EDITORIAL

Arteriovenous fistula in kidney transplant recipients: from essential to undesirable

Rafael Enrique Cruz Abascal [1a,b]

1 Hospital Provincial Universitario Clínico Quirúrgico "Arnaldo Milián Castro," Nephrology Department, Renal Transplant Unit. Cuba.
[a] Senior specialist in Nephrology, master's degree in Infectious Diseases; [b] Full professor and assistant researcher.

The arteriovenous (AV) fistula, surgically created for periodic hemodialysis by Brescia and Cimino [1] in collaboration with surgeon Appel in 1966, remains the preferred long-term vascular access to achieve therapeutic goals in patients with chronic kidney disease (CKD). Its use facilitates adaptation to dialysis, enhances quality of life, reduces complication rates, and prolongs survival.

Throughout the course of CKD, and even from its early stages, cardiovascular dysfunction accompanies the progressive decline in renal function. This complication represents the leading cause of morbidity and mortality and is framed within the definition of type 4 cardiorenal syndrome, described by Ronco et al. in 2008 [2].

The cumulative burden of various epiphenomena arising during the progressive, nondialytic stages of CKD, as well as during renal replacement therapy, induces a series of changes in the cardiovascular system that ultimately result in its deterioration, which often persists and worsens after kidney transplantation [3].

Following transplantation, additional alterations emerge, whose interplay promotes disorders associated with chronic inflammation and atherogenesis, thereby contributing to cardiovascular involvement. Notable factors include the adverse effects of corticosteroids and calcineurin inhibitors, weight gain, dyslipidemia, worsening hypertension, and the onset of diabetes mellitus [4].

Some authors have supported the continued use of AV fistulas, emphasizing its relevance for patients undergoing hemodialysis. Basile and Lomonte [4] referred to it as "a blessing of God," while others have called it "the connection to life," alluding to its benefits for patients undergoing renal replacement therapy. However, the potential for cardiovascular complications secondary to increased blood flow to the cardiac chambers, resulting in structural and functional impairment of the heart, has generated divergent opinions and prompted further research.

In kidney transplant (KT) recipients, structural and functional abnormalities of the heart often persist and may worsen, necessitating close collaboration between nephrologists and cardiologists to proactively address potential life-threatening cardiovascular complications, even when the allograft is functioning properly [5].

Several authors [5,6] advocate for maintaining the AV fistula in KT recipients, even when the allograft remains functional and no apparent comorbidities emerge during follow-up that could threaten survival. These authors argue that cardiovascular involvement is not clinically significant and that returning to maintenance hemodialysis without a permanent vascular access would expose patients to serious risks. Moreover, the creation of a new AV fistula would be burdensome and would require a suitable period of maturation.

In this context, focusing on risk factors associated with cardiovascular involvement in KT recipients requires careful monitoring of any condition that may lead to cardiac deterioration. Among these factors, the persistence of the AV fistula is a specific condition that may result in serious complications, including pulmonary hypertension, diastolic dysfunction, and high-output heart failure [6,7].

Recent studies on AV fistula closure in KT recipients with preserved graft function have demonstrated its role as an additional, independent, and modifiable risk factor contributing to structural and functional impairment of the heart. Rao et al. [8] and Zheng et al. [9] have suggested AV fistula closure following KT and strongly emphasized its benefits in mitigating or preventing cardiovascular alterations.

Corresponding author:
Rafael Enrique Cruz Abascal
rafaelca@infomed.sld.cu

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A quasi-experimental study conducted in Cuba and completed in 2020 on KT transplant recipients with normal allograft function found that patients who underwent AV fistula closure, with blood flow rates < 1000 mL/min, showed greater improvement compared with those who did not undergo vascular access occlusion. In both groups, various parameters were compared at two time points, including clinical variables (palpitations, exertional dyspnea, orthopnea, and systolic and diastolic blood pressure), graft function (regression of baseline serum creatinine levels and marked changes in glomerular filtration rate), and 13 echocardiographic variables: right heart measurements (anteroposterior diameter of the atrium and ventricle, systolic pulmonary artery pressure, mean pulmonary artery pressure, and tricuspid annular plane systolic excursion) and left heart measurements (anteroposterior diameter of the atrium and ventricle in diastole, interventricular septum and posterior wall thickness, left ventricular mass index, ejection fraction, end-diastolic volume, and cardiac output) [10].

In conclusion, AV fistula closure in KT recipients with no foreseeable risk of allograft dysfunction in the short or medium term, when its persistence is not clinically justified, contributes to a significant reduction in structural and functional cardiovascular complications, thereby improving quality of life.

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