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Successful transradial antegrade recanalization of a chronic total occlusion of an anomalous circumflex artery arising from the right sinus of Valsalva



Revascularización anterógrada exitosa mediante acceso radial de una oclusión total crónica en una arteria circunfleja con origen anómalo en el seno derecho de Valsalva

Dear Editor,

Primary congenital anomalies of the coronary arteries are rather rare with an incidence of 0.3–1.6%.¹ Anomalous origin of the left circumflex (LCX) coronary artery from the right sinus of Valsalva is the most common congenital coronary variant, with prevalence at coronary angiography of 0.18–0.67%.^{2,3} Percutaneous coronary intervention (PCI) for an anomalous coronary artery is a technically challenging and complicated procedure. We report a very unusual case of an anomalous origin of a chronically occluded LCX artery arising directly from the right sinus of Valsalva that was successfully performed by transradial (TR) antegrade approach.

A 66-year-old female with a past medical history of hypertension presented with an 8-month history of exertional chest pain. An echocardiogram showed normal heart wall movement with normal left ventricular ejection fraction. She exercised for 8 min on the standard Bruce protocol and experienced chest pain, and was found to have a 2-mm ST-segment depression in the inferolateral leads at the end of exercise. After obtaining an informed consent, coronary angiography revealed absence of the left main coronary artery, accompanied with the left anterior descending coronary artery without significant obstructive atherosclerotic lesions (Fig. 1A) and an anomalous origin of a proximal chronically occluded LCX artery from right sinus of Valsalva with a retro-aortic course with the right coronary artery (RCA) and the LCX sharing a common ostium (Fig. 1B). It was a tapered chronic total occlusion (CTO) in the proximal portion of the anomalous LCX with bending >45 degrees detected within the CTO segment and >20 mm occlusion length (JCTO score=2).⁴ The CTO revascularization was performed from the right radial artery. Before the procedure, the patient was taking clopidogrel (75 mg/day) and aspirin (100 mg/day) and during the procedure, received anticoagulation with unfractionated heparin (70 UI/kg) to achieve an activated clotting time of 250–300 s. With a

6 Fr Amplatz right (AR) 1 guiding catheter we made a double-wire antegrade technique, involving placement of a separate Sion[®] wire (Asahi Intecc, Japan) into the RCA to anchor the guide, followed by wiring of the anomalous LCX with a Pilot[®] 150 wire (Abbott Vascular, Santa Clara, CA, USA) supported by a 1.0 × 10 mm Falcon[®] CTO balloon (Invatec, Roncadelle, Italy). Next, we proceeded with the parallel wire technique with the use of a Pilot[®] 200 wire. This wire punctured the proximal cap at a different position and was easily advanced to the distal true lumen (Fig. 1C). The occlusion was predilated with a 2.0 × 20 mm Emerge[®] semi-compliant balloon (Boston Scientific, Natick, MA, USA) restoring coronary blood flow. Finally, a 2.75 × 38 mm Synergy[®] (Boston Scientific, Natick, MA, USA) bioabsorbable polymer drug-eluting stent was deployed (Fig. 1D) with a good angiographic result (Fig. 2A), which was confirmed by optical coherence tomography (Fig. 2B) and coronary computed tomography angiogram study after angioplasty (Fig. 2C).

To the best of our knowledge this is the first case presented of successful recanalization of a CTO in an anomalously arising LCX performed by TR antegrade approach. Anomalies of the origin and course of the LCX coronary artery are amongst the most frequently encountered. The anomalous LCX originates from the right coronary cusp, either directly, or as a branch from the RCA and courses behind the aorta to the left part of the atrioventricular sulcus, where it resumes its usual configuration. This anomaly is classified as benign since it is not known to predispose individuals to sudden cardiac death. However, some studies have proposed a higher incidence of atherosclerosis and myocardial infarction in the presence of this anomaly.⁵ Anomalies of the LCX artery pose several potential challenges to the interventional cardiologist. Selection of the appropriate equipment (guiding catheter/wire) assumes greater importance, ranging from successfully engaging the ostium of the anomalous coronary artery with adequate support to advance interventional devices and ultimately, concluding the procedure with minimal exposure to contrast agents and radiation. PCI on anomalous LCX vessels is technically feasible, with a high procedural success rate when performed by experienced operators.⁶ CTOs successful recanalization in patients with viable myocardium has been shown to reduce symptoms like angina decrease the need for surgery and improve survival.⁷ According to the standard practice of the majority of CTO-dedicated centers and operators, PCI on CTO are attempted using large guiding catheters and trans-femoral approach. The TR approach is a valuable alternative to trans-femoral approach, which has been shown to reduce vascular complications and possibly be associated to a better clinical outcome.⁸

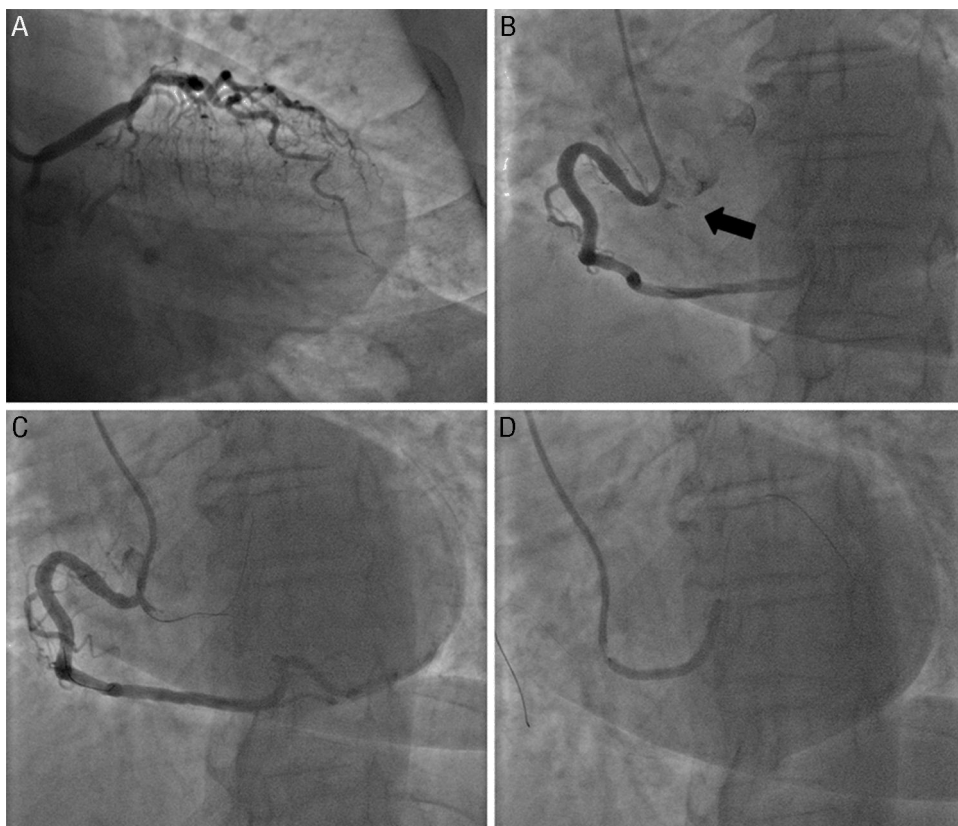


Figure 1 (A, B) Baseline coronary angiography. The arrow indicates the anomalous origin of a chronically occluded left circumflex artery. (C) Percutaneous coronary intervention with the chronic total occlusion successfully crossed. (D) Synergy® stent implanted.

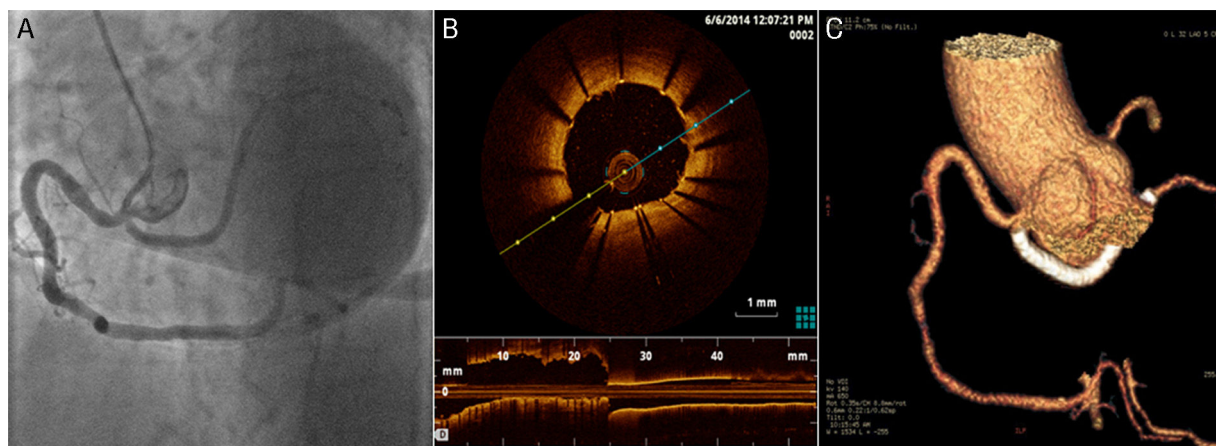


Figure 2 (A) Final angiographic result. (B) Optical coherence tomography image showing good stent apposition. (C) Coronary computed tomography angiogram after angioplasty.

Anomalous coronary arteries are rare and clinically significant. PCI for an anomalous coronary artery is a technically challenging and complicated procedure. We would like to emphasize the feasibility of a TR approach even for complex lesions such as the one in this patient.

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Conflict of interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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Manejo de la mediastinitis postrasplante cardíaco mediante mediastinoscopia y perlas antibióticas de liberación prolongada



Dissolvable and extended release antibiotic beads in mediastinoscopic management of mediastinitis after heart transplantation

Las complicaciones quirúrgicas relacionadas con la esternotomía media se pueden presentar en los pacientes postoperados de cirugía cardíaca como un amplio espectro de afecciones, que varían desde la dehiscencia de la herida quirúrgica hasta la mediastinitis supurativa. De este modo, los términos esternitis, mediastinitis, complicación de la herida e infección de la herida quirúrgica han sido utilizados indistintamente para denotar infección mediastinal profunda¹.

En aquellos pacientes sometidos a trasplante cardíaco (TC), la mediastinitis posquirúrgica constituye una complicación grave y de difícil diagnóstico, que pone en riesgo la vida de los pacientes; además, muestra aspectos únicos debido al estado de inmunosupresión en el que estos se encuentran².

Una vez establecido el diagnóstico, debe instituirse el tratamiento de inmediato, generalmente combinando antibioticoterapia con cirugía, lavado y desbridamiento intensivos. Por desgracia, el tratamiento convencional tiene varias desventajas, tales como la inestabilidad de la caja torácica, la inmovilización prolongada y el trauma quirúrgico sustancialmente mayor, que puede ser perjudicial^{3,4}.

Al respecto, se ha descrito un gran número de abordajes quirúrgicos para el manejo de la mediastinitis; sin embargo,

el tratamiento quirúrgico óptimo continúa siendo controversial. Basándose en los hallazgos tomográficos y los datos clínicos, resulta posible realizar incisiones y drenajes por vía transcervical, subxifoidea y toracoscópica y por toracotomía y mediastinoscopia videoasistida³.

El otro punto angular del tratamiento es la terapia con antibióticos. Uno de sus principales objetivos consiste en alcanzar altas concentraciones farmacológicas en el sitio de infección. Stimulan[®] (Biocomposites Ltd., Keele, Staffordshire, Reino Unido) es un medio absorbible para la liberación de antibióticos a nivel local y que ha probado su eficacia con anterioridad en la cirugía ortopédica, tanto en la profilaxis como en el tratamiento de la osteomielitis⁵.

A continuación presentamos nuestra experiencia con 2 casos de mediastinitis manejados mediante procedimiento de mínima invasión y colocación de perlas de liberación de antibióticos en pacientes sometidos a TC.

Se trató de 2 pacientes masculinos, ambos con antecedente de TC y bajo tratamiento inmunosupresor (a base de ácido micofenólico, prednisona y sirolimus), de 42 y 62 años de edad y con diagnóstico establecido de mediastinitis tipo IIIb y v de Oakley¹, respectivamente.

Con base en los hallazgos tomográficos de ambos casos (fig. 1a b) se optó por realizar abordaje subxifoideo y mediastinoscopia (fig. 1c). Se realizó drenaje de las colecciones, lavado con abundante solución salina y desbridación del tejido infectado; además, se tomaron muestras de tejido y del exudado para cultivo. Se utilizó después del lavado instrumental limpio para la liberación *in situ* de antibióticos, con cambio de batas, campos y guantes para todo el equipo quirúrgico.

Posteriormente, se colocaron perlas de sulfato de calcio con antibiótico para liberación *in situ* (Stimulan[®]); en el primer caso se utilizó imipenem/amikacina, y en el segundo paciente, imipenem/vancomicina y clindamicina (fig. 1d). Al final de la cirugía se dejó un sistema de drenaje cerrado a