

Cath Lab Digest

A product, news & clinical update for the cardiac catheterization laboratory specialist

www.cathlabdigest.com • February 2025 • vol. 33, no. 2



CATH LAB SPOTLIGHT

Trinity Health Grand Rapids Heart and Vascular

Jordan Gallagher, BSN, RN; Chuck Hyde, BSN, RN-BC

Tell us about your cath lab and facility.

The Catholic Church founded the Sisters of Mercy in Dublin, Ireland. Their mission was to follow Christ in his compassion for suffering people. In 1843, they brought their mission to the United States. In 1893, the Sisters of Mercy founded St. Mary's Hospital in Grand Rapids, Michigan. The hospital was named after Mary McNamara, the widow who donated her home to the project. The hospital has now been a member of Trinity Health, a nationwide Catholic health system, since 2000, but the mission and commitment to serve the underserved and suffering people has not changed.

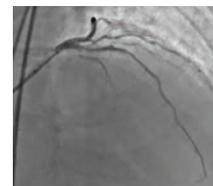
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CASE REPORT

Benefits of “Dual Prep” With Rotational Atherectomy and Subsequent Use of Intravascular Lithotripsy (IVL)

Stephan H. Heo, MD, FACC, FSCAI

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CARDIOVASCULAR AMBULATORY SURGERY CENTERS

Expanding Access to Care: A Virginia ASC With a Cardiac Service Line

CLD talks with Ann E. Honeycutt, MSN.

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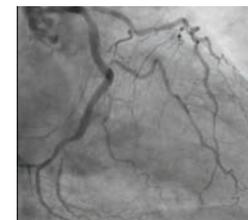


CASE REPORT

The Takeru™ PTCA Balloon Dilatation Catheter for Pre Intravascular Lithotripsy (IVL)

Daniel Vilchez, MD

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Happy Cardiovascular Professionals Week! February 9-15, 2025

Benefits of “Dual Prep” With Rotational Atherectomy and Subsequent Use of Intravascular Lithotripsy (IVL)

Stephan H. Heo, MD, FACC, FSCAI

With an aging population, the need to modify severely calcified coronary lesions prior to stent deployment is as common and difficult as ever. In this case, we highlight the treatment strategy of a tight lesion in a

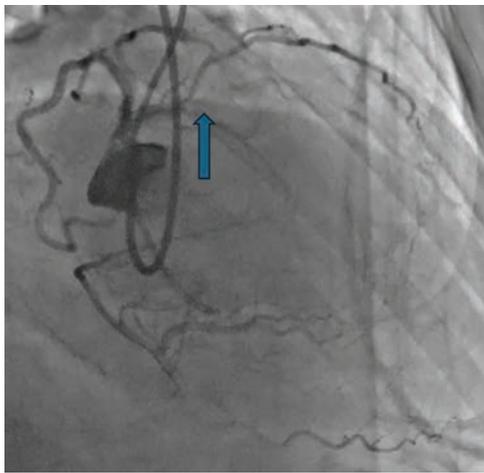


Figure 1. Dual injection of the right coronary artery providing collaterals to the proximal left anterior descending shows a chronic total occlusion (arrow).



Figure 2. Under-expanded 3.0 mm noncompliant balloon.

large vessel that was resistant to balloon dilatation. Utilizing the Society for Cardiovascular Angiography and Interventions (SCAI) treatment algorithm,¹ this case highlights how intravascular lithotripsy (IVL) after initial use of atherectomy allows operators to safely and effectively achieve desired calcium modification to promote stent expansion and prevent poor clinical outcomes in these types of situations. This case also highlights how the use of intravascular imaging, such as optical coherence tomography (OCT), can help inform the need for additional calcium modification post atherectomy to further improve vessel compliance and pliability to obtain the optimal stent results.

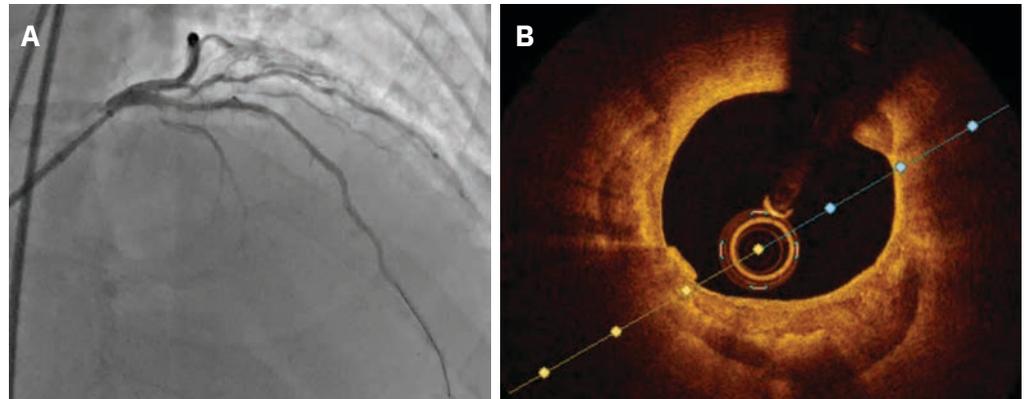


Figure 3A-B. Angiography post rotational atherectomy. OCT imaging shows persistent circumferential calcium and deep calcium without fractures.

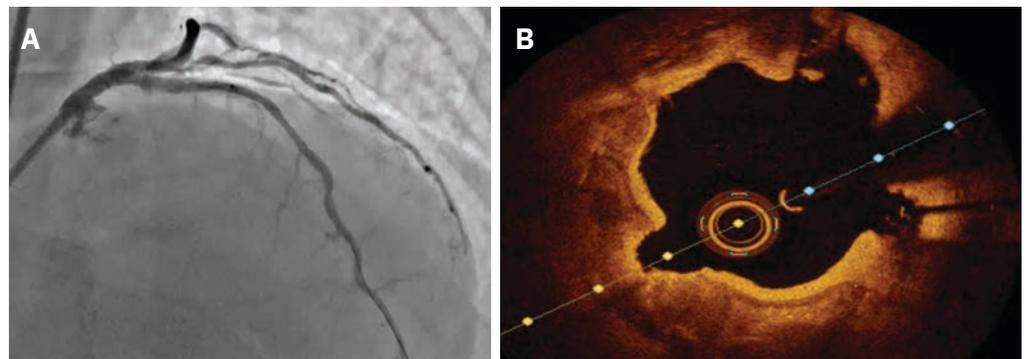


Figure 4A-B. Angiography and OCT post 4.0 mm IVL with significant multiplane and longitudinal fractures.

Case Report

The patient is a 77-year-old male with a history of hypertension and hyperlipidemia who presented to our group at Cardiovascular Specialists of New England (CSNE) after a cardiac catheterization showed a chronic total occlusion of the proximal left anterior descending (LAD) coronary artery (Figure 1). A cardiac stress PET showed a large reversible defect in the anterior and anterolateral walls of the left ventricle. He continued to have exertional angina despite maximum medical therapy. We performed a repeat angiogram with dual injections from the right coronary artery and left main. After successful traversal of the chronic total occlusion of the LAD using a Turnpike Spiral microcatheter (Teleflex) and .014-inch Mongo wire (Asahi Intecc), 2.5 mm and 3.0 mm noncompliant balloons were unable to expand the lesion (Figure 2).

Rotational atherectomy was performed using a 2.0 mm burr. Subsequent angiography showed an excellent result post atherectomy (Figure 3A). However, OCT intravascular

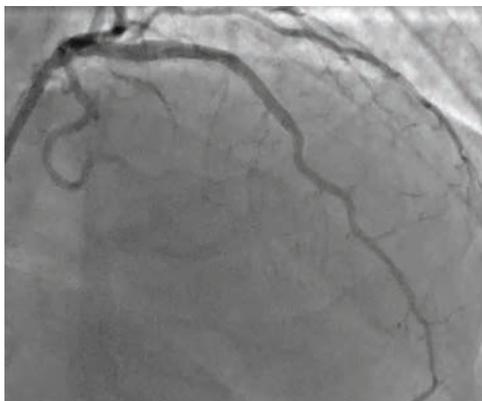


Figure 5. Angiography after placement of a 4.5 mm Onyx stent.

imaging showed persistent presence of circumferential calcium greater than 270 degrees and 0.5 mm in depth, with a minimal lumen area (MLA) of 7.06 mm² (Figure 3B).

A 4.0 mm IVL was performed without difficulties. Repeat OCT showed significant expansion and both multiplane and longitudinal fractures (Figure 4A-B). A 4.5 mm Onyx stent (Medtronic) was placed and the final angiographic result showed a significant increase in MLA (Figure 5).

Discussion

This case showcases the need for an adjunctive calcium modification strategy post atherectomy due to the mechanistic limitations of atherectomy within large vessels. Intravascular imaging was critical to help understand the presence, morphology, and treatment strategy of the unmodified calcium present within the vessel. The concentric, deep calcium remaining in the vessel was effectively modified by Shockwave coronary IVL without any procedural complications. The procedural flow and outcome of this case matches the results and conclusions of the Dual-Prep registry — a first-of-its-kind, rigorous, 100% imaging-guided prospective study on the safety and efficacy of IVL post atherectomy within 120 severely calcified coronary lesions.² As in this case, Dual-Prep investigators chose IVL post atherectomy based on the unlikelihood of efficacy of additional atherectomy within large vessels and were able to achieve desired calcium modification without any notable increase in procedural complications. This real-world case also supports the Dual-Prep conclusion that it may be possible to facilitate better stent expansion and eccentricity with a

rotational atherectomy and IVL combination strategy versus a standalone atherectomy or alternative combination strategy. ■

This article is sponsored by Shockwave Medical.

Dr. Heo is a paid consultant of Shockwave Medical. Views expressed are those of the authors and not necessarily those of Shockwave Medical.

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TABLE. Overview of Dual-Prep registry outcomes compared to most modern imaging-based atherectomy studies.

	DIRO trial ¹⁾		PREPARE CALC+ISAR CALC ²⁾			PREPARE CALC COMBO ³⁾	Disrupt CAD III ⁴⁾	Dual-Prep
	RA	OA	RA	Modified balloon	Super high-pressure Balloon	RA+CBA	IVL	RA/OA+IVL
No. of Lesions	50	50	62	103	34	76	97	120
Stent expansion	72.7 (60.6-86.3)	64.1 (54.0-77.7)	73.2±11.6	70.8±13.6	71.8±12.2	75.1 ± 13.8	78.2 ± 19.7	81.6 ± 13.5
SE<80%	-	-	71.4%	71.8%	73.5%	64.5%	-	38.3%
Eccentricity index	NA	NA	0.71±0.06	0.70±0.08	0.74±0.09	NA	NA	0.87 ± 0.04
EI<0.7	-	-	38.1%	46.6%	32.4%	-	-	0%

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 3) Allali A et al. *Catheter Cardiovasc Interv.* 2022 Nov;100(6):979-989.
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