



## Retrospective study of 1500 Fetal Echocardiograms over a period of five years at various centers in India

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**ABSTRACT-** After doing 1500 fetal Echocardiograms over a period of five years at multiple centers, 5 large ventricular septum defects, 11 small VSD, 1 Tetralogy of Fallot, 1 congenital transposition of great arteries, 1 pulmonary stenosis, 1 pulmonary atresia, 1 PFO restriction, 1 ASD, 1 supra ventricular tachycardia, 1 Complete heart block, 1 Ebstein Anomaly, 1 Tricuspid Atresia were found.

### I. AIM-

The aim of study is to know the prevalence of congenital heart disease in fetuses. Also fetal echo is a great tool in deciding the outcome of pregnancy as congenital heart disease is one of the main reasons for fetal demise. Another aim is to prognosticate the parents about conditions as Tricuspid Atresia which requires three stage surgeries.

### II. MATERIALS-

Voluson E8 GE echo machine with 3D and 4D probes, Phillips IE echo machine with 3D probe. Methods-

2D, colour, Doppler, 3D, echo images were taken.

4D probe was used to obtain STIC (spatio temporal image correlation) was used to obtain images Anterior to posterior and were compared with 2D images. But due to fetal movements it was not fruitful as it takes 10 seconds to store images.

Doll method was used to identify right, left sides of the fetus.

Pulse wave Doppler was used to obtain 1:1 AV conduction and to calculate fetal heart rate by placing it on mitral-aortic junction.

Colour was used to detect regurgitation and was confirmed by Doppler. Sweets were given to non Diabetic mothers to reduce fetal movements.

Two to three times mothers were asked to lie down in supine positions if images were not obtained nicely.

Many times mothers were asked to review after two weeks to obtain clear images.

Four chambers view, five chambers view, RVOT views, arch views and ductal arch views were obtained and colour and Doppler were obtained in each view.

Case Scenarios-

1. Ventricular septum defects- 5 large non restrictive perimembranous VSD were found bidirectional shunt.

Size of VSD was decided by the size of aortic annulus. 11 small muscular were found which were followed and spontaneously closure was observed.

2. Atrioventricular septal defect- 2 cases of Complete AVSD were found with large inlet VSD and large ostium primum ASD with common AV valve regurgitation.

3. Tetralogy of Fallot – 1 case of TOF was found with large perimembranous VSD and severe pulmonary stenosis measured by Doppler as 3.5 meter per second.

4. Pulmonary stenosis- 1 case of pulmonary stenosis with pulse Doppler velocity of 3 meter per second.

5. Ebstein Anomaly- 1 case of Ebstein Anomaly was diagnosed with severe TR. This case was referred by radiologists as Severe TR.

6. Congenital transposition of great artery- 1 case of CTGA was found with intact septum with TR with no pulmonary stenosis with situs inversus of abdominal organs also.

7. PFO restriction- 1 case of PFO restriction was found at 30 weeks gestation. The mother was on NSAIDS for placental insufficiency. The fetus had severe TR, RA, RV enlarged. The baby didn't survive.

8. Supra ventricular tachycardia- 1 case of SVT was found with HR 210 at 24 weeks of gestation. Tab metoprolol 25 mg twice daily was given. At 32 weeks gestation the mother came for fetal echo and pericardial effusion, TR, MR was found and pregnancy was terminated.

9. Complete heart block- 1 case was referred by radiologists with fetal heart rate 80 beats per minute. Pulse Doppler placed on mitral-aortic junction showed Complete AV dissociation. Anti Ro, anti-La were positive. High dose steroids were started by Gynecologist. Fetal echo was serially done and at 36 weeks gestation Cesarean section was done. Post delivery the heart rate was 90 beats per minute with Complete AV dissociation in ECG. No structural heart abnormality was found.

10. Atrial septal defect- 1 case of ASD was found. Although it is difficult to say with confidence but there was no PFO flap. Mother did not come for followup.

11. Tricuspid Atresia- 1 case of Tricuspid Atresia was found with large VSD with no Pulmonary stenosis and Good sized pulmonary artery branches. The three stage surgeries post delivery were discussed with



parents and the choice of medical termination of pregnancy was left to them.

12. Pulmonary Atresia- 1 case of Valvular pulmonary atresia was found with intact septum with TR with PDA supplying branch PAs.

13. Echogenic focus- 2 to 3 echogenic focuses in LV or RV have been found in many cases cases, nearly one in every 10 cases . These are usually calcifications that cause no hemodynamic disturbances. On follow up they may be seen postnatally. These are associated with chromosomal abnormalities.

Limitations of the study-

1. Follow up of cases was not done as the pregnant mothers did not come for followup.
2. Record of the fetal echo was not kept due to heavy load of level II fetal ultrasound scans.

### III. DISCUSSION-

Fetal Echocardiograms are a necessity these days just like level II fetal ultrasound scans because congenital heart disease is one of the major causes of fetal demise. Due to scarcity of specialists fetal Echocardiograms can not be done in every case but since fetal ultrasound scans are being done in nearly every pregnancy, the radiologists should suspect congenital heart disease and refer suspect cases to pediatric cardiologist so that a full study can be done. In severe cases like single ventricle and Tricuspid Atresia, the parents can be prognosticated regarding termination of pregnancy or go for three stage surgeries. Progressive congenital heart disease like pulmonary stenosis and aortic stenosis should be followed as they may lead to Hypoplastic left heart syndrome. Fetal interventions for critical aortic stenosis and severe PFO restriction are being done but do not have praiseworthy outcomes.

### REFERENCES-

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