SNS COLLEGE OF ALLIED HEALTH SCIENCE

Affiliated to The Tamil Nadu Dr. M.G.R Medical University, Chennai

DEPARTMENT OF CARDIAC TECHNOLOGY

COURSE NAME : CARDIAC CATHETERIZATION LABORATORY BASICS

UNIT : TABLE MOVEMENT IN CATH LAB

TOPIC : BASICS OF TABLE MOVEMENT CONTROL

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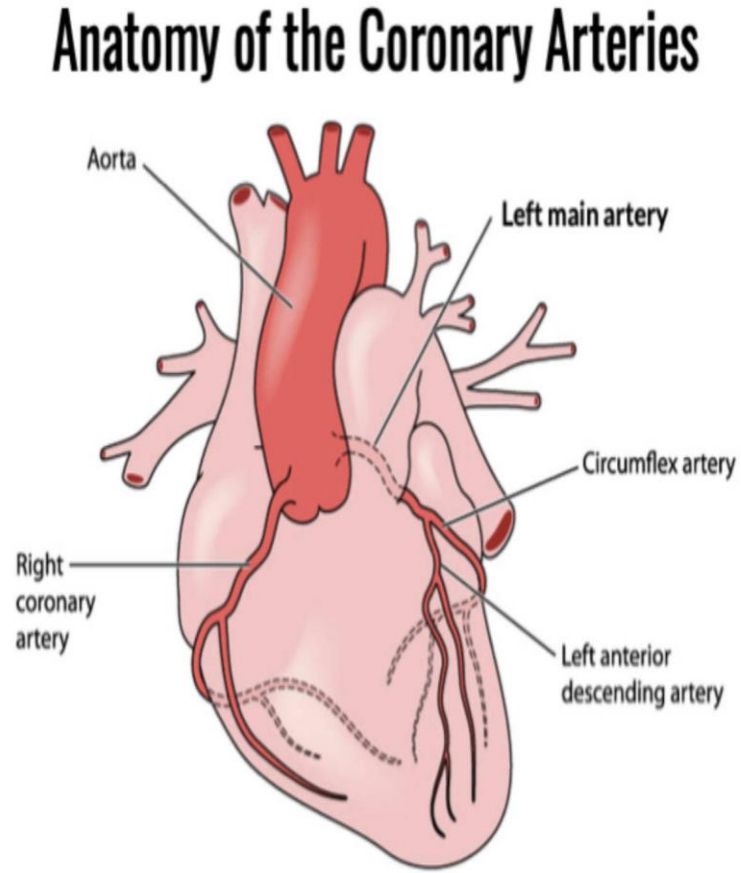
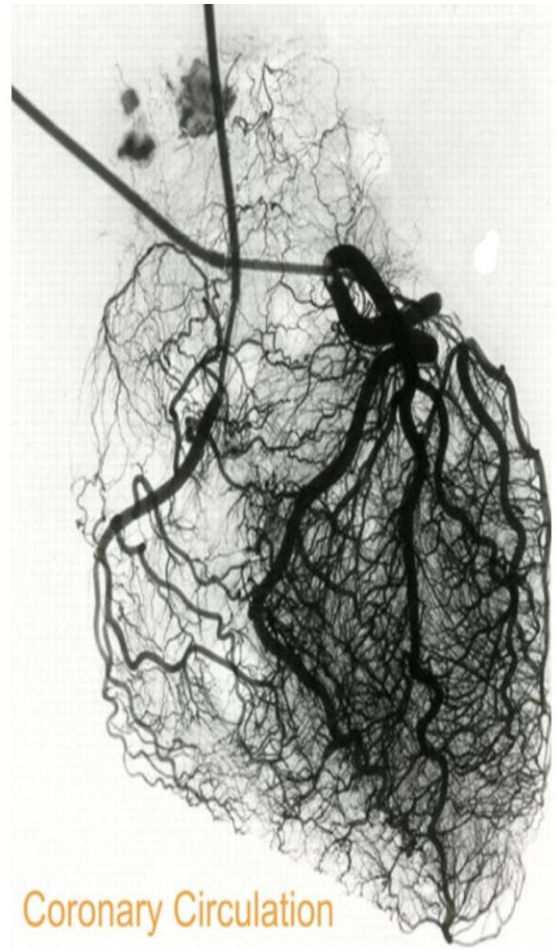
INTRODUCTION

- Cardiac catheterization, particularly coronary angiography, involves injecting contrast dye into the coronary arteries to visualize their structure and identify blockages or abnormalities using

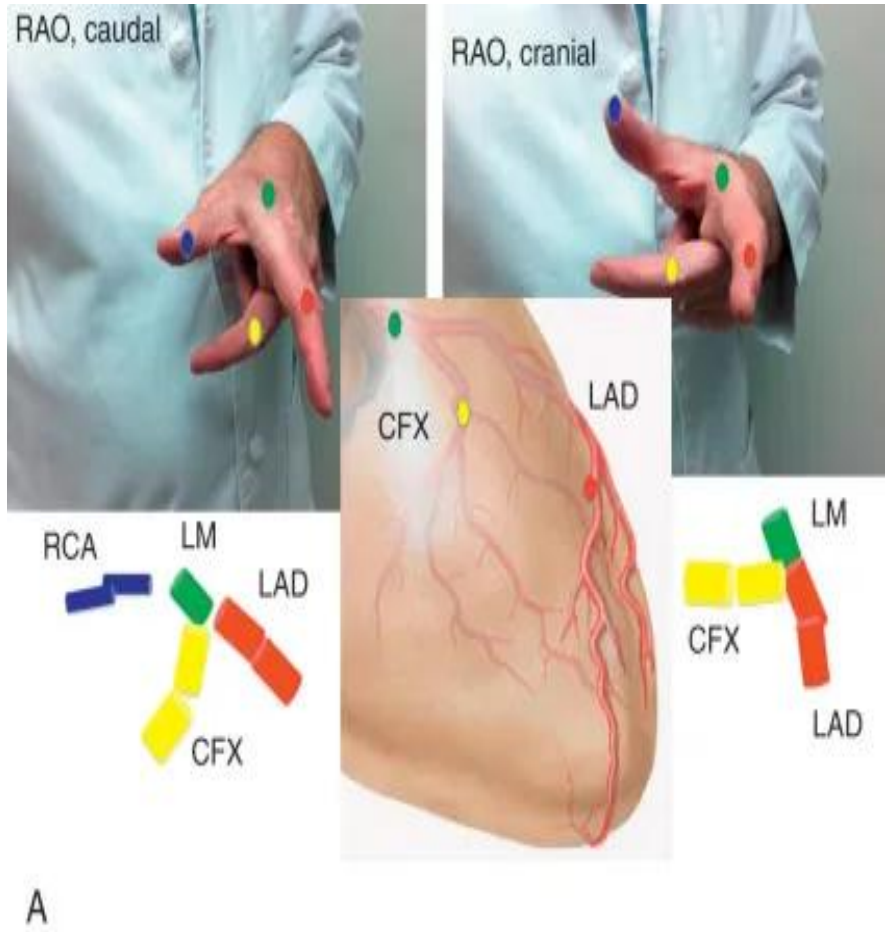
X-ray imaging.



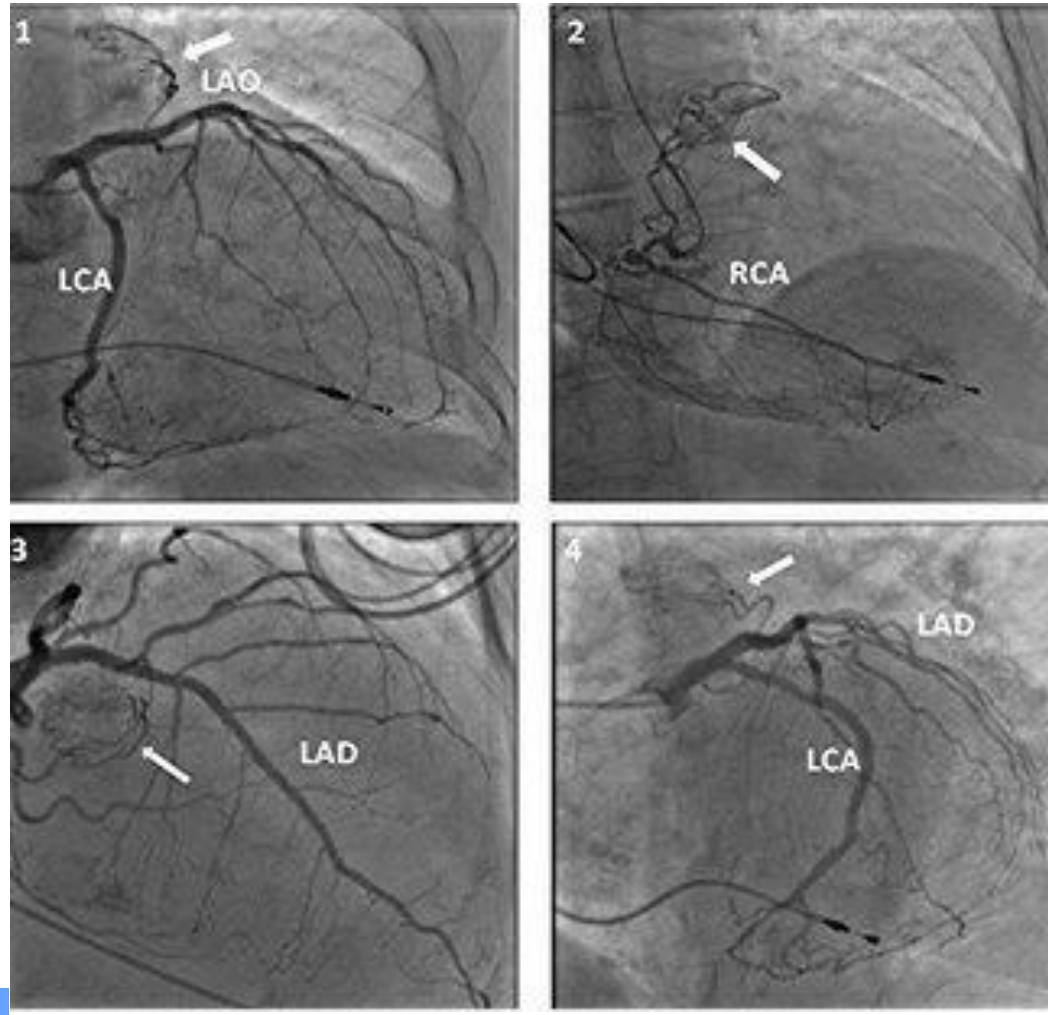


STANDARD VIEWS

- Cardiac catheterization uses X-ray (fluoroscopy) to guide catheters to the heart, creating specific views (like RAO Caudal, LAO Cranial) to visualize **coronary arteries, heart chambers, and valves by injecting contrast dye, helping diagnose blockages, measure pressures,** and plan treatments like angioplasty or stenting.
- These standard views **(RAO Cranial/Caudal, LAO Cranial/Caudal, AP Cranial/Caudal)** offer different angles to clearly see all parts of the coronary arteries, especially the Left Main, LAD, and Circumflex, for precise diagnosis and intervention.



- The "views" refer to specific angiographic projections, which are angles at which the X-ray camera (image intensifier) is positioned relative to the patient.
- These projections are crucial for obtaining clear, non-overlapping images of different segments of the coronary arteries.

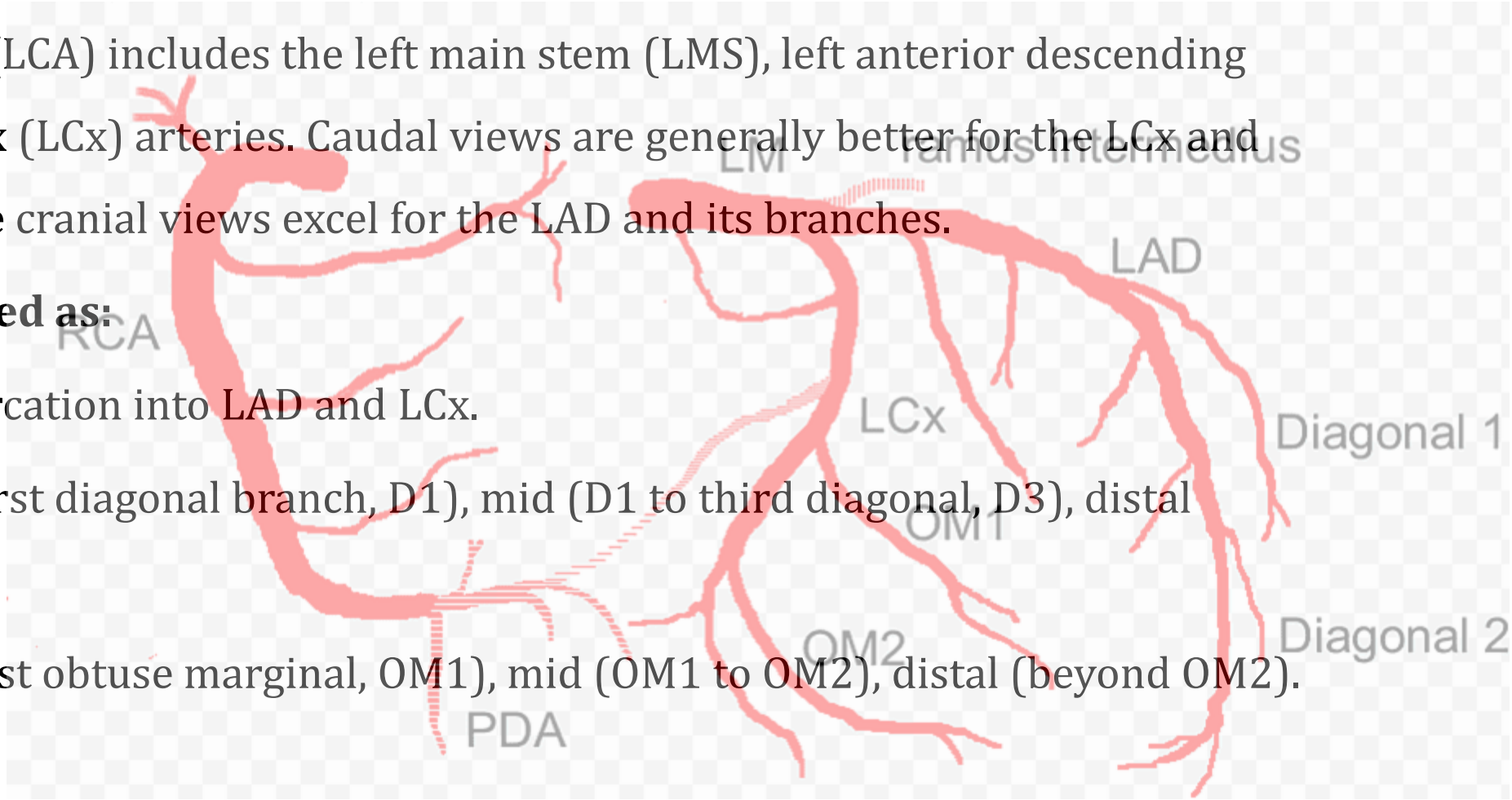


Left Coronary System Views

- The left coronary artery (LCA) includes the left main stem (LMS), left anterior descending (LAD), and left circumflex (LCx) arteries. Caudal views are generally better for the LCx and proximal segments, while cranial views excel for the LAD and its branches.

The arteries are segmented as:

- **LMS:** From origin to bifurcation into LAD and LCx.
- **LAD:** Proximal (LMS to first diagonal branch, D1), mid (D1 to third diagonal, D3), distal (beyond D3).
- **LCx:** Proximal (LMS to first obtuse marginal, OM1), mid (OM1 to OM2), distal (beyond OM2).

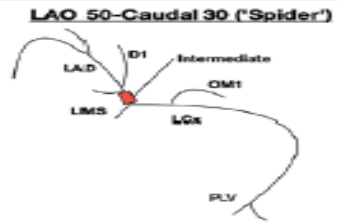
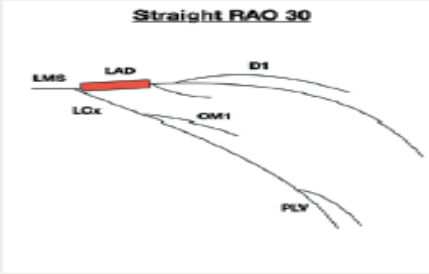
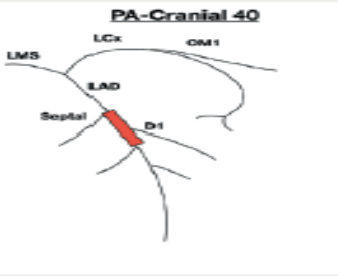
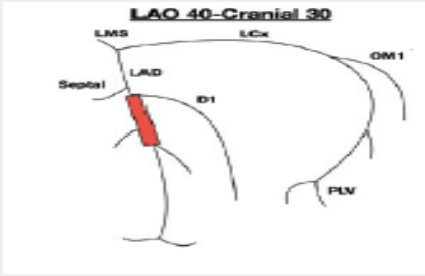
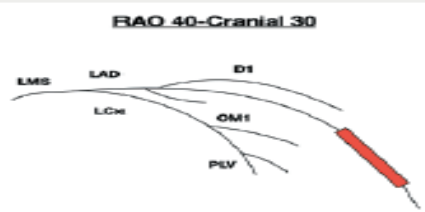
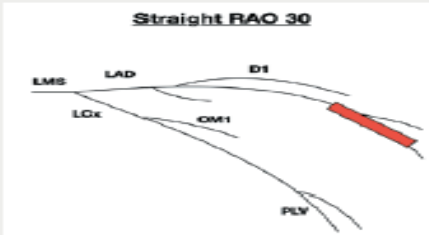


Left Coronary System Views

Segment	Recommended Views	Angles	Visualized Structures
Left Main Stem (LMS)	LAO Cranial, RAO Cranial	LAO 45°-60° Cranial; RAO 30°-45° Cranial	Ostium and proximal LMS; helps assess bifurcation into LAD and LCx.
Proximal LAD	LAO, RAO	LAO 45°; RAO 30°-45°	From LMS to D1; identifies septal perforators and early diagonals.
Mid LAD	RAO Cranial, LAO	RAO 20°-30° Cranial; LAO 0°-20°	From D1 to D3; best for diagonal bifurcations and mid-segment stenoses.
Distal LAD	LAO Caudal, RAO Caudal	LAO 0°-20° Caudal; RAO 0°-20° Caudal	Beyond D3; shows apical wrap-around and distal flow.
Proximal LCx	RAO, LAO	RAO 40°-50°; LAO 70°-80°	From LMS to OM1; visualizes early marginal branches.
Mid LCx	LAO, RAO	LAO 0°-20°; RAO 0°	From OM1 to OM2; assesses intermediate branches.
Distal LCx	LAO Caudal, RAO	LAO 0° Caudal; RAO 0°	Beyond OM2; shows posterolateral extensions.

Additional common LCA views include

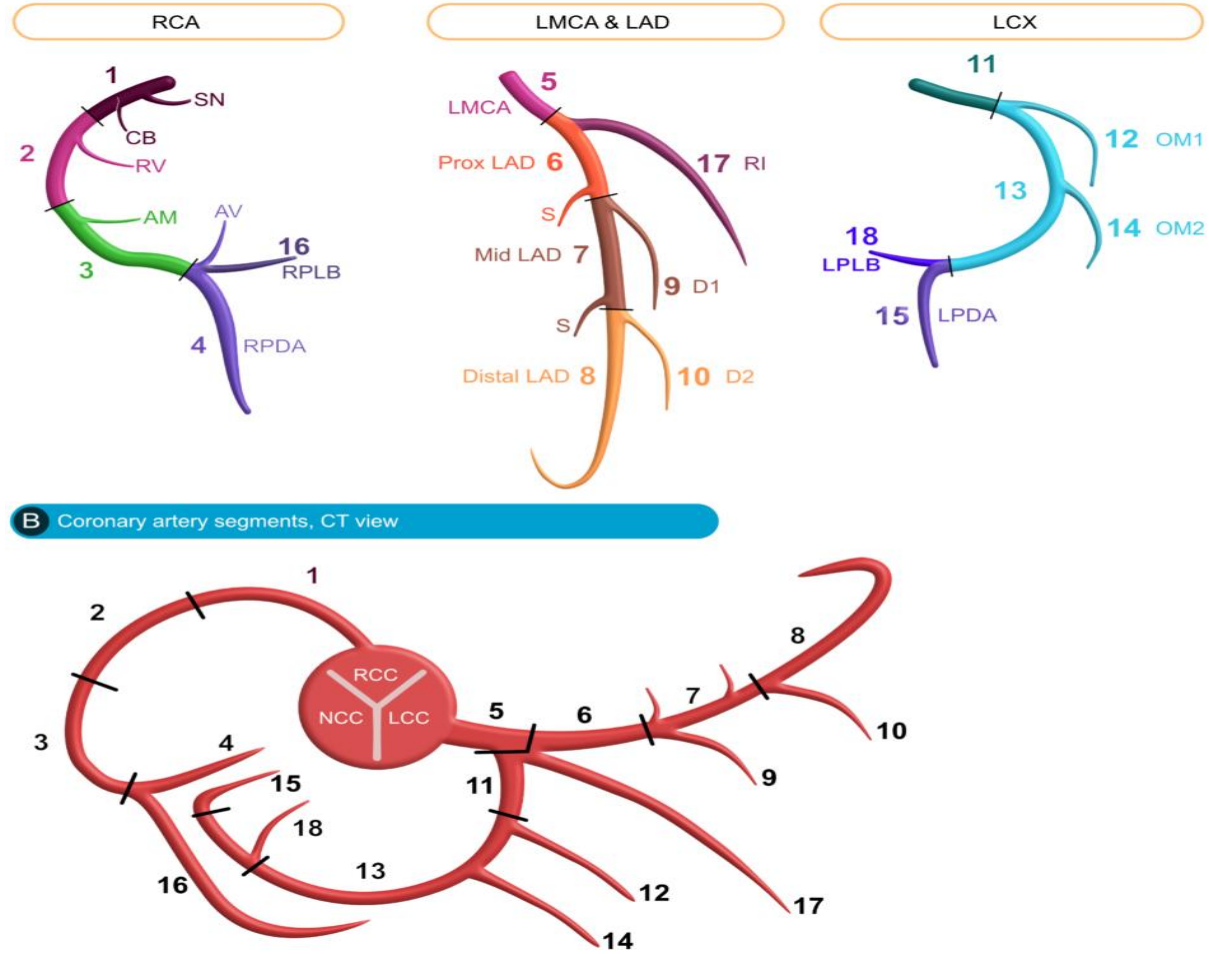
- ✓ **RAO 20° Caudal 20°:** Good overall for proximal LCA.
- ✓ **AP (Antero-Posterior) 0° Caudal 30°:** For bifurcations.
- ✓ **LAO 50° Caudal 30°:** Excellent for LCx.
- ✓ **LAO 50° Cranial 30°:** For LAD/diagonal separations.
- ✓ **AP 0° Cranial 40°:** Distal LAD visualization.

Segment	Main views	
Proximal	 (Alternative: PA-Caudal)	
Mid		
Distal		

Right Coronary System Views

The right coronary artery (RCA) is segmented as:

- **Proximal**: From ostium to where it turns vertical.
- **Mid**: Vertical segment.
- **Distal**: From end of vertical segment to bifurcation into posterior descending artery (PDA) and posterolateral ventricle (PLV) branches.



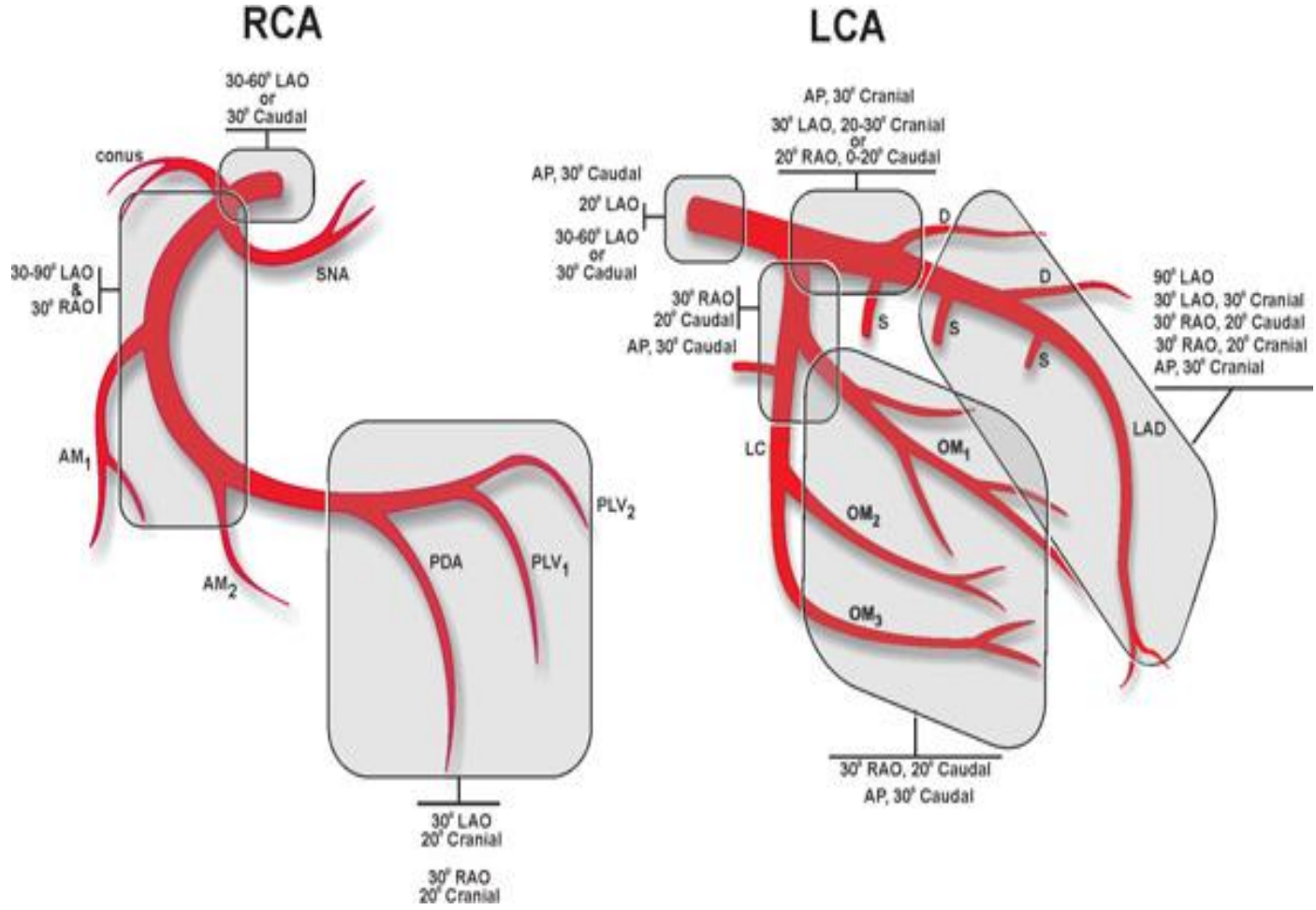
Right Coronary System Views

Segment	Recommended Views	Angles	Visualized Structures
Proximal RCA	LAO, PA (Postero-Anterior)	LAO 30°-40°; PA 0°	Ostium and early conus branch; detects ostial disease.
Mid RCA	RAO Caudal, LAO Caudal	RAO 20°-30° Caudal; LAO 0°-20° Caudal	Vertical portion; assesses right ventricular branches.
Distal RCA	LAO Caudal, RAO	LAO 0°-20° Caudal; RAO 0°	Bifurcation into PDA and PLV; evaluates dominance and distal flow.

Right Coronary System Views

Additional common RCA views:

- Straight RAO 30°: Mid RCA.
- AP 0° Cranial 30°: Distal bifurcation (with inspiration to clear diaphragm).

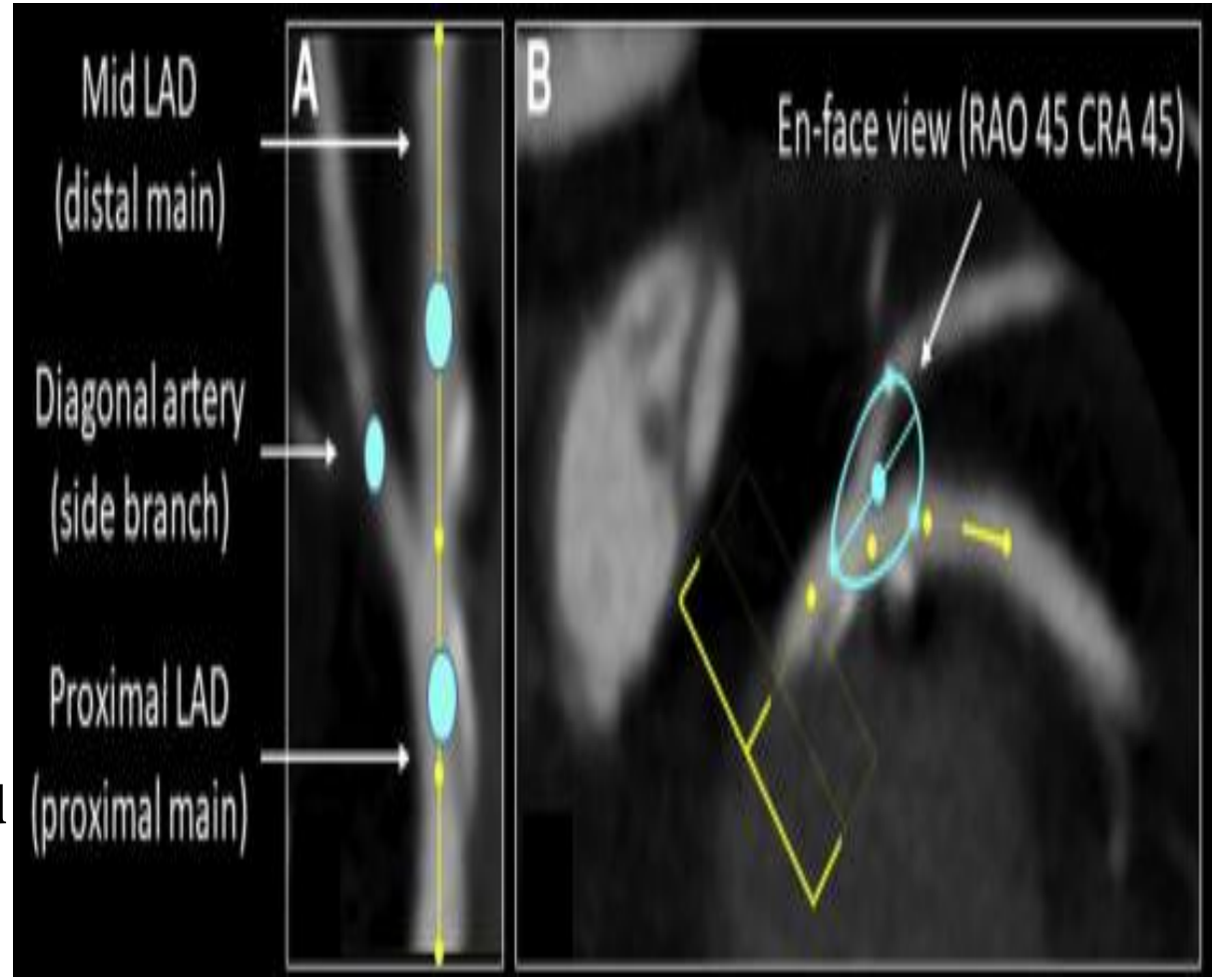


Additional Considerations

- **Bifurcation Lesions:** Use specialized views like LAO 45° Caudal 30° for LMS bifurcation or RAO 30° Cranial 30° for LAD/diagonal.
- **Post-Surgical (e.g., Bypass Grafts):** Views like left lateral for LIMA (left internal mammary artery) body or right cranial for LIMA to mid-LAD.

Additional Considerations

- **Tips for Optimization**: Start with LAO 40° for cannulation. Use non-selective injections if ostial disease is suspected. Adjust frame rates (10-15 fps) and pulse rates to reduce contrast and radiation. Patient positioning and breath instructions are key for clear images.
- **Variations**: Views may need adjustment for anatomical variants like dominant LCx or anomalous origins. Always confirm with multiple angles to avoid foreshortening.



Summary

- In-depth explanation of angiographic projections, including rationale for each view (e.g., separating branches, assessing bifurcations, evaluating eccentricity).
- Comprehensive coverage of normal and variant anatomy, with detailed figures of RAO/LAO, cranial/caudal angulations.
- Discussions on left and right coronary views, aortography, graft angiography, and peripheral vessels.
- Integration with hemodynamic data and evaluation of cardiac function (cross-referenced to Section V).
- Advanced topics like integrated
- imaging modalities and stress angiography.

Reference

1. Kern's Cardiac Catheterization Handbook (8th Edition, 2024)

Primary Chapter: Chapter 3 – **Coronary Angiography and Ventriculography**

2. Grossman & Baim's Cardiac Catheterization, Angiography, and Intervention (9th Edition, 2020)

Primary Section: Section IV – Angiographic Techniques