

## Transcatheter closure of Patent Ductus Arteriosus through only venous route

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### Abstract

Patent ductus arteriosus is a common congenital cardiac defect comprising 5-10% of all these defects in term neonates. Although open chest and video-assisted interruption are still in use, transcatheter occlusion has rapidly become the first choice for patent ductus arteriosus closure in the appropriate patient. Percutaneous closure of patent ductus arteriosus is widely done by transvenous approach guided by aortic access. We present the case of a 2 year old girl who underwent patent ductus arteriosus device occlusion with transvenous access only.

**Keywords:** Patent ductus arteriosus, Device occlusion, Venous access.

### Introduction

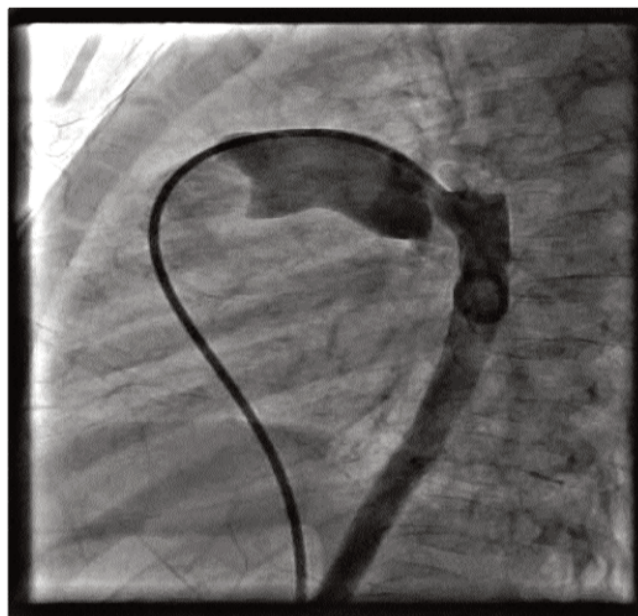
Patent ductus arteriosus (PDA) is one of the most common congenital cardiac defects. It occurs in 1 in 2000 births for term neonates, accounting for 5-10% of all the congenital cardiac defects in these neonates.<sup>1</sup> The condition is more common in preterm neonates, 20-60% having patent ductus arteriosus at birth.<sup>2</sup> Porstmann et al. first described the transcatheter closure of PDA in 1967.<sup>3</sup> Various devices and procedures have been devised since then. At present, transcatheter closure of PDA with Occlutech duct occluder along with other devices is widely being used as an alternative to surgical treatment.<sup>4-6</sup> In this case, we closed a large PDA with Occlutech duct occluder through transvenous route only.

### Case Report

A 2 year old girl presented on August 12, 2015 in Rawalpindi Institute of Cardiology, Rawalpindi with repeated chest infection and failure to thrive. On examination, she had high volume pulse with a rate of 100 per minutes. There was no tachypnoea. Her blood pressure was 100/60. Precordium was hyperdynamic with lateral shift of apex beat. Both heart sounds were normal with a grade 3/6 continuous murmur at left infra clavicle

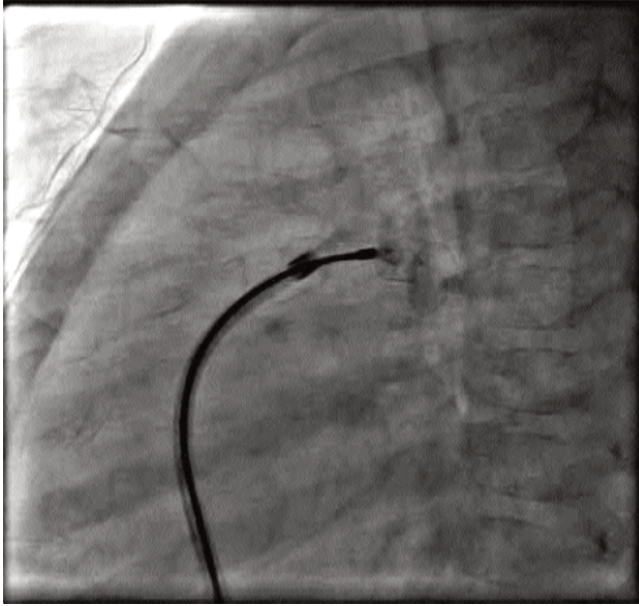
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**Figure-1:** Angiogram showing large communication (PDA) between aorta and pulmonary artery.

region. Rest of systemic examination was normal. Echocardiogram showed large size PDA measuring 3.6mm at its narrowest point. There was left ventricle volume overload. The defect was found suitable for device closure. The procedure was performed on August 14, 2015. IRB approval and consent was obtained. A 6F radial sheath was placed in the femoral vein. A 5F pigtail was placed in descending aorta near the PDA by crossing the defect from venous side. Shape and size of the PDA was measured by an angiogram obtained at 90 degrees left lateral position (Figure-1). It was type A PDA (Krichenko classification) measuring 4mm at its narrowest point. PDA was 5mm long with 6.5mm ampulla. PDA was crossed with 5f MP catheter and glide wire. Glide wire was exchanged with extrastiff Amplatzer wire. A 6F delivery system was passed over the wire. Dilater and wire were removed. A 8/6 mm Occlutech duct occluder was passed through delivery system. Aortic end was released followed by pulmonary end. Position of device was assessed with transthoracic echocardiography. Stenosis due to the protrusion of the device into the left pulmonary artery and descending aorta was also checked.



**Figure-2:** Picture showing occlusion device in PDA attached to cable.

Device released without difficulty. Follow up echocardiography was performed just before discharge, at 1 and 6 month. PDA was completely occluded with no complications.

### Discussion

The widely used method of PDA device occlusion is transvenous access through the femoral vein guided by aortic access from femoral artery. However in some patients in which PDA device closure is planned, femoral artery can be inaccessible. So there is need to develop an alternative method for such patients. Baykan A et al reported that transcatheter PDA closure in children without using femoral artery, under the guidance of transthoracic echocardiography and aortogram in the return phase is an effective and reliable method.<sup>8</sup> Another study reported successful use of this technique in extremely premature infants.<sup>9</sup> Chen et al showed the efficacy of transvenous route as only approach in grown

up patients.<sup>10</sup> In Pakistan, it is a common practice to take both arterial and venous access.<sup>11,12</sup> We performed PDA device occlusion taking only venous access. This may or may not be the first case using venous route only in Pakistan but first reported case to our knowledge.

**Disclaimer:** None.

**Conflict of Interest:** None.

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