Corrected transposition of the great arteries with mild discrete subpulmonary stenosis
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Objective
Defining the presence or absence of outflow tract obstruction in case of corrected transposition of the great arteries has a great importance in postnatal management. Here, we present a discrete form of sub pulmonary stenosis in case of congenitally corrected transposition of great arteries associated with large VSD but no other associated defects.

Methods
A 23-year old woman (G1P0) was referred to our institution at 27 weeks gestation with suspected transposition of great arteries.

Results
Ultrasound examination revealed situs inversus totalis with dextrocardia. The morphological left atrium (right sided and posteriorly located) receives the pulmonary veins and is seen connected to the right sided posteriorly located morphological right ventricle (thick moderator band, rough septal trabeculations, apical offset of the tricuspid valve with visualized its septal leaflet in short axis view). The morphological right atrium (left sided) receives systemic veins (IVC and SVC) and is seen connected to the anterior retrosternal morphological left ventricle (absent moderator band with elongated its anechoic lumen reaching cardiac apex, smooth septal endocardial surface, two papillary muscles attached to free wall, two leaflets of mitral valve with no septal attachment in short axis view). This pattern of ventricular looping in the presence of dextrocardia and situs inversus is named D looping with associated discordant atrio ventricular connection. Discordant ventriculo arterial connections in which the ascending aorta arises from the morphologic right ventricle through a sub aortic conus (RVOT) and appears anterior and to the right side of the main pulmonary artery that arises from the morphologic left ventricle with absent sub pulmonary conus. Associated large outlet sub pulmonary VSD (with inlet extension facing the inlet part of LV cavity) is noted with a septal membrane seen flickering between the sub aortic and sub pulmonary regions without aneurysm formation. Characteristic high velocity jet is seen in the sub pulmonary and pulmonary valve region suggesting evidence of pulmonary stenosis. The level of the jet is clearly seen under the pulmonary valve where a discrete sub pulmonary fibro muscular membrane (vs. ridge) is seen. No other associated tricuspid valve anomalies, aortic arch coarctation or interruption or fetal arrhythmia (heart block or re-entrant tachycardia) were present. Our final diagnosis was congenitally corrected transposition of great arteries associated with discrete sub pulmonary stenosis, large inlet and outlet (sub pulmonary VSD) and situs inversus totalis with dextrocardia. This anatomic type of ccTGA represents the I,D,D type (Inversus situs, Dextrocardia, D-looped ventricles with D-transposition).

Conclusion
Sub pulmonary stenosis in case of ccTGA is a well documented anatomic association in about 30-50% of cases especially in the presence of large outlet sub pulmonary VSD that has a characteristic inlet extension (directed inferiorly and posteriorly facing the inlet cavity of the left ventricle). The combination of both VSD and sub pulmonary stenosis in ccTGA is so frequent but the anatomic type of ccTGA as the I,D,D one is rare reaching about 20% of all cases. This pattern of sub pulmonary stenosis may be in the form of fibro muscular tissue, tunnel like hypoplasia, valve stenosis, aneurysm of the membranous septum, accessory mitral valve tissue in the sub pulmonary region or may be systolic anterior motion on the mitral leaflet itself. An obvious discrete fibro muscular tissue in sub pulmonary region was seen causing sub pulmonary stenosis. To the best of our knowledge, this pattern of discrete sub pulmonary stenosis in case of ccTGA with large VSD has never been prenatally reported before. We noticed a septal membrane in the region of the VSD flickering between both sub aortic and sub pulmonary regions but with no septal aneurysm formation under the pulmonary valve. In absence of other associated anomalies, such as Ebstein malformation of tricuspid valve, Conduction
system abnormalities (heart block or re-entrant tachycardia), pulmonary atresia or ventricular hypoplasia, the short term prognosis may be good if closure of VSD and removal of the sub pulmonary obstructing fibro muscular tissue were done as an initial intervention before total repair.