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## Minimal radiation exposure trans-catheter patent ductus arteriosus closure using only venous access- A novel technique

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**Objective:** The transcatheter closure of patent ductus arteriosus (PDA), as well as other pediatric cardiac interventions has raised the concerns regarding radiation exposure, particularly relevant when treating children with almost normal life expectancy. The purpose of this study is to show how to perform the transcatheter closure of PDA in children while giving less ionized radiation exposure and to prove that the amount of radiation can be reduced by using pressure trace during catheter manipulation. This is Prospective analysis of feasibility, safety and advantages of doing PDA device closure using only venous access under minimal radiation technique.

**Background:** Taking an arterial access for transcatheter device closure has been a standard practice but has some inherent complications. The use of radiation or fluoroscopy is necessary but it has some ill effects on tissues, especially in children because of their greater sensitivity compared to adults and also for health care providers inside catheterization laboratory for continuous exposure.

**Method:** As per our departmental policy, we decided to go for PDA device closure only through venous access in the beginning March 2016 till date. We decided to reduce the radiation time during the procedure by different techniques; most important was entry from IVC to RA, RA to RV and RV to pulmonary artery (ductal end) under pressure tracing guidance and occasionally crossed the ductus under echocardiographic guidance. Echocardiography was used for patient selection and assessment for pre procedure sizing of device and procedural outcome without using aortic angiogram.

**Result:** 137 out of 176 patients underwent PDA device closure from March 2016 to April 2017, over thirteen months with only venous access and under minimal radiation technique, weighing 3.8- 42 kg with half of them < 10 kg . Fluoroscopic time ranged from 0.04 to 2.12 minutes. Twelve patients had difficulty in entering right ventricle from right atrium and required fluoroscopic guidance. Immediate closure was achieved in 126 patients. Three Syndromic babies had mild flow acceleration across left pulmonary artery and two patients had small intradevice shunt at 12 months of follow up.

**Conclusion:** PDA device closure can be comfortably done without an arterial access irrespective age and weight of the patients. Apart from pre procedure echocardiographic device selection, pressure trace guidance catheter manipulation can reduce radiation time and effective radiation to patients as well as health care providers compared to conventional technique.

### Biography

Nurul Islam has completed graduation at 25 years of age in medical science from Calcutta National Medical College, India and had post-graduation in Pediatrics from Vivekananda Institute of Medical Sciences under The West Bengal University of Health Sciences in 2010, He has completed his fellowship in Pediatric Cardiology under Diplomate National Board (DNB) from Indraprastha Apollo Hospitals, Delhi and had training in Advanced Pediatric Cardiac Intervention in Evelina Children Hospital, Guys and St Thomas Trust in UK. Now working as consultant interventional pediatric cardiologist in The Mission hospital and as visiting consultant pediatric cardiologist in esteemed institute, Ramakrishna Mission Seva Pratisthan, Kolkata, West Bengal, India.

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