

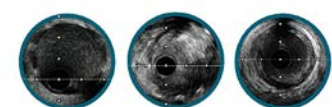


ARGENTINIAN JOURNAL OF INTERVENTIONAL CARDIOLOGY

January - March 2026 | Year 17 | Issue 1

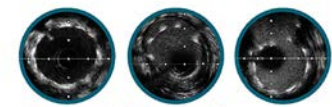
Análisis post-stent

1 Descartar pérdida de geografía (a) Y disección de bordes (b)



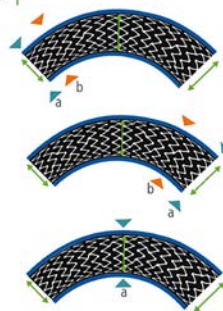
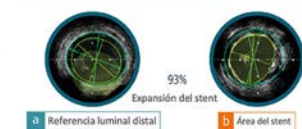
Zona de anclaje óptima Pérdida de geografía (a) Disección de bordes (b)

2 Descartar malaposición



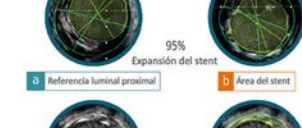
✓ Apuesto ✗ Malapuesto Ramo lateral

3 Confirmar óptima expansión del stent



93% Expansión del stent

a Referencia luminal distal b Área del stent



95% Expansión del stent

a Referencia luminal proximal b Área del stent



a Infraexpansión

Editorial

A College built by all of us

Board of Directors

Editorial comment

Commentary on the Consensus on Intravascular Imaging in Coronary Angioplasty

Fernández Pereira C

Consensus

Consensus on the use of intravascular imaging methods (IVUS and OCT) in percutaneous coronary interventions.

Intravascular Imaging Consensus

Garmendia CM et al.

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January - March 2026 | Year 17 | Issue 1

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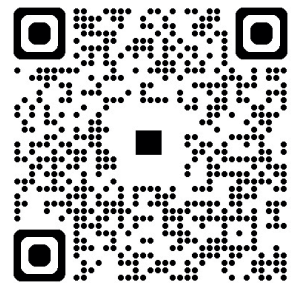
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Dispositivo de asistencia
ventricular izquierdo **IVAC 2 L**,
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LANZAMIENTO EN ARGENTINA

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Vesscrack™ Coronary IVL

Tecnología de litotricia intravascular con emisión de ondas de alta precisión para tratar lesiones calcificadas.

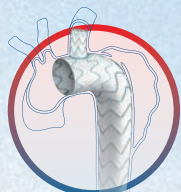
Nueva tecnología de Litotricia Intravascular (IVL)

- ✓ Tratamiento de lesiones calcificadas complejas
- ✓ Litotricia intravascular de alta precisión
- ✓ Disponible para aplicaciones coronarias y periféricas



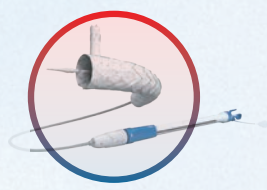
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NetSur



Castor™

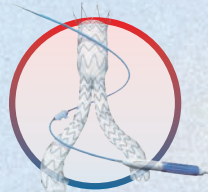
Endoprótesis de tratamiento aórtico torácica con rama de protección subclavia



Cratos™

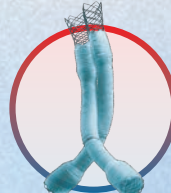
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Nuevo sistema de liberación



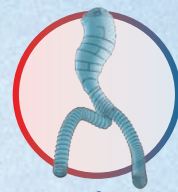
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Endoprótesis trimodular autoexpandible de 14fr



Altura™

Endoprótesis abdominal cuadrimodular de bajo perfil 14fr



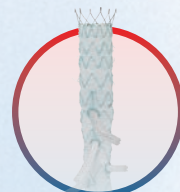
Aorfix™

Endoprótesis abdominal de bajo perfil para cuellos hostiles



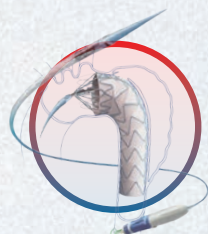
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Endoprótesis torácica multi rama Hector (CMD)



Zelus CMD™

Endoprótesis toracoabdominal de bajo perfil 20fr con ramas internas precanaladas para vasos viscerales y arterias renales tipo "Zelus".



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Día Internacional de la Cardiología Intervencionista

Miércoles 16 de Septiembre

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Fernández Pereira C

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A COLLEGE BUILT BY ALL OF US

Board of Directors

Dear Members,

We want to share some reflections on the current state of our College and, most importantly, on the path we wish to continue building together with each and every one of you.

For many years, the Argentine College of Interventional Cardiologists has been committed to representing, strengthening, and promoting our specialty throughout the country. Much of this work is carried out in daily tasks that are not always visible to all our colleagues. For this reason, we believe it is important to provide you with a comprehensive overview of our main activities and future projects.

EDITORIAL COMMENT / COMENTARIO EDITORIAL

COMMENTARY ON THE CONSENSUS ON INTRAVASCULAR IMAGING IN CORONARY ANGIOPLASTY

Fernández Pereira C

The Consensus on the use of intravascular imaging methods (IVUS and OCT) in percutaneous coronary interventions, published in this issue, is one of the most relevant documents by the Argentine College of Interventional Cardiologists (CACI) in recent years.

It comes at a particularly important time for our specialty. Accumulated scientific evidence has consistently shown that the use of intravascular imaging improves procedural planning, optimizes stent implantation, reduces stent thrombosis and restenosis, and helps improve clinical outcomes for our patients. However, there is still a significant gap between available evidence and everyday clinical practice.

CONSENSUS / CONSENSOS

CONSENSUS ON THE USE OF INTRAVASCULAR IMAGING METHODS (IVUS AND OCT) IN PERCUTANEOUS CORONARY INTERVENTIONS. INTRAVASCULAR IMAGING CONSENSUS

Garmendia CM et al.

Over the past several decades, intravascular imaging methods such as intravascular ultrasound (IVUS) and optical coherence tomography (OCT) have become essential tools for guiding and optimizing coronary interventional cardiology procedures. Through detailed assessment of vessel dimensions, vascular structure, and atherosclerotic plaque morphology, several limitations of conventional coronary angiography have been overcome, increasing procedural accuracy and safety, and providing substantial clinical benefits. The accumulation of robust scientific evidence from randomized clinical trials and international multicenter registries has consistently shown that the systematic use of intravascular imaging is associated with a significant reduction in major adverse cardiovascular events (MACE), primarily driven by a decrease in the incidence of stent thrombosis and in-stent restenosis.

A College built by all of us

Un Colegio que construimos entre todos

Revista Argentina de Cardioangiología Intervencionista 2026;17(1):010-010. <https://doi.org/10.30567/RACI/202601/0010-0010>

Dear Members,

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Continuing medical education is one of the fundamental pillars of our institution. Through our Specialization Program, refresher courses, simulator-based training programs, scientific conferences, webinars, and various in-person and remote academic activities, we seek to provide ongoing opportunities for training and professional development. Our goal is to support the growth of each colleague throughout all stages of their professional career, promoting excellence and continuous learning.

At the same time, the College actively represents and defends our specialty. We work with public and private organizations, medical insurance companies, and various stakeholders within the healthcare system to safeguard our professional practice, advocate for appropriate working conditions, and promote recognition of the significance of interventional cardiology to the health of our population.

Solidarity among colleagues is also one of our institutional core values. For this reason, we maintain financial assistance programs to support members facing health-related circumstances that temporarily or permanently affect their professional activities, thus providing support during particularly difficult times.

Another of our most valuable initiatives is the Annual Congress, which brings together colleagues from across the country year after year in a setting for scientific, academic, and personal exchange. Beyond the opportunities to update knowledge and present advancements in our specialty, it offers a unique chance to strengthen relationships, share experiences, and reinforce a sense of belonging to our professional community.

We are also firmly committed to radiation protection, promoting good radiation safety practices for our members, trainees, and patients. Through educational activities and specialized guidance, we work to prevent and appropriately manage the inherent risks in our daily practice.

We look forward to the future, with the conviction that much remains to be done. We want to bring our educational initiatives closer to all our members, facilitating access to high-quality training in every corner of the country. We want to continue strengthening our Specialization Program, collaborate with more sites in their accreditation processes, and establish a solid, representative National Registry of Procedures that allows us to accurately assess the impact of our specialty on the health of Argentine people.

However, no institutional project can be sustained by a Board of Directors alone. The true driving force behind the College is its membership. That is why we want to reaffirm our commitment to building a welcoming College—one that fosters participation, pluralism, and involvement; a place where every voice is heard, where ideas find channels through which they can be transformed into action, and where every colleague can feel that they are an active part of an institution that represents them.

We encourage you to participate, share your proposals, join our activities, and contribute your experience and commitment to the growth of our College. We are convinced that the present and future challenges for our specialty can only be addressed through collaborative work, ongoing dialogue, and full membership participation.

We are deeply grateful for the trust you place in our institution and renew our vow to continue working responsibly, transparently, and diligently in the service of our members and interventional cardiology in Argentina.

With warm regards and respect,

Board of Directors

Argentinian College of Interventional Cardiologists

Commentary on the Consensus on Intravascular Imaging in Coronary Angioplasty

Comentario sobre Consenso de imágenes intravasculares en la Angioplastia Coronaria

Revista Argentina de Cardioangiología Intervencionista 2026;17(1):011-011. <https://doi.org/10.30567/RACI/202601/0011-0011>

The *Consensus on the use of intravascular imaging methods (IVUS and OCT) in percutaneous coronary interventions*, published in this issue, is one of the most relevant documents by the Argentine College of Interventional Cardiologists (CACI) in recent years.

It comes at a particularly important time for our specialty. Accumulated scientific evidence has consistently shown that the use of intravascular imaging improves procedural planning, optimizes stent implantation, reduces stent thrombosis and restenosis, and helps improve clinical outcomes for our patients. However, there is still a significant gap between available evidence and everyday clinical practice.

Among the most noteworthy aspects of this document are the comprehensive update of available evidence through 2026, a precise definition of the clinical scenarios in which intravascular imaging provides the greatest benefit, the standardization of stent implantation optimization criteria, the characterization of stent failure mechanisms, and the incorporation of practical algorithms to guide decision-making during percutaneous coronary intervention. **The recognition of intravascular imaging as a tool with a Class I recommendation and Level A evidence for the optimization of complex lesions and left main coronary artery lesions is also particularly relevant, since it solidifies concepts that constitute the current standard of excellence in interventional cardiology.**

The consensus also addresses a reality that warrants reflection. While intravascular ultrasound (IVUS) and optical coherence tomography (OCT) are available in many sites (IVUS more frequently than OCT), many operators have access to these technologies, and coverage for their use is authorized by health insurance companies, we must regret that their utilization remains below expectations. Resistance to change, historical reliance on conventional angiography, and the perception that angiographic experience alone is sufficient remain barriers that we must overcome. Contemporary evidence demonstrates that angiography alone has inherent limitations for the adequate assessment of vessel size, plaque composition, stent expansion, and failure mechanisms, all of which can now be precisely characterized through intravascular imaging. **A paradigm shift can be achieved: from angiography to image-optimized angiography.**

Intravascular imaging should no longer be considered a complementary tool reserved for exceptional cases, but rather a natural extension of modern angiography when we seek the best possible outcomes for our patients.

As a scientific community, we must take on the challenge of transforming these resources from available technologies into routinely used tools. Excellence lies not merely in having access to technology, but in incorporating it systematically whenever it adds value for the patient. In this regard, CACI, through its training program and refresher courses, can influence new generations by encouraging the incorporation of intravascular imaging into daily practice. This is a particularly important point, as the consensus emphasizes the need for continuing education.

Furthermore, we can add to our consideration the concept of procedural outcome quality. We cannot improve what we do not measure. IVUS and OCT make it possible to quantify stent expansion, apposition, and lesion coverage, thus transforming procedural assessment from a subjective appraisal into an evaluation based on objective, reproducible parameters.

I believe that the future of angioplasty will not simply involve implanting more stents, but rather implanting better stents that are better sized, better expanded, and more thoroughly optimized.

I would particularly like to highlight the extraordinary work of **Dr. Cristian Maximiliano Garmendia**, who led the preparation of this document with remarkable scientific rigor, an outstanding ability to synthesize the evidence, and profound academic vision. His efforts, together with those of a distinguished group of national experts, have made it possible to produce an outstanding and comprehensive consensus that is modern, practical, and aligned with the highest international standards.

On behalf of the *Argentinian Journal of Interventional Cardiology* (RACI), we congratulate all the authors on this valuable contribution. We are convinced that this document will become an essential reference for training new generations of interventional cardiologists and for consolidating an increasingly precise, safe, and evidence-based clinical practice.

Finally, above all else, we would like to convey the following message: **the current discussion should no longer be about whether intravascular imaging works, but rather on which patients should we be using it.**

This idea aptly captures the spirit of the consensus and the current challenge for modern interventional cardiology.

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Consensus on the use of intravascular imaging methods (IVUS and OCT) in percutaneous coronary interventions.

Intravascular Imaging Consensus

Consenso sobre la utilización de métodos de imagen intravascular (IVUS y OCT) en las intervenciones coronarias percutáneas. Consenso de imagen intravascular

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INTRODUCTION

Over the past several decades, intravascular imaging methods such as intravascular ultrasound (IVUS) and optical coherence tomography (OCT) have become essential tools for guiding and optimizing coronary interventional cardiology procedures. Through detailed assessment of vessel dimensions, vascular structure, and atherosclerotic plaque morphology, several limitations of conventional coronary angiography have been overcome, increasing procedural accuracy and safety, and providing substantial clinical benefits.

The accumulation of robust scientific evidence from randomized clinical trials and international multicenter registries has consistently shown that the systematic use of intravascular imaging is associated with a significant reduction in major adverse cardiovascular events (MACE), primarily driven by a decrease in the incidence of stent thrombosis (ST) and in-stent restenosis (ISR)¹⁻⁶.

However, despite the extensive evidence supporting the implementation of these technologies, their adoption in contemporary clinical practice in our region remains low, with substantial variability between hospitals and operators. Reasons for this underutilization include limited training for interventional cardiologists, the perception that these technologies increase procedural duration, and funding-related issues.

From an economic point of view, it is important to consider that an absolute reduction of 1.5–2% in the target lesion revascularization (TLR) rate, at an approximate cost of USD 1000 per catheter, translates into a cost of approximately USD 100,000 to prevent two additional revascularization procedures for every 100 patients. This analysis underscores the need for rational patient selection⁷.

In this context, the Argentine College of Interventional Cardiologists (CACI) has prioritized the updating and harmonization of national recommendations on the use of IVUS and OCT, with the aim of promoting rational, cost-effective, evidence-based adoption tailored to the healthcare realities of our region.

CONSENSUS RATIONALE AND OBJECTIVES

The coexistence of various technical documents and partial recommendations regarding the use of intravascular imaging methods has created a need to harmonize diagnostic criteria, clinical indications, and optimization parameters. In this regard, this document is a comprehensive and unified update of previous consensus statements developed by CACI, incorporating the new scientific evidence available through 2026 and the most recent international methodological standards.

MAIN OBJECTIVES

- To unify criteria for the use, indication, and optimization of IVUS- and OCT-guided coronary cardiovascular interventional procedures.
- To adapt international guideline recommendations to everyday clinical practice in our region.
- To promote continuing education and the incorporation of these technologies into interventional cardiology training and accreditation programs.

METHODOLOGY

The development of this consensus was coordinated by CACI, with the participation of a multidisciplinary panel of experts on interventional cardiology, cardiovascular imaging, clinical cardiology, and scientific methodology.

Evidence selection

A structured search was conducted in MEDLINE (PubMed), Scopus, Embase, and the Cochrane Library using the terms “intravascular ultrasound”, “optical coherence tomography”, “percutaneous coronary intervention”, “outcomes”,

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and “guidelines” on articles published between January 2015 and March 2026. Evidence from randomized clinical trials, meta-analyses, and international consensus documents was prioritized.

DEGREE OF RECOMMENDATION AND LEVEL OF EVIDENCE

The recommendations included in this document were developed in accordance with the ACC/AHA (American College of Cardiology/American Heart Association) classification system, which has been widely adopted by leading international scientific societies, including the European Society of Cardiology (ESC)⁸. This system classifies each recommendation based on two independent dimensions: (1) the Class of Recommendation (COR), expressed as Classes I, IIa, IIb, and III, which reflects the magnitude of benefit in proportion to risk; and (2) the Level of Evidence (LOE), expressed as Levels A, B-R, B-NR, C-LD, and C-EO, which indicates the quality and strength of the data supporting the recommendation. It is important to clarify that, in this consensus, a Class I recommendation means that an intervention “is recommended” or “is indicated/useful/effective”. In sections where the most appropriate Class I wording is “is recommended”—rather than “should be performed”—, this will be explicitly stated in the text, so that the decision not to use imaging in every procedure is not necessarily interpreted as an inadequate standard of care.

CONSENSUS PROCESS

Recommendations were discussed and validated using a modified Delphi methodology, involving three consecutive rounds of consultation with a panel of national and international experts (Likert scale, 1–9; consensus defi-

ned as agreement ≥80%). The final text was reviewed and approved by all panel members⁹.

SCOPE OF THIS CONSENSUS

This document focuses on the clinical, technical, and procedural use of IVUS and OCT to optimize percutaneous coronary interventional procedures. It does not address in depth their use in structural, peripheral, or experimental research settings, except where the evidence has direct implications for clinical interventional practice.

GLOSSARY OF TERMS

In order to standardize concepts and definitions—thereby facilitating future reporting tasks and collaborative research among different centers across the country—a glossary is provided below.

- IVUS: intravascular ultrasound | OCT: optical coherence tomography | PCI/ATC: percutaneous coronary intervention.
- LMCA: left main coronary artery | MACE: major adverse cardiovascular events | TVF: target vessel failure.
- TLR: target lesion revascularization | MLA: Minimum lumen area | EEL: external elastic lamina.
- FFR: fractional flow reserve | iFR: instantaneous wave-free ratio | TCFA: thin-cap fibroatheroma.
- NIRS: Near infra-red spectroscopy | LCBImax: maximum lipid core burden index.
- ACS: acute coronary syndrome | DES: drug-eluting stent | ISR: in-stent restenosis | ST: stent thrombosis | CTO: chronic total occlusion.
- CHIP: complex high-risk indicated procedures.

For the purposes of this consensus, a complex lesion is defined as one meeting at least one of the following cri-

TABLE 1. Class (strength) of recommendation

Class 1 (Strong)	Benefit >>> Risk
<ul style="list-style-type: none">• Is recommended• Is indicated/useful/effective/beneficial• Should be performed/administered/other Comparative effectiveness: <ul style="list-style-type: none">• Strategy A is recommended/indicated in preference to strategy B• Treatment A should be chosen over treatment B	
Class 2a (Moderate)	Benefit >> Risk
<ul style="list-style-type: none">• Is reasonable• Can be useful/effective/beneficial Comparative effectiveness: <ul style="list-style-type: none">• Strategy A is probably recommended/indicated in preference to strategy B• Es razonable elegir el tratamiento A sobre el tratamiento B	
Class 2b (Weak).	Benefit > Risk
<ul style="list-style-type: none">• May/might be reasonable• May/might be considered• Usefulness/effectiveness is unknown/uncertain or not well established	
Class 3 (No benefit)	Benefit = Risk
<ul style="list-style-type: none">• Is not recommended• Is not indicated/useful/effective/beneficial• Should not be performed/administered	
Class 3 (Harm)	Risk > Benefit
<ul style="list-style-type: none">• Potentially harmful• Causes harm• Associated with excess morbidity/mortality• Should not be performed/administered	

TABLE 2. Level (quality) of evidence

Level A
<ul style="list-style-type: none">• High-quality evidence from ≥1 randomized clinical trial (RCT)• Meta-analyses of high-quality RCTs• One or more RCTs corroborated by high-quality registry studies
Level B-R (Randomized)
<ul style="list-style-type: none">• Moderate-quality evidence from ≥1 RCTs• Meta-analyses of moderate-quality RCTs
Level B-NR (Non Randomized)
<ul style="list-style-type: none">• Moderate-quality evidence from ≥1 well-designed observational studies or registry studies• Meta-analyses of such studies
Level C-LD (Limited data)
<ul style="list-style-type: none">• Randomized or non-randomized observational studies with limitations• Meta-analyses of such studies
Level C-EO (Expert opinion)
<ul style="list-style-type: none">• Consensus of expert opinion based on clinical experience

teria, in accordance with the inclusion criteria of the RENOVATE-COMPLEX-PCI¹⁰ trial: severe angiographic coronary calcification, an ostial lesion in a major epicardial artery, a true bifurcation with a side branch ≥ 2.5 mm according to the Medina classification, unprotected left main coronary artery disease, CTO, ISR, a long lesion with an expected stent length ≥ 38 mm, or multivessel PCI involving simultaneous treatment of two or more major epicardial arteries or requiring three or more planned stents. In addition, pursuant to the IVUS-CHIP¹¹ trial, angiographically long lesions extending >28 mm and procedures requiring mechanical circulatory support are also included in the aforementioned criteria. It should be noted that the 2024 ESC guidelines do not provide an equivalent comprehensive definition, but rather identify left main coronary artery disease, true bifurcations, and long lesions as prototypical scenarios for which intracoronary imaging carries a Class I, Level A recommendation¹². This explicit definition is essential in this consensus, given the particularly important role of intravascular imaging in this patient subgroup, both for proper procedural planning and final outcome optimization.

REGIONAL PERSPECTIVE

The adoption of intravascular imaging methods in Latin America has historically been constrained by technological availability, economic limitations, and healthcare coverage policies. In this regard, this document also aims to establish a methodological reference that can be adapted to different healthcare settings, helping to reduce variability between public and private institutions and promoting standardized, cost-effective clinical practice.

TECHNICAL ASPECTS OF INTRAVASCULAR IMAGING METHODS

Intravascular ultrasound

IVUS is a tool based on the emission of ultrasound waves that enables real-time characterization of vascular structures. Such waves and their differential reflection by tissues generate grayscale cross-sectional images of the examined vessel. Structures with high proportions of fibrous tissue and calcium appear hyperechoic and lipid-rich areas appear hypoechoic.

There are two main configurations: (1) solid-state systems, which use multiple transducer elements arranged in a circular configuration; and (2) mechanical systems, which use a single rotating transducer. Both designs are available in monorail or over-the-wire configurations, with automatic pullback preferred. Current-generation systems operate at frequencies of 20–60 MHz, with a spatial resolution of approximately 70 μm and tissue penetration of 5–6 mm.

IVUS can be complemented by additional technologies. Near infra-red spectroscopy (NIRS), available in our country through the Makoto® IVUS+NIRS system (Infraredx, Inc., Bedford, MA, USA), enables quantification of lipid burden through the maximum lipid core burden index (LCBImax), thus expanding the characterization of vulnerable plaque in contemporary clinical practice¹³. In this regard, the PROSPECT II study demonstrated that non-culprit plaque with

an LCBImax ≥ 400 and a minimum lumen area (MLA) of <4.0 mm² is associated with a higher risk of future events¹⁴.

It is important to emphasize that IVUS has greater potential for detecting the external elastic lamina (EEL) in clinical practice, particularly in vessels with severe calcification. As a recommendation, when a segment is used as reference for measurements, at least 50% of its EEL should be visible.

Optical coherence tomography

OCT uses near infra-red light that is emitted and received through a rotating optical fiber coupled to an imaging lens. The system digitally converts the reflected optical signal into high-resolution cross-sectional and three-dimensional images, thus enabling precise visualization of vascular microarchitecture and atherosclerotic plaque morphology.

Unlike IVUS, OCT offers higher spatial resolution (an axial resolution of 10–20 μm and a lateral resolution of 20–90 μm), although its tissue penetration is lower (1–2 mm).

Image acquisition requires a blood-free field, achieved through the injection of contrast medium or saline solution, which may limit its use in ostial stenoses, large-caliber vessels, or critical stenoses.

Current platforms incorporate simultaneous co-registration with angiography. Hybrid IVUS-OCT systems are under development (Table 3).

INDICATIONS FOR THE USE OF INTRAVASCULAR IMAGING

Several studies have shown that both IVUS and OCT provide valuable information to guide therapeutic decision-making, particularly in left main coronary artery (LMCA) disease or complex coronary anatomy¹⁵⁻¹⁸. In this regard, intravascular imaging methods have substantially improved vascular structure assessment and increased stenting precision.

For the aforementioned reasons, this consensus assigns a Class I recommendation, with Level A evidence, to the use of intravascular imaging for stenting optimization in LMCA stenosis or complex lesions at centers with low-to-moderate experience in using these methods, and a Class II recommendation, with Level A evidence, for the treatment of complex lesions at high-volume centers with operators experienced in intravascular imaging.

This recommendation is maintained despite the methodological limitations of recently published studies (OPTIMAL and IVUS-CHIP), which are discussed in the specific section at the end of this document. It should be noted that both trials consistently confirmed a reduction in stent thrombosis with IVUS guidance, thereby preserving the mechanistic value of this tool regardless of its results for the composite endpoints.

Thus, intravascular imaging is highly useful during the procedural stages detailed below.

Pre-intervention assessment: characterization of plaque composition, identification of reference segments, and determination of necessary preparation tools.

Stent selection: determination of optimal stent diameter and length, avoiding geographic miss and dissection.

Post-implantation optimization: assessment for underexpan-

TABLE 3. Comparison between both intravascular imaging methods.

Parameter	IVUS	OCT
Energy source	Ultrasound	Near infra-red light
Wavelength (μm)	35–80	1.3
Resolution (μm)	40–200 (axial); 200–300 (lateral)	15–20 (axial); 20–40 (lateral)
Maximum scanning diameter (mm)	15	7
Tissue penetration (mm)	10	1–2.5
Blood clearance	Not required	Required
Advantages	More favorable imaging in larger vessels (e.g., left main coronary artery)	Can measure and characterize calcium thickness
Disadvantages	Can measure and characterize calcium thickness	Does not enable accurate assessment of residual plaque burden at stent edges

IVUS: intravascular ultrasound. OCT: optical coherence tomography.

sion, malapposition, edge dissection, or edge hematoma, and identification of the failure mechanism in previously implanted stents.

IMPACT ON THE DECISION-MAKING PROCESS: THE LIGHTLAB INITIATIVE AND THE OCTIVUS STUDY

The LightLab Initiative showed that a standardized OCT workflow using the MLD MAX algorithm changed operator clinical decision-making in 86% of the lesions assessed in 925 patients across 16 centers in the United States. Most changes occurred during the pre-PCI assessment, in lesion morphology (45%), plaque preparation strategy (27%), stent diameter (37%), and stent length (36%). These changes were consistent regardless of the operator's previous level of experience with OCT¹⁹. These findings reinforce the value of intravascular imaging as an active decision-making tool, beyond its benefits in long-term clinical endpoints. Additionally, the OCTIVUS Study, the first large-scale randomized study to compare OCT versus IVUS in complex PCI (n=2008), demonstrated the non-inferiority of OCT to IVUS for target vessel failure (TVF) at 12 months (5.1% vs. 4.1%; hazard ratio [HR] 1.24; 95% confidence interval [CI]: 0.85–1.82), supporting their interchangeability in centers experienced in both techniques²⁰.

PRE-INTERVENTION ASSESSMENT

Intravascular imaging methods are useful for accurately characterizing atherosclerotic plaque composition, identifying vascular reference segments and stent landing zones, and selecting optimal stent length and diameter for implantation^{21–22}.

Image acquisition should be performed after intracoronary nitroglycerin administration, beginning at least 20 mm distal to the stenotic area²³.

In cases of critical stenosis in which the intravascular imaging catheter cannot advance beyond the obstruction, predilation may be performed using a low-profile coronary balloon at low pressure. Alternatively, in cases of marked lesion calcification, plaque preparation techniques (intravascular lithotripsy, cutting balloons, or atherectomy) may be used to facilitate catheter advancement and subsequent image acquisition²⁴.

Even when stent implantation is not required, intravascular imaging methods can identify features of vulnerability in plaque that is not significant from an angiographic or physiological standpoint, but which may be at risk of rupture during follow-up and may be associated with adverse cli-

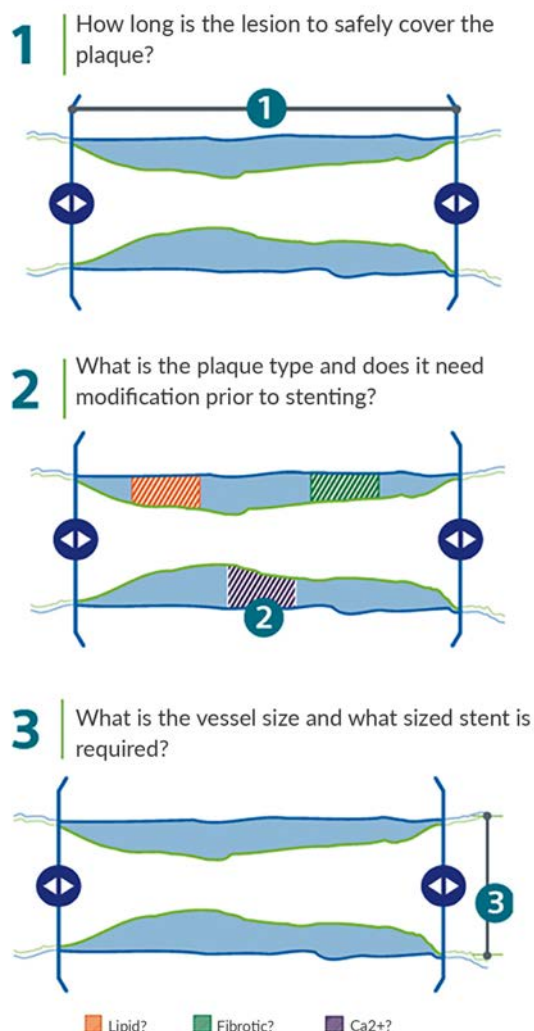
nical events, potentially warranting intensification of medical therapy^{25–26}.

IVUS and OCT are also useful in a setting of myocardial infarction with non-obstructive coronary arteries (MINOCA), Takotsubo syndrome, myocarditis, spontaneous coronary artery dissection (SCAD), cardiac allograft vasculopathy (CAV), and other etiologies, facilitating their accurate characterization and enabling targeted treatment. In cases of suspected SCAD, particular caution should be exercised when performing intravascular imaging because of the risk of hydraulic propagation of the dissection during intracoronary manipulation, especially given the contrast injections required for OCT. That notwithstanding, the benefit of establishing an etiological diagnosis may be substantial in determining the treatment strategy. Likewise, in a clinical setting of acute coronary syndrome (ACS), intravascular imaging methods (either OCT or high-definition IVUS) enable the differentiation between plaque erosion and plaque rupture, which could facilitate future personalized therapeutic strategies, including medical therapy alone without stent implantation in selected cases.

In the context of MINOCA, the PROMISE study, a prospective, multicenter, randomized study, showed that an OCT-guided stratified approach enabled the identification of the underlying etiological mechanism in a greater proportion of cases and was associated with more targeted treatment, with potential clinical benefits²⁷. Similarly, the use of IVUS or OCT is an established indication for CAV assessment, since angiography significantly underestimates the extent of disease in this setting.

Substantial evidence supports the accuracy of intravascular imaging methods in identifying features of atherosclerotic plaque vulnerability, such as thin-cap fibroatheroma (TCFA; cap thickness <65–75 μm), high lipid burden, a minimum lumen area (MLA) <4.0 mm², plaque burden ≥70%, macrophage infiltration, and high lipid core burden. Whether identified individually or in combination, these features make it possible to detect atherosclerotic plaque at high risk of rupture, which may lead to an increased incidence of adverse cardiovascular events^{28–35}. In this context, NIRS enables quantification of lipid core burden through the maximum lipid core burden index (LCBI_{max}). In relation to it, the PROSPECT II study showed that non-culprit plaque with an LCBI_{max} ≥400 and an MLA <4.0 mm² carries a higher risk of causing future events and may warrant intensification of medical therapy¹⁴. Pre-intervention assessment also helps clarify complex anatomical findings, such as ambiguous aorto-ostial coronary stenoses, coronary dissections, intramural hematomas, aneurysmal vascular disease, and diffuse graft vasculopathy in transplant recipients^{36–40}.

What are the problems to be solved?



Pre-stenting analysis

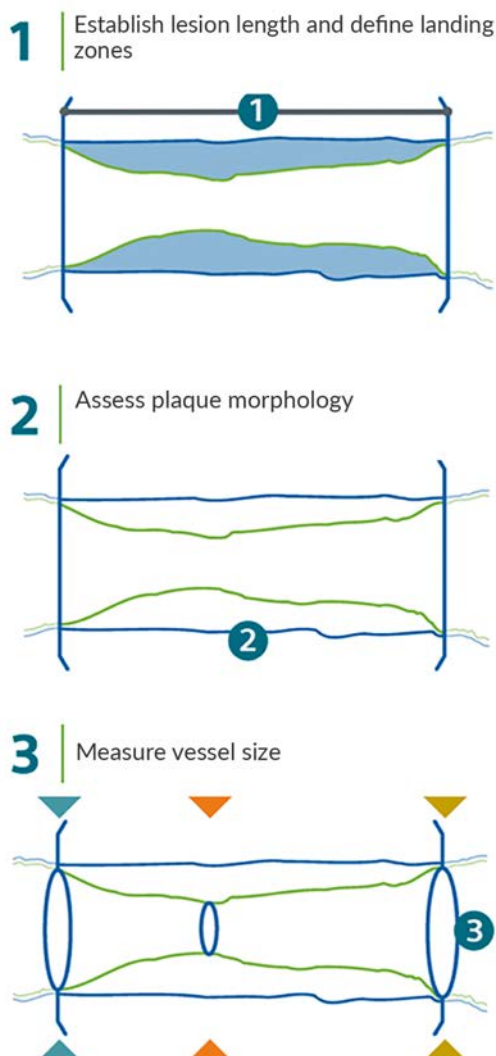


Figure 1. IVUS123™ algorithm for the assessment of atherosclerotic coronary artery disease before stent implantation.

For the aforementioned reasons, this consensus assigns a Class I recommendation, with Level A evidence, to performing intravascular imaging before a coronary interventional procedure, with the aim of achieving better characterization of vascular architecture and atherosclerotic plaque in order to establish an accurate etiological diagnosis and provide targeted treatment.

OPTIMIZATION DURING THE INTERVENTIONAL PROCEDURE

Before stent implantation

Algorithms have been developed for accurate characterization of atherosclerotic plaque with the aim of optimizing stent implantation. The IVUS123™ algorithm proposes a sequential assessment of plaque length, safe stent landing zones, plaque composition, and vessel dimensions (**Figure 1**). This algorithm was developed as part of Boston Scientific's

educational approach, together with its AVVIGO™/ALA™ (Automated Lesion Assessment) software. With it, we can systematically and objectively determine atherosclerotic plaque length, identify safe landing zones for the stent to be implanted, characterize atherosclerotic plaque composition to determine whether targeted plaque preparation techniques are required, and establish vessel dimensions in the segments proximal and distal to the plaque, with the aim of avoiding geographic miss during stent implantation.

In this regard, this document assigns a Class I recommendation, with Level A evidence, to the use of intravascular imaging to characterize atherosclerotic disease and determine target vessel dimensions.

Stent selection

Several studies have shown that stent underexpansion is one of the main predictors of MACE during follow-up⁴¹⁻⁴⁴. In

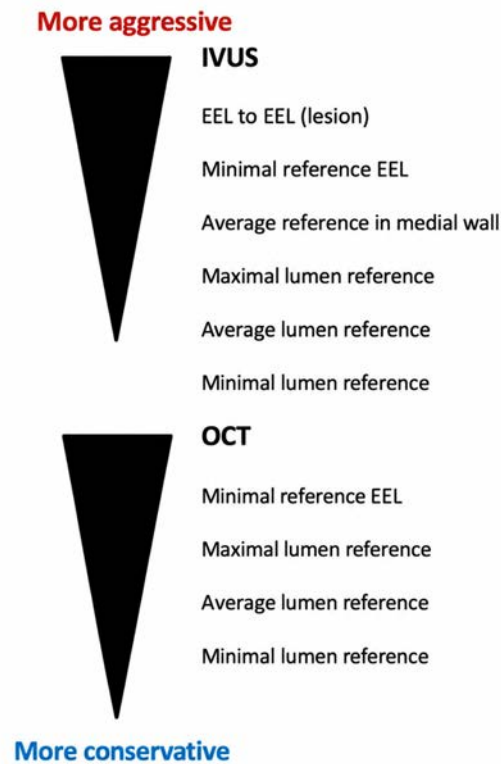


Figure 2.

this sense, various strategies have been proposed for stent diameter selection, taking into account the vascular architecture data provided by intravascular imaging methods and considering the following:

- the average lumen diameters of the proximal and distal reference segments,
- the reference maximal lumen diameter (proximal or distal), or
- the minimal EEL area as determined by IVUS or OCT.

More aggressive approaches, applicable only with IVUS (not with OCT), are based on a media-to-media measurement at the site of the minimal lumen diameter.

From a practical standpoint, the use of the distal lumen reference (whether based on the EEL or the lumen itself) is a straightforward and safe strategy, followed by post-dilation of the mid- and proximal part of the stent (**Figure 2**).

Moreover, when using a lumen-based approach, the OPINION Study recommended selecting stent diameter using the mean lumen diameter, rounding up to the next 0.25-mm increment⁴⁵. In contrast, when applying an EEL-based approach, it is advisable to use the mean EEL diameter (derived from two orthogonal measurements, or from a single measurement when EEL visibility is limited to approximately 180°), rounding the stent diameter down to the nearest 0.25-mm⁴⁶. Long stenoses with marked variations in diameter (for example, lesions extending from the mid-segment of the left anterior descending artery to the left main coronary artery) are an important exception to this strategy. In these cases, the identification of stent underexpansion should take into account both differences in vessel diameter and the presence of side branch origins⁴⁷ (**Table 4**).

TABLE 4. Stent sizing with intravascular imaging methods.

- The benefit of imaging-guided angioplasty does not seem to depend strictly on the algorithm used for stent sizing using IVUS or OCT.
- From a practical point of view, using the distal luminal diameter as a reference can be a safe and simple approach, with subsequent optimization of the mid- and proximal stent segments.
- Specifically, the mean distal luminal diameter rounded up (0–0.25 mm), for example, 3.76 → 4.0 mm, or the mean vessel area diameter (EEL measurement in 2 orthogonal axes) rounded down to the nearest 0.25 mm multiple of the stent size (for example, 3.76 → 3.5 mm) can be used.
- When using OCT, the EEL reference strategy is still feasible, although more challenging than a lumen-based approach for routine clinical practice.
- Correct stent landing zone selection is crucial, as a residual plaque burden of <50% and, in particular, the presence of lipid-rich tissue at the stent edge are associated with subsequent restenosis.
- Angiography co-registration with IVUS or OCT is useful for determining stent length and enables accurate placement.

IVUS: intravascular ultrasound. OCT: optical coherence tomography. EEL: external elastic lamina.

Regarding the selection of appropriate stent length, incomplete lesion coverage has consistently been identified as one of the predictors of stent failure (ST, ISR), as well as of MACE during follow-up^{48,49}. In this regard, it is clinically important to avoid selecting stent landing zones in areas with a residual plaque burden >50%, paying particular attention to lipid-rich atherosclerotic plaque, which has been associated with a higher incidence of edge restenosis after implantation of newer-generation drug-eluting stents (DES)^{41,50–51}. Similarly, co-registration of intravascular imaging with angiography is an essential tool for facilitating accurate stent length selection and optimizing implantation.

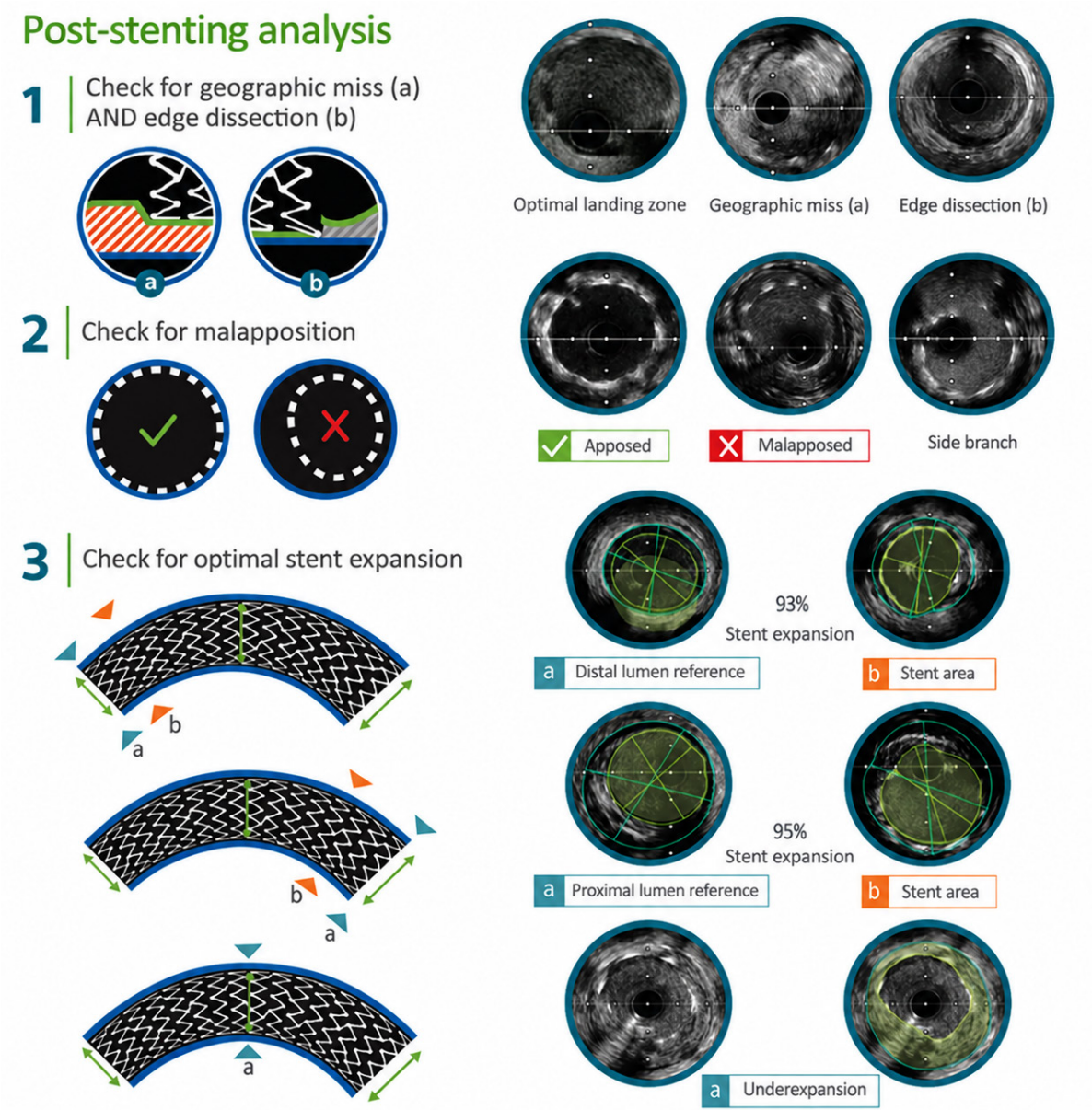
This consensus document assigns a Class I recommendation, with Level A evidence, to the use of intravascular imaging to objectively assess vessel dimensions, both in terms of diameter and total length of the affected vessel, in order to select the appropriate stent for implantation, maximize clinical benefit, and reduce the likelihood of periprocedural vascular complications.

Post-stenting optimization

Several studies have proposed a series of optimization criteria for both IVUS and OCT aimed at reducing the incidence of adverse clinical events after stenting, during follow-up (**Figure 3**).

Among these, the ULTIMATE study included the following: (1) a minimum stent area >5.0 mm² or 90% of the minimal lumen area (MLA) of the distal reference segment; (2) a plaque burden <50% within 5 mm proximal or distal to the stent edge; and (3) the absence of edge dissection involving the media and extending >3 mm². In contrast, a simplified algorithm known as MLD-MAX has recently been proposed for pre- and post-intervention assessment using OCT. Pre-procedural assessment using this algorithm evaluates atherosclerotic plaque morphology, lesion length, and vessel diameter, while post-procedural assessment identifies the presence or absence of medial dissection and evaluates stent apposition and expansion⁵² (**Figure 4**).

All stent sizing criteria must be interpreted in consideration of modality-specific differences in lumen detection and vessel measurement. In this regard, despite the diversity of optimization criteria applied in clinical studies, the



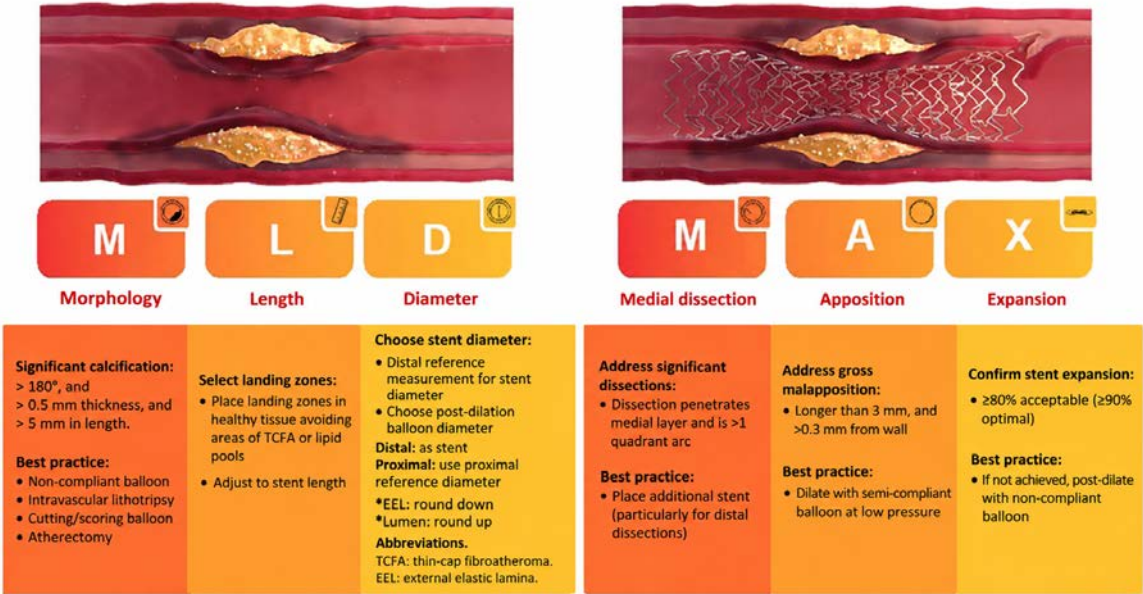


Figura 4. TCFA: thin-cap fibroatheroma. EEL: external elastic lamina..

TABLE 5. Criteria for correct stent optimization using intravascular imaging methods.

<ul style="list-style-type: none">A relative stent expansion >80% (MSA divided by the mean reference luminal area) should be achieved in routine clinical practice.
<ul style="list-style-type: none">An MSA >5.5 mm² by IVUS and >4.5 mm² by OCT should be achieved in all lesions except those in the left main coronary artery.
<ul style="list-style-type: none">The clinical relevance of acute malapposition remains uncertain. However, extensive malapposition should be avoided and corrected, if anatomically feasible, after stenting. Early strut coverage may be favored by complete apposition.
<ul style="list-style-type: none">Acute malapposition <0.4 mm with longitudinal extension <1 mm should not be corrected, as spontaneous neointimal integration is anticipated. This cutoff point requires prospective validation
<ul style="list-style-type: none">Late malapposition is a well-established cause of late and very late stent thrombosis.
<ul style="list-style-type: none">Tissue prolapse in ACS, compared with stable CAD, is associated with poorer outcomes, probably due to differences in the composition of the protruding tissue.
<ul style="list-style-type: none">Extensive dissections detected by IVUS or OCT are independent predictors of MACE. Residual plaque burden, wide lateral extension (>60°), longitudinal extension (>2 mm), involvement of deep layers (media or adventitia), and distal location relative to the stent all increase the risk of adverse events.
<ul style="list-style-type: none">Stent edge hematoma can be detected by IVUS or OCT in the event of residual stenosis at the stent edge detected by angiography.

MSA: minimum stent area. IVUS: intravascular ultrasound. OCT: optical coherence tomography. ACS: acute coronary syndrome. CAD: coronary atherosclerotic disease. MACE: major adverse cardiac events.

is now widely adopted, allowing for their etiologies to be grouped into two major pathophysiological categories. This distinction facilitates an understanding of the underlying mechanisms while enabling an individualized therapeutic approach⁶² (Table 6).

Although ISR is an angiographic diagnosis, intravascular imaging techniques offer greater sensitivity both for its characterization and for understanding its underlying pathophysiological mechanisms. In this regard, IVUS and OCT differ substantially in their ability to identify the various stent failure mechanisms, something that is directly related to the intrinsic characteristics of each modality, particularly regarding resolution and tissue penetration depth^{53, 63} (Table 7).

This consensus document recommends the use of intravascular imaging methods in cases of stent failure, with a Class IIa recommendation and Level A evidence, to establish an etiological diagnosis of the failure mechanism and characterize it precisely in order to guide targeted treatment.

Since stent failure is very frequently caused by unrecognized underexpansion, the use of intravascular imaging in this setting could be upgraded to a Class I recommendation in future updates as more specific evidence emerges.

DETERMINING STENOSIS SIGNIFICANCE

Coronary lesions outside the left main coronary artery

To date, robust evidence has shown that intravascular physiology-based methods, such as the determination of coronary fractional flow reserve (FFR) as a hyperemic index and instantaneous wave-free ratio (iFR) as a reference non-hyperemic index, are highly safe and effective methods to determine the functional severity of coronary stenoses⁶⁴⁻⁶⁶. Conversely, among the anatomical parameters quantified using intravascular imaging methods, the MLA is the parameter that correlates best with the presence of ischemia confirmed by intravascular physiology-based methods. In this regard, IVUS-derived MLA cutoff values range from 2.1 to 4.4 mm² and are generally lower in studies involving Asian populations than in patients from Western cohorts. Combining parameters (for example, MLA with plaque burden or lesion length), adjusting for vessel size, or incorporating tissue characterization technologies have not been shown to be superior to using MLA alone. Unlike IVUS, OCT-derived MLA cutoff values range from 1.6 to 2.4 mm², although the number of available studies is half of that available for IVUS. Meta-analyses suggest an IVUS-derived 2.8–2.9-mm² MLA cutoff (3.0 mm² in Western populations and 2.7 mm² in Asian patients) and an OCT-derived 2.0-mm² MLA cutoff⁶⁹⁻⁷¹. It is

TABLE 6. Stent failure mechanisms.

I	Mechanical	Underexpansion (Type I A)	High-pressure balloon
		Stent fracture (Type I B))	DES
II	Biological	Hiperplasia intimal (Tipo II A)	Balloon, DCB, DES y VBT
		Non-calcified neoatherosclerosis (Type II B)	DCB y DES
		Calcified neoatherosclerosis (Type II C)	Balón scoring, ELCA y AR
III	Mixed pattern: combined mechanical and biological machanisms		Balón de alta presión con DCB, DES o VBT
IV	Chronic total occlusion		DCB o DES, VBT for multiple layers, MRS if necessary
V	>2 stent layers		Balloon, DCB, VBT y CRM

DES: drug-eluting stents. DCB: drug-coated balloons. VBT: vascular brachytherapy. ELCA: excimer laser coronary atherectomy. RA: rotational ablation. MRS: myocardial revascularization surgery.

TABLE 7. Benefits of each method according to the clinical-anatomical scenario.

	IVUS	OCT
Assessment of LMCA lesion severity	+++	+
Assessment of de novo lesion characteristics		
• Thin-cap fibroatheroma	–	+++
• Thrombus	+	+++
• Plaque rupture	++	+++
• Calcified nodule	+	+++
• Dissection	++	+++
• Positive remodeling	+++	+
• Plaque burden	+++	+
• Aorto-ostial disease	+++	–
Stent optimization		
• Expansion	++	+++
• Apposition	++	+++
Stent failure		
• Neointimal hyperplasia	+	++
• Underexpansion	++	+++
• Malapposition	++	+++
Renal failure	+++	+

IVUS: intravascular ultrasound. OCT: optical coherence tomography. LMCA: left main coronary artery.

worth emphasizing that most intravascular imaging studies show that MLA has a high negative predictive value but a low positive predictive value for the determination of a therapeutic strategy (PCI versus deferral of invasive treatment) outside the left main coronary artery (LMCA). This means that any anatomically significant stenosis identified by intravascular imaging does not necessarily correspond to functionally significant ischemia. Therefore, integration with physiological assessment methods is strongly recommended in this setting.

Three randomized clinical trials—DEFER, FAME, and FAME-2—provided the basis for a Class I recommendation for the use of FFR to assess the severity of coronary lesions outside the LMCA⁶⁴⁻⁶⁶. However, the strength of such recommendation has been called into question by recent trials with neutral results—FLOWER-MI, FUTURE, and FAME-3⁷²⁻⁷⁴. Furthermore, the FORZA study demonstrated equivalence between an OCT-guided strategy and an FFR-guided strategy, although its methodological limitations (single-center study conducted in 2020; comparison of PCI guidance versus decision to defer intervention) warrant caution in its interpretation⁷⁵.

Left main coronary artery lesions

An accurate assessment of angiographic significance of LMCA lesions is associated with low interobserver agreement, with agreement rates as low as 30%, particularly in stenoses involving the ostium. In Western countries, an

IVUS-derived <6 mm² MLA is the parameter that correlates best with ischemia, whereas two studies involving Korean populations suggested that an MLA >4.5–4.8 mm² would be sufficient to rule out the need for revascularization⁷⁶⁻⁷⁷. The lower cutoff values observed in Asian populations compared with Western populations have been attributed to smaller cardiac mass in Asian patients, as well as to the observation that a normal, non-atherosclerotic LMCA in this population has 75% of the cross-sectional area observed in Western patients⁷⁸. In this regard, a meta-analysis comparing IVUS-guided deferral of LMCA revascularization with FFR-based assessment showed equivalent clinical outcomes at 30 months⁷⁹.

To date, the available evidence on LMCA PCI has been supplemented by the OPTIVUS-Complex PCI study⁸⁰ and the INFINITE meta-analysis, which analyzed 11 randomized studies comparing IVUS versus angiography for LMCA interventions⁸¹. However, the OPTIMAL study—the largest randomized trial specifically designed for this indication—did not demonstrate the superiority of IVUS guidance over angiography in patients with unprotected LMCA disease at a median follow-up of 2.9 years (HR 1.11; 95% CI: 0.87–1.42; P=0.40). This finding affects the recommendation for this subgroup and is discussed in detail in a dedicated section at the end of this document⁸².

Assessment of the left main coronary artery (LMCA) using OCT has two main limitations: the large vessel caliber combined with the limited tissue penetration shown by this method, and the need to clear blood from the lumen, which particularly affects visualization of the aorto-ostial junction. It is worth emphasizing that, to date, there are no correlation studies or long-term follow-up studies using OCT in this setting. Nevertheless, OCT can be used to assess the mid or distal segment of the LMCA, a common location for high-risk atherosclerotic plaque.

Intravascular imaging should be acquired from both the anterior descending artery and the circumflex artery up to the aorto-ostial junction, in order to determine the MLA (using the lower value obtained from the two pullbacks), as well as to assess the presence of disease at the ostia of both coronary arteries. LMCA disease typically extends into the anterior descending artery in approximately 90% of patients, with variable involvement of the circumflex artery, regardless of Medina classification. In this regard, isolated ostial disease in the anterior descending artery (Medina 0,1,0) or the circumflex artery (Medina 0,0,1) almost always implies distal LMCA involvement when assessed using intravascular imaging⁸³.

It should be noted that an LMCA whose diameter is smaller than that of the largest distal coronary vessel, or that does not comply with Murray's law, should not be considered ana-

TABLE 8. Specific clinical scenarios favoring IVUS or OCT.

Scenario	Preferred method	Justification
ACS culprit lesion	OCT	OCT easily detects and differentiates between red thrombus and white thrombus, and it can identify erosion.
Suspected SCAD	IVUS	Contrast flushing required by OCT could expand the dissection.
Aorto-ostial lesions	IVUS	Clearing blood from the aorto-ostial junction is a difficult task.
LMCA PTCA	IVUS	OCT provides scarce data; OCT ostium assessment is difficult to achieve.
Chronic total occlusion	IVUS	Contrast flushing required by OCT could expand a dissection.
Stent failure	OCT	OCT enables strut coverage assessment and neoatherosclerosis detection.
Chronic kidney disease	IVUS	Contrast flushing required by OCT could worsen kidney disease.

ACS: acute coronary syndrome. OCT: optical coherence tomography. SCAD: spontaneous coronary artery dissection. IVUS: intravascular ultrasound. PTCA: percutaneous transluminal coronary angioplasty. LMCA: left main coronary artery

tomically small but rather diffusely diseased, without an angiographically normal reference segment⁸⁴.

SITUATIONS IN WHICH ONE METHOD IS SUPERIOR TO THE OTHER

In the vast majority of PCI procedures involving stent implantation, both IVUS and OCT can be used safely, effectively, and interchangeably, with comparable outcomes over short- and intermediate-term follow-up. However, there are specific scenarios in which one modality may be preferable to the other, either for clinical reasons or because there is a greater body of evidence for that modality⁸⁵ (Table 8).

It is worth considering that IVUS has greater EEL detection power in clinical practice, which is particularly relevant in severely calcified vessels where OCT may not adequately visualize the EEL. This technical difference may influence the choice of imaging modality in individual cases, without implying overall clinical superiority of IVUS.

NEW RANDOMIZED CLINICAL TRIALS AND THEIR IMPACT ON THE RECOMMENDATIONS IN THIS CONSENSUS

In March 2026, two highly relevant trials were simultaneously published in the *New England Journal of Medicine*: the IVUS-CHIP study, which included 2020 patients undergoing complex-lesion PCI, and the OPTIMAL study, which included 806 patients with unprotected LMCA disease. Both trials yielded neutral results—IVUS-CHIP: HR 1.25; $P=0.08$; OPTIMAL: HR 1.11; $P=0.40$ —, although both consistently showed a significant reduction in definite stent thrombosis with IVUS guidance, a finding that preserves the mechanistic value of this tool regardless of the results for the composite endpoints.

These results do not invalidate the use of IVUS; rather, they may be explained by a combination of concurrent methodological limitations. First, the participating operators, who had extensive prior experience with intracoronary imaging and routinely used IVUS in 50–100% of their cases, had so thoroughly internalized its principles that they also applied them in the angiography arm, effectively creating an “IVUS without IVUS” control arm. Post-dilation rates in the angiography group reached 84–96%, figures substantially higher than those observed in previous positive trials, such as ULTIMATE (57%) and RENOVATE (75%), thereby eliminating the procedural separation between the groups. Second, the predefined stent optimization criteria were achieved in only 48% of lesions in IVUS-CHIP, and IVUS findings prompted additional corrective maneuvers in only 29% of cases in OPTIMAL, thus switching IVUS from an active

decision-making tool to a passive observational modality. Third, pre-stent IVUS—which accounts for its greatest mechanistic value in guiding lesion preparation and stent selection—was performed in only 63–65% of patients in both trials, limiting its potential in a substantial proportion of cases. Furthermore, while 45.8% of patients in IVUS-CHIP had severe calcification, rotational atherectomy was used in only 6.5% and intravascular lithotripsy in 10.6% of cases: without appropriate plaque-preparation tools, IVUS can document underexpansion, but it cannot correct it. Finally, both trials based their power calculations on a 35% relative risk reduction (HR 0.65), derived from observational data from the first-generation drug-eluting stent era. In a contemporary setting, 15–20% constitutes a more realistic treatment effect, which would require 4000–6000 patients to achieve adequate statistical power, leaving both studies likely underpowered to detect true clinical benefit.

In a Latin American setting, where adoption remains low and operator experience is heterogeneous, the recommendations of this consensus remain fully valid: IVUS and OCT continue to be essential tools for LMCA disease assessment, complex lesions, stent failure management, and any clinical scenario in which imaging actively influences decision-making processes.

CONCLUSIONS

To date, there is a substantial body of scientific evidence establishing intravascular imaging methods as fundamental tools for optimizing coronary interventional procedures. Their use is consistently associated with a reduction in adverse clinical events during follow-up, supporting their systematic incorporation into contemporary interventional practice. The accuracy with which these technologies characterize coronary vascular architecture allows for a detailed identification of atherosclerotic plaque morphology and a precise determination of target vessel dimensions. This level of information enables a targeted therapeutic approach, facilitating the selection of the optimal plaque preparation strategy as well as the appropriate choice of stent size.

In addition, intravascular imaging helps identify the etiology of the index coronary event in cases where no angiographically significant stenoses are observed, providing valuable information about alternative mechanisms, such as plaque rupture or erosion. Furthermore, it has shown an adequate ability to assess stenosis severity in both the left main coronary artery and other epicardial vessels. In certain clinical settings, intravascular imaging offers distinct advantages due to its technological features and its ability to guide decisions more precisely than angiography alone. For the aforementioned reasons, current evidence makes it

necessary to consider intravascular imaging as part of the quality standard in contemporary angioplasty, particularly

in complex or high-risk lesions, where its omission may compromise clinical outcomes.

REFERENCES

- Hong SJ, Kim BK, Shin DH, Nam CM, Kim JS, Ko YG, et al. Effect of Intravascular Ultrasound-Guided vs Angiography-Guided Everolimus-Eluting Stent Implantation: The IVUS-XPL Randomized Clinical Trial. *JAMA*. 2015 Nov 24;314(20):2155–63. doi:10.1001/JAMA.2015.15454 PubMed PMID: 26556051.
- Zhang J, Gao X, Kan J, Ge Z, Han L, Lu S, et al. Intravascular Ultrasound Versus Angiography-Guided Drug-Eluting Stent Implantation: The ULTIMATE Trial. *J Am Coll Cardiol*. 2018 Dec 18;72(24):3126–37. doi:10.1016/j.jacc.2018.09.013 PubMed PMID: 30261237.
- Lee JM, Choi KH, Song Y Bin, Lee JY, Lee SJ, Lee SY, et al. Intravascular Imaging-Guided or Angiography-Guided Complex PCI. *N Engl J Med*. 2023 May 4;388(18):1668–79. doi:10.1056/NEJMOA2216607 PubMed PMID: 36876735.
- Prati F, Di Vito L, Biondi-Zoccai G, Occhipinti M, La Manna A, Tamburino C, et al. Angiography alone versus angiography plus optical coherence tomography to guide decision-making during percutaneous coronary intervention: the Centro per la Lotta contro l'Infarto-Optimization of Percutaneous Coronary Intervention (CLI-OPCI) study. *EuroIntervention*. 2012 Nov;8(7):823–9. doi:10.4244/EIJV8I7A125 PubMed PMID: 23034247.
- Meneveau N, Souteyrand G, Motreff P, Caussin C, Amabile N, Ohlmann P, et al. Optical Coherence Tomography to Optimize Results of Percutaneous Coronary Intervention in Patients with Non-ST-Elevation Acute Coronary Syndrome: Results of the Multicenter, Randomized DOCTORS Study (Does Optical Coherence Tomography Optimize Results of ...). *Circulation*. 2016 Sep 27;134(13):906–17. doi:10.1161/CIRCULATIONAHA.116.024393 PubMed PMID: 27573032.
- Kubo T, Shinke T, Okamura T, Hibi K, Nakazawa G, Morino Y, et al. Optical frequency domain imaging vs. intravascular ultrasound in percutaneous coronary intervention (OPINION trial): one-year angiographic and clinical results. *Eur Heart J*. 2017 Nov 1;38(42):3139–47. doi:10.1093/EURHEARTJ/EHX351 PubMed PMID: 29121226.
- Hong D, Lee J, Lee H, Cho J, Guallar E, Choi KH, et al. Cost-Effectiveness of Intravascular Imaging-Guided Complex PCI: Prespecified Analysis of RENOvATE-COMPLEX-PCI Trial. *Circ Cardiovasc Qual Outcomes*. 2024 Mar 1;17(3):E010230. doi:10.1161/CIRCOUTCOMES.123.010230 PubMed PMID: 38477162.
- Halperin JL, Levine GN, Al-Khatib SM, Birtcher KK, Bozkurt B, Brindis RG, et al. Further Evolution of the ACC/AHA Clinical Practice Guideline Recommendation Classification System: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *J Am Coll Cardiol*. 2016 Apr 5;67(13):1572–4. doi:10.1016/J.JACC.2015.09.001 PubMed PMID: 26409257.
- Diamond IR, Grant RC, Feldman BM, Pencharz PB, Ling SC, Moore AM, et al. Defining consensus: a systematic review recommends methodologic criteria for reporting of Delphi studies. *J Clin Epidemiol*. 2014 Apr;67(4):401–9. doi:10.1016/J.JCLINEPI.2013.12.002 PubMed PMID: 24581294.
- Lee JM, Choi KH, Song Y Bin, Lee JY, Lee SJ, Lee SY, et al. Intravascular Imaging-Guided or Angiography-Guided Complex PCI. *N Engl J Med*. 2023 May 4;388(18):1668–79. doi:10.1056/NEJMOA2216607 PubMed PMID: 36876735.
- Diletti R, Daemen J, Faurie B, Barbierato M, Tchéché D, Hovasse T, et al. Intravascular Ultrasound-Guided or Angiography-Guided Complex High-Risk PCI. *New England Journal of Medicine*. 2026 Mar 30. doi:10.1056/NEJMOA2601521
- Vrints C, Andreotti F, Koskinas KC, Rossello X, Adamo M, Ainslie J, et al. 2024 ESC Guidelines for the management of chronic coronary syndromes: Developed by the task force for the management of chronic coronary syndromes of the European Society of Cardiology (ESC) Endorsed by the European Association for Cardio-Thoracic Surger.... *Eur Heart J*. 2024 Sep 29;45(36):3415–537. doi:10.1093/EURHEARTJ/EHAE177 PubMed PMID: 39210710.
- Kuku KO, Singh M, Ozaki Y, Dan K, Chezar-Azerrad C, Waksman R, et al. Near-Infrared Spectroscopy Intravascular Ultrasound Imaging: State of the Art. *Front Cardiovasc Med*. 2020 Jun 30;7. doi:10.3389/FCVM.2020.00107 PubMed PMID: 32695796.
- Erlinge D, Maehara A, Ben-Yehuda O, Bøtker HE, Maeng M, Kjølner-Hansen L, et al. Identification of vulnerable plaques and patients by intracoronary near-infrared spectroscopy and ultrasound (PROSPECT II): a prospective natural history study. *The Lancet*. 2021 Mar 13;397(10278):985–95. doi:10.1016/S0140-6736(21)00249-X PubMed PMID: 33714389.
- Lee JM, Choi KH, Song Y Bin, Lee JY, Lee SJ, Lee SY, et al. Intravascular Imaging-Guided or Angiography-Guided Complex PCI. *N Engl J Med*. 2023 May 4;388(18):1668–79. doi:10.1056/NEJMOA2216607 PubMed PMID: 36876735.
- Ali ZA, Landmesser U, Maehara A, Matsumura M, Shlofmitz RA, Guagliumi G, et al. Optical Coherence Tomography-Guided versus Angiography-Guided PCI. *N Engl J Med*. 2023 Oct 19;389(16):1466–76. doi:10.1056/NEJMOA2305861 PubMed PMID: 37634188.
- Hong SJ, Mintz GS, Ahn CM, Kim JS, Kim BK, Ko YG, et al. Effect of Intravascular Ultrasound-Guided Drug-Eluting Stent Implantation: 5-Year Follow-Up of the IVUS-XPL Randomized Trial. *JACC Cardiovasc Interv*. 2020 Jan 13;13(1):62–71. doi:10.1016/j.jcin.2019.09.033 PubMed PMID: 31918944.
- Holm NR, Andreassen LN, Neghabat O, Laanmets P, Kumsars I, Bennett J, et al. OCT or Angiography Guidance for PCI in Complex Bifurcation Lesions. *N Engl J Med*. 2023 Oct 19;389(16):1477–87. doi:10.1056/NEJMOA2307770 PubMed PMID: 37634149.
- Bergmark B, Dallan LAP, Pereira GTR, Kuder JF, Murphy SA, Buccola J, et al. Decision-Making During Percutaneous Coronary Intervention Guided by Optical Coherence Tomography: Insights From the LightLab Initiative. *Circ Cardiovasc Interv*. 2022 Nov 1;15(11):872–81. doi:10.1161/CIRCINTERVENTIONS.122.011851 PubMed PMID: 36378739.
- Kang DY, Ahn JM, Yun SC, Hur SH, Cho YK, Lee CH, et al. Guiding Intervention for Complex Coronary Lesions by Optical Coherence Tomography or Intravascular Ultrasound. *J Am Coll Cardiol*. 2024 Jan 23;83(3):401–13. doi:10.1016/j.jacc.2023.10.017 PubMed PMID: 37879490.
- Garcia-Garcia HM, Costa MA, Serruys PW. Imaging of coronary atherosclerosis: intravascular ultrasound. *Eur Heart J*. 2010 Oct;31(20). doi:10.1093/EURHEARTJ/EHQ280 PubMed PMID: 20823109.
- Araki M, Park SJ, Dauerman HL, Uemura S, Kim JS, Di Mario C, et al. Optical coherence tomography in coronary atherosclerosis assessment and intervention. *Nat Rev Cardiol*. 2022 Oct 1;19(10):684–703. doi:10.1038/S41569-022-00687-9 PubMed PMID: 35449407.
- Mintz GS, Nissen SE, Anderson WD, Bailey SR, Erbel R, Fitzgerald PJ, et al. American College of Cardiology clinical expert consensus document on standards for acquisition, measurement and reporting of intravascular ultrasound studies (IVUS). *J Am Coll Cardiol*. 2001 Apr 1;37(5):1478–92. doi:10.1016/S0735-1097(01)01175-5
- Park H, Ahn JM, Kang DY, Lee JB, Park S, Ko E, et al. Optimal Stenting Technique for Complex Coronary Lesions: Intracoronary Imaging-Guided Pre-Dilation, Stent Sizing, and Post-Dilation. *JACC Cardiovasc Interv*. 2020 Jun 22;13(12):1403–13. doi:10.1016/J.JCIN.2020.03.023 PubMed PMID: 32473888.
- Vergallo R, Park SJ, Stone GW, Erlinge D, Porto I, Waksman R, et al. Vulnerable or High-Risk Plaque: A JACC: Cardiovascular Imaging Position Statement. *JACC Cardiovasc Imaging*. 2025 Jun 1;18(6):709–40. doi:10.1016/j.jcmg.2024.12.004 PubMed PMID: 40019413.
- Laudani C, Occhipinti G, Greco A, Spagnolo M, Giacompo D, Capodanno D. Completeness, timing, and guidance of percutaneous coronary intervention for myocardial infarction and multivessel disease: a systematic review and network meta-analysis. *EuroIntervention*. 2025;21(4):e203–16. doi:10.4244/EIJ-D-24-00814 PubMed PMID: 39962946.

27. Montone RA, Cosentino N, Gorla R, Biscaglia S, La Vecchia G, Rinaldi R, et al. Stratified treatment of myocardial infarction with non-obstructive coronary arteries: the PROMISE trial. *Eur Heart J*. 2026 Mar 24;47(12). doi:10.1093/EURHEARTJ/EHAF917 PubMed PMID: 41150941.
28. Stone GW, Maehara A, Lansky AJ, de Bruyne B, Cristea E, Mintz GS, et al. A prospective natural-history study of coronary atherosclerosis. *N Engl J Med*. 2011 Jan 20;364(3):226–35. doi:10.1056/NEJMOA1002358 PubMed PMID: 21247313.
29. Cheng JM, Garcia-Garcia HM, De Boer SPM, Kardys I, Heo JH, Akkerhuis KM, et al. In vivo detection of high-risk coronary plaques by radiofrequency intravascular ultrasound and cardiovascular outcome: results of the ATHEROREMO-IVUS study. *Eur Heart J*. 2014;35(10):639–47. doi:10.1093/EURHEARTJ/EHT484 PubMed PMID: 24255128.
30. Erlinge D, Maehara A, Ben-Yehuda O, Bøtker HE, Maeng M, Kjølner-Hansen L, et al. Identification of vulnerable plaques and patients by intracoronary near-infrared spectroscopy and ultrasound (PROSPECT II): a prospective natural history study. *The Lancet*. 2021 Mar 13;397(10278):985–95. doi:10.1016/S0140-6736(21)00249-X PubMed PMID: 33714389.
31. Kedhi E, Berta B, Roleder T, Hermanides RS, Fabris E, IJsselmuiden AJJ, et al. Thin-cap fibroatheroma predicts clinical events in diabetic patients with normal fractional flow reserve: the COMBINE OCT-FFR trial. *Eur Heart J*. 2021 Dec 1;42(45):4671–9. doi:10.1093/EURHEARTJ/EHAB433 PubMed PMID: 34345911.
32. Kubo T, Ino Y, Mintz GS, Shiono Y, Shimamura K, Takahata M, et al. Optical coherence tomography detection of vulnerable plaques at high risk of developing acute coronary syndrome. *Eur Heart J Cardiovasc Imaging*. 2021 Dec 1;22(12):1376–84. doi:10.1093/EHJCI/JEAB028 PubMed PMID: 33619524.
33. Capodanno D, Spagnolo M. Optical Coherence Tomography or Intravascular Ultrasound for Complex PCI: Different Approaches, Similar Outcomes. *J Am Coll Cardiol*. 2024 Jan 23;83(3):414–6. doi:10.1016/j.jacc.2023.10.044 PubMed PMID: 38233014.
34. Calvert PA, Obaid DR, O'Sullivan M, Shapiro LM, McNab D, Densem CG, et al. Association between IVUS findings and adverse outcomes in patients with coronary artery disease: the VIVA (VH-IVUS in Vulnerable Atherosclerosis) Study. *JACC Cardiovasc Imaging*. 2011 Aug;4(8):894–901. doi:10.1016/J.JCMG.2011.05.005 PubMed PMID: 21835382.
35. Waksman R, Torguson R, Spad MA, Garcia-Garcia H, Ware J, Wang R, et al. The Lipid-Rich Plaque Study of vulnerable plaques and vulnerable patients: Study design and rationale. *Am Heart J*. 2017 Oct 1;192:98–104. doi:10.1016/J.AHJ.2017.02.010 PubMed PMID: 28938968.
36. Mendiz OA, Gamboa P, Renedo MF, Lev GA, Favaloro LE, Bertolotti AM. Intravascular ultrasound for cardiac allograft vasculopathy detection. *Clin Transplant*. 2021 Feb 1;35(2). doi:10.1111/CTR.14167 PubMed PMID: 33237578.
37. Shahandeh N, Kashiwayama K, Honda Y, Nsair A, Ali ZA, Tobis JM, et al. Invasive Coronary Imaging Assessment for Cardiac Allograft Vasculopathy: State-of-the-Art Review. *Journal of the Society for Cardiovascular Angiography & Interventions*. 2022 Jul 1;1(4). doi:10.1016/J.JSCAI.2022.100344 PubMed PMID: 39131933.
38. Maehara A, Mintz GS, Ahmed JM, Fuchs S, Castagna MT, Pichard AD, et al. An intravascular ultrasound classification of angiographic coronary artery aneurysms. *Am J Cardiol*. 2001 Aug 15;88(4):365–70. doi:10.1016/S0002-9149(01)01680-0 PubMed PMID: 11545755.
39. Marrazzo G, Palmeri S, Pastore F, Ragni M, De Luca M, Gambardella M, et al. Multimodality Imaging Approach to Spontaneous Coronary Artery Dissection. *J Clin Med*. 2022 Jan 1;12(1). doi:10.3390/JCM12010154 PubMed PMID: 36614955.
40. Kang DY, Ahn JM, Yun SC, Hur SH, Cho YK, Lee CH, et al. Guiding Intervention for Complex Coronary Lesions by Optical Coherence Tomography or Intravascular Ultrasound. *J Am Coll Cardiol*. 2024 Jan 23;83(3):401–13. doi:10.1016/j.jacc.2023.10.017 PubMed PMID: 37879490.
41. Choi SY, Witzensbichler B, Maehara A, Lansky AJ, Guagliumi G, Brodie B, et al. Intravascular ultrasound findings of early stent thrombosis after primary percutaneous intervention in acute myocardial infarction: a Harmonizing Outcomes with Revascularization and Stents in Acute Myocardial Infarction (HORIZONS-AMI) substudy. *Circ Cardiovasc Interv*. 2011 Jun;4(3):239–47. doi:10.1161/CIRCINTERVENTIONS.110.959791 PubMed PMID: 21586693.
42. Kang SJ, Ahn JM, Song H, Kim WJ, Lee JY, Park DW, et al. Comprehensive intravascular ultrasound assessment of stent area and its impact on restenosis and adverse cardiac events in 403 patients with unprotected left main disease. *Circ Cardiovasc Interv*. 2011 Dec;4(6):562–9. doi:10.1161/CIRCINTERVENTIONS.111.964643 PubMed PMID: 22045969.
43. Sonoda S, Morino Y, Ako J, Terashima M, Hassan AHM, Bonneau HN, et al. Impact of final stent dimensions on long-term results following sirolimus-eluting stent implantation: Serial intravascular ultrasound analysis from the SIRIUS trial. *J Am Coll Cardiol*. 2004 Jun 2;43(11):1959–63. doi:10.1016/j.jacc.2004.01.044 PubMed PMID: 15172398.
44. Song HG, Kang SJ, Ahn JM, Kim WJ, Lee JY, Park DW, et al. Intravascular ultrasound assessment of optimal stent area to prevent in-stent restenosis after zotarolimus-, everolimus-, and sirolimus-eluting stent implantation. *Catheter Cardiovasc Interv*. 2014 May 1;83(6):873–8. doi:10.1002/CCD.24560 PubMed PMID: 22815193.
45. Kubo T, Shinke T, Okamura T, Hibi K, Nakazawa G, Morino Y, et al. Optical frequency domain imaging vs. intravascular ultrasound in percutaneous coronary intervention (OPINION trial): one-year angiographic and clinical results. *Eur Heart J*. 2017 Nov 1;38(42):3139–47. doi:10.1093/EURHEARTJ/EHX351 PubMed PMID: 29121226.
46. Ali ZA, Maehara A, G  n  reux P, Shlofmitz RA, Fabbioocchi F, Nazif TM, et al. Optical coherence tomography compared with intravascular ultrasound and with angiography to guide coronary stent implantation (ILUMIEN III: OPTIMIZE PCI): a randomised controlled trial. *Lancet*. 2016 Nov 26;388(10060):2618–28. doi:10.1016/S0140-6736(16)31922-5 PubMed PMID: 27806900.
47. Nakamura D, Wijns W, Price MJ, Jones MR, Barbato E, Akasaka T, et al. New Volumetric Analysis Method for Stent Expansion and its Correlation With Final Fractional Flow Reserve and Clinical Outcome: An ILUMIEN I Substudy. *JACC Cardiovasc Interv*. 2018 Aug 13;11(15):1467–78. doi:10.1016/j.jcin.2018.06.049 PubMed PMID: 30093052.
48. Mintz GS. Intravascular ultrasound and outcomes after drug-eluting stent implantation. *Coron Artery Dis*. 2017;28(4):346–52. doi:10.1097/MCA.0000000000000483 PubMed PMID: 28441172.
49. Calvert PA, Brown AJ, Hoole SP, Obaid DR, West NEJ, Bennett MR. Geographical miss is associated with vulnerable plaque and increased major adverse cardiovascular events in patients with myocardial infarction. *Catheter Cardiovasc Interv*. 2016 Sep 1;88(3):340–7. doi:10.1002/CCD.26275 PubMed PMID: 26527101.
50. Kang SJ, Cho YR, Park GM, Ahn JM, Kim WJ, Lee JY, et al. Intravascular ultrasound predictors for edge restenosis after newer generation drug-eluting stent implantation. *Am J Cardiol*. 2013 May 15;111(10):1408–14. doi:10.1016/J.AMJCARD.2013.01.288 PubMed PMID: 23433757.
51. Ino Y, Kubo T, Matsuo Y, Yamaguchi T, Shiono Y, Shimamura K, et al. Optical Coherence Tomography Predictors for Edge Restenosis After Everolimus-Eluting Stent Implantation. *Circ Cardiovasc Interv*. 2016 Oct 1;9(10). doi:10.1161/CIRCINTERVENTIONS.116.004231 PubMed PMID: 27688261.
52. Shlofmitz E, Croce K, Bezerra H, Sheth T, Chehab B, West NEJ, et al. The MLD MAX OCT algorithm: An imaging-based workflow for percutaneous coronary intervention. *Catheter Cardiovasc Interv*. 2022 Nov 1;100 Suppl 1(S1):S7–13. doi:10.1002/CCD.30395 PubMed PMID: 36661367.
53. Maehara A, Ben-Yehuda O, Ali Z, Wijns W, Bezerra HG, Shite J, et al. Comparison of stent expansion guided by optical coherence tomography versus intravascular ultrasound: The ILUMIEN II study (Observational Study of Optical Coherence Tomography [OCT] in Patients Undergoing Fractional Flow Reserve [FFR] and Percutaneous Co...). *JACC Cardiovasc Interv*. 2015 Nov 1;8(13):1704–14. doi:10.1016/j.jcin.2015.07.024 PubMed PMID: 26585621.
54. Habara M, Nasu K, Terashima M, Kaneda H, Yokota D, Ko E, et al. Impact of frequency-domain optical coherence tomography guidance for optimal coronary stent implantation in comparison with intravascular ultrasound guidance. *Circ Cardiovasc Interv*. 2012 Apr;5(2):193–201. doi:10.1161/CIRCINTERVENTIONS.111.965111 PubMed PMID: 22456026.
55. Prati F, Di Vito L, Biondi-Zoccai G, Occhipinti M, La Manna A, Tambu-

- rino C, et al. Angiography alone versus angiography plus optical coherence tomography to guide decision-making during percutaneous coronary intervention: the Centro per la Lotta contro l'Infarto-Optimisation of Percutaneous Coronary Intervention (CLI-OPCI) study. *EuroIntervention*. 2012 Nov;8(7):823–9. doi:10.4244/EIJV8I7A125 PubMed PMID: 23034247.
56. Maehara A, Ben-Yehuda O, Ali Z, Wijns W, Bezerra HG, Shite J, et al. Comparison of Stent Expansion Guided by Optical Coherence Tomography Versus Intravascular Ultrasound: The ILUMIEN II Study (Observational Study of Optical Coherence Tomography [OCT] in Patients Undergoing Fractional Flow Reserve [FFR] and Percutaneous Co...). *JACC Cardiovasc Interv*. 2015 Nov 1;8(13):1704–14. doi:10.1016/j.jcin.2015.07.024 PubMed PMID: 26585621.
 57. Meneveau N, Souteyrand G, Motreff P, Caussin C, Amabile N, Ohlmann P, et al. Optical Coherence Tomography to Optimize Results of Percutaneous Coronary Intervention in Patients with Non-ST-Elevation Acute Coronary Syndrome: Results of the Multicenter, Randomized DOCTORS Study (Does Optical Coherence Tomography Optimize Results of...). *Circulation*. 2016 Sep 27;134(13):906–17. doi:10.1161/CIRCULATIONAHA.116.024393 PubMed PMID: 27573032.
 58. Kubo T, Shinke T, Okamura T, Hibi K, Nakazawa G, Morino Y, et al. Optical frequency domain imaging vs. intravascular ultrasound in percutaneous coronary intervention (OPINION trial): one-year angiographic and clinical results. *Eur Heart J*. 2017 Nov 1;38(42):3139–47. doi:10.1093/EURHEARTJ/EHX351 PubMed PMID: 29121226.
 59. Ali ZA, Maehara A, G  n  reux P, Shlofmitz RA, Fabbiochi F, Nazif TM, et al. Optical coherence tomography compared with intravascular ultrasound and with angiography to guide coronary stent implantation (ILUMIEN III: OPTIMIZE PCI): a randomised controlled trial. *Lancet*. 2016 Nov 26;388(10060):2618–28. doi:10.1016/S0140-6736(16)31922-5 PubMed PMID: 27806900.
 60. Yin D, Mintz GS, Song L, Chen Z, Lee T, Kirtane AJ, et al. In-stent restenosis characteristics and repeat stenting underexpansion: insights from optical coherence tomography. *EuroIntervention*. 2020;16(4):E335–43. doi:10.4244/EIJ-D-18-01191 PubMed PMID: 31403461.
 61. Xenogiannis I, Varlamos C, Benetou DR, Dragana VM, Vlachos S, Pappas C, et al. Stent Failure Management in Contemporary Clinical Practice. *Diagnostics (Basel)*. 2025 Jul 1;15(13). doi:10.3390/DIAGNOSTICS15131709 PubMed PMID: 40647709.
 62. Shlofmitz E, Iantorno M, Waksman R. Restenosis of Drug-Eluting Stents: A New Classification System Based on Disease Mechanism to Guide Treatment and State-of-the-Art Review. *Circ Cardiovasc Interv*. 2019 Aug 1;12(8). doi:10.1161/CIRCINTERVENTIONS.118.007023 PubMed PMID: 31345066.
 63. Maehara A, Matsumura M, Ali ZA, Mintz GS, Stone GW. IVUS-Guided Versus OCT-Guided Coronary Stent Implantation: A Critical Appraisal. *JACC Cardiovasc Imaging*. 2017 Dec 1;10(12):1487–503. doi:10.1016/j.jcmg.2017.09.008 PubMed PMID: 29216976.
 64. Bech GJW, De Bruyne B, Pijls NHJ, De Muinck ED, Hoorntje JCA, Escaned J, et al. Fractional flow reserve to determine the appropriateness of angioplasty in moderate coronary stenosis: a randomized trial. *Circulation*. 2001 Jun 19;103(24):2928–34. doi:10.1161/01.CIR.103.24.2928 PubMed PMID: 11413082.
 65. Patricio L, Tonino PAL, De Bruyne B, Pijls NHJ, Siebert U, Ikeno F, et al. Fractional flow reserve versus angiography for guiding percutaneous coronary intervention. *N Engl J Med*. 2009 Feb;360(3):229–30. doi:10.1056/NEJMOA0807611 PubMed PMID: 19144937.
 66. De Bruyne B, Pijls NHJ, Kalesan B, Barbato E, Tonino PAL, Piroth Z, et al. Fractional flow reserve-guided PCI versus medical therapy in stable coronary disease. *N Engl J Med*. 2012 Sep 13;367(11):991–1001. doi:10.1056/NEJMOA1205361 PubMed PMID: 22924638.
 67. Davies JE, Sen S, Dehbi HM, Al-Lamee R, Petraco R, Nijjer SS, et al. Use of the Instantaneous Wave-free Ratio or Fractional Flow Reserve in PCI. *N Engl J Med*. 2017 May 11;376(19):1824–34. doi:10.1056/NEJMOA1700445 PubMed PMID: 28317458.
 68. G  tberg M, Christiansen EH, Gudmundsdottir JJ, Sandhall L, Danilewicz M, Jakobsen L, et al. Instantaneous Wave-free Ratio versus Fractional Flow Reserve to Guide PCI. *N Engl J Med*. 2017 May 11;376(19):1813–23. doi:10.1056/NEJMOA1616540 PubMed PMID: 28317438.
 69. D'Ascenzo F, Barbero U, Cerrato E, Lipinski MJ, Omed   P, Montefusco A, et al. Accuracy of intravascular ultrasound and optical coherence tomography in identifying functionally significant coronary stenosis according to vessel diameter: A meta-analysis of 2,581 patients and 2,807 lesions. *Am Heart J*. 2015 May 1;169(5):663–73. doi:10.1016/j.ahj.2015.01.013 PubMed PMID: 25965714.
 70. Jang JS, Shin HC, Bae JS, Jin HY, Seo JS, Yang TH, et al. Diagnostic Performance of Intravascular Ultrasound-Derived Minimal Lumen Area to Predict Functionally Significant Non-Left Main Coronary Artery Disease: a Meta-Analysis. *Korean Circ J*. 2016 Sep 1;46(5):622–31. doi:10.4070/KCJ.2016.46.5.622 PubMed PMID: 27721852.
 71. Ramasamy A, Chen Y, Zanchin T, Jones DA, Rathod K, Jin C, et al. Optical coherence tomography enables more accurate detection of functionally significant intermediate non-left main coronary artery stenoses than intravascular ultrasound: A meta-analysis of 6919 patients and 7537 lesions. *Int J Cardiol*. 2020 Feb 15;301:226–34. doi:10.1016/j.ijcard.2019.09.067 PubMed PMID: 31677827.
 72. Puymirat E, Cayla G, Simon T, Steg PG, Montalescot G, Durand-Zaleski I, et al. Multivessel PCI Guided by FFR or Angiography for Myocardial Infarction. *N Engl J Med*. 2021 Jul 22;385(4):297–308. doi:10.1056/NEJMOA2104650 PubMed PMID: 33999545.
 73. Rioufol G, D  rimay F, Roubille F, Perret T, Motreff P, Angoulvant D, et al. Fractional Flow Reserve to Guide Treatment of Patients With Multivessel Coronary Artery Disease. *J Am Coll Cardiol*. 2021 Nov 9;78(19):1875–85. doi:10.1016/j.jacc.2021.08.061 PubMed PMID: 34736563.
 74. Fearon WF, Zimmermann FM, De Bruyne B, Piroth Z, van Straten AHM, Szekely L, et al. Fractional Flow Reserve-Guided PCI as Compared with Coronary Bypass Surgery. *N Engl J Med*. 2022 Jan 13;386(2):128–37. doi:10.1056/NEJMOA2112299 PubMed PMID: 34735046.
 75. Burzotta F, Leone AM, Aurigemma C, Zambrano A, Zimbardo G, Ariotti M, et al. Fractional Flow Reserve or Optical Coherence Tomography to Guide Management of Angiographically Intermediate Coronary Stenosis: A Single-Center Trial. *JACC Cardiovasc Interv*. 2020 Jan 13;13(1):49–58. doi:10.1016/j.jcin.2019.09.034 PubMed PMID: 31918942.
 76. de la Torre Hernandez JM, Hern  ndez Hernandez F, Alfonso F, Rumoroso JR, Lopez-Palop R, Sadaba M, et al. Prospective Application of Pre-Defined Intravascular Ultrasound Criteria for Assessment of Intermediate Left Main Coronary Artery Lesions: Results From the Multicenter LITRO Study. *J Am Coll Cardiol*. 2011 Jul 19;58(4):351–8. doi:10.1016/j.jacc.2011.02.064 PubMed PMID: 21757111.
 77. Park SJ, Ahn JM, Kang SJ, Yoon SH, Koo BK, Lee JY, et al. Intravascular ultrasound-derived minimal lumen area criteria for functionally significant left main coronary artery stenosis. *JACC Cardiovasc Interv*. 2014;7(8):868–74. doi:10.1016/j.jcin.2014.02.015 PubMed PMID: 25147031.
 78. Skowronski J, Cho I, Mintz GS, Wolny R, Opolski MP, Cha MJ, et al. Inter-ethnic differences in normal coronary anatomy between Caucasian (Polish) and Asian (Korean) populations. *Eur J Radiol*. 2020 Sep 1;130. doi:10.1016/j.ejrad.2020.109185 PubMed PMID: 32771813.
 79. Cerrato E, Echavarria-Pinto M, D'Ascenzo F, Gonzalo N, Quadri G, Quir  s A, et al. Safety of intermediate left main stenosis revascularization deferral based on fractional flow reserve and intravascular ultrasound: A systematic review and meta-regression including 908 deferred left main stenosis from 12 studies. *Int J Cardiol*. 2018 Nov 15;271:42–8. doi:10.1016/j.ijcard.2018.04.032 PubMed PMID: 30223378.
 80. Nishikawa R, Shiomi H, Yamamoto K, Morimoto T, Miyazawa A, Ando K, et al. Optimal Intravascular Ultrasound-Guided Percutaneous Coronary Intervention in Patients With Left Main Coronary Artery Disease: The OPTIVUS-Complex PCI Study LMCA Cohort. *Am J Cardiol*. 2026 Jan 15;259:202–11. doi:10.1016/j.amjcard.2025.09.018 PubMed PMID: 41005598.
 81. Karim K, Akbar MR, Pramudyo M, Martha JW. Intravascular Ultrasound versus Angiography Guided Drug Eluting Stent Implantation in Patients with Left Main Coronary Artery Disease - A Systematic Review and Meta-Analysis. *Rev Cardiovasc Med*. 2024;25(1). doi:10.31083/J.RCM2501032 PubMed PMID: 39077662.
 82. Testa L, Hernandez JMD la T, Maria GL De, Jones DA, Pi   n-Esteban P, Campo G, et al. IVUS-Guided versus Angiography-Guided PCI in Unprotected Left Main Coronary Disease. *New England Journal of Medicine*. 2026 Mar 30. doi:10.1056/NEJMOA2600440
 83. Oviedo C, Maehara A, Mintz GS, Araki H, Choi SY, Tsujita K, et al. Intra-

- vascular ultrasound classification of plaque distribution in left main coronary artery bifurcations: where is the plaque really located? *Circ Cardiovasc Interv.* 2010 Apr;3(2):105–12. doi:10.1161/CIRCINTERVENTIONS.109.906016 PubMed PMID: 20197513.
84. Motreff P, Rioufol G, Gilard M, Caussin C, Ouchchane L, Souteyrand G, et al. Diffuse atherosclerotic left main coronary artery disease unmasked by fractal geometric law applied to quantitative coronary angiography: an angiographic and intravascular ultrasound study. *EuroIntervention.* 2010 Jan;5(6):709–15. doi:10.4244/EIJV5I6A117 PubMed PMID: 20142223.
 85. Mintz GS, Matsumura M, Ali Z, Maehara A. Clinical Utility of Intravascular Imaging: Past, Present, and Future. *JACC Cardiovasc Imaging.* 2022 Oct 1;15(10):1799–820. doi:10.1016/J.JCMG.2022.04.026 PubMed PMID: 36202460.

Reglamento de Publicaciones de la *Revista Argentina de Cardioangiología Intervencionista*

Publications rules Argentine Journal of Interventional Cardioangiology

La *Revista Argentina de Cardioangiología Intervencionista* (RACI) es una publicación trimestral editada por el Colegio Argentino de Cardivulgación de material científico y educativo para la especialidad. La distribución nacional es gratuita y está dirigida a cardioangiólogos intervencionistas, cardiólogos clínicos y pediátricos, radiólogos, neurólogos, técnicos en hemodinamia y especialidades afines. La publicación es de tipo impresa y electrónica (www.caci.org.ar).

Los principios editoriales de la revista se basan en las recomendaciones para manuscritos enviados a revistas Biomédicas (*Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals*) redactados por el Comité Internacional de Editores de Revistas Médicas (*International Committee of Medical Journal Editors - ICMJE*) en su más reciente actualización, disponible en www.icmje.org.

A partir del número 2 volumen 9 año 2018, por razones editoriales, los elementos gráficos (figuras, tablas, fotos) se editan a lo sumo en dos colores (azul y negro). Aquellos que los deseen a todo color deberán pagar un costo adicional por el trabajo de 200 US\$.

Los artículos enviados deben ser originales. El Comité Editorial evaluará los trabajos y luego de un primer análisis sobre si el artículo sigue las normas Editoriales de la Revista, el Director y/o Directores Asociados serán los encargados de enviarlos a un arbitraje externo, que será simple ciego, que significa que los autores no conocen el nombre de los revisores y los revisores a su vez no conocen el nombre de otros revisores. Esta política del RACI se hace siguiendo los mismos criterios empleados por el Comité de Revisión y Editorial del *J Am Coll Cardiol* (JACC), que es la revista de cardiología de mayor factor impacto. La decisión final quedará en manos del Comité Editorial de acuerdo con las conclusiones del arbitraje. Asimismo, el Comité Editorial tendrá la facultad de introducir, con el consentimiento de los autores, todos los cambios editoriales exigidos por las normas gramaticales y las necesidades de edición de la revista. Los artículos de Revisión y Editoriales también serán objeto de la misma revisión. Los artículos Editoriales son usualmente pedidos por el Comité Editorial.

Luego de la primera revisión, los trabajos pueden ser aceptados en la forma en que fue inicialmente enviado; Revisiones Menores es cuando si bien el trabajo tiene aportes importantes existen limitaciones menores que deben ser corregidas antes de su eventual publicación; Revisiones Mayores es cuando el trabajo es inaceptable para publicar de acuerdo a como fue presentado. Sin embargo, el Comité Editorial consideraría un posible nuevo envío, también llamado *de novo submission*, si el trabajo es modificado sustancialmente; Rechazo, es cuando los revisores y el Comité Editorial consideran que el trabajo es inapropiado para publicar en la Revista RACI.

En casos especiales de consensos de diagnóstico y/o tratamiento realizados en conjunto entre el CACI y sociedades científicas afines, tal

consenso, de común acuerdo entre las mismas y con conocimiento del Comité Editorial, podrá ser publicado en forma excepcional por las revistas oficiales de ambas sociedades en forma simultánea.

PRESENTACIÓN GENERAL DEL MANUSCRITO

Todos los autores así como los miembros del Comité Editorial deben declarar conflictos de intereses, en caso de que existan, con las publicaciones.

Cada artículo debe ser presentado con una primera página que debe contener: (a) el título, informativo y conciso; (b) los nombres completos de los autores y de las instituciones en que se desempeñan; (c) un título abreviado para cabeza de página; (d) el número total de palabras del artículo, sin las referencias bibliográficas; (e) el nombre y dirección completa, con fax y dirección electrónica, del autor con quien se deba mantener correspondencia. La segunda página debe incluir el resumen (abstract) en español y en inglés, con 3-6 palabras clave al final de éstos con términos incluidos en la lista del Index Medicus (*Medical Subject Headings - MeSH*). Luego, en la tercera página, se debe desarrollar el contenido del manuscrito (véase Preparación del manuscrito), iniciando una nueva página para cada sección. Todas las páginas deben ir numeradas desde la portada.

El envío del artículo (texto, tablas y figuras) debe realizarse por correo electrónico a revista@caci.org.ar, con una nota firmada por todos los autores (véase modelo página web), con la indicación de la sección a que correspondería el manuscrito y la aseveración de que los contenidos no han sido anteriormente publicados. Una vez recibido el material, el Comité Editorial iniciará el proceso de incorporación que tiene una duración media de cinco semanas.

Quienes figuren como autores deben haber participado en la investigación o en la elaboración del manuscrito y hacerse públicamente responsables de su contenido.

Para cada artículo se permite un máximo de 8 autores, que deben adaptarse a las normas sobre autoría expuestas por la IMCJE. Cada manuscrito recibido es examinado por el Comité Editor y por uno o dos revisores externos. Posteriormente se notificará al autor responsable sobre la aceptación (con o sin correcciones y cambios) o el rechazo del manuscrito. Aprobada la publicación del trabajo, la RACI retiene los derechos de autor para su reproducción total o parcial.

Los autores deberán proveer su código de ORCID a los efectos de consignar sus datos filiatorios.

SECCIONES

Artículos originales (véase Preparación del manuscrito)

Son trabajos científicos o educativos de investigación básica o clínica original. Condiciones: a) texto general, hasta 5.000 palabras, incluidas

las referencias; b) resumen, hasta 250 palabras; c) tablas + figuras, hasta 8; e) autores, hasta 10.

Comunicaciones breves

Los trabajos de esta sección cumplen con los lineamientos de Artículos originales, pero no tienen la suficiente cantidad de pacientes como para ser considerados como tales.

Artículos de revisión

Son artículos sobre temas relevantes de la especialidad solicitados por el Comité Editor a autores de reconocida trayectoria (nacionales o extranjeros). Puede ser escrito por diferentes tipos de médicos (no más de 3 autores). Condiciones: ídem Artículo Original.

Educación básica

Son artículos sobre el manejo racional y protocolizado de diferentes circunstancias que se presentan en la práctica diaria. Son revisados y consensuados previamente con especialistas en el tema, y se culminan con un diagrama de flujo sobre el manejo diagnóstico y terapéutico de la patología. Es solicitado por el Comité Editor. Condiciones: a) texto general, hasta 2.500 palabras excluyendo referencias; b) resumen, hasta 150 palabras; c) tablas + figuras, hasta 6; d) referencias, hasta 20; e) autores, hasta 4.

Caso clínico

Es la descripción de un caso clínico de características inusuales, con su abordaje diagnóstico y terapéutico y su resolución final. Debe acompañarse de una breve discusión bibliográfica. Condiciones: a) texto general, hasta 1.200 palabras; b) resumen, hasta 100 palabras; c) tablas + figuras, hasta 4; d) referencias, hasta 10; e) autores, hasta 5.

¿Cómo traté?

Bajo el título "¿Cómo traté?" los autores presentarán un caso desafiante y la descripción del tratamiento realizado. El título deberá estar incluido al comienzo del texto, por ejemplo "¿Cómo traté un aneurisma en la descendente anterior?". Luego se incluirán los nombres, apellidos, títulos y lugar de trabajo de los autores. Deberá indicarse el autor que recibirá la correspondencia, incluyendo su dirección postal y e-mail. Todos los autores deberán declarar sus conflictos de interés y, en el caso de no tenerlos, indicarlo. Texto, figuras y referencias seguirán los criterios del Caso Clínico

Imágenes en intervencionismo

Se aceptarán para publicar imágenes de casos excepcionales, ilustrativas, y que el Comité Editorial y los revisores externos consideren de sumo interés para su publicación en la revista. Deben ir acompañadas de una leyenda explicativa y un breve resumen de historia clínica. Condiciones: a) texto general, hasta 300 palabras; b) solo 2 figuras originales; c) referencias, hasta 3; d) autores, hasta 5.

Protocolos de investigación

Como artículos especiales la Revista aceptará la publicación de Protocolos de Investigación Clínica, preferentemente multicéntricos y siempre que los mismos no hubiesen reportado antes los resultados parciales o totales del estudio.

Editoriales

Son análisis y/o comentarios de temas relevantes de la especialidad o de la Cardiología General que tuviesen relación con nuestra especialidad. Siempre serán solicitados por el Comité Editor a un experto en el tema. Asimismo, pueden solicitarse comentarios sobre temas no relacionados a un artículo en particular. Condiciones: a) texto general, hasta 2.000 palabras; b) referencias, hasta 40.

Cartas del lector

Es una opinión sobre un artículo publicado en el último número de la revista, el cual requiere un arbitraje realizado por miembros del Comité Editor. Condiciones: a) texto, hasta 250 palabras; b) se podrá publicar una tabla y/o figura; c) referencias, hasta 5. Se aceptarán solo aquellas cartas enviadas dentro del mes de haber salido la versión impresa del número de la revista donde se publicó el artículo original.

PREPARACIÓN DEL MANUSCRITO

El artículo debe estar escrito en castellano, en un procesador de texto Word (Microsoft®) y guardado con extensión *.doc. El tamaño de la página debe ser A4 o carta, con doble espacio interlineado, márgenes de 25 mm con texto justificado y con tamaño de letra de 12 puntos tipo Times New Roman o Arial. Las páginas se numerarán en forma consecutiva comenzando con la portada. El manuscrito (artículo original) debe seguir la estructura «IMR D», es decir, Introducción, Material y métodos, Resultados y Discusión (véanse las normas de publicación ICMJE). Además, debe incluir Título, Resumen, Conclusiones, Conflicto de Intereses y Bibliografía. Al final de cada artículo original, antes de las referencias, deberá hacerse como una tabla destacada de los puntos relevantes del trabajo que se llamará Resumen de Puntos Salientes.

En estos 4 o 5 renglones se deberán señalar los problemas y el conocimiento que hay en el tema tratado hasta el momento y además cuáles serían los interrogantes.

En los dos últimos renglones se destaca el aporte y/o los aportes del trabajo más relevantes sobre este tema. Al final de las referencias se escribirán los Agradecimientos y un Apéndice Suplementario cuando correspondiese en estudios aleatorizados o registros multicéntricos que necesiten reportar todos los investigadores incluidos en el estudio.

Como unidad de medida se utilizará el sistema métrico decimal, usando comas para los decimales. Todas las mediciones clínicas, hematológicas y químicas deben expresarse en unidades del sistema métrico y/o UI. Solo se utilizarán las abreviaturas comunes, evitándose su uso en el título y en el resumen. La primera vez que se empleen irán precedidas por el término completo excepto que se trate de unidades de medida estándar.

Las tablas deben presentarse en hojas individuales, numerándose de forma consecutiva utilizando números arábigos (0, 1, 2, etc.) según el orden en que fueron citadas en el texto, con un título breve para cada una de ellas. Todas las abreviaturas de la tabla no estandarizadas deben explicarse. Las notas aclaratorias deben ir al pie de la misma utilizando los siguientes símbolos en esta secuencia: *, †, ‡, §, ¶, **, ††, ‡‡, etc.

Las figuras deben tener formato TIFF, PSD o JPEG e ir, cada una, en un archivo aparte a 300 dpi en formato final. Cada una de ellas tiene que estar numerada de forma correlativa junto a la leyenda explicativa en archivo aparte. El tamaño usual de las fotografías debe ser de 127 x 173 mm. Los títulos y las explicaciones detalladas se colocan en el texto de las leyendas y no en la ilustración misma.

Las referencias bibliográficas se enumerarán de manera consecutiva con números arábigos entre paréntesis. Se incluirán todos los autores cuando sean seis o menos; si fueran más, el tercero será seguido de la expresión «, et al.». Los títulos de las revistas serán abreviados según el estilo empleado en el Index Medicus. Ejemplos:

1. *Registro de Procedimientos Diagnósticos y Terapéuticos efectuados durante el período 2006-2007. Colegio Argentino de Cardioangiólogos Intervencionistas (CACI). Disponible en <http://www.caci.org.ar/addons/3/158.pdf> consultado el 01/01/2009.(Página Web.)*
2. *Magid DJ, Wang Y, McNamara RL, et al. Relationship between time of day, day of week, timeliness of reperfusion, and in-hospital mortality for patients with acute ST-segment elevation myocardial infarction. JAMA 2005;294:803-812. (Revistas en inglés.)*
3. *Aros F, Cuñat J, Marrugat J, et al. Tratamiento del infarto agudo de miocardio en España en el año 2000. El estudio PRIAMHO II. Rev Esp Cardiol 2003;62:1165-1173. (Revistas en español).*