# [Progression of aortic root dilatation and aortic valve regurgitation after the arterial switch operation.](https://www.ncbi.nlm.nih.gov/pubmed/31292191)

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**Take Home Points:**

* Neo-aortic root dilatation and aortic incompetence in patients post ASO is progressive – does not stabilize over time.
* More complex subtypes of TGA and male gender were associated with greater increases in root dilatation.
* A disproportionate increase of aortic root size occurs in the first year post ASO.



***Commentary from Dr. Blanche Cupido (Cape Town, South Africa), section editor of ACHD Journal Watch:*** The arterial switch operation (ASO) has largely replaced the atrial switch procedure for transposition of the great arteries (TGA) over the last 2 decades. The late survival with this procedure has been excellent but the concern of neo-aortic dilatation (in >2/3 of patients) and aortic regurgitation (AR) remains. There is however limited data, especially in adults, on the progression of neo-aortic dilatation.

This is a retrospective study from the Netherlands, describing neo-aortic growth, neo-aortic valve function and the need for neo-aortic root intervention at long term follow-up and to identify risk factors for root dilatation and AR.

All patients who underwent an ASO for TGA with intact ventricular septum (TGA-IVS), TGA with VSD (TGA-VSD) or double outlet RV with subpulmonary VSD (DORV-SP-VSD) between 1977 and 2015 were included. All patients had 2 or more echocardiograms during follow-up. If possible, echo images at 3,6,9 and 12 months and then at 2,3 and 5 years and 5 year intervals thereafter were evaluated until the last available follow-up. The following neo-aortic measurements were recorded: annulus, mid-sinus and sinotubular junction. For paediatric patients, Z scores were calculated and dilatation defined as a Z score of 2 or more. AR jet and LV dimensions were also assessed.

A total of 452 patients underwent ASO. Fifty-two patients (11.5%) patients died during follow-up of which 42 deaths occurred during the first month post-op. Early deaths were higher in the years 1977-1987, and reduced to 3.3% in subsequent years. The cohort was made up of the following morphological subtypes: TGA-IVS (66.7%), TGA-VSD (25.8%) and DORV-SP-VSD (7.5%).

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Figure 2A-C above shows the absolute neo-aortic diameters for all patients with TGA. The dimensions for neo-aortic annulus, root and STJ shows a rapid increase in the first year post- ASO followed by a linear increase in childhood and an ongoing increased growth rate in adulthood. For neo-aortic annulus and root diameters, both TGA-VSD and DORV-PS-VSD showed significantly greater dilatation compared to TGA-IVS. Both morphological subtype and male gender were independent predictors for root dilatation.

Regarding aortic regurgitation, at last follow-up or just before re-operation for root pathology, 33 patients (9.6%) had at least moderate AR.