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| **Embryonic part** | **Adult part** |
| Truncus arteriosus | Ascending aortaPulmonary trunk |
| Bulbus cordis | **Smooth** left ventricle**Smooth** right ventricle |
| Endocardial cushion | Atrial **septum****Membranous** IV **septum****Heart valves** |
| **Primitive** atrium | **Trabeculated** left atrium**Trabeculated** right atrium |
| **Primitive** ventricle | **Trabeculated** left ventricle**Trabeculated** right ventricle |
| Primitive pulmonary vein | **Smooth** left atrium |
| **Left horn**, sinus venosus | Coronary sinus |
| **Right horn**, sinus venosus | **Smooth** right atrium |
| Right common cardinal veinRight anterior cardinal vein | Superior vena cava |
| AllantoisUrachus | Median umbilical ligament |
| Ductus arteriosus | Ligamentum arteriosum |
| Ductus venosus | Ligamentum venosum |
| Foramen ovale | Fossa ovalis |
| Umbilical arteries | Medial umbilical ligaments |
| Umbilical vein | Ligamentum teres hepatis(round ligament of liver) |

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| **Right to Left Shunt****Early cyanosis** | **Presistent truncus arteriosus** | Outflow failure to divide**AP septum fails to form**Often accompanying VSD | **Tricuspid atresia** | **Absence of tricuspid valve**Hypoplastic RV**Requires both ASD, VSD** |
| 22q11 syndrome |
| **Total anomalous pulmonary****venous return (TAPVR)** | **Pulmonary veins drain into right side**Requires ASD and PDA for life | **Ebstein abnormality** | **Tricuspid valve displaced towards RV apex**(atrializes ventricle)**Tricuspid regurg, right HF** |
| **Tetralogy of Fallot** | **Pulmonary stenosis**(degree determines prognosis)**RV hypertrophy**(boot heart)**Overriding aorta****VSD**Tet spell: worse outflow obstruction | Lithium in Utero |
| Alcohol in utero22q11 syndrome | **Transposition of great vessels** | **Aorta leaves RV****Pulmonary trunk leaves LV**Two separate circuits**Survival requires shunting**Surgery required |
| **Diabetic mother** |
| **Left to Right Shunt****Late cyanosis** | **Ventricular septal defect** | **Most common cardiac defect**Manifests weeks after birthMay remain asymptomatic**Can cause LV overload, HF** | **Patent ductus arteriosus** | Normal in utero, closes after birth**Patent causes progressive RVH**(leads to LVH, HF)**Machine like murmur****Late cyanosis of legs** |
| Alcohol in uteroDown syndrome | Alcohol in uteroCongenital rubella |
| **Atrial septal defect** | Interatrial septum missing tissue**Loud S1, wide fixed split S2**Asymptomic or can lead to HF**Different than patent foramen ovale** | **Eisenmenger syndrome** | **Uncorrected left-right shunt**Pulmonary HTN, RVH compensation**Becomes right-left shunt**Late cyanosis, clubbing, polycythemia |
| Alcohol in uteroDown syndrome |
| **Coarctation of aorta** | **Aortic narrowing near ductus arteriosus insertion****Brachial femoral delay**: HTN in upper extremities, weak delayed pulse in lower extremitiesIntercostal arteries provide collateral circulation, **erodes ribs****Causes HF, cerebral hemorrhage/berry aneurysm, aortic rupture, endocarditis** |
| Turner syndromeBicuspid aortic valve |