

## Short- and Midterm Outcomes of Open Repair and Fenestrated Endografting of Pararenal Aortic Aneurysms in a Concurrent Propensity-Adjusted Comparison.

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### Abstract

**PURPOSE:** To compare outcomes of patients treated for pararenal aortic aneurysms using fenestrated endovascular aneurysm repair (fEVAR) vs open surgical repair (OSR) in 3 high-volume centers.

**MATERIALS AND METHODS:** A multicenter retrospective analysis was conducted of 200 pararenal abdominal aortic aneurysm patients electively treated with OSR (n=108) or fEVAR (n=92) from 1998 to 2015 at 3 tertiary institutions. Endpoints were 30-day morbidity and mortality, late reinterventions, visceral artery occlusion, and mortality. Analysis was conducted on the entire population and on a propensity score-matched population constructed on age, gender, coronary artery disease (CAD), and chronic renal failure.

**RESULTS:** In the total cohort, fEVAR patients were significantly ( $p<0.001$ ) older and had higher frequencies of CAD ( $p<0.001$ ) and previous stroke ( $p=0.003$ ). OSR patients had higher risk of perioperative morbidity (OR 2.5, 95% CI 1.09 to 5.71,  $p=0.033$ ), specifically respiratory failure (OR 4.06, 95% CI 1.12 to 4.72,  $p=0.034$ ). These findings were confirmed in the propensity-adjusted analysis, where cardiac complications were also higher after OSR (OR 12.8, 95% CI 0.07 to 0.21,  $p=0.02$ ). No difference in perioperative mortality (2.2% in fEVAR vs 1.9% in OSR) was identified. Mean follow-up was 50 months (range 0-119). Four-year results showed higher survival (91.2% vs 69.3%,  $p=0.02$ ) and freedom from reintervention (95.6% vs 77.8%,  $p=0.01$ ) after OSR in the unmatched population, with a small but significant ( $p=0.021$ ) difference in the risk of late visceral artery occlusion/stenosis after fEVAR. On propensity analysis, no differences in late survival were found between groups.

**CONCLUSION:** fEVAR and OSR may afford similar early and midterm survival rates. Higher risks of perioperative systemic complications after OSR are counterbalanced by higher risks of

late visceral vessel patency issues and need for reintervention after fEVAR. Both procedures are safe and effective in the long term in experienced centers, where patient evaluation should drive the treatment strategy.

**KEYWORDS:** abdominal aortic aneurysm; endovascular aneurysm repair; fenestrated stent-graft; mortality; open surgical repair; pararenal aneurysm; reintervention; surgery; visceral vessels

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