

A systematic review of valve sparing aortic root replacement compared to composite root replacement.

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Objectives:

Aortic root aneurysms represents a significant risk of morbidity and mortality. Composite root replacement represents the preferred practice for repair, although recently valve sparing replacement is becoming a popular alternative. We sought to identify comparative studies that simultaneously analysed composite root and valve sparing root replacement outcomes.

Methods:

A systematic review of the current literature was performed through four major databases from inception to 2014. All comparative studies of valve sparing vs composite root replacement were identified. Paediatric populations and studies only with Marfan patients were excluded. All studies were assessed by 2 reviewers for their applicability and inclusion.

Results:

A total of 13 comparative papers were identified encompassing 2123 patients (656 valve sparing and 1467 composite). Average age 57.3, male 67.3%, mean follow-up time 4.6 years, Marfans 10.6%. Perioperative bleeding was significantly higher in mechanical composite group compared to the biological composite and valve sparing groups ($9.8\% \pm 6.4$ vs $4.4\% \pm 6.2$ vs $3.3\% \pm 4.2$ respectively, $p < 0.01$). In-hospital mortality was low and non-significant between all groups. Only one study reported long-term follow up. Reoperation rates were higher in the valve sparing group compared to the composite group (6.7% vs 2.8% respectively), this was non-significant when weighted with follow up.

Conclusions:

Valve sparing and composite root replacement remain feasible options for replacement of the aortic root. Mechanical composite replacement is associated with increased risk of perioperative bleeding. Long term data of comparative studies do not yet exist to assess viability of these procedures.