needle into a peripheral vessel (usually the femoral artery or vein in children) and then guided into the heart with the aid of fluoroscopy. After the tip of the catheter is within a heart chamber, measurements of pressures and saturations in the different cardiac chambers are obtained. Contrast material is injected, and images are taken of the circulation inside the heart (**angiography**). Types of cardiac catheterizations include:

Diagnostic catheterizations: These studies are used to diagnose congenital cardiac defects, particularly in symptomatic infants and before surgical repair. They can include right-sided catheterizations, in which the catheter is introduced through a vein (usually the femoral vein) and threaded to the right atrium, and left-sided catheterizations, in which the catheter is threaded through an artery into the aorta and into the heart.

Interventional catheterizations (therapeutic catheterizations): A balloon catheter or other device is used to alter the cardiac anatomy. Examples include dilating stenotic valves or vessels or closing abnormal connections (Table 23-2).

TABLE 23-2

Current Interventional Cardiac Catheterization Procedures in Children

Intervention	Diagnosis
Balloon atrioseptostomy: Use well established in newborns; may also be done under echocardiographic guidance	Transposition of great arteries Some complex single-ventricle defects
Balloon dilation: Treatment of choice	Valvular pulmonic stenosis
	Branch pulmonary artery stenosis
	Congenital valvular aortic stenosis
	Rheumatic mitral stenosis
	Recurrent coarctation of aorta
	Further follow-up required in:
	Native coarctation of aorta in patients older than 7 months
	Congenital mitral stenosis
Coil occlusion: Accepted alternative to surgery	PDA (<4 mm)
Transcatheter device closure: Several devices used in clinical trials	ASD
Amplatzer septal occluder: Approved for ASD closure	ASD
VSD devices: Used in clinical trials	VSDs
Stent placement	Pulmonary artery stenosis