

Chapter 5

ANESTHESIA IN PEDIATRIC CONGENITAL HEART SURGERY

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► History

In 1937, John Streider performed a patent ductus arteriosus interruption surgery. Despite the loss of the patient, this date is considered the start of congenital cardiac surgery. In 1944, Alfred Blalock successfully completed the first Blalock-Taussing shunt. In 1951, Clarence Dennis operated a six-year-old girl diagnosed with atrial septal defect and congestive heart failure with his own developed heart lung mechanism. Along with the developing technology, successful results are obtained in palliative and full correction operations in congenital heart diseases.

► Incidence

Congenital heart diseases (CHD) include a series of abnormalities that can be detected in infancy, early childhood or, more rarely, in adulthood. The incidence of congenital heart diseases is reported to be approximately 0.6-1 per 100 live births. Ventricular septal defect is the most common congenital heart disease. (Table 1).

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Atrial Septal Defect

There are Ostium Sekundum, Sinus Venosus, Ostium Primum types. There is a shunt from left to right, and right heart loading findings occur. Hypertrophic and large right heart are seen. Lung blood flow may increase by 3-4 times. The secundum type is asymptomatic. If heart failure is present in the infant, additional cardiac anomalies should be considered. Surgically, ASD closure is performed with primary repair or pericardial patch. Medium hypothermia is preferred in cardiopulmonary bypass. Small defects in appropriate anatomic localization can be closed by catheterization.

Ventricular Septal Defect

Ventricular septal defect size determines pulmonary blood flow. Small VSD's symptoms are limited and can close spontaneously in the first 5 years. Large ventricular septal defect may develop left atrium, left ventricle, right ventricular dilatation and heart failure in the first year of life. Pulmonary vascular damage and Eisenmenger's Syndrome occur in the terminal period and the shunt turns from right to left. Therefore, patients should be treated at an early age.

Aortic Coarctation

In this pathology the aortic ductus arteriosus narrows before or after. There is a pressure difference between the lower extremity and upper extremity. About eight years of age due to the hypertension at upper extremity, excessive collateral circulation leads notching at the ribs. In the surgery, resection of the narrow aortic segment and end-to-end anastomosis are performed by left thoracotomy. In severe strictures, the ductus arteriosus is kept open with PGE₁.

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