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Commentary: A new option for patch material on coronary artery ostium plasty

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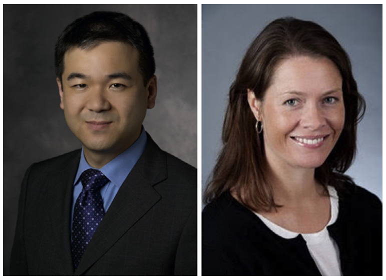

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CENTRAL MESSAGE

There is a need to identify the ideal patch material for coronary ostioplasty. Femoral artery homograft can be an option with better handling and less thrombogenicity. Long-term follow-up is awaited.

The arterial switch operation for d-transposition of the great arteries is now standard practice, and its long-term survival has reached more than 95% in 25 years.[1] However, the incidence of lifetime coronary events is reported to be as high as 7%, with an occurrence pattern that is bimodal following repair: greater early and slower later.[2] Coronary events can cause life-threatening arrhythmia and cardiac dysfunction, and lifelong follow-up for prevention and treatment is essential. With this issue in mind, cardiologists and surgeons struggle with treatment options because (1) it involves the coronary ostium and main trunk, unlike distal lesions as in adult ischemic heart disease, (2) patients are relatively young with a long life expectancy, (3) these coronary arteries are relatively small due to stretch and possibly a long-standing low-flow state, and (4) after LeCompte maneuver and coronary button transfer, anatomical access is difficult.

Mosca and colleagues[3] reported a 22-year-old man who underwent an arterial switch operation as an infant with a single coronary artery who presented with exertional angina and a positive stress test. His coronary artery was severely stenosed at its origin. Because of his age, coronary stent or bypass grafting was not recommended because of the limited longevity of repair. Ultimately, patch plasty of the coronary ostium was performed because unroofing the adjacent wall did not seem feasible, either.

For the selection of patch materials, there are many factors to take into consideration, such as (1) patch texture such as thickness, softness, and contour, which are related to handling, hemostasis, and shape without kinking after suturing; (2) early- and long-term inflammation (calcification); and (3) low thrombogenicity. As of now, there is no ideal patch commercially available for this purpose. Standard aortic and pulmonary homografts are too thick for the coronary arterial wall. Various autologous or heterologous pericardium by different fixation techniques are reported, but they are stiff and there is potential for kinking, bleeding, and later, restenosis. In our institution, we have previously used extracellular matrix derived from porcine small intestinal mucosa for coronary plasties. However, while the repair initially looked reasonable, the patch became edematous and caused stenosis in the mid-term. Therefore, our current choice for coronary ostial stenosis is a distal branch pulmonary homograft, which is very thin and friable, but still not ideal, either.

The femoral artery homograft the authors used has a thin wall and smooth arterial inner surface with a similar diameter and contour to coronary arteries and potentially less thrombogenicity due to its natural

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endothelial lining. It is easy to imagine its handling and ability to achieve hemostasis along the suture line. It may have a great potential as a patch material in a small vessel or ostial plasty. At our institution, there has been an increase in patients with William syndrome and severely affected coronaries necessitating more coronary ostium patch plasties.[4] The ideal patch material for the coronary artery ostial reconstruction is in desperate need, and a femoral artery homograft is of great potential.

We want to congratulate the authors for the use of a new material in delicate coronary artery ostium repair with a successful outcome. Long-term outcomes are still unknown, and follow-up data are eagerly awaited.

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