored by either digital or analog means

Body Part	*Contrast*	*Qualifier*	*Qualifier*
◉ **0** Thoracic Aorta	○ **0** High Osmolar	○ **1** Laser	○ **0** Intraoperative
○ **1** Brachiocephalic-Subclavian Artery, Right	○ **1** Low Osmolar	◉ **Z** None	◉ **Z** None
○ **2** Subclavian Artery, Left	○ **Y** Other Contrast		
○ **3** Common Carotid Artery, Right	○ **Z** None		
○ **4** Common Carotid Artery, Left			

Ventriculogram

Ventriculogram - Used to visualize ventricular wall motion and ventricular outflow tracts, including subvalvular, valvular, and supravalvular regions. Also to estimate severity of mitral valve regurgitation and determine its pathophysiology.

- **Done with fluoroscopy or plain radiography**
- **Done on the left heart, right heart or both**
- **Done using contrast: High Osmolar, Low Osmolar, or Other Contrast**



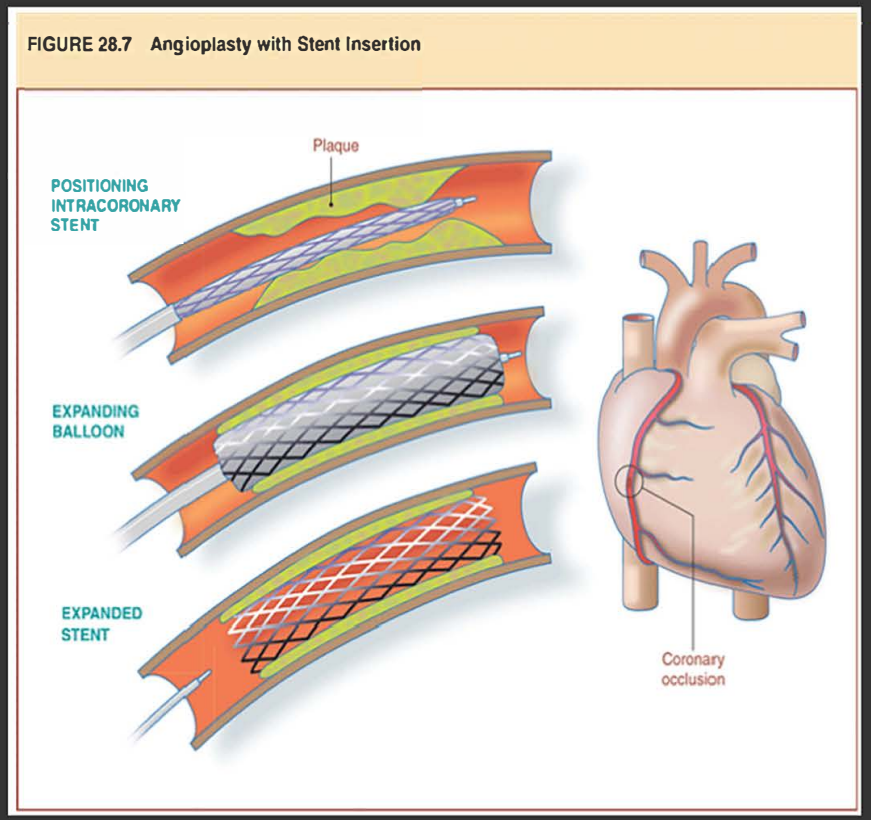
Left Ventriculogram

- Contrast is injected into the left ventricle
- Shows blood flow through and out of the left ventricle
- Can measure your ejection fraction (EF), which is the amount, or percentage, of blood the heart pumps out with each beat
  - Often used to evaluate heart function in heart failure patients

Left ventriculogram, with fluoroscopy, using Isovue contrast: B2151ZZ, Fluoroscopy of Left Heart using Low Osmolar Contrast.

Coronary Stents

Coronary stents are used to prop open the blocked coronary arteries. A balloon is inserted into the artery and inflated to squash plaque deposits against the vessel wall. Then a second balloon is inserted with the stent, which pushes the stent against the artery wall to maintain patency.



Coronary Stents

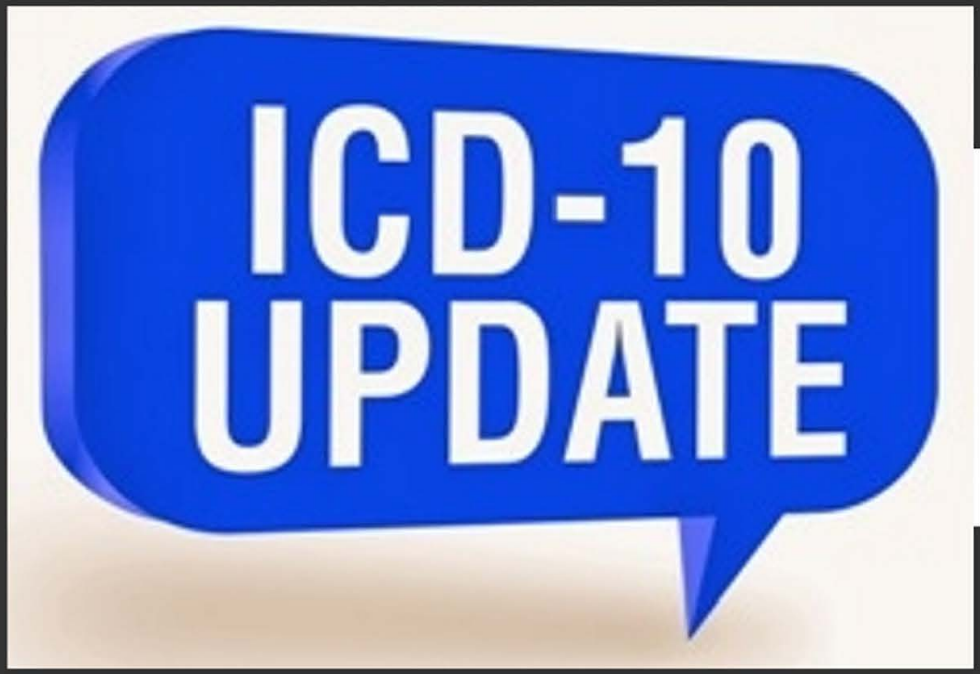
Common **Drug Eluting Stents** - are metal mesh tubes that have been coated with slow-release medication such as sirolimus or paclitaxel to prevent restenosis, or re-blocking of an artery. The medication helps to decrease the amount of re-growth within the artery walls.

- Cypher
- Taxus
- Xience
- Endeavor
- Promus
- Resolute

Coronary Stents

Common **Bare Metal Stents** - are made from a metal mesh tube and are used without drug coating. BMS help to provide support to arteries following an angioplasty and are primarily used in patients who cannot tolerate the medications involved with drug eluting stent, or DES.

- Liberte
- Multi Link
- Coroflex
- VeriFLEX
- Integrity
- Driver
- MicroDriver


ICD-10
UPDATE

2017
2016

ICD-10-CM New Diagnosis Codes Effective October 1, 2016

Code	Description
T82.855A	Stenosis of coronary artery stent, initial encounter
T82.855D	Stenosis of coronary artery stent, subsequent encounter
T82.855S	Stenosis of coronary artery stent, sequela

ICD-10-PCS Guideline B3.6b

2016: Coronary arteries are classified by number of distinct sites treated, rather than number of coronary arteries or anatomic name of a coronary artery (e.g., left anterior descending). Coronary artery bypass procedures are coded differently than other bypass procedures as described in the previous guideline. Rather than identifying the body part bypassed from, the body part identifies the number of coronary artery sites bypassed to, and the qualifier specifies the vessel bypassed from.

2017: Coronary artery bypass procedures are coded differently than other bypass procedures as described in the previous guideline. Rather than identifying the body part bypassed from, the body part identifies the number of coronary artery sites bypassed to, and the qualifier specifies the vessel bypassed from.

ICD-10-PCS Guideline B3.6b

2016: If multiple coronary artery sites are bypassed, a separate procedure is coded for each coronary artery site that uses a different device and/or qualifier.
Example: Aortocoronary artery bypass and internal mammary coronary artery bypass are coded separately.

2017: If multiple coronary arteries are bypassed, a separate procedure is coded for each coronary artery that uses a different device and/or qualifier.
Example: Aortocoronary artery bypass and internal mammary coronary artery bypass are coded separately.

ICD-10-PCS Guideline B4.4

2016: The coronary arteries are classified as a single body part that is further specified by number of sites treated and not by name or number of arteries. Separate body part values are used to specify the number of sites treated when the same procedure is performed on multiple sites in the coronary arteries.

2017: The coronary arteries are classified as a single body part that is further specified by number of arteries treated. One procedure code specifying multiple arteries is used when the same procedure is performed, including the same device and qualifier values.

ICD-10-PCS Guideline B4.4

2017 Examples:

Angioplasty of two distinct coronary arteries with placement of two stents is coded as
Dilation of Coronary Artery, Two Arteries with Two Intraluminal Devices.

Angioplasty of two distinct coronary arteries, one with stent placed and one without, is coded separately as Dilation of Coronary Artery, One Artery with Intraluminal Device, and Dilation of Coronary Artery, One Artery with no device.

In conjunction with the revisions for body part values to identify the number of coronary arteries, six new "Device values" were added for coronary interventional procedures as shown below:

New Device Values:

- 5 Intraluminal Device, Drug-Eluting, Two
- 6 Intraluminal Device, Drug-Eluting, Three
- 7 Intraluminal Device, Drug-Eluting, Four or More
- E Intraluminal Device, Two
- F Intraluminal Device, Three
- G Intraluminal Device, Four or More

These new values restore detail that was available in ICD-9-CM to capture the specific number of drug-eluting and non-drug-eluting coronary artery stents placed. This change impacts codes describing "Dilation of Heart and Great Vessels" since stent insertion is typically associated with angioplasty.

Coding Clinic, Second Quarter ICD-10 2015 Page:4

Question: The patient had a lesion in the proximal left anterior descending (LAD) artery that was treated percutaneously with one drug-eluting stent and a lesion in the distal LAD artery that was treated with one non drug-eluting stent.

Answer: In this case, since different types of stents were inserted, two codes with the body part value of one coronary artery site are assigned, to show the type of stent used. Assign code 027034Z, Dilation of coronary artery, one ~~site~~ artery with drug eluting intraluminal device, percutaneous approach, and code 02703DZ, Dilation of coronary artery, one ~~site~~ artery with intraluminal device, percutaneous approach.

(verbiage revised 10-1-16)

Coding Clinic, Fourth Quarter 2016, Page 84

Question: The patient underwent placement of two overlapping drug-eluting stents to treat a long lesion in the left anterior descending coronary artery with another drug-eluting stent placed in the left circumflex coronary artery. In addition, two non-drug-eluting stents were placed in the right coronary artery to treat two separate lesions. How is this procedure coded?

Answer: Assign the following procedure codes:

027136Z Dilation of coronary artery, two arteries with three drug-eluting intraluminal devices, percutaneous approach, for the placement of two drug-eluting stents in the left anterior descending coronary artery and one drug-eluting stent in the left circumflex coronary artery

02703EZ Dilation of coronary artery, one artery with two intraluminal devices, percutaneous approach, for placement of two non-drug-eluting stents in the right coronary artery.

Coding Clinic, Fourth Quarter 2016, page 84 continued…

Answer: The code assignments reflect the number of coronary arteries treated and the number of stents placed. The codes also reflect drug-eluting and non-drug-eluting stents, because they have different device values. Two coronary arteries, the left anterior descending and the left circumflex, were treated with a total of three drug-eluting stents. One coronary artery, the right coronary artery, was treated with two non-drug-eluting stents.

Coding Clinic, Fourth Quarter 2016, Page 85

Question: The patient presented with stenosis of her coronary artery bypass graft (CABG). The provider documented that a portion of the saphenous vein graft was stenotic due to further progression of atherosclerotic heart disease. A drug-eluting stent was placed to treat stenosis of the distal segment of the saphenous vein graft originating from the aorta and attached to the right posterior descending artery. The stent reduced the stenosis. However, after deployment, there was dissection of the saphenous vein graft expanding from the ostium to the recently deployed stent. The dissection was sealed with three additional overlapping drug eluting stents. Since placement of the stents was performed for distinct purposes, dilation of the graft and repair of the graft, what are the code assignments for this case?

Coding Clinic, Fourth Quarter 2016, Page 85

Answer: Assign code I25.810, Atherosclerosis of coronary bypass graft(s) without angina pectoris, for the stenosis of the saphenous vein bypass graft due to progression of disease. Placement of the stents is coded to the root operation "Dilation" rather than the root operation "Revision," because the procedure is performed for progression of disease rather than failure of the device. Assign the following ICD-10-PCS code:

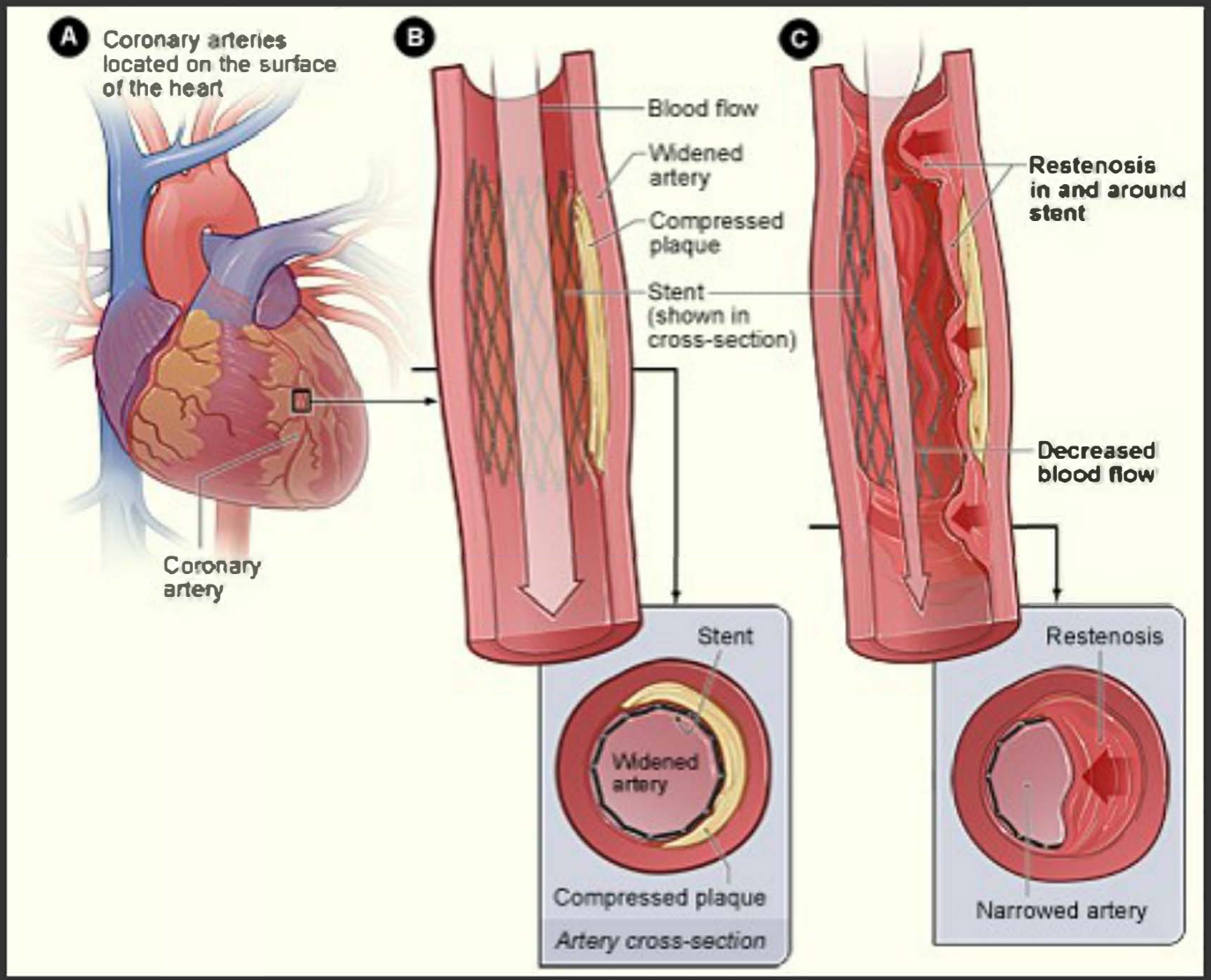
027037Z Dilation of coronary artery, one artery with four or more drug-eluting intraluminal devices, percutaneous approach

In-Stent Stenosis

- Stents are placed in arteries in areas of stenosis
- Compresses the cholesterol deposits and creates a wider pathway for blood to flow through
- Solid, metal object that acts as scaffolding that keeps the targeted segment of artery open for an extended period of time

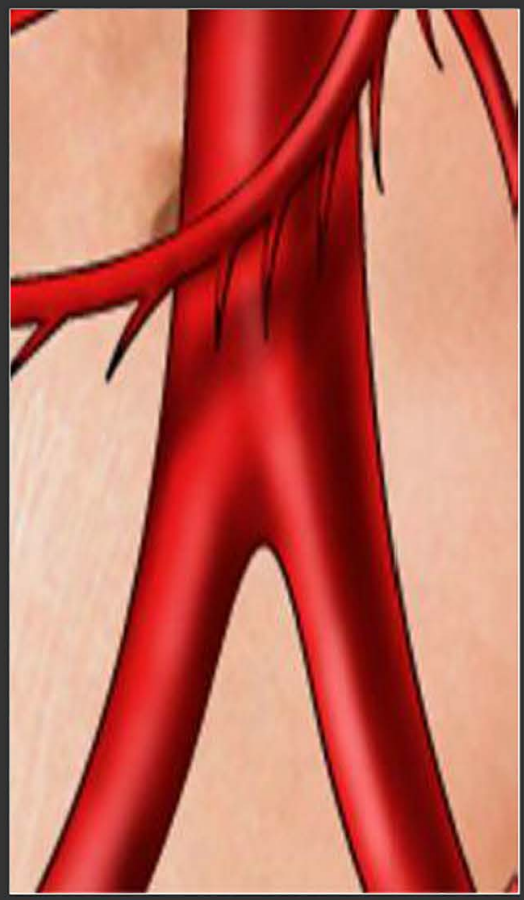
In-stent stenosis - new blockages build up at the site of a previously placed stent.

In-Stent Stenosis



Coronary Artery Bifurcations

The coronary arteries are like a tree with branches. Plaque often builds up at a site where a coronary artery branches off the main coronary artery.

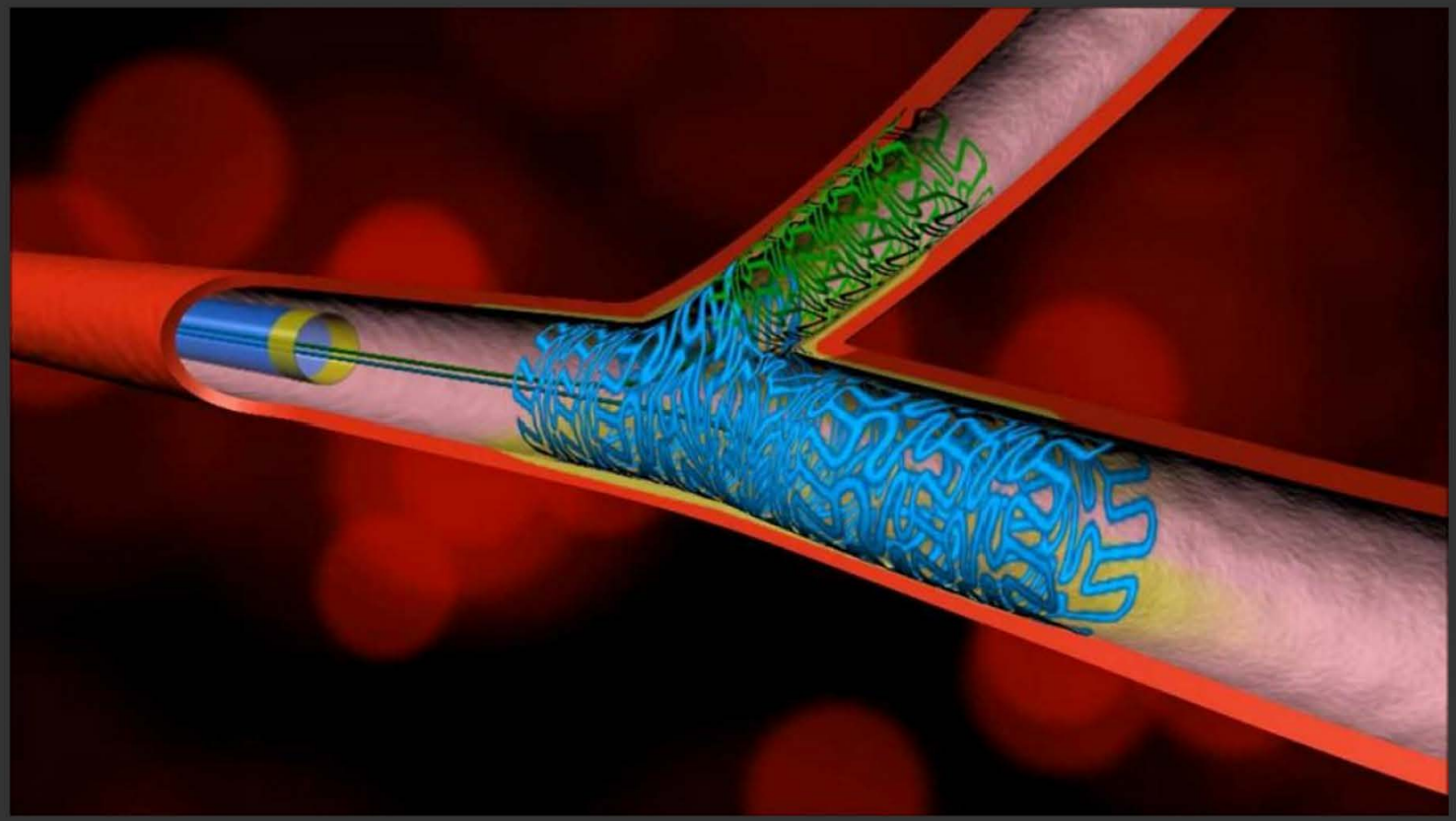


Stenosis located in a main coronary artery and an adjoining side-branch vessel is called a bifurcation blockage or lesion.

Bifurcation blockages are more challenging to treat because current stents do not come in a "Y" configuration.

Coding Bifurcation Lesions

- There must be physician documentation of the stented area being on a bifurcation
- Most times two stents will be used to treat blockages that are on a bifurcation



Case Study:

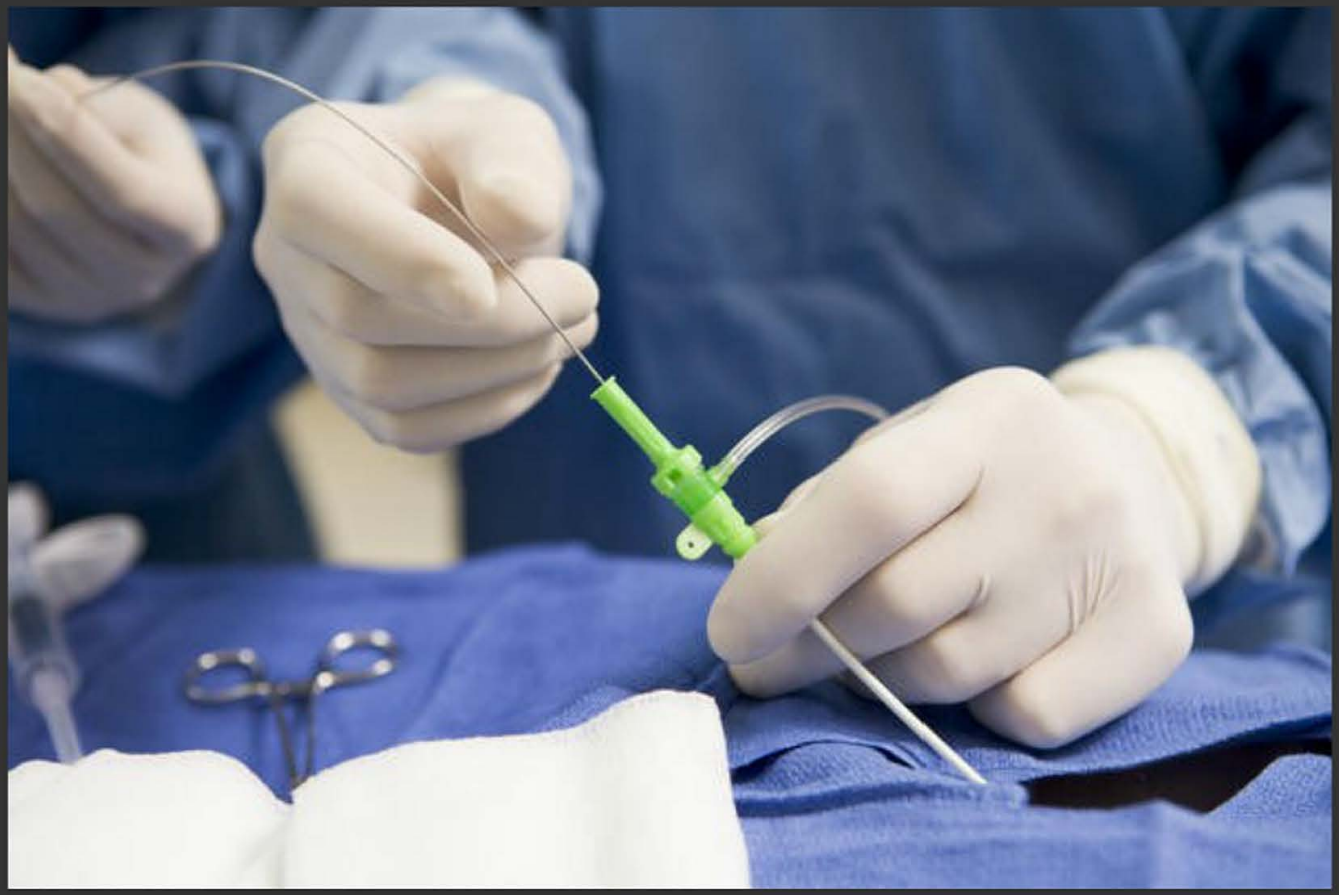
This 80 year old male with a history of remote CABG who was admitted with recurrent bradycardia and near syncope.

Procedure Title:

- Left heart catheterization
- Coronary angiography
- Left ventriculography
- Supraventricular ascending aortography
- Right internal mammary artery angiography
- Left internal mammary artery angiography
- Saphenous vein graft angiography
- Percutaneous coronary intervention with a drug-eluting stent to the mid right coronary artery

Case Study Procedure Note:

The right femoral artery was accessed with a 5-French sheath using micropuncture technique.

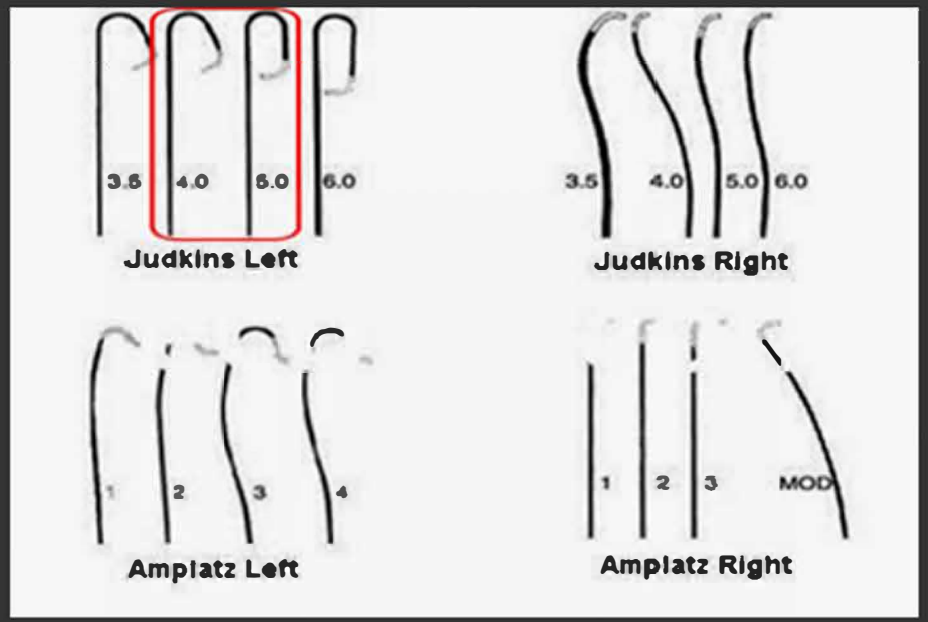


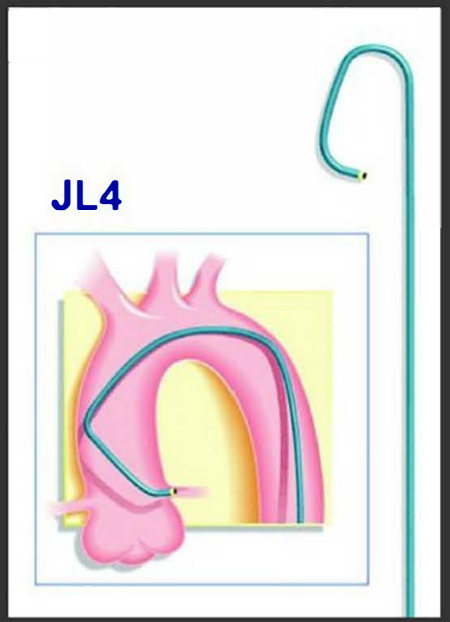
Case Study Procedure Note:

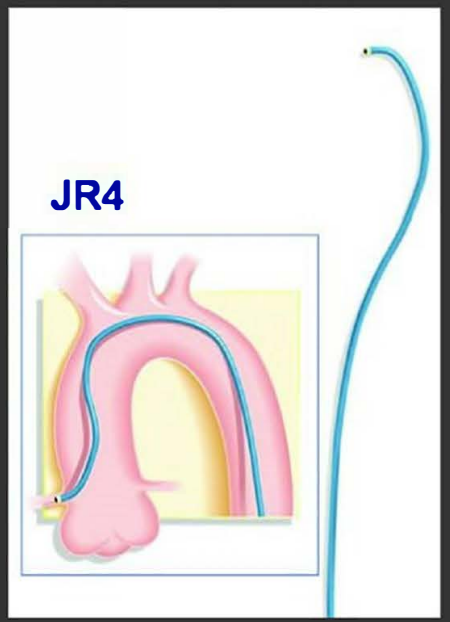
Coronary angiography was performed with a 5-French JL5 and a 5-French JL4 diagnostic catheters.

Saphenous vein graft angiography was performed with a 5-French JR4 catheter, and of the RIMA and LIMA with a 5-French IM diagnostic catheter.

Left heart catheterization, left ventriculography, and supraventricular ascending aortography were also performed with a 5-French pigtail catheter.







Case Study Procedure Note:

At that point, I discussed the case and reviewed the radiographic images with Cardiovascular Surgery for a possible surgical revascularization. However, considering the patient's anatomic findings a decision was made to pursue a percutaneous revascularization.

The indwelling femoral artery sheath was exchanged for the 6-French x 35 cm Brite Tip sheath. A 6-French JR4 guiding catheter was engaged in the right coronary artery and bivalirudan was used, intensity over 250 seconds. Angioplasty of the stenosis in the RCA was performed using a 2.75 x 8 mm balloon. Then, 3.0 x 60 mm Promus drug-eluting stent was implanted and post-dilated with a 3.0 x 8 mm noncompliant balloon. Final angiography revealed excellent results and no complications.

Case Study Procedure Note:

Technical details:
Contrast: Optiray 320, 360 ml (low osmolar)
Complications: None

Findings:
LV ejection fraction 35-40%
Left main - 80% stenosis
LAD - occluded at its origin
RCA - 95% stenosis in the mid segment
RCA - 60% stenosis in the distal segment
LIMA and RIMA are patent

Case Study Procedure Note:

Impression:
Severe native three vessel coronary artery disease
Severe left main coronary artery stenosis
Critical RCA stenosis successfully treated with drug eluting stent
Patent LIMA to LAD

ICD-10-CM:

Code	Description
I25.10	Atherosclerotic heart disease of native coronary artery without angina pectoris
Z95.1	Presence of aortocoronary artery bypass graft

Case Study PCS Codes:

Left heart catheterization, Coronary angiography, Left ventriculography, Aortography, Right internal mammary artery angiography, Left internal mammary artery angiography, Saphenous vein graft angiography, Percutaneous coronary intervention with a drug-eluting stent to the mid right coronary artery.

Code	Description
4A023N7	Measurement of Cardia Sampling and Pressure, Left Heart, Percutaneous Approach
B2001ZZ	Plain Radiography of Single Coronary Artery using Low Osmolar Contrast
B2051ZZ	Plain Radiography of Left Heart using Low Osmolar Contrast
B3001ZZ	Plain Radiography of Thoracic Aorta using Low Osmolar Contrast
B2081ZZ	Plain Radiography of Left Internal Mammary Bypass Graft using Low Osmolar Contrast
B2071ZZ	Plain Radiography of Right Internal Mammary Bypass Graft using Low Osmolar Contrast
B2021ZZ	Plain Radiography of Single Coronary Artery Bypass Graft using Low Osmolar Contrast
027034Z	Dilation of Coronary Artery, One ~~Site~~ Artery with Drug-Eluting Intraluminal Device, Percutaneous Approach (verbiage revised 10-1-16)

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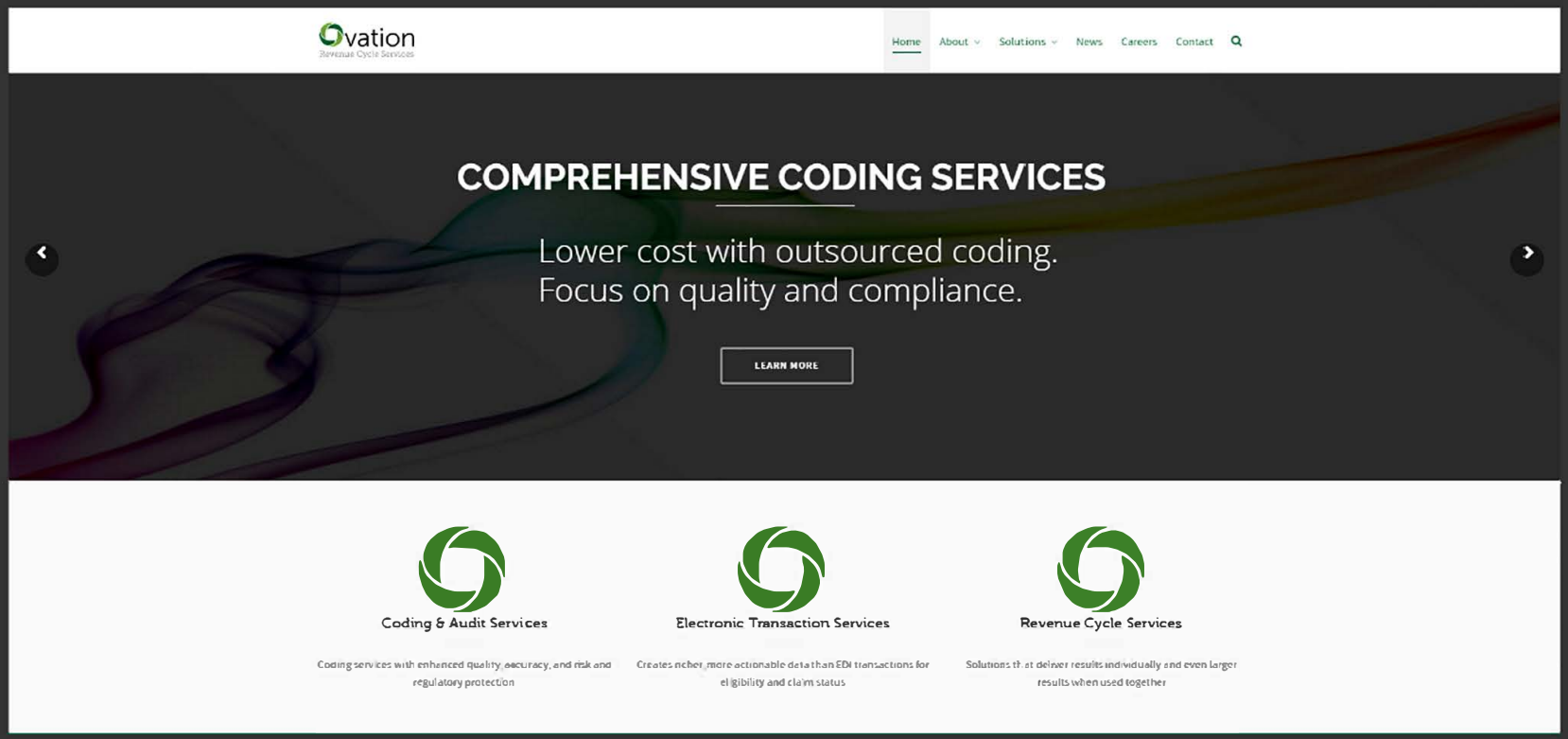

Q&A

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Thank you for your time!

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