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**O024 Prognostic value of haemodynamic parameters in predicting adverse clinical events in type B aortic dissection**

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**Introduction:** Ascertain the prognostic role of in-vivo 4D-flow magnetic resonance imaging (MRI) and computational fluid dynamics (CFD) aortic haemodynamic parameters as predictors of adverse dissection-related events in type B aortic dissection (TBAD).

**Methods:** A systematic literature search was conducted according to the PRISMA guidelines using electronic databases searched from 1946 to 2021 for studies reporting on the relationship between aortic haemodynamics and aortic dissection-related events defined as aortic growth, aneurysm development, false lumen thrombosis, need for surgery and aortic rupture.

**Results:** Fourteen studies were included; eleven studies used CFD and three studies used 4D-flow MRI. Two studies found increased FL ejection fraction (EF) significantly associated with aortic growth rate, and another study found increased FL stroke volume significantly associated with increased aortic expansion rate. Result for time-averaged wall shear stress (TAWSS) and relative residence time (RRT) are contradictory; one study found TAWSS significantly associated with aortic wall deformation, but another study found no significant difference. Five studies suggested possible associations between slow flowing regions or increased RRT and FL thrombosis, with another study finding significant associations between FL thrombosis and adverse aortic outcomes. However, one study revealed opposite findings where decreased RRT significantly correlated with aneurysm formation.

**Conclusion:** In-vivo aortic haemodynamic measurements such as FL EF, FL stroke volume, TAWSS and RRT show possible associations with FL and aortic expansion, as well as FL thrombosis. Larger prospective studies are now needed to determine the prognostic utility of in vivo...
aortic haemodynamic metrics in predicting TBAD clinical outcomes to guide management. 

**Take-home message:** Aortic haemodynamic parameters measured by 4D-flow magnetic resonance imaging and computational fluid dynamics show promising potential as predictors of adverse dissection-related events in type B aortic dissection.