

THERAPEUTICS CATHETERIZATION IN PEDIATRIC CARDIOLOGY

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Therapeutic catheterization increases the role in pediatric cardiology practice, especially in congenital heart diseases. It may be classified into two groups: 1) Dilatation (open up) that use balloon catheters and endovascular stents; 2) Closure (close down) that use occluding devices eg, occlusion of patent ductus arteriosus (Lertsapcharoen *et al*, 1999, 2009). In 1966, Dr William Rashkind reported the work on “Creation of an Atrial Septal Defect

Without Thoracotomy,” and one year later, a sponge plug for Patent Ductus Arteriosus (PDA) closure by Dr Charles Dotter was introduced (Fig 1). With advances in plastic and alloy engineering, various transcatheter occluding devices to close heart defects and balloon catheter-based techniques to dilate stenotic lesions have been developed. Improved catheter and stent systems led to a wide range of feasibility with better outcome in neonates

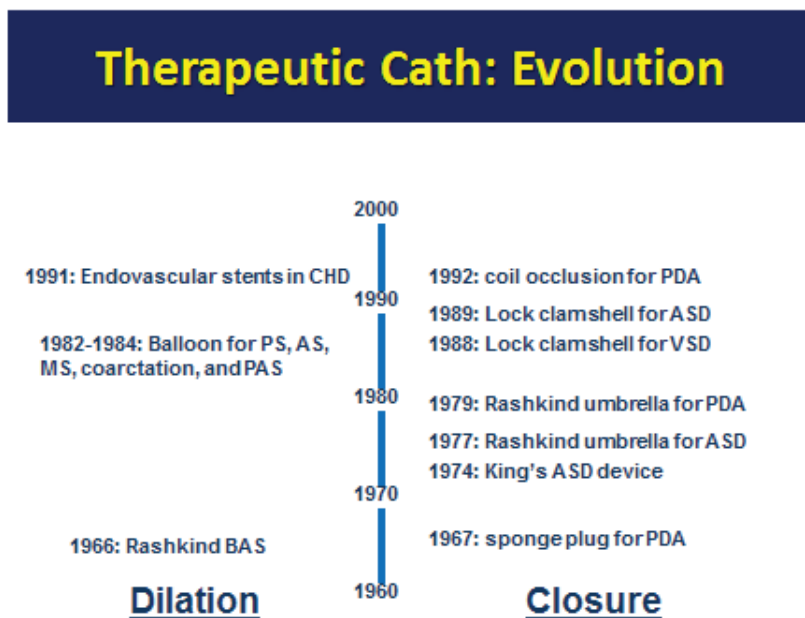


Fig 1—Evolution of therapeutic catheterization.

Table 1

Open up	Close down
Valvular Pulmonary Stenosis	Patent Ductus Arteriosus
Valvular Aortic Stenosis	Atrial septal defect (secundum)
Coarctation of the aorta	Ventricular septal defect (perimembranous or muscular)
	Coronary arteriovenous fistula
	Pulmonary arteriovenous malformation (AVM)

and small babies. Catheter interventions may be applied in corrective treatment in simple lesions, and palliative treatment in some complex lesions. Most recently, transcatheter valve implantation has been applied as an alternative to open heart surgery (Table 1).

The role of therapeutic catheterization for palliative treatment includes balloon atrial septostomy in transposition of great arteries (d-TGA), balloon pulmonary valvuloplasty in Tetralogy of Fallot (Cholkraisuwat *et al*, 2010), PDA stenting in ductal dependent lesions, re-opening of occluded Blalock-Taussig shunt, and correcting some residual defects after surgical treatment.

The future looks set for the introduction of more new Ventricular Septal Defect (VSD) devices, breakable or biodegradable stents for grown-up baby, less metal, less foreign material, or degradable occluding devices, and re-implantable transcath-

eter valve system for valve replacement, thereby superseding the need for open heart surgery.

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