Comparison Between Balloon and Self-Expandable Bridging covered Stent in Branched Endovascular Aneurysm Repair.

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Objective:

Evaluate whether self-expandable (SESGs) or balloon-expandable (BESGs) stents-grafts reduces the incidence of target vessel instability, endoleak, occlusion, and the need for reinterventions in in patients undergoing to branched endovascular aortic repair (BEVAR) for thoracoabdominal aortic aneurysm (TAAA).

Methods:

We conducted a systematic search of studies in the PubMed, Embase, and Cochrane databases up to July 2024. Following the PRISMA protocol, 1115 articles were analyzed. A restricted maximum likelihood model with random effects with odds ratios and 95% confidence intervals was applied for binary outcomes. Heterogeneity was assessed using the Cochrane Q test and Higgins and Thompson's I2 statistic. Significance was defined as a p-value < 0.05.

Results:

Three cohort studies involving 2,906 vessels were included, of which 1313 (45%) target vessels received BESGs and 1593 (55%) received SESGs. There was no statistically significant difference observed for branch occlusion (OR 0.76; 95% CI 0.28 to 2.04; p=0.59) and target vessel instability (OR 1.12; 95% CI 0.45 to 2.77; p=0.81). However, all studies showed a significantly lower incidence of target artery-related endoleaks (types I-III) in the SESG group compared to the BESG group (OR 2.47; 95% CI 1.42 to 4.29; p=0.001). Additionally, the reintervention rate was significantly lower in the SESG group compared to the BESG group (OR 3.97; 95% CI 2.94 to 5.37; p<0.00001), as reported by two studies.

Conclusion:

SESGs in branched endovascular aortic repair is associated with a lower incidence of TA-related endoleaks and reinterventions compared to BESGs, with no notable differences in occlusion or TV instability.

Author Disclosures: M.M Mastra Fontoura: None; D. S. Pimentel Junior: None; C. F. Mesquita: None; M. G. Fernandez: None; E.P. Bertolino: None; P. E. Ocke Reis: None; F. Motta: None; G. Carvajal Mulatti: None.