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LETTER TO THE EDITORS

Anastomosis time as risk factor for kidney transplant outcome: more pieces to the puzzle

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Dear Editors,

We read with great interest the article by Weissenbacher and co-workers, showing that anastomosis time adversely impacts kidney transplant outcome [1]. Surprisingly, the effect of anastomosis time has been poorly investigated in the past. This stands in stark contrast with the well-known fact that warm ischaemia – inevitably occurring during this period – has major deleterious impact on tissue viability in general. Previous studies evaluating the effect of anastomosis time focused on delayed graft function, not on other end-points [2, 3]. Therefore, the current study brings new information on this virtually unexplored topic. However, several questions remain unanswered.

The authors observed an independent effect of anastomosis time on patient survival, while graft survival was unaffected. Still, in recipients of a first kidney transplant, an independent effect on graft survival could be confirmed. Unfortunately, graft survival was not censored for recipient death, which makes it difficult to draw firm conclusions. As discussed by O'Neill and colleagues in their letter to the editor [4], the lack of effect on graft survival in the overall population raises questions about the existence of confounding factors, for example factors that both prolong the process of anastomosing the vessels as well as diminish recipient survival. We agree with O'Neill and colleagues that the demonstration of an effect of anastomosis time on graft function would have more convincingly supported the author's statement.

We recently investigated the effect of anastomosis time on delayed graft function, graft function later after transplantation, histology in protocol-specified biopsies and death-censored graft survival in 669 first kidney transplants from brain-dead donors [5]. Not only did we observe a 5% increased risk in delayed graft function for every minute increase in anastomosis time, prolonged anastomosis time also independently diminished graft function later after transplantation, even when adjusted for earlier delayed graft function. In addition, anastomosis time was associated with the presence of interstitial fibrosis in protocol-specified biopsies at 3, 12 and 24 months after transplantation. Our study did not have adequate power to definitely answer whether prolonged anastomosis time reduced death-censored graft survival. One could speculate that by affecting graft function up to 3 years after transplantation longer term function will be affected as well, as graft function at 1 year is considered the best predictor of long-term function [6]. Also, the independent effect of anastomosis time on overall graft survival in recipients of a first renal transplant in the study of Weissenbacher *et al.* supports this.

In addition to showing a significant association between anastomosis time, graft histology and function, our study also evaluated potential confounding factors. We measured aortic calcifications, hemodynamic parameters of arterial stiffness and intima-media thickness in a subset of patients. There was no correlation of anastomosis time with any of these atherosclerosis-associated variables, which suggests that these factors did not represent a major confounder in our analysis.

In conclusion, our study demonstrated that prolonged anastomosis time impacts on the graft itself, and thus supports the statement of Weissenbacher *et al.* that anastomosis time is an important, yet modifiable risk factor for transplant outcome.

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Conflict of interest

The authors of this manuscript have no conflict of interests to disclose as described by Transplant International.

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