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Commentary: Chronic kidney disease and coronary bypass surgery: Getting it right

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CENTRAL MESSAGE

Mild-to-moderate chronic kidney disease does not appear to influence the long-term survival benefit of coronary bypass surgery.

It is incumbent upon surgeons to deliver the correct treatment or operation, targeted to each individual patient. In the context of coronary bypass grafting (CABG) surgery, the evidence for a survival advantage of patients with complex coronary artery disease is growing,^{1,2} particularly in specific subgroups such as those with diabetes.³ Chronic kidney disease (CKD) is prevalent in patients with arteriosclerosis and/or diabetes who present with coronary artery disease and is a known risk factor for CABG.^{4,5} It is not clear whether this increased perioperative risk limits the treatment effect of CABG.

Doenst and colleagues⁶ assess the influence of CKD on 10-year mortality and cardiovascular (CV) outcomes in patients with ischemic heart failure. They undertook a secondary analysis of data from the Surgical Treatment for Ischemic Heart Failure (STICH) trial, which randomized systolic heart failure patients to CABG and medical therapy versus medical therapy alone, and showed a survival advantage for patients also having CABG.⁷ Baseline estimated glomerular filtration rates (eGFRs) were calculated and the 1209 patients, randomized to medical therapy or CABG in the STICH trial, were categorized as CKD stages 1 through 5. Stage 1: eGFR >90 mL/min (n = 232), stage 2: eGFR 60 to 89 mL/min (n = 646), stage 3: eGFR 30 to 59 mL/min (n = 303) and stage 4 and 5: eGFR <30 mL/min (n = 28). Baseline characteristics of patients in the 2 treatment arms were equal for each CKD stage. However, patients in CKD stages 3 through 5 were older than those in stages 1 and 2

(aged 66-71 vs 54-59 years) and had more comorbidities. There was an inverse association linear relationship between eGFR and risk of death, CV death, and/or CV rehospitalization (all *P* values < .001). The study's primary outcome showed a significant improvement in 10-year survival and CV rehospitalization rates by CABG in CKD stages 1 through 3. These data were inconclusive in CKD stages 4 and 5, probably due to small sample size.

There is limited evidence, mainly based on retrospective database analyses, on whether CKD affects the treatment benefit of CABG.^{8,9} Although this is a secondary analysis of the STICH trial, Doenst and colleagues⁶ demonstrate, for the first time using data from a randomized prospective study, that mild-to-moderate CKD does not appear to influence the long-term benefit of CABG. There are important limitations, such as limited patient numbers in the highest and lowest CKD stages. In addition, because the STICH trial was not powered for interaction testing, residual confounding cannot truly be excluded. Finally, any conclusions apply in mild-to-moderate CKD only and are in patients with heart failure with reduced ejection fraction.

In real-life practice, the presence of CKD may be a predictor for not referring patients for surgery.¹⁰ Although this could be challenged by the results of the study by Doenst and colleagues,⁶ more information is required before a recommendation for CABG treatment can be made in all otherwise-suitable CKD patients. These effects should be confirmed regardless of left ventricular ejection fraction and for patients with more severe grades of CKD who are

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presumably the least likely to be referred for surgery. In addition, off-pump surgery and new pharmaceutical measures¹¹ that may further enhance the benefits of CABG in patients with CKD will require investigation. Nevertheless, Doenst and colleagues⁶ provide further impetus in the importance of establishing the correct treatment for the right patient.

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