

Ayjeran M.

**VARIANT ANATOMY AND CONGENITAL ANOMALIES OF THE HUMAN
INTERVENTRICULAR SEPTUM**

Tutor: PhD, associate professor Huseva Y.A.

*Department of Human Anatomy
Belarusian State Medical University, Minsk*

The relevance of the study is due to the high frequency of interventricular septal defects (ISD) which accounts for 10% of congenital heart defects in adults.

Key characteristics of the ISD include its muscular and fibrous composition, which contribute to the heart's structural integrity and contractile function. The muscular part of ISD itself is divided into inlet, trabecular, and outlet (or infundibular) components. ISDs are used to be observed in the area of the membranous part (termed perimembranous defects); within the muscular part (termed muscular defects); or in the area of septum subjacent to the arterial valves (termed subarterial infundibular defects). Perimembranous defects are found extending either into the inlet, trabecular, or infundibular septa. Muscular defects are found in or between the inlet septum, trabecular septum, or infundibular septum.

ISDs vary in size, ranging from small defects without hemodynamical significance, to large communications leading to complications in early childhood with the signs of central cyanosis. Small ISDs only lead to the minimal left-to-right shunt without left ventricular fluid overload or pulmonary arterial hypertension; they are usually asymptomatic or found incidentally on physical examination. Medium size ISDs result in a moderate left ventricular volume overload; they present late in childhood with mild congestive heart failure. Those with large defects develop congestive heart failure early in childhood due to the severe left ventricular overload. Small defects are expected to close spontaneously in the first year of life; however, larger defects can result in severe complications. In the setting of long-standing large left-to-right shunts, the pulmonary vascular endothelium undergoes irreversible changes. When the pressure in the pulmonary circulation exceeds the pressure in the systemic circulation, the shunt direction reverses and becomes a right-to-left shunt. This is known as Eisenmenger syndrome, and it occurs in 10–15% of patients with ISD. Surgical VSD closure is the standard of care with device closure emerging as a promising alternative. This chapter will focus on the classification and pathophysiology of isolated VSD, with detailed information on the operative approach and further discussion on newer interventions to repair isolated VSD. A decrease in shunt size or even spontaneous closure of IVDs is common during early childhood.

By highlighting the implications of interventricular septal defects on cardiac performance, this work aims to enhance awareness and understanding among healthcare professionals, ultimately improving diagnostic accuracy and treatment strategies.