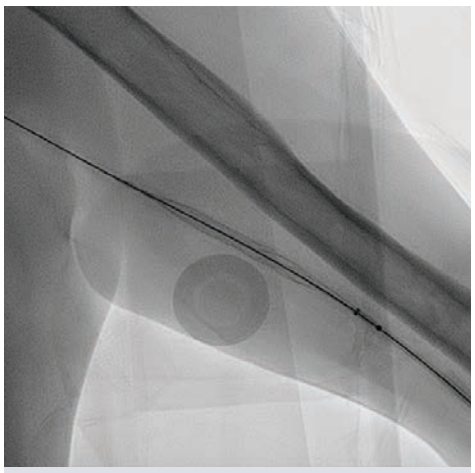
Cath Lab Digest

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



THROMBECTOMY

Early Experience and Key Learnings of the InThrill Thrombectomy System for Treating Arteriovenous Access Thrombosis in Hemodialysis Patients

Alexander Misono, MD, MBA, RPVI

Patients with end-stage renal disease (ESRD) depend on hemodialysis treatment that often utilizes an arteriovenous fistula (AVF) or arteriovenous graft (AVG) for vascular access (Figure 1). Maintaining AV access patency remains a challenge that can require frequent interventions. AV access thrombosis is the most common cause of dialysis failure, occurring up to 2 times per year for each patient and accounting for 65%-85% of permanent access loss.[1]

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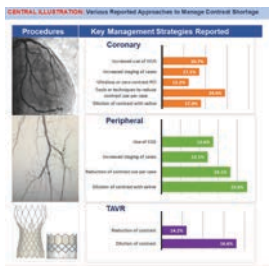
In This Issue

ORIGINAL CONTRIBUTION

Impact of the Global Iodinated Contrast Shortage on Workflow of Cardiac Cath Labs Across the U.S.

Anum Asif, MD; Yogamaya Mantha, MD; Tayo Addo, MD; Timir Paul, MD; Chadi Alraies, MD; Subhash Banerjee, MD; Emmanouil S. Brilakis, MD, PhD; Shweta Bansal, MD; Anand Prasad, MD



Iodinated contrast is a necessary pharmaceutical for imaging in the catheterization laboratory. In March of 2022, there was a surge in COVID-19 cases in Shanghai, China. This surge led to a lockdown within the cities as the Chinese government moved to prevent spread of the Omicron SARS-CoV-2 variant. This "zero-COVID" policy resulted in curfews, closure of small businesses, and halting of larger factory-based manufacturing operations. Affected by this shutdown was GE Healthcare (GE). GE is a leading worldwide producer of iodinated contrast media (CM) and the sole manufacturer of the compounds iohexol (Omnipaque) and iodixanol (Visipaque), which are widely utilized among hospitals across the United States. Nearly all CM is produced outside the United States and GE's primary operations are located in Shanghai.

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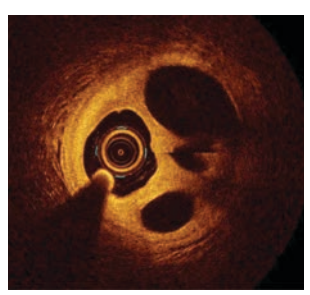
CASE REPORT

Woven Coronary Artery Presenting as High-Risk ACS

Hussain Alzayer, MD; Nasser Alhammad, MBBS; Hamed Alghamdi, MBBS



A woven coronary artery (WCA) is an unusual anomaly that has a wide range of clinical presentations. Patients can be asymptomatic, have anginal symptoms, and in extreme cases, can present with cardiac arrest. We present an interesting case of WCA presenting with high-risk features, in which optical coherence tomography (OCT) was used to establish diagnosis. A literature review is included.

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A Case Report of Woven Coronary Artery Presenting as High-Risk Acute Coronary Syndrome

Hussain Alzayer, MD; Nasser Alhammad, MBBS; Hamed Alghamdi, MBBS

Case Vignette

A 39-year-old male with no previous cardiac history, presented to the emergency department with vague central chest discomfort for one week with mild dyspnea. His cardiac risk factors included smoking and dyslipidemia. He was not on any medical treatment.

On examination, he was hemodynamically stable with an unremarkable cardio-respiratory physical examination. His 12-lead electrocardiogram showed normal sinus rhythm with nonspecific ST-T changes (Figure 1).

Laboratory investigations demonstrated a white cell count of 4.52 × 10^9/L, hemoglobin 13.4 g/dL, platelet count 174 × 10^9/L, creatinine 80 µmol/L, and elevated high-sensitivity troponin-I 1342.7 pg/mL (cutoff <34.2). Two-dimensional transthoracic echocardiogram showed normal left ventricular function with no regional wall motion abnormalities nor any significant valvular disease.

Working diagnosis at this stage was high-risk non-ST elevation myocardial infarction (NSTEMI) and accordingly, the patient was commenced on dual antiplatelet therapy. Given his ongoing chest pain and positive cardiac biomarkers, an urgent coronary angiogram was performed.

Coronary angiography demonstrated an unobstructed left main, and normal left anterior descending (LAD) artery and left circumflex (Figure 2). The right coronary artery (RCA) had an intraluminal defect extending from the ostium to the distal vessel (Figure 3, Video 1). Optical coherence tomography (OCT) was performed to further delineate this finding, and showed multiple channels with preserved intima and no evidence of plaque rupture (Figure 4, Video 2). Based on OCT, the diagnosis of woven coronary artery (WCA) was established. The decision was made to proceed with percutaneous coronary intervention (PCI) of the RCA with 3 overlapping drug-eluting stents from distal to proximal vessel (Figure 5). Post-PCI OCT was done and showed appropriate stent expansion. The patient was discharged on dual antiplatelet therapy (DAPT) in a stable clinical condition.

Discussion

WCA is a rare and usually benign congenital anomaly[1] first described by Sane et al in 1988. Apart from our case, there are 37 reported cases in the literature.[2] The vast majority of affected patients have been male and the vessel most commonly involved is the RCA. Diagnosis is usually made on coronary angiography; however, intracoronary imaging has emerged as an essential tool for the diagnosis of WCA and to exclude other mimickers. Out of the reported 37 cases, intracoronary imaging using OCT was performed in 8 cases, and intravascular ultrasound (IVUS) was performed in 3 cases. The optimal treatment strategy for WCA remains unknown. The majority of patients were treated with medical therapy and very few were revascularized.

In our case, the mottled, hazy appearance of the RCA raised the possibility of dissection versus recanalized thrombus, based on angiography. Wiring can be particularly challenging given the multiple channels. As such, a hydrophilic guidewire with polymer coating (Hi-Torque Pilot 50, Abbott Vascular) was used, along with meticulous handling of

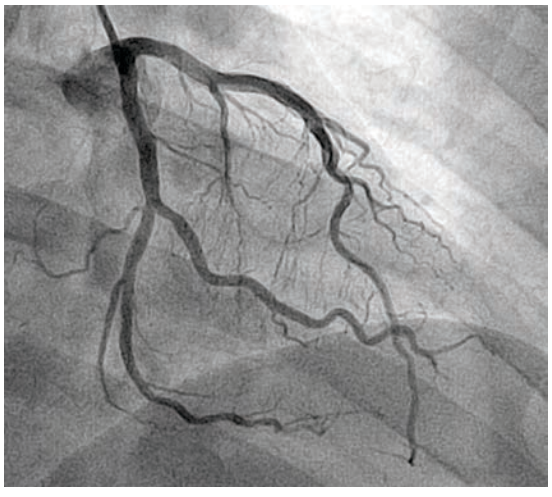

Figure 2. Coronary angiography of the left system showed normal left anterior descending (LAD) and circumflex arteries.

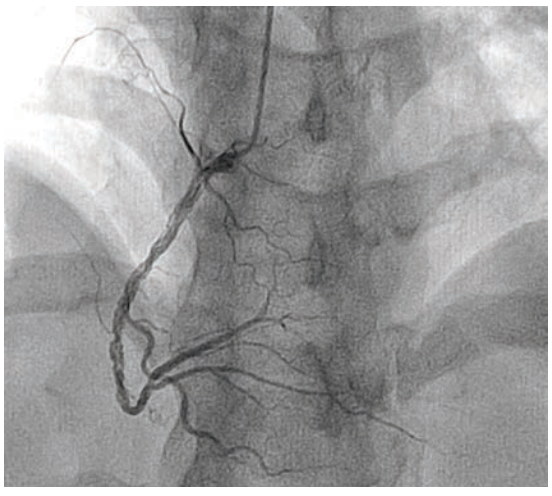

Figure 3. Coronary angiography of the right coronary artery (RCA) showed an intraluminal defect extending from the ostium to the distal vessel.

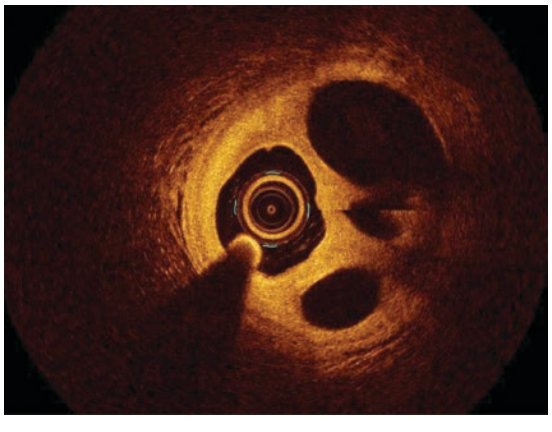

Figure 4. Optical coherence tomography (OCT) of the RCA showed multiple interlaced thin channels along the vessel.

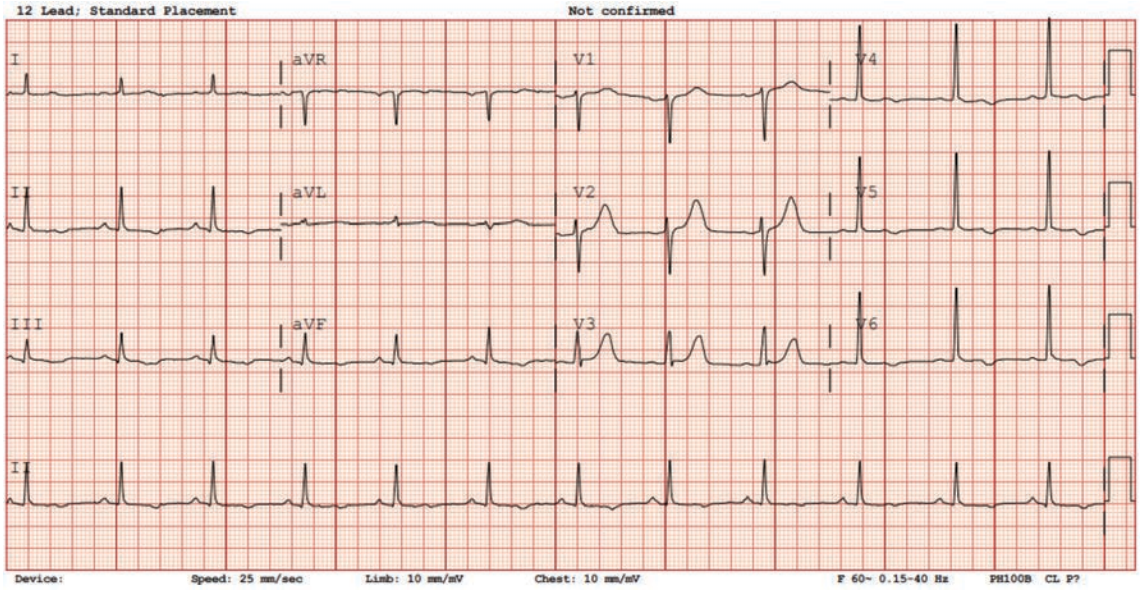

Figure 1. A 12-lead electrocardiogram showed normal sinus rhythm with a ventricular rate of 70 beats per minute and nonspecific ST-T abnormality.

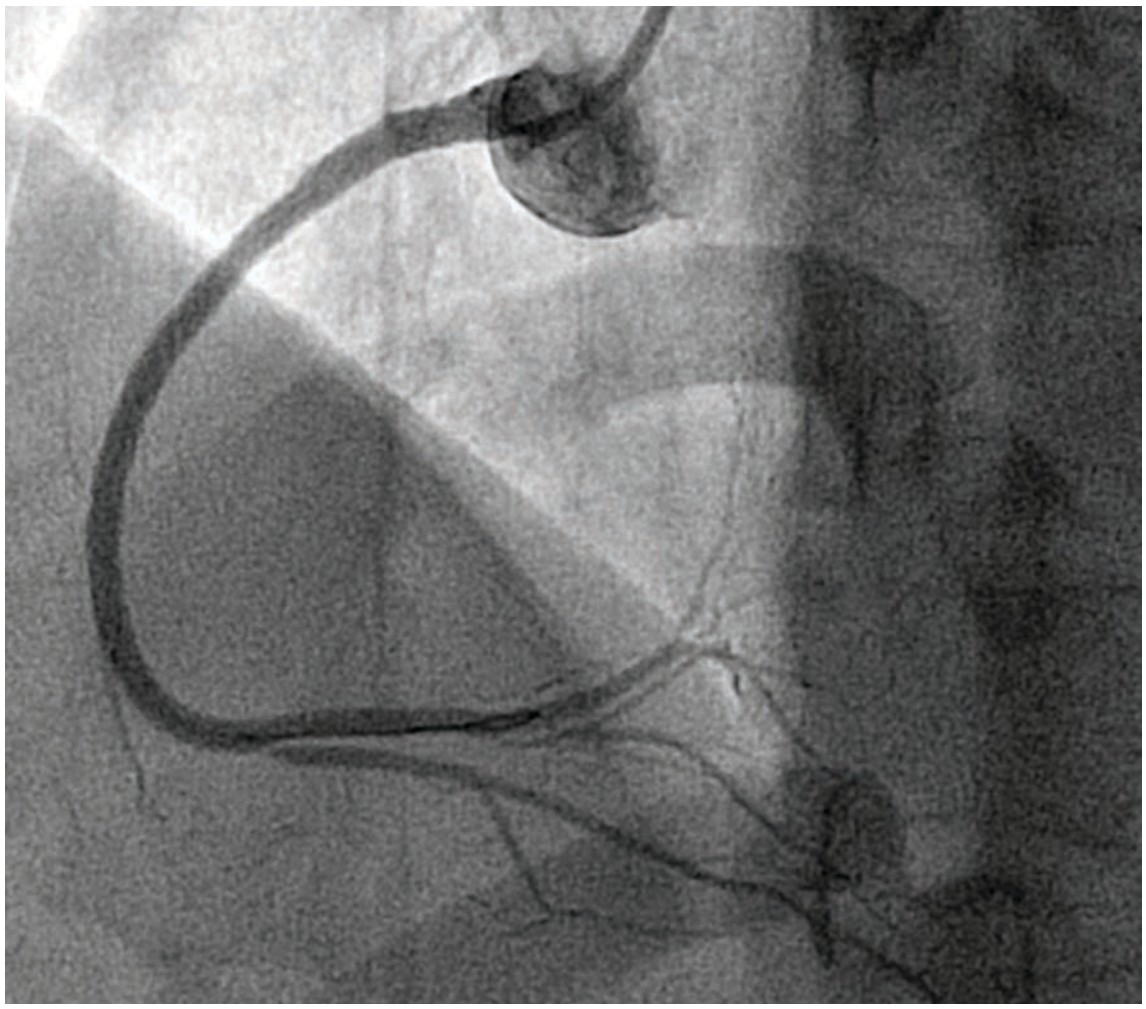

Figure 5. Post percutaneous coronary intervention (PCI) coronary angiogram of the RCA with 3 overlapping stents and TIMI-III flow down the vessel.

the torque device, in order to negotiate the lesion safely. OCT was crucial to refute other diagnostic possibilities and establish the definitive diagnosis of WCA. Although WCA is usually considered a benign entity, acute coronary syndrome and even sudden cardiac death have been reported as possible sequelae.[3] In our patient, the lesion extended from the ostial RCA to the distal vessel and before the bifurcation. Given the patient's ongoing chest pain and rising cardiac biomarkers, PCI was warranted.

This case highlights the importance of intracoronary imaging, and in particular, the use of OCT, in diagnosing WCA, an unrecognized and underreported entity.[4,5] ■

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Disclosures: The authors report no conflicts of interest regarding the content herein.

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References

1. Uribarri A, Sanz-Ruiz R, Elízaga J, Fernández-Avilés F. Pathological insights of a woven coronary artery with optical coherence tomography. *Eur Heart J*. 2013 Oct; 34(38): 3005. doi:10.1093/eurheartj/eht322
2. Bamousa B, Sbitli T, Mohamed T, et al. Woven coronary artery anomaly: an incidental finding and literature review. *Case Rep Cardiol*. 2022 Apr 14; 2022: 3235663. doi:10.1155/2022/3235663
3. Wang F, Han J, Guo L. Optical coherence tomography and fractional flow reserve guided treatment of woven coronary artery anomaly presenting as acute myocardial infarction: a case report. *Medicine (Baltimore)*. 2020 Feb; 99(7): e19163. doi:10.1097/MD.0000000000019163
4. Yorifuji H, Shutta R, Egami Y, et al. Woven coronary artery anomaly: optical coherence tomography versus intravascular ultrasound. *JACC Case Rep*. 2020 Sep 15; 2(11): 1698-1699. doi:10.1016/j.jaccas.2020.07.049
5. Wei W, Zhang Q, Gao LM. Woven coronary artery: a case report. World J Clin Cases. 2020 Oct 26; 8(20): 4917-4921. doi:10.12998/wjcc.v8.i20.4917

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