

[04-032]

Preliminary results from 5 years of the STOP BLOQ study (Surveillance To Prevent AV Block Likely to Occur Quickly)

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Objective: To summarize preliminary results from the STOP BLOQ prospective clinical trial of anti-SSA/Ro+ pregnancies.

Methods: Anti-SSA/Ro+ pregnant subjects were stratified into low and high antibody titer groups at the core laboratory. High-titer subjects underwent 3x/day ambulatory fetal heart rate monitoring (FHRM) and frequent (weekly, every other week) fetal echocardiograms (FE) to detect atrioventricular block (AVB) and extranodal disease between 17-26 weeks; low-titer subjects had routine FE or no surveillance. After delivery, all neonates underwent 12-lead electrocardiograms.

Results: We enrolled 885 subjects at 26 unique centers; all have completed prenatal surveillance. All disease occurred in high-titer pregnancies: 10/569 developed 2° or 3° AV block at 18-23 weeks detected by FHRM, two subjects had initial AV valvulitis and endocardial fibroelastosis (EFE) that progressed to AVB or tricuspid valve (TV) chordal rupture. Low-titer subjects (304/885) had no conduction or extranodal disease. Isolated EFE or TV insufficiency did not predict disease progression.

Conclusion: Maternal antibody titer levels effectively differentiated pregnancies at higher risk for fetal AVB. Ambulatory FHRM reliably detected AVB. Preliminary findings suggest surveillance for fetal AVB can be limited to high-titer pregnancies between 18-23 weeks' gestation. Isolated extranodal findings were rare and only bilateral AV valve insufficiency combined with EFE predicted progression.

[04-033]

Neonatal ECG results of the STOP BLOQ study (Surveillance To Prevent AV Block Likely to Occur Quickly)

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Objective: To determine if atrioventricular block (AVB) develops in anti-SSA/Ro+ pregnancies after uneventful surveillance between 17-26 weeks' gestation, and to characterize differences in neonatal electrocardiogram (ECG) intervals according to maternal antibody titers (high vs. low).

Methods: Anti-SSA/Ro+ pregnant subjects were stratified into high and low-antibody-titer groups based on core-lab testing. High-titer subjects underwent 3x/day fetal heart rate monitoring and weekly or biweekly fetal echocardiograms (FE) to detect AVB between 17-26 weeks; low-titer subjects had routine FE or no surveillance. After delivery, all neonates underwent 12-lead ECGs.

Results: We enrolled 885 anti-SSA/Ro+ pregnancies from 26 North American centers. Fetal 2° and 3° AVB, but not 1° AVB, developed in 10 high-titer pregnancies between 18-23 weeks' gestation. A total of 569 neonatal ECGs were obtained (374 high-titer and 195 low-titer). Apart from known fetal AVB subjects, all neonates demonstrated normal sinus rhythm with normal conduction. ECG intervals did not differ between neonates with high and low maternal titers.

Conclusion: No late conduction system disease occurred and maternal titer levels were not associated with neonatal ECG intervals. These findings suggest that surveillance can be limited to high titer pregnancies between 18-23 weeks' gestation and routine postnatal ECGs are not indicated

[04-034]

Risk-Stratified vs. Universal Screening for Fetal Congenital Heart Block in Anti-SSA/SSB Pregnancies: A Decision-Analytic Simulation of Multiple Surveillance Strategies

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Objectives: Prenatal detection of early-stage congenital heart block (CHB) in anti-SSA/SSB-positive pregnancies may allow intervention before progression to complete block, yet screening guidelines remain conflicting. Following our report of low yield with universal PR-interval screening, we compared the performance of multiple risk-targeted surveillance strategies.

Methods: Simulation analysis using a cohort of 124 anti-SSA/SSB-positive singleton pregnancies undergoing universal serial PR-interval screening. Individual and combined screening strategies were evaluated, including prior CHB history, anti-Ro/SSA titer thresholds, maternal SLE diagnosis, dual SSA/SSB positivity, and isolated anti-SSB positivity. Outcomes included projected CHB detection, false negatives, and ultrasounds saved per 1,000 pregnancies.

Results: Universal surveillance identified 3 CHB cases (2.4%), including 2 potentially modifiable incomplete blocks detected only after 30 weeks despite intensive surveillance, with 1 case per 359 ultrasounds. Anti-Ro/SSA titer-based strategies performed best, detecting all observed CHB cases while reducing burden by 342 ultrasounds per 1,000 pregnancies. Adding exclusion of isolated anti-SSB pregnancies achieved the greatest reduction, saving 392 ultrasounds per 1,000 with no projected false negatives.

Conclusions: Titer-guided surveillance may preserve CHB detection while substantially reducing screening burden. These findings support risk-targeted yet sustained surveillance as an alternative to universal screening, potentially extending surveillance beyond 28 weeks.

[04-035]

Multi-center generalizability for deep-learning-enabled congenital heart disease screening

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Congenital heart disease (CHD) is the most common birth defect; prenatal detection is critical. Second-trimester ultrasound is universally recommended for CHD screening, but performance is variable and can be low in community settings, where most pregnancies occur. Deep learning (DL) has shown promise for CHD detection. However, clinical adoption is limited by the need for generalizable performance across diverse healthcare settings. Here, we report a multi-center trained and tested, end-to-end DL pipeline for CHD screening. The pipeline simplified fetal screening by relying on only three views and dispensing with all human-in-the-loop checks. We trained on 729,840 images from 11 medical centers, spanning 10 states and two countries and covering diverse imaging protocols, equipment, and patient populations. Our pipeline achieved $96.7 \pm 5.6\%$ (range: 90-100) sensitivity and $97.8 \pm 2.2\%$ (range: 95-99) specificity on 8,375 screening ultrasounds across three external centers (2% CHD). Performance was robust for exams with few stored images, as is common in community settings. On fetal echocardiograms from four external centers (34% CHD), specificity was $99.8 \pm 0.4\%$ (range: 99.1-100), indicating the potential to apply the pipeline at referral centers. Our results achieve clinical-grade screening for one of the most difficult, high-volume diagnostic problems in ultrasound.

[04-036]

Expanding Fetal Cardiac Care Through Telehealth

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Background: Prenatal diagnosis of congenital heart disease (CHD) improves outcomes and facilitates family counseling and delivery planning. Utah is a large rural state with a single pediatric cardiac center, requiring many families to travel long distances for specialized care, including fetal echocardiograms.

Methods: A fetal cardiology telehealth program was developed in 2021. A Maternal-Fetal Medicine (MFM) sonographer was trained to perform fetal echocardiograms. Studies were performed at a local MFM clinic (4.5 hrs away from cardiac center) with real-time image review and communication between the fetal cardiologist and sonographer. Families received audiovisual counseling during the visit. Initially focused on low-risk screening indications, the program has expanded to include more complex cardiac abnormalities.

Results: A total of 277 fetal echocardiograms have been performed through the telehealth clinic. Cardiac abnormalities were identified in 86 cases (31%). The program saved more than 170,000 driving miles and 2,500 travel hours for families. Diagnostic accuracy was high, with one false-positive and one false-negative result, both involving ventricular septal defects.

Conclusions: Fetal cardiac care by telehealth is feasible and highly accurate when supported by a trained sonographer and real time image review, substantially improving access to specialized fetal cardiac care for rural and remote populations.

[04-037]**International Fetal Cardiac Intervention Registry: 25-Years of Worldwide Outcomes and Future Directions****Thomas Sequeira Przybycien**

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Though experience with fetal cardiac interventions (FCI) is growing worldwide, outcomes remain guarded. The International Fetal Cardiac Intervention Registry (IFCIR) database was queried from January 2001 to November 2025 for details of diagnoses, procedures, and outcomes. High and low volume centers were subset for exploratory analysis. Twenty-nine institutions submitted 884 cases, 458 underwent FCI. Overall 302 patients underwent aortic valvuloplasty (FAV), 75 pulmonary valvuloplasty (FPV), 77 atrial septal interventions (FASI), and 5 unclassified. Fetal procedural mortality was 15%. When excluding termination of pregnancy, unknown outcome cases, and those that did not meet fetal criteria for FCI, survival to neonatal discharge was similar for FCI and non-FCI groups (45.6% vs 51.2%). More patients were discharged with biventricular circulation if they underwent successful aortic valvuloplasty (55.2% vs 7.8%), pulmonary valvuloplasty (83.7% vs 35.7%), and atrial septal intervention (6.3% vs 0). The higher volume centers performed 89.6% of FCI with modestly better procedural success (75% vs 68%). If FCI was successful, biventricular circulation at discharge was more likely if done at high volume FAV (42.3% vs 37.5%), FPV (75% vs 50%) and FASI (5.8% vs 0) centers. Accumulated experience with FCI shows improved outcomes across disease groups particularly in highly experienced centers.

[04-038]

Fetal Cardiac Rhabdomyoma: Prenatal Diagnosis, Management, and Postnatal Outcomes — A Single-Center Cohort

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We aim to characterize prenatal features, management strategies, and postnatal outcomes in pregnancies complicated by fetal cardiac rhabdomyoma (CR).

We conducted a retrospective cohort study of prenatally diagnosed fetal CR at a single tertiary referral center. Cases were excluded if the pregnancy was ongoing or postnatal CR was not confirmed. Prenatal echocardiographic findings, genetic testing results, sirolimus use, and postnatal outcomes were abstracted. Primary outcomes included postnatal tuberous sclerosis (TSC) diagnosis, seizures, neurodevelopmental delay, and neuroimaging findings.

Of 28 identified cases, 1 ongoing pregnancy was excluded, yielding 27 for analysis. Four (15%) underwent termination of pregnancy. Of 23 live births, 4 had no postnatal CR confirmed and were excluded, leaving 19 for outcome analysis. Prenatal sirolimus was administered in 1 case (5%); postnatal sirolimus or everolimus was initiated in 11 (58%). TSC was confirmed postnatally in 11 neonates (58%; TSC2 in 10). Seizures or epilepsy occurred in 9 (47%), neurodevelopmental delay in 10 (53%), subependymal nodules in 11 (58%), and cortical tubers in 11 (58%) on postnatal MRI.

Prenatally diagnosed CR carries substantial postnatal TSC-related morbidity, yet prenatal mTOR inhibitor use remains rare. These findings support prospective evaluation of sirolimus initiation earlier than current guidelines recommend, to reduce postnatal burden.

[04-039]

Impact of Social Drivers of Health on Fetal Growth in Critical Congenital Heart Disease

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Background: Critical congenital heart disease (CCHD) often requires surgery within the first month of life, and poor somatic growth increases the risk of adverse outcomes. We evaluated the relationship between social drivers of health (SDOH), measured by the PRAPARE screener, and growth in fetuses with prenatally diagnosed CCHD.

Methods: All pregnant individuals with a fetal CCHD diagnosis completed PRAPARE screening. Mixed-effects linear regression with a patient-level random intercept assessed associations between PRAPARE score (0, 1–2, ≥ 3) and fetal growth, while linear regression evaluated birthweight. Models were adjusted for gestational age and single vs. biventricular physiology, with results reported as predicted fetal weight percentiles and birthweight.

Results: Among 83 included cases, all had fetal growth data and 62 (74.7%) had birthweight recorded thus far. Higher PRAPARE scores were significantly associated with lower fetal growth (Wald $\chi^2=13.4$, $p=0.001$), but effects lessened later in gestational age (Wald $\chi^2=7.3$, $p=0.03$). Fetuses with PRAPARE ≥ 3 had consistently lower predicted weight percentiles. No significant association was observed between PRAPARE and birthweight adjusting for gestational age and CCHD type.

Conclusions: SDOH may influence fetal growth early in pregnancy, though differences appear to attenuate over time. Future studies will examine specific SDOH components and infant growth through 1-year.

[04-040]

**Chorio Vitelline Placenta (CVP) A cryptic Fetal Anomaly;
In Utero Ultrasonographic Study****REUVEN ACHIRON, Shlomo Lipitz**

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Background: In humans, the chorio-vitelline circulation is a transient embryonic system that provides early nutrient supply from the yolk sac via the vitelline vein. It is normally replaced by the allantoic (umbilical) circulation with the establishment of the chorio-allantoic placenta.

Objective: To describe our experience with prenatal diagnosis of persistent chorio-vitelline placentation and to assess its clinical significance.

Methods: This retrospective case series. Fetuses demonstrating a characteristic sonographic finding—an enlarged vein with a caudal course from the umbilical annulus to the hepatic hilum—were included

Results: Four cases were identified. Mean gestational age at diagnosis was 19.5 ± 4.3 weeks (range 13–23). All cases demonstrated a persistent vitelline vein with aneurysmal dilatation and abnormal intrahepatic venous anatomy. One pregnancy resulted in intrauterine demise at 28 weeks. Among live births, mean gestational age at delivery was 34.6 ± 5.0 weeks, with appropriate birth weight centiles. Postnatally, portal venous thrombosis occurred in two cases—one requiring anticoagulation and one resolving spontaneously. In surviving infants, the anomalous vein regressed within six months, with normal neurodevelopment on follow-up.

Conclusion: Persistent chorio-vitelline placentation is associated with a risk of portal venous thrombosis and warrants careful prenatal and postnatal surveillance.