

To close or not to close arteriovenous fistulas in kidney allograft recipients: that is the question

Letter to the Editor The controversial issue of arteriovenous (AV) fistula closure after successful kidney transplantation is important and efforts should be made to determine appropriate decisions in these cases. Głowiński et al.¹ took this challenge comparing 9 patients with patent fistulas and 9 patients in whom the fistulas occluded spontaneously or were surgically closed post transplantation. After a 3-month follow-up, the authors did not find differences between the groups in terms of a change in the left ventricular (LV) diastolic diameter, muscle thickness, myocardial mass, or ejection fraction. It should be stated, however, that hardly any conclusion regarding the effect of fistula closure on the cardiovascular system can be made from these data. Taking into account limited precision of the echocardiographic evaluation of the measured parameters, the study group was too small to observe any statistical difference, particularly after such a short follow-up. Despite these limitations, the authors themselves point out that there were favorable changes in the LV diastolic diameter and the LV mass index (LVMI) after fistula ligation that reached borderline significance ($P = 0.08$ for LVMI). Moreover, despite similar baseline echocardiographic parameters, there was a significant difference in the LV diastolic diameter between the groups at the end of follow-up in favor of the patients who underwent fistula ligation ($P = 0.026$).

We should also clearly point out that the development of LV hypertrophy, dilatation, and systolic dysfunction may take years rather than months. Echocardiographic tissue Doppler measurements could have given more information on cardiac function in this study. Unfortunately, although suggested by the caption of table 2,¹ no Doppler data were presented. Moreover, it would be important to know what was the flow in patent fistulas (some of them could be stenosed or partially thrombosed).

Since the evaluation methods of cardiac structure and function applied in the study were basic, the authors could also consider using other tests

to better assess changes in the circulatory system caused over time by patent AV fistulas. On one hand, the evaluation of LV function with magnetic resonance imaging or even computed tomography could provide more insight into the structure of the myocardium.² On the other hand, the use of stress testing (preferably spiroergometry) could give more objective details on the functional status and prognosis of the patients.³

We fully agree with the authors admitting the paper had significant limitations. We keep the fingers crossed hoping the study will recruit more patients and will be continued with a longer follow-up. Recognition of the prognostic factors determining the indications for AV fistula closure in kidney allograft recipients still remains a significant challenge.

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Author response Thank you for your interest in our paper. „To close or not to close” is an important question that bothers all nephrologist-transplantologists and vascular access surgeons. Only a few papers on the subject have been published so far, but they refer to fistulas with high blood flow (>1500 ml/min). No publications have described patients with normal-flow fistulas (<1000 ml/min) with relatively normal echocardiographic findings.

This prompted us to present our patients based on the available data. Our study group consisted of highly selected patients. Kidney recipients with normal-flow fistulas who had undergone an AV access closure are extremely rare.

Most papers on heart function and AV fistulas described small numbers of patients and conclusions were based on LV morphology. Significant changes were noticed in a group of 16 patients just a few weeks after fistula creation¹ or 3 months post fistula closure.² An interesting study, with 17 patients in a study group and 6 patients in a control group, showed postoperative LV end-diastolic diameter and mass reductions within 3 to 10 weeks.³ However, those papers concerned high-flow fistulas with evident LV hypertrophy.

Case reports describing immediate improvement in heart function after fistula banding have been published.⁴ We described a 55-year-old woman with a hyperkinetic fistula and a significant drop of 20% in the ejection fraction during a 6 month follow-up.⁵ She was scheduled for urgent kidney transplantation with subsequent fistula closure.

Data on fistula flow are presented in table 1 of our paper.⁶

Advanced techniques of heart examination, described by the authors of the letter, could undoubtedly give more insight into cardiac morphology and function. Detailed echocardiographic and Doppler measurements, collected in a prospective manner, by 1 or 2 echocardiographers would be of value. On the other hand, use of contrast media for magnetic resonance imaging or computed tomography in patients with end-stage renal disease for purely scientific purpose will not find many enthusiasts.

Our study is continued. We are enlarging our groups and extending the follow-up period. Detailed echocardiographic findings will be described.

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