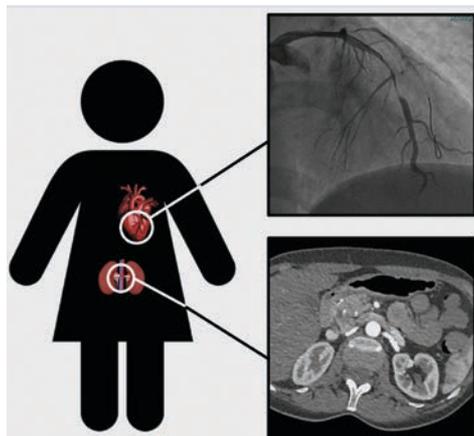


Cath Lab Digest

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



CASE REPORT

Unmasking Fibromuscular Dysplasia: When Spontaneous Coronary Artery Dissection Rings a Bell

Elena Sala, MD; Lorenzo Tua, MD; Alberto Cereda, MD; Gabriele Antonio Franchina, MD; Matteo Carlà, MD; Stefano Lucreziotti, MD

Case Report

A 47-year-old woman presented to the emergency department complaining of typical chest pain. She had a history of acute coronary syndrome (ACS) 8 years earlier, with no significant coronary artery disease reported at coronary angiography. At that time, assuming a vasospastic etiology, she was put on non-dihydropyridine calcium channel blockers, continuing to the present visit.

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PAD GUIDELINES

What You Should Know About the 2024 AHA/ACC Guideline on the Management of Lower Extremity Peripheral Artery Disease

CLD talks with Guideline Committee Chair Heather L. Gornik, MD, FAHA, MSVM.

Can you share the main updates in the 2024 AHA/ACC Guideline on the Management of Lower Extremity Peripheral Artery Disease?'

The initial new element is a focus on the importance of evaluating peripheral artery disease (PAD) according to clinical subsets. We put an emphasis on determining which particular PAD subset the patient falls into.



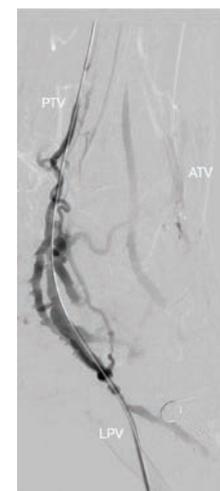
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CASE REPORT

Transcatheter Arterialization of Deep Veins (TADV)

Mehdi H. Shishehbor, DO, MPH, PhD; Shilpkumar Arora, MD, MPH

Chronic limb-threatening ischemia (CLTI) represents the most advanced stage of peripheral artery disease (PAD), characterized by chronic ischemic rest pain, non-healing wounds, or gangrene in the lower extremities.¹ Despite advancements in surgical and endovascular treatments, up to 20% of CLTI patients are not candidates for revascularization due to the lack of suitable arterial targets or conduits for bypass surgery. These patients face a high risk of major amputations, with a 50% mortality rate within one year in patients over 65 years old.² The LimFlow system (Inari Medical) provides a new option by creating an arteriovenous fistula proximal to the diseased tibial arteries using a covered stent. This redirects oxygenated blood from the tibial arteries to the tibial veins, leveraging the venous system to deliver arterial blood to ischemic tissues, aiming to prevent major amputations and promote wound healing.³ The PROMISE II study has demonstrated the safety and efficacy of the LimFlow technique, showing high procedural success rates and significant improvements in amputation-free survival and wound healing among patients without conventional revascularization options.⁴

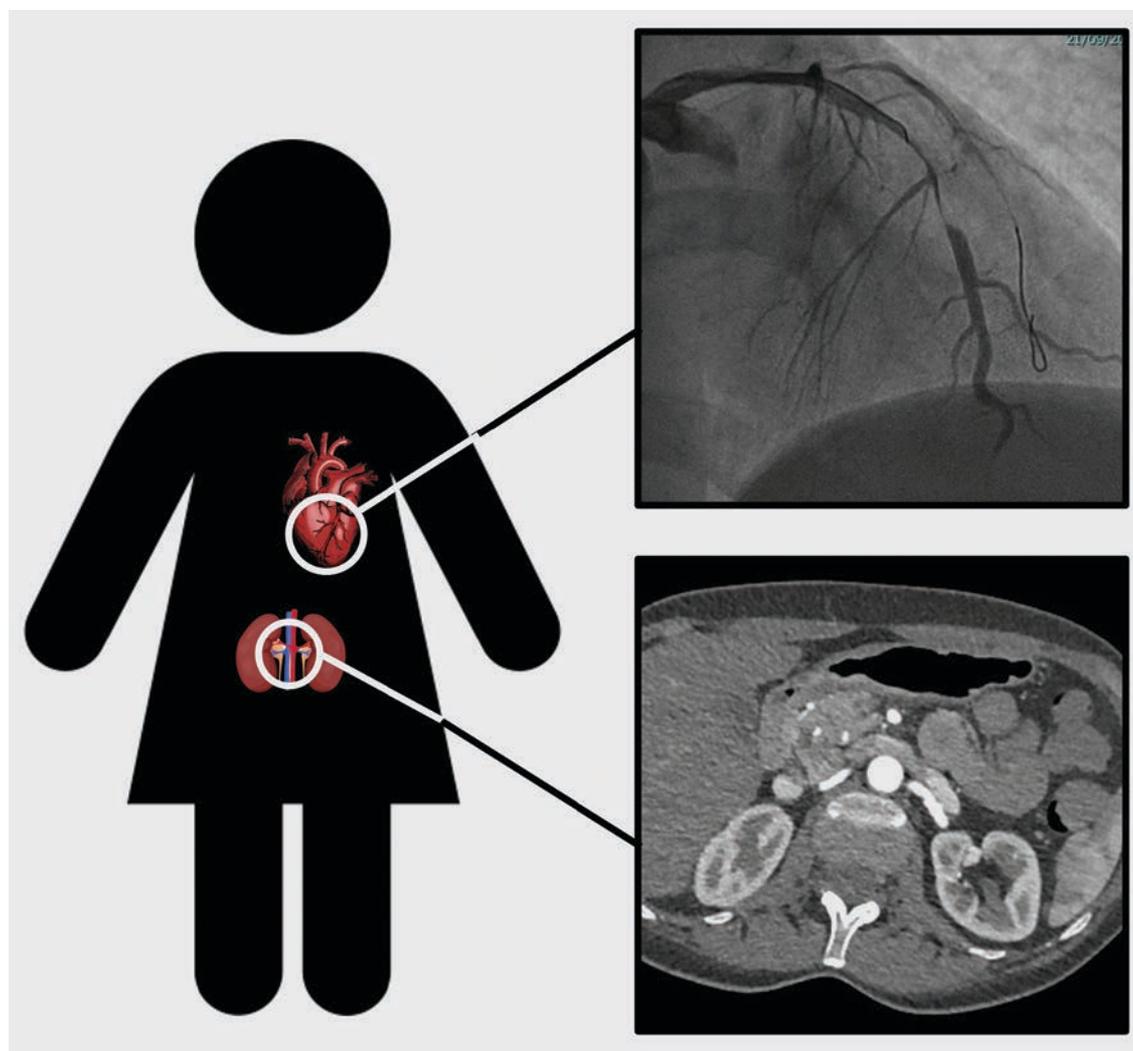


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Unmasking Fibromuscular Dysplasia: When Spontaneous Coronary Artery Dissection Rings a Bell

Elena Sala, MD; Lorenzo Tua, MD; Alberto Cereda, MD; Gabriele Antonio Franchina, MD; Matteo Carlà, MD; Stefano Lucreziotti, MD



Summary Figure. Spontaneous coronary acute dissection and renal arteries showing the “string of beads” appearance are two common features of fibromuscular dysplasia.

This case represents an exemplary case of fibromuscular dysplasia in a young woman, discovered by one of its most serious complications, spontaneous coronary artery dissection (SCAD).

Upon arrival, the electrocardiogram showed sinus rhythm, with mild ST depression in inferior and lateral leads. First measurement of cardiac troponin T was 23 ng/L (negative value <5 ng/L) and it increased to 114 ng/L two hours later. Blood count, renal function, and electrolytes were within limits. She was therefore transferred to the cath lab for early coronary angiography, which revealed tapering of the ostium and proximal segment of the left circumflex artery (LCx) and moderate stenosis of the ostium and proximal segment of the obtuse marginal (OM) branch (Figure 1A). The remaining epicardial coronary vessels were unremarkable. Due to non-univocal interpretation of the lesions of the LCx and OM, it was decided to perform a functional evaluation with instantaneous wave-free ratio (iFR). Short after engagement of the left main coronary artery with the guide catheter, total occlusion at the ostium of the LCx was observed (Figure 1B). Intracoronary nitrates were administered, without any benefit. A guidewire was advanced easily to the distal portion of the OM and, through a microcatheter, the intraluminal position of the wire was confirmed. Given the persistent absence of antegrade flow, low-pressure predilatation with a 1.5 mm semi-compliant balloon was performed, without benefit. Suspecting occlusive dissection of the ostium of the LCx, a support guidewire was placed in the left anterior descending artery (LAD). Intravascular ultrasound (IVUS) confirmed proximal dissection of the LCx, from the ostium of the LCx to the middle segment of the OM, with the IVUS probe within the false lumen but the guidewire correctly in the true lumen distally (Figure 2). Meanwhile, after the guidewire had been in place for some time, spontaneous dissection of proximal and mid-segment of the LAD occurred (Figure 1C). At that point, the patient started complaining of worsening angina and hemodynamics began to deteriorate. Given the worsening scenario, an intra-aortic balloon pump (IABP) was positioned. With adequate circulatory support, IVUS-guided percutaneous coronary intervention (PCI) of the LM and LCx-OM bifurcations axes were performed with a culotte technique and the use of four drug-eluting stents (DES) in total. The result was satisfactory, with restoration of distal blood flow and improving vital signs (Figure 1D). The IABP was removed the following day with no complications.

A few days later, relatives of the patient provided the images of the coronary angiography performed 8 years earlier at a different hospital and whose report concluded as “normal coronary arteries with possible vasospasm”. Surprisingly, what appeared to be a normal, thin OM at the first coronary angiography (Figure 3), presented, before acute dissection occurred, a consistently greater diameter and broader distribution. This allowed for a late diagnosis of spontaneous coronary dissection at the time of the first coronary angiography, which was not diagnosed and progressively healed.

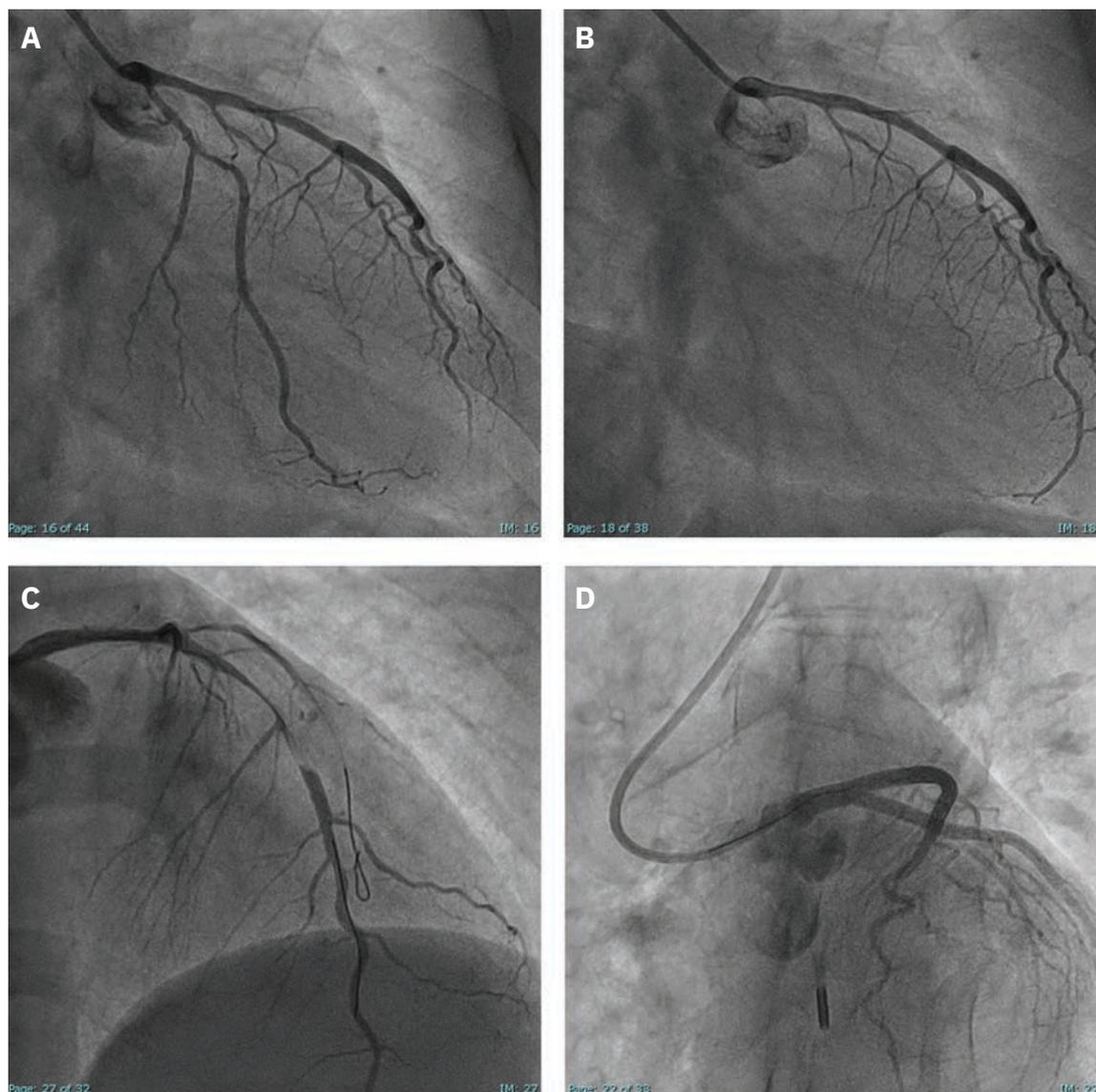


Figure 1. (A) Basal coronary angiography showing moderate stenosis of the left circumflex (LCx) and tapering of the first obtuse marginal artery (OM1); (B) Acute intraprocedural dissection of the LCx; (C) Acute dissection of the left anterior descending artery (LAD); (D) Final result after percutaneous coronary intervention of the left main (LM) bifurcation and LCx-OM bifurcation.

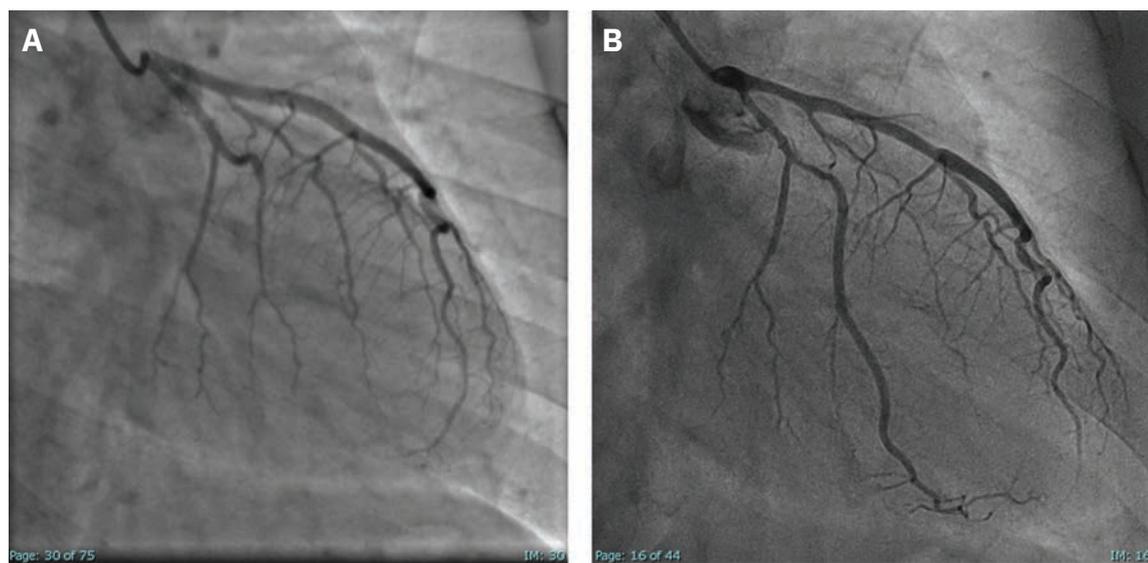


Figure 3. Confrontation of what appeared to be a normal OM branch at first coronary angiography and was instead, at that time, a spontaneous coronary dissection that healed over the years, resulting in a normal vessel 8 years later, moments before a new spontaneous dissection occurred at the time of LM engagement.

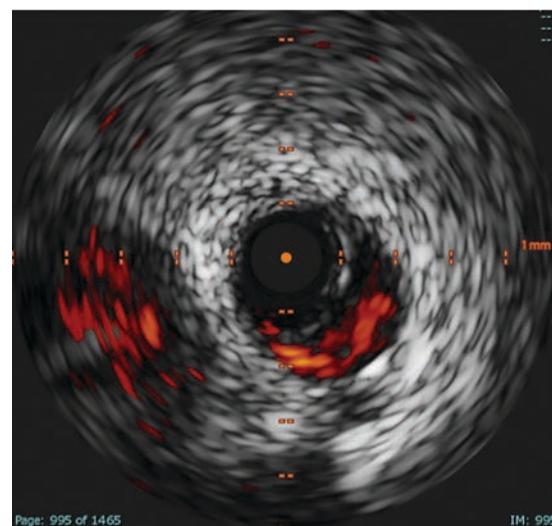


Figure 2. Intravascular ultrasound (IVUS) right after the left main carina. On the left, the LAD demonstrates the position of the IVUS probe within the false lumen, while the true lumen on LCx appears filled by color Doppler.

Given this propensity for spontaneous dissection, it was necessary to consider fibromuscular dysplasia, which is the most common cause of SCAD in young women¹; thus, thoraco-abdominal computed tomography (CT) angiography was performed, showing the typical “string of beads” appearance of the renal arteries and confirming the diagnosis (Figure 4).² Before discharge, invasive coronary angiography was repeated, demonstrating good outcome of the recent stenting procedure and healing of the dissection on the OM. Two-dimensional echocardiography showed

Thoraco-abdominal computed tomography (CT) angiography was performed, showing the typical “string of beads” appearance of the renal arteries and thus confirming the diagnosis (Figure 4).²

preserved ejection fraction, with hypokinesia of the basal inferior and inferolateral segments. The patient was discharged in good general condition, on double antiplatelet therapy, inhibitor of angiotensin-converting enzyme and beta-blocker, proton pump inhibitor, and statin. She was put on a strict clinical, echocardiographic, and angiographic follow-up, and no lesions have developed since.

Discussion

This case is of particular interest for several reasons: (i) it represents an exemplary case of



Figure 4. Three-dimensional reconstruction of the computed tomography scan of the renal arteries, showing the typical appearance as a “string of beads”.

fibromuscular dysplasia in a young woman, discovered by one of its most serious complications, spontaneous coronary artery dissection (SCAD); (ii) in the literature, a high co-prevalence of extra-coronary vascular abnormalities has been described in patients with SCAD, especially fibromuscular dysplasia, and major position papers support arterial imaging from head to pelvis for screening³; (iii) it underlines the challenges in the diagnosis of

SCAD, both during the first coronary angiography in 2014, which appeared as a normal, tapering, coronary tree, as well as during the second acute event, when, with the bias of the previous medical report, the first diagnosis was believed to be coronary spasm; (iv) it provides evidence that PCI during ongoing SCAD is feasible if performed with the use of intracoronary imaging. ■

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In the Literature: CLD Editor's Picks

VDM Vascular Disease Management

New RCT Hopes to ‘CRACK-IT’ With Aggressive Vessel Prep in Heavily Calcified Fempop Lesions

Tim Wittig, MD

The aim of this study is to evaluate intravascular lithotripsy (IVL)-based lesion preparation versus conventional balloon angioplasty in extremely calcified femoropopliteal lesions, which are typically not included in clinical trials. At the moment, we do not really have an adequate scoring classification system that reflects these extreme, typically combined intimal and medial calcifications, but such lesions represent a major challenge in clinical routine.

CRACK-IT is an investigator-initiated (principal investigators Andrej Schmidt and Sabine Steiner), prospective, single-center, 1:1 randomized pilot study (120 subjects; 60 per study arm) to evaluate the real-world acute performance of the Shockwave system versus standard treatment with aggressive balloon angioplasty for lesion preparation prior to Supera stent implantation. It is important that the clinical study is independent of industry, but is funded by an independent research institution, the Helmholtz Institute for Metabolism, Obesity and Vascular Diseases.

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Complex Percutaneous Coronary Intervention in Patients Unable to Undergo Coronary Artery Bypass Grafting During the COVID-19 Pandemic: Insights From the UK-ReVasc Registry

Thomas A. Kite, MD, PhD; Alexander Chase, MD, PhD; Colum G. Owens, MD; et al

Cardiac surgery for coronary artery disease was dramatically reduced during the first wave of the COVID-19 pandemic. Many patients with disease ordinarily treated with coronary artery bypass grafting (CABG) instead underwent percutaneous coronary intervention (PCI). We sought to describe 12-month outcomes following PCI in patients who would typically have undergone CABG. Between March 1, 2020 and July 31, 2020, patients who received revascularization with PCI when CABG would have been the primary choice of revascularization were enrolled in the prospective, multicenter UK-ReVasc Registry.

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