

Post-EVAR Renal Outcomes and Mortality: Insights from Short- and Mid-Term Follow-Up

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INTRODUCTION

The study aimed to investigate the prevalence of acute kidney injury (AKI) and its association with mortality in patients treated with endovascular aneurysm repair (EVAR) for abdominal aortic aneurysm (AAA). Specifically, it sought to evaluate the incidence of AKI within the first 48 hours following surgery, identifying potential risk factors, clinical predictors, and the underlying mechanisms contributing to its onset. The research also examined the progression and impact of AKI on patient outcomes, including its effect on renal function, overall health status, and quality of life over a two-year follow-up period. Furthermore, the study aimed to determine the correlation between AKI and postoperative mortality rates, providing insights into the potential for early intervention strategies to mitigate risks and improve long-term prognoses for EVAR-treated patients.

METHODS

The study analyzed a total of 192 patients (46 females and 146 males) who underwent EVAR for AAA between 2015 and 2022. Comprehensive patient medical records were reviewed to identify the prevalence of pre-existing comorbidities, including hypertension, type 2 diabetes mellitus (DM t2), atrial fibrillation, coronary artery disease, chronic obstructive pulmonary disease (COPD), and chronic kidney disease (CKD). Additionally, demographic details such as age, sex, and body mass index (BMI), as well as aneurysm-specific characteristics like diameter and location were meticulously documented. The analysis incorporated perioperative data, including baseline renal function, intraoperative fluid management, contrast medium volume used during the procedure, and any complications occurring during or immediately after surgery. Follow-up evaluations conducted at 48 hours post-surgery assessed the incidence of acute kidney injury (AKI) and its potential associations with patient profiles, procedural factors, and early postoperative outcomes. Long-term follow-up, carried out two years after the procedure, evaluated the progression of renal dysfunction, recurrence of AAA-related complications, and overall survival rates, exploring correlations between AKI, patient-specific factors, and mortality outcomes. This comprehensive approach aimed to provide a detailed understanding of the factors influencing AKI development and its long-term effects on patients undergoing EVAR.

RESULTS

The average age of the study participants was 73.3 ± 7.9 years, with patients who developed AKI demonstrating a slightly higher mean age of 74.9 ± 9.1 years. AKI occurred in 19% of the cohort (36 cases), with a pronounced male predominance, as 86.1% of those affected were male. Among patients with pre-existing CKD, 66.7% developed AKI, emphasizing a strong correlation between CKD and an elevated risk of postoperative AKI. The average aneurysm diameter was 57.2 ± 17 mm across the study population. However, patients who developed AKI had significantly larger aneurysms, with an average diameter of 66.9 ± 19.7 mm. Aneurysm sizes exceeding 67 mm were identified as a critical risk factor for the development of AKI, further linking larger aneurysm dimensions with adverse renal outcomes. During the two-year follow-up period, the overall mortality rate was 16.7%, with a striking disparity in outcomes for patients who experienced AKI. The mortality rate for this subgroup was 38.9%, highlighting the severe long-term impact of AKI on survival. Mortality among patients with pre-existing CKD was also substantial, at 23.9%, reinforcing the combined burden of renal dysfunction on postoperative prognosis. Similarly, patients with aneurysms larger than 67 mm had a mortality rate of 20%, suggesting that larger aneurysms contribute to both AKI risk and subsequent mortality. Additionally, DMt2 emerged as a significant determinant of poor outcomes, with a mortality rate of 37.9%, the highest among other comorbidities studied. This finding underscores the compounded impact of metabolic disorders and structural risk factors on survival in patients undergoing EVAR. These results highlight the importance of identifying and managing high-risk patients, particularly those with CKD, larger aneurysms, and metabolic comorbidities, to improve both short- and long-term outcomes.

CONCLUSIONS

The findings underscore that AKI, CKD, aneurysm size, and DM t 2 are significant predictors of mortality in patients undergoing EVAR for AAA. These results highlight the importance of comprehensive preoperative risk stratification and tailored postoperative care to reduce complications and enhance long-term survival outcomes.

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