Trainee Dr Ajay Iyengar hopes to improve international, multicentric experience.”

Grants provided by the College, the NHMRC and the National Heart Foundation have allowed Melbourne cardiothoracic Trainee Dr Ajay Iyengar to analyse the outcomes, failure rates and risk factors facing children in Australia and New Zealand who have undergone the Fontan Procedure to treat complex congenital heart malformations. Only offered in New Zealand since 1975 and Australia since 1980, the Fontan Procedure is used to treat children born with only one ventricle and involves connecting the caval veins directly to the pulmonary arteries allowing blood to pass passively through the lungs without going through the heart (Figure 1).

Dr Iyengar said, however, that as the Fontan population aged, long-term risk factors and physiological effects now needed to be analysed and understood. He is now conducting that population-based analysis of Australian and New Zealand Fontan patients using data generated through the Australia and New Zealand Fontan Registry, a multi-centre, bi-national registry established in 2008, the world’s first such Fontan registry.

In particular, Dr Iyengar is seeking to analyse early patient outcomes following the surgery, the long-term rate of failure, death, transplantation, arrhythmia and thromboembolic events and to examine the effects of warfarin and aspirin, the two main anticoagulation regimes given to Fontan patients.

Fontan patients obviously undergo a significant physiological change and now that the population is growing steadily (Figure 2) and aging, we are in a better position to understand the long-term effects of that change,” Dr Iyengar said.

“For instance, we know their veins are under much higher pressure, that the blood passing through the lungs isn’t pulsatile and that cardiac output is fixed even during strenuous exercise.

“There is also enormous inter-centre variation in the practices of anticoagulation and fenestration and we need to know if there is a significant difference between regimes to determine optimal long-term treatment.

“We are also now seeking to determine the incidence of subclinical chronic liver and renal disease amongst Fontan patients, long-term complications that are only now emerging.”

Dr Iyengar, who helped establish the Fontan Registry as a medical student and intern, said information was gathered from patients, long-term complications that are only now emerging.”

“Long-term outcomes for all Fontan patients have significantly improved; however, the increase in the proportion of patients with hypoplastic left-heart syndrome has led to high rates of re-intervention and long-term failure and we need to understand this so that we can offer the best possible advice to the parents of such very sick babies.”

Dr Iyengar is conducting his PhD research through the University of Melbourne, the Department of Cardiac Surgery at the Royal Children’s Hospital and the Heart Research Group, Murdoch Children’s Research Institute.

His work is being supervised by Associate Professor Yves d’Udekem, Department of Cardiac Surgery at the Royal Children’s Hospital and Heart Research Group at the Murdoch Children’s Research Institute, Professor David S Celermajer, Department of Cardiology at Royal Prince Alfred Hospital and the Sydney Heart Research Institute, University of Sydney, and Professor John Huxton, Department of General Surgery, Royal Children’s Hospital and Surgical Research at the Murdoch Children’s Research Institute.

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