

# An Expedient and Versatile Catheter for Primary STEMI Transradial Catheterization/Intervention

Jack P. Chen, MD, FACC, FSCAI, FCCP

Medical Director, Northside Heart Institute, Atlanta, GA

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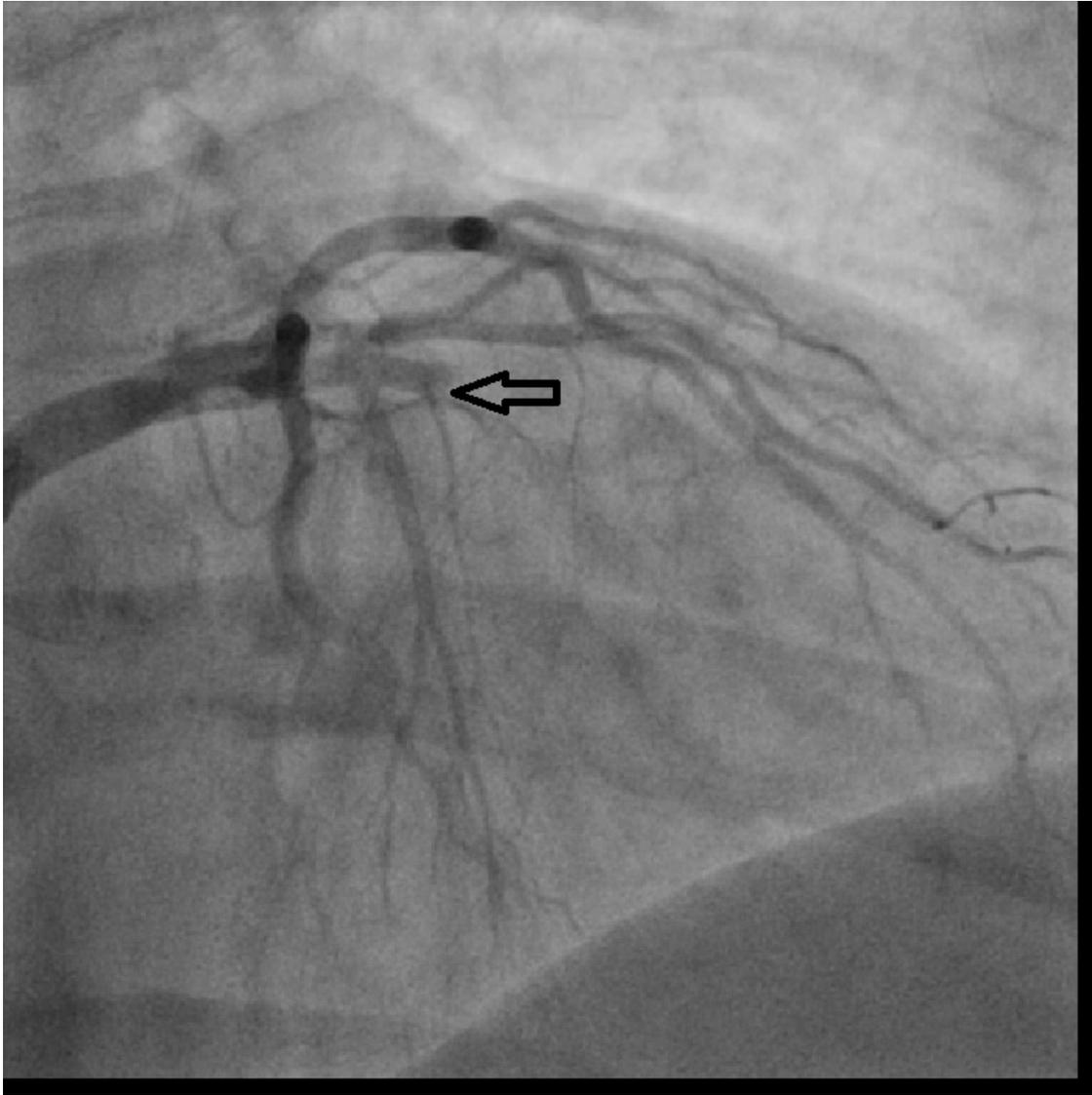
Tak Kwan, MD, FACC, FSCAI

Director of Cardiac Catheterization Laboratories, Beth Israel Medical Center, New York, NY

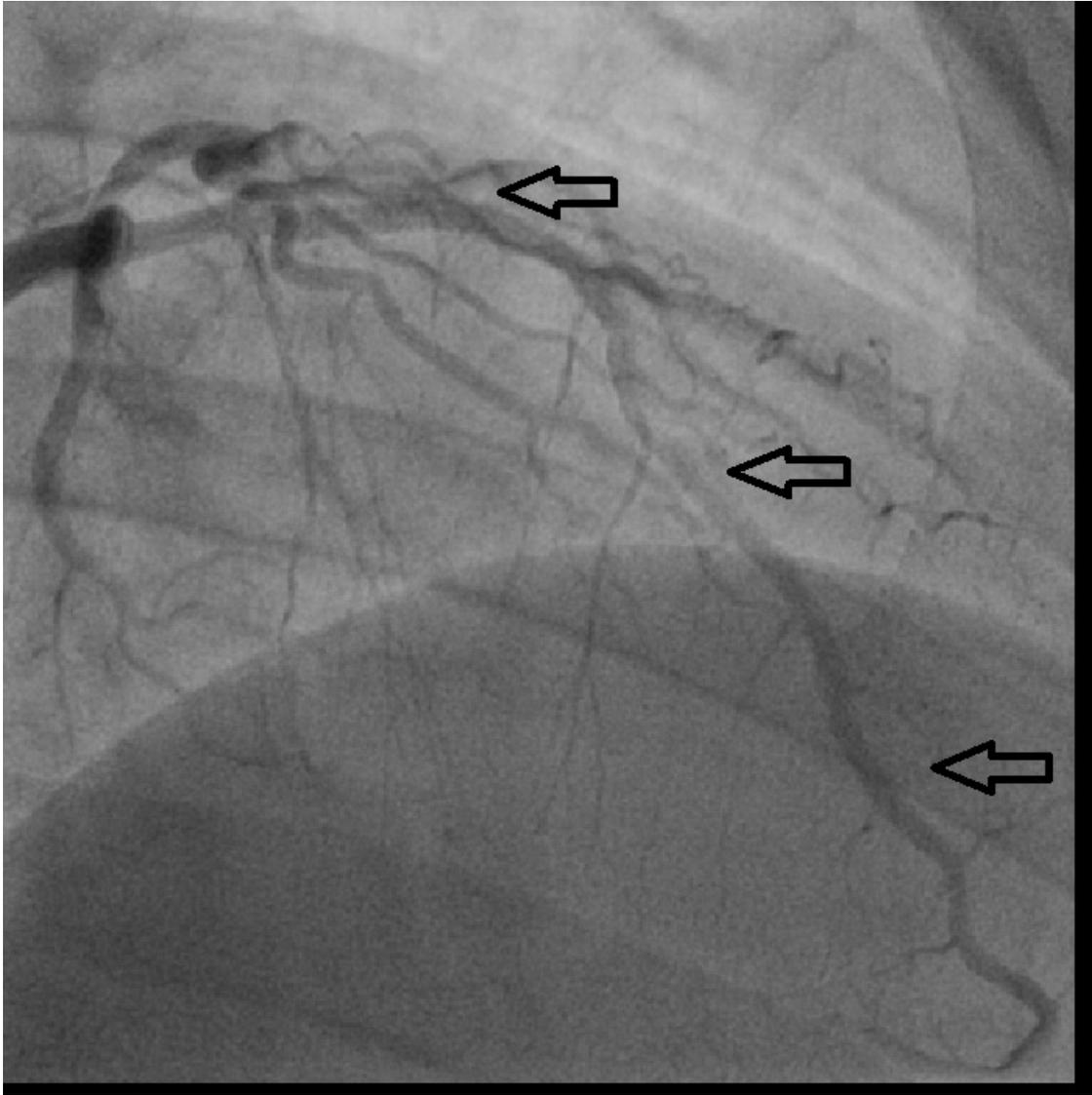
Expediency in culprit coronary reperfusion is of paramount importance during primary percutaneous coronary intervention (PCI) for ST-elevation myocardial infarction (STEMI). Additionally, recent studies have underscored the enhanced safety of transradial PCI in this setting. Two major trials have demonstrated reduced combined major adverse cardiovascular event (MACE) as well as mortality rates for transradial versus transfemoral access during STEMI (1,2). We have found one user-friendly guide catheter able to offer both benefits in many cases; a representative case is illustrated below.

A 46-year-old gentleman, with past medical history significant only for morbid obesity, presented to the emergency department with substernal and interscapular back pain; anterior STEMI was diagnosed on electrocardiogram. Although the chest x-ray revealed a normal mediastinal diameter, his symptomatology was concerning for concomitant aortic dissection. Emergent chest computerized tomography (CT), however, was within normal limits.

The patient subsequently underwent emergent transradial cardiac catheterization using an Ikari Left 3.5 guide catheter. Left coronary angiography revealed total occlusion of the proximal left anterior descending artery (LAD) (Figure 1A).



Immediate direct PCI was performed through the same catheter with initial predilatation with a 2.0 mm balloon. Manual aspiration thrombectomy and drug-eluting stent deployment produced an excellent final angiographic result, with TIMI-3 flow (Figure 1B).



Post-intervention, right coronary angiography and manual injection left ventriculography respectively revealed no significant stenosis (Figure 2) and normal wall contractility.

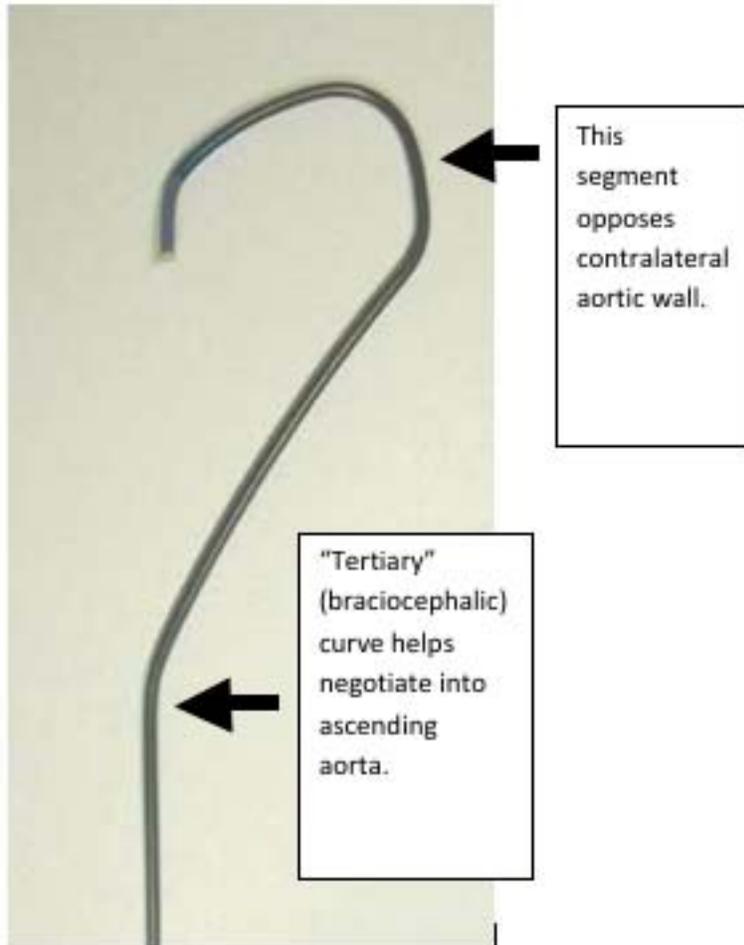


Both were likewise performed with the same catheter. Despite the intervening chest CT, the total door-to-balloon time was 73 minutes. In specific, the radial arterial access-to-balloon time was 15 minutes, and the total case (diagnostic/interventional) time was 37 minutes. The patient had an uneventful post-infarct course, with mild cardiac marker elevations, and was discharged on the third day.

Previously, initial diagnostic imaging of all coronaries had been recommended during STEMI, to rule out the need for emergent bypass surgery. However, recent changes in interventional strategy favoring primary PCI in cases of triple-vessel, and even left main, disease have prompted operators to perform initial culprit vessel imaging with guide catheters. To expedite door-to-balloon time, immediate primary PCI frequently follows, with performance of non-culprit angiography and left ventriculography reserved for last. Moreover, during situations in which the culprit artery is uncertain, such as inferolateral STEMI [either left circumflex or right coronary artery (RCA)], use of a universal catheter eliminates the need for catheter exchanges.

The Ikari Heartrail guide catheter series (Terumo, Tokyo, Japan) (Figure 3), with its modified shaft curvature and nontraumatic tip designs, can be utilized for diagnostic and interventional procedures of either coronary in the majority of cases.

Figure 3. Ikari Left 3.5 Guide Catheter



The proprietary secondary curve design results in a longer segment of shaft contact with the contralateral aortic wall, providing the Ikari Left 3.5 catheter with excellent backup support for both the left and right coronaries in most anatomies. The catheter also features an additional "tertiary" bracheocephalic curve, which facilitates coronary cannulation from the transradial approach. Furthermore, the soft tip allows for more aggressive, nontraumatic, deep ostial engagement; this can be accomplished by tracking the catheter over a guidewire or balloon shaft for deep coaxial intubation.

As with manipulation of other transradial catheters, the 0.035" guidewire plays an integral role. When utilizing the Ikari Left catheter for either coronary, the 0.035" wire tip is maintained just proximal to the primary curve. For left coronary cannulation, the catheter is advanced into and retroflexed against the

left cusp with gentle counterclockwise rotation until the tip ascends to the left main ostium. The guidewire is then removed. RCA intubation is accomplished by placing the catheter tip just below the RCA ostium; the catheter is then gently withdrawn with clockwise rotation to engage. The 0.035" wire is then withdrawn; in this case, the wire modifies the Ikari catheter to simulate a Judkins Right conformation.

Less used, the Ikari Right series provides very deep RCA intubation and excellent backup; however, it should be avoided in cases of ostial or proximal RCA disease. Additionally, the Ikari Right 1.5 catheter may be useful for superior left coronary origins.

As the popularity of transradial PCI continues to grow, so does the need for user-friendly, dedicated transradial guide catheters. With employment of modern aggressive anticoagulation and antiplatelet regimens, the safety benefits of transradial access are further enhanced in the STEMI setting (3). Reluctance to utilize transradial access during primary PCI likely stems from the perception of longer procedural times. However, as familiarity and comfort levels with single transradial catheter techniques increase, this strategy may provide valuable time savings for both emergent, as well as elective, procedures.

## References

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3. Chen JP, Hou DM, Pendyala L, King SB III. "Percutaneous coronary intervention—general principles" in Mukherjee D, Bates ER, Roffi M, Moliterno DJ (ed). *Cardiovascular Catheterization and Intervention: A Textbook of Coronary, Peripheral, and Structural Heart Disease*. Informa Healthcare, London 2010: 388-303.

## Figure Legends:

Figure 1A: Left coronary diagnostic angiogram revealed total occlusion of the proximal left anterior descending artery (arrow).

Figure 1B: Final angiogram after stenting of the proximal left anterior descending artery.

Figure 2: Right coronary angiogram.

Figure 3: The Ikari Left 3.5 guide catheter