Efficacy of Open Surgical Repair and Endovascular Aneurysm Repair for Ruptured Abdominal Aortic Aneurysms: a Multicenter Retrospective Study

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Objective:

Ruptured abdominal aortic aneurysm (rAAA) is associated with high mortality. The primary surgical procedures to address this condition are open surgical repair (OSR) and endovascular aneurysm repair (EVAR), with ongoing debate regarding their relative superiority. This multicenter retrospective study aimed to compare the advantages and disadvantages of OSR and EVAR in treating rAAA and to identify key variables affecting perioperative patient survival.

Methods:

Data on patient demographics, perioperative details, and follow-up outcomes were systematically collected. Patients were split into two groups based on treatment type: OSR group or EVAR group calculated the 30-day postoperative mortality rates for each group and analyzed the 1-year postoperative survival using Kaplan-Meier curves. Logistic regression identified factors influencing perioperative mortality.

Results:

Ninety-six surgically treated patients were included in this study, with 41 in the OSR group and 55 in the EVAR group. The 30-day postoperative mortality did not significantly between the two groups (26.8% vs. 21.8%, P=0.569). Kaplan-Meier curve analysis showed no significant difference in one-year survival rates between the groups (P=0.879). However, compared to the EVAR group, the OSR group had a higher incidence of postoperative pulmonary infections (29.3% vs. 10.9%, P=0.023) and venous thromboembolism (17.1% vs. 1.8%, P=0.019). The re-intervention rate showed no significant difference between the groups after surgery and during follow-up (12.2% vs. 20%, P=0.31). Patients were categorized into two groups based on perioperative survival: the survival group and the death group. Univariate analysis revealed that emergency systolic blood pressure (eSBP), diastolic blood pressure, AAA diameter, hemoglobin, creatinine, albumin, and alanine transaminase were primary factors affecting perioperative mortality. Logistic regression analysis identified eSBP (P=0.009) and AAA diameter (P=0.043) as independent risk factors for perioperative mortality.

Conclusion:

Both the OSR and EVAR groups showed no significant difference in 30-day postoperative mortality and one-year survival rates. However, the perioperative complication rate was higher in the OSR group. eSBP and AAA diameter were identified as primary risk factors for patient mortality. For patients with poor blood pressure control and large AAA diameter, early surgical intervention is recommended.