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Commentary: Femoral artery homograft for coronary artery plasty—will it withstand the test of time?

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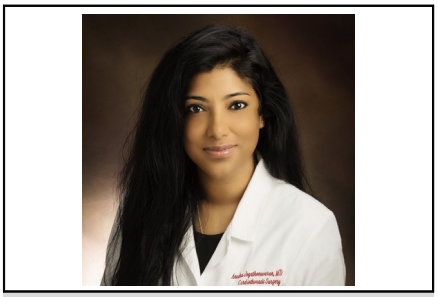

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CENTRAL MESSAGE

Femoral artery homograft has been successfully used for coronary artery plasty in this case report with short-term follow-up, but time-tested verification of its utility is still required.

In this issue of *JTCVS Techniques*, Mosca and colleagues[1] present a case report describing the use of femoral artery homograft for stenosis of a single coronary artery system following the arterial switch procedure. While numerous options were considered including bypass grafting and unroofing of the adjacent segment, ultimately the authors proceeded with left main coronary artery patch plasty due to the young patient age of 22 years and the specific anatomy of the lesion. They augmented the coronary artery using femoral artery homograft. At 7 months of follow-up, this patient remained asymptomatic with a coronary computed tomographic angiogram demonstrating a widely patent left main coronary artery.

A well-understood complication of any coronary artery surgery, especially of infants undergoing the arterial switch operation, is ostial stenosis presenting either in the immediate postoperative period or during late follow-up. A primary solution in this scenario is patch plasty, which consists of patching across the area of stenosis. Within this report, the authors present the novel use of femoral artery homograft. They suggest that it is a suitable choice due to its natural curvature and tissue properties, such as having an endothelial lining that may make it less thrombogenic compared with other alternatives and its hemostatic properties.

As the authors mention, multiple different types of patch materials have been described in the literature for coronary artery patch plasty, including native and treated autologous pericardium, saphenous vein, bovine pericardium, and pulmonary homograft.[2-6] These patch materials each have their own inherent characteristics and limitations. It is well known that autologous pericardium often retracts, thickens, and calcifies over time, and that bovine pericardium too calcifies.[7] The primary limitation that remains, however, is that none have been shown to be time-tested and true, including that of femoral artery homograft. The majority of studies, such as the ones referenced herein are case series, and most have little or no follow-up of patch durability.

It should also be emphasized that it is just as important to have a technically sound repair. This is important, not only for the initial procedure, but for the reoperation. With respect to the initial procedure, it is important to understand and evaluate the factors that may have led to stenosis, most importantly the anatomy of the vessels in relation to the commissure, the ostial morphology, and the technique used for coronary artery transfer. With respect to the subsequent repair, coronary artery patch plasty must be performed while ensuring that the incision is appropriately beyond the stenosis and that the patch geometry prevents turbulent flow and kinking. However, resolving the debate regarding which patch material is superior is a must and should be done through careful scientific evaluation of a

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larger number of patients with a longer period of follow-up to determine which material will withstand the test of time.

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