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PII: S0870-2551(24)00183-5  
DOI: <https://doi.org/doi:10.1016/j.repc.2024.02.011>  
Reference: REPC 2339

To appear in: *Revista Portuguesa de Cardiologia*

Received Date: 2 January 2024  
Accepted Date: 13 February 2024

Please cite this article as: Arroyo-Rodríguez C, Machain-Leyva CZ, Vásquez-Serna CI, López-Borbón F, Rangel-Guerrero G, González-García A, Martínez-Hernández FA, Polytetrafluoroethylene graft for anomalous left coronary artery from the pulmonary artery: 6-year patency, *Revista Portuguesa de Cardiologia* (2024), doi: <https://doi.org/10.1016/j.repc.2024.02.011>

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## Polytetrafluoroethylene graft for anomalous left coronary artery from the pulmonary artery: 6-year patency

Enxerto de politetrafluoroetileno para artéria coronária esquerda anómala a partir da artéria pulmonar: relatório de patência a seis anos

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A 31-year-old female was evaluated for repeated syncope and chest pain. She had a history of three previous uncomplicated pregnancies. Her physical examination was otherwise unremarkable, except for a continuous murmur best heard at the apex.

Transthoracic echocardiogram revealed mildly dilated left chambers, left ventricular ejection fraction of 58% and moderate mitral regurgitation (Figure 1A). Extensive collateral circulation demonstrated by color Doppler (Figure 1 B) raised suspicion of a congenital coronary anomaly. Computed tomographic angiography revealed an anomalous origin of the left coronary artery arising from the main pulmonary artery (ALCAPA) (Figure 1C), and a subsequent coronary angiography confirmed the diagnosis (Figure 1D).

Direct reimplantation was considered the first option of repair. However, the left coronary artery (LCA) originated from the non-facing sinus and a long distance from the aorta precluded this approach. Although the Takeuchi procedure is an alternative for patients with inadequate coronary

length, the creation of an intrapulmonary baffle carries the risk of supra-avalvular pulmonary stenosis, aortic and pulmonary valve insufficiency, and baffle obstruction and leaks.<sup>1</sup> Owing to extensive collaterals, ligation of the LCA could be an option, however does not provide a dual coronary system and would not likely have reduced the risk of mortality<sup>2,3</sup> Another possible approach could have been to create a left subclavian-ALCAPA bypass; however, it is only described in children where the tissues still grow, thus enabling long term patency.<sup>4</sup> A saphenous and internal mammary artery graft was also considered; nonetheless, their diameter was much smaller than the LCA. Instead, she underwent surgically restoration of a dual coronary system utilizing a ringed 6mm polytetrafluoroethylene (PTFE) graft (Figures 1E and 1F). Thereafter, anti-platelet therapy with clopidogrel was started.

At six years of follow-up, the patient is asymptomatic, with normal chamber size and only mild mitral regurgitation. In addition, a recent dipyridamole stress echocardiography was negative to ischemia. Although poor compliance and the lack of endothelial cells lining the lumen of PTFE grafts contribute to their poor patency, a properly sized graft could aid in maintaining an optimal wall shear stress and improve its patency.<sup>5</sup>

#### Ethics in publishing

1. Does your research involve experimentation on animals?:

No

2. Does your study include human subjects?:

Yes

If yes; please provide name of the ethical committee approving these experiments.:

Ethical committee Hospital San José Hermosillo

If yes; please confirm authors compliance with all relevant ethical regulations. :

Yes

If yes; please confirm that written consent has been obtained from all patients. :

Yes

3. Does your study include a clinical trial?:

No

4. Are all data shown in the figures and tables also shown in the text of the Results section and discussed in the Conclusions?:

Yes

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## Figure legends

(A) Echocardiogram demonstrating a dilated left ventricle (B) Extensive collateral circulation on echocardiogram (\*). (C) Left coronary artery arising from the pulmonary artery seen on computed tomography (red arrow) and (D) Invasive coronary angiography (yellow arrow), ectatic right coronary artery (yellow arrowhead). (E, F) Computed tomography signaling the polytetrafluoroethylene graft.

