



Society for Cardiovascular Angiography & Interventions Think Tank Proceedings

Adopting Best Practices in the Management of Coronary Calcification

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Introduction

Each year at the Society for Cardiovascular Angiography & Interventions (SCAI) Annual Scientific Sessions meeting, collaborative think tanks involving interventional cardiologists, administrative partners, and members of industry are convened for each SCAI clinical practice area to discuss topics of particular interest to the group. This document presents the proceeding of the 2022 Coronary session, which focused on calcium management and adoption of best practices. The aim of these discussions is to identify needs and promote actions by the participants, leading to a positive effect on patient care.

Can SCAI provide clearer guidance to the interventional community and encourage greater adoption of best practices based on data, anatomy, morphology, complexity, current calcium algorithms, and differences in care and outcomes, regardless of service location?

The tools available to address calcific lesions, including rotational atherectomy, orbital atherectomy, and intravascular lithotripsy, are

widely available; yet, indications and usage vary considerably. A position statement by SCAI on optimal PCI therapy for complex coronary artery disease suggested an algorithm for the management of calcified lesions.¹ Despite this, the group acknowledged that there is substantial variation when it comes to following these practices in most catheterization laboratories. There was uniform agreement that this variability can be attributed to the lack of clear benefits demonstrated in device-based randomized clinical trials on the treatment of calcified lesions. The design of these trials, however, is challenging, including concerns that operators may not want to randomize patients because of existing biases, potential issues with crossover therapies, and, especially, the nonhomogeneous and subtle characteristics that calcification presents, resulting in nonuniformity across a large cohort.

Importantly, much of this variability is only seen with the use of intravascular imaging, which remains infrequently used in coronary interventions despite available data supporting its use as a "best practice." The reasons for not utilizing intravascular imaging include ease-of-use issues; concerns as to whether the time, effort, and expense produce a consistent benefit; uncertainty regarding image interpretation; and poor reimbursement. One contemporary barrier discussed is current staffing shortage in many catheterization

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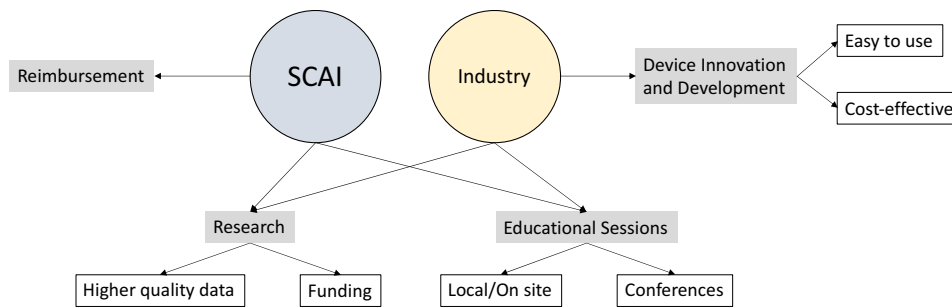


Figure 1.

Areas of action and advocacy on calcium management. SCAI, Society for Cardiovascular Angiography & Interventions.

laboratories, resulting in a shortage of experienced support staff critical to the efficient performance and success of these procedures. Overall, there is a sense that many interventional operators are not impressed by the pressing “need” to change practices and specifically utilize more intravascular imaging or dedicated calcium management strategies.

Available data from the National Cardiovascular Data Registry do not provide granularity to provide outcome differences with the currently available data collection form. The group also acknowledged the impact of volume in relation to outcomes in these complex cases. Although available data in some publications have demonstrated a modest correlation between higher-volume operators and institutions with better overall patient outcomes, a significant proportion of interventional operators and laboratories perform fewer than the recommended number of procedures on a yearly basis.² Given the complexity of image interpretation and proper utilization of calcium management tools, lower-volume operators and laboratories may face greater challenges to produce similar results in providing care for these complex patients, which should be addressed using educational efforts.

How should the approach to calcium management—including the role of imaging and physiology—differ by service location (ambulatory surgical centers vs hospital)?

The group felt strongly that access to best practices should remain a high priority regardless of service location. Initial recommendations for the types of coronary interventions that would ideally be performed in ambulatory surgical centers are actively being modified to include considerations for more complex procedures, including those utilizing calcium management tools. Therefore, the biggest barrier to the adoption of these tools in ambulatory surgical centers is that the present reimbursement model does not support increased costs for either imaging or calcium management tools. Consequently, the performance of these procedures even in a hospital-based setting does not result in a favorable cost model. This is especially true when intravascular imaging is added to a coronary intervention because the facility reimbursement remains unchanged despite the additional equipment costs.

Opportunities for the future

Our group consensus was that patients should be treated with the best available modality for their disease, regardless of the center, geography, or setting. We believe that education, training, and

experience in both intravascular imaging and calcium modification equipment are essential, regardless of the location where PCI is performed. Specifically, the following are important:

1. SCAI should consider dedicated educational efforts directed at intravascular imaging, particularly focusing on providing operators expertise in image interpretation that would allow tailoring of coronary interventions in ways that the present data suggest results in improved patient outcomes.
2. SCAI has an opportunity to coordinate partnership between the interventional scientific community and industry partners that currently provide intravascular imaging and calcium management tools in order to enhance the available data to support better definition and guidance regarding specific calcium management strategies (Figure 1).
3. Because reimbursement remains a limiting factor for providing best practices to the greatest number of patients, SCAI will continue its efforts toward supporting improved reimbursement for these technologies, providing and encouraging best practices, and providing guidance (eg, expert consensus) on best practices in hospital and ambulatory surgical settings.

Peer review statement

Deputy Editor, Suzanne J. Baron, and Associate Editor, Cindy L. Grines, had no involvement in the peer review of this article and have no access to information regarding its peer review. Full responsibility for the editorial process for this article was delegated to Dean J. Kereiakes.

Declaration of competing interest

Michael J. Lim is on the Advisory Board of and a consultant for Abiomed. Suzanne J. Baron is on the Advisory Board of Biotronik and Boston Scientific; is a consultant for Boston Scientific; received honoraria from Shockwave and Medtronic; and is the principal investigator for the “Substudy on ST-Elevation Myocardial Infarction (STEMI) Door-To-Unload (DTU)” trial, funded by Abiomed. Connie S. Baumgard and Nick E.J. West are employees at Abbott. Blake Bell and Scott Shadiow are employees at Shockwave Medical. Ilka Bijoux and Bryan Moriarty are employees at Terumo. Louis A. Cannon is on the Advisory Board of Medtronic, Boston Scientific, and Abbott. Ronald P. Caputo is a consultant for Cordis. Dom Didonato is an employee at Cordis. Dustin Dunham and Linda Lonn are employees at GE Healthcare. Daniel M. Kolansky is on the Advisory Board of Abbott. Vanessa Long is an employee at Abiomed. Elizabeth Martin is an employee at LivaNova. Arnold Seto is in the Speakers Bureau

for Terumo and is a site investigator for research funded by Philips. Vinod Sharma is an employee at Boston Scientific. Luiz F. Ybarra is on the Advisory Board of Abbott. Steve Zizzo is an employee at Philips Healthcare. Joaquin E. Cigarroa, George D. Dangas, Cindy L. Grines, Srihari S. Naidu, Sunil V. Rao, and Timothy D. Henry reported no financial interests.

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Ethics statement

The research reported has adhered to the relevant ethical guidelines.

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