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# OSCE in Fetal Medicine & Genetics

*Editor-in-Chief*
**Jaydeep Tank**

*Editors*
**Seetha Ramamurthy Pal • Jaya Chawla**

*Forewords*
**Ashok Khurana • S Suresh**

JAYPEE

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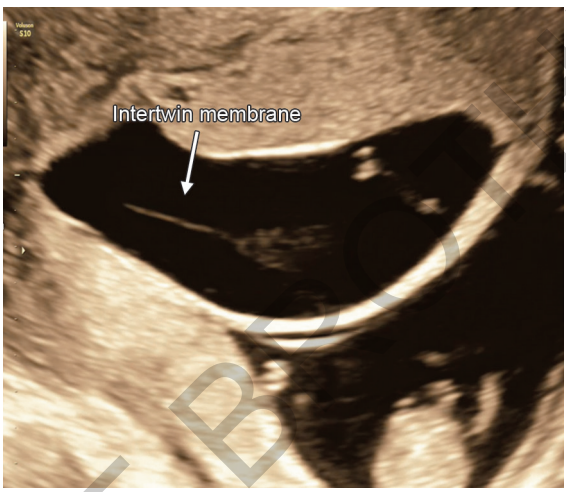
CHAPTER 5

# Screening in Multifetal Gestations

*Seetha Ramamurthy Pal*

**STATION 1.**




1. **Identify the type of triplets.**
2. **Can a combined first trimester screening be offered?**
3. **What is the best method of screening?**

**Ans.**

1. Dichorionic triamniotic triplets
2. No. Though the risk of aneuploidy in a trizygotic triplet is higher than in singleton or dizygotic pregnancies, serum screening is not validated in both trichorionic triamniotic triplets and dichorionic triamniotic triplets.
3. Nuchal translucency (NT)-based screening with maternal age is the best option.

## SUGGESTED READING

1. Gibson JL, Castleman JS, Meher S, Kilby MD. Updated guidance for the management of twin and triplet pregnancies from the National Institute

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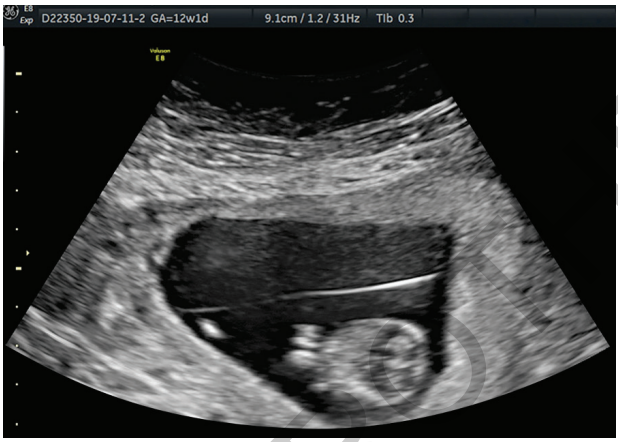
for Health and Care Excellence guidance, UK: What's new that may improve perinatal outcomes? Acta Obstet Gynecol Scand. 2020;99(2):147-52.
2. Kim M, Oh J, Kim H, Lee S, Park C, Park J, et al. Performance of Down's syndrome screening in triplet pregnancy with combination of maternal age and nuchal translucency. Ultrasound Obstet Gynaecol. 2016;48(S1):107.

## STATION 2.




1. **What is the type of placentation?**
2. **What is the risk of T21 in each monochorionic diamniotic (MCDA) twins?**
3. **How is the risk calculated?**
4. **What is the sensitivity of combined first trimester screening (FTS) in MCDA twins?**

### Ans.

1. MCDA twins
2. The risk of trisomy 21 is calculated per pregnancy because the twins share the same karyotype.
3. Risk is calculated by taking the average of NT of both the fetuses and average of the calculated risk.
4. 87% for a false positive rate (FPR) of 5%

### SUGGESTED READING

1. Khalil A, Sotiriadis A, Baschat A, Bhide A, Gratacós E, Hecher K, et al. ISUOG Practice Guidelines (updated): role of ultrasound in twin pregnancy. Ultrasound Obstet Gynecol. 2025;65(2):253-76.

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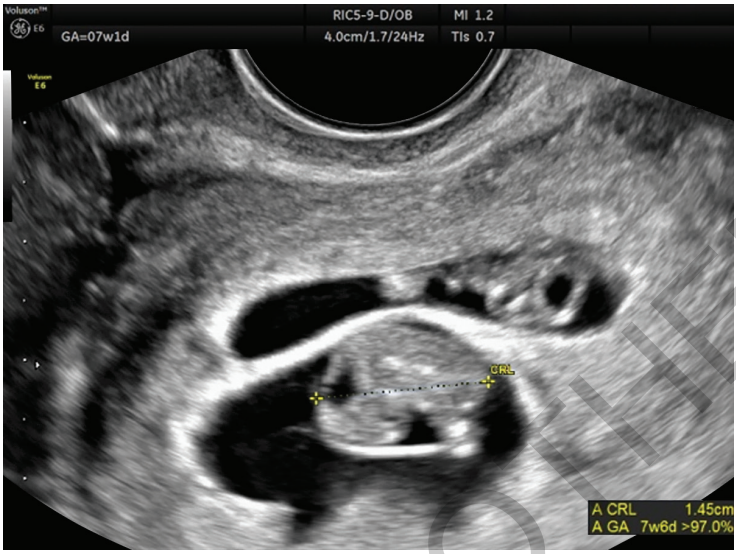
**STATION 3.**




1. **Identify the type of placentation.**
2. **Sensitivity of combined first trimester screening (CFTS) in such twins.**
3. **What is the aneuploidy risk in each of the twins?**
4. **How is the risk calculated?**

**Ans.**

1. Dichorionic diamniotic (DCDA) placentation
2. 86% for FPR of 5%
3. In dizygotic twins the maternal age-related risk for chromosomal abnormalities for each fetus is the same as in singleton pregnancies. Therefore, in a woman with dichorionic twins the chance that at least one fetus is affected by a chromosomal defect is twice as high as in singleton pregnancies.
4. The risk is calculated per fetus as 90% of them are dizygotic, so have different karyotypes.

## SUGGESTED READING

1. Khalil A, Sotiriadis A, Baschat A, Bhide A, Gratacós E, Hecher K, et al. ISUOG Practice Guidelines (updated): role of ultrasound in twin pregnancy. Ultrasound Obstet Gynecol. 2025;65(2):253-76.
2. The Fetal Medicine Foundation, the 11–13 weeks scan/education.

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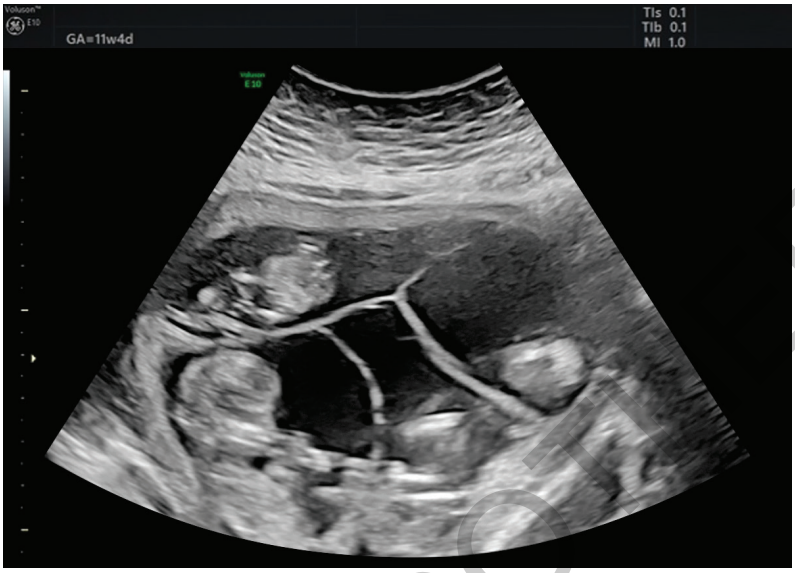
## STATION 4.




1. **How is labelling of fetuses done in multiple pregnancies?**
2. **Can CFTS be offered in higher order multiples?**
3. **Can noninvasive prenatal screening (NIPS) be offered in higher order multiples?**
4. **What type of screening can be offered in higher order multiples?**

### Ans.

1. Labelling of fetuses is done in an anticlockwise fashion with the fetus near the os as twin A. Labelling should be a descriptive one, based on lateral or vertical orientation of the gestational sac, placental site (if relevant) and cord insertions of each fetus.
2. CFTS cannot be offered in higher order multiples as there is no study validating the role of serum screening in higher order multiples.
3. No, NIPS is also not validated for higher order multiple pregnancies.
4. Screening in higher order multiples is usually by maternal age combined with ultrasound markers such as NT.

### SUGGESTED READING

1. Odibo AO, Lawrence-Cleary K, Macones GA. Screening for aneuploidy in twins and higher-order multiples: is first-trimester nuchal translucency the solution? Obstet Gynecol Surv. 2003;58(9):609-14.

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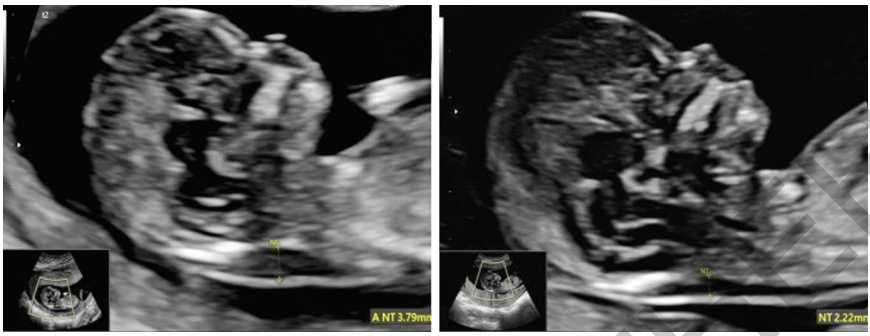
**STATION 5. A 28-year-old primigravida, conceived with IVF with DCDA twins, comes for CFTS. The scan shows discordant NT with NT >95th centile in one twin.**




1. **How is NT discordance defined as?**
2. **What are the implications of discordant NT in DCDA twins?**
3. **What are the implications of discordant NT in MCDA twins?**
4. **What is the sensitivity of discordant NT in predicting twin-to-twin transfusion syndrome (TTTS) in MCDA twins?**
5. **Can non-invasive prenatal testing (NIPT) be offered?**

**Ans.**

1. Nuchal translucency discordance is commonly defined as a discrepancy in NT of at 20% between the two fetuses.
2. In DC twin pregnancies with no major fetal abnormalities, the incidence of NT ≥95th percentile in one or both fetuses is associated with increased risk of aneuploidy in that particular fetus.
3. The finding in one or both fetuses of NT ≥95th percentile, and more so NT ≥99th percentile, is associated with a 10% increased risk of fetal loss or need for endoscopic laser surgery at <20 weeks' gestation.
4. Discordance in NT of ≥20% is found in around 25% of monochorionic twins and has <50% sensitivity for predicting TTTS.
5. NIPT should not be offered in the presence of increased NT. Ideally invasive testing of both fetuses is recommended to rule out aneuploidy or genetic syndromes.

## SUGGESTED READING

1. Cimpoca B, Syngelaki A, Litwinska E, Muzaferovic A, Nicolaides KH. Increased nuchal translucency at 11-13 weeks' gestation and outcome in twin pregnancy. Ultrasound Obstet Gynecol. 2020;55(3):318-25.

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**STATION 6. Shown below is the NIPS report of a primigravida with DCDA twins.**

| | | | |
|---|---|---|---|
| Patient Name | | Requesting Clinician | |
| Date of Birth | 30-04-1991 | Hospital Information | |
| Maternal age at EDD | 33 Years & 10 Months | Hospital No. | NA |
| Maternal weight | 75.2 kg | Samples Collected | 14-09-2024, 16:10 |
| Gestational age | 13 weeks / 1 days | Samples Received | 17-09-2024, 11:10 |
| Sample ID / Order ID | 8709885 / 1053700 | Order Created | 17-09-2024, 12:06 (Maternal blood only) |
| Clinical Indication for NIPS | Non Invasive Prenatal Screening for specific chromosomal abnormalities | Report Date | 23-09-2024, 14:42 |

RESULT SUMMARY : TWINS

LOW RISK

Fetal fraction 8.8%

Result Details: Aneuploidies

| CHROMOSOME TESTED | ANEUPLOIDY | LLR Score (Trisomy) | High Risk LLR cut-off * (Trisomy) |
|---|---|---|---|
| CHROMOSOME 21 | Low Risk | -6.02 | ≥2. 5 |
| CHROMOSOME 18 | Low Risk | -4.48 | ≥3 |
| CHROMOSOME 13 | Low Risk | -6.42 | ≥3 |

*These cut-offs are subjected to variation based on periodic statistical review of data.

1. **What is the sensitivity of NIPT in twins?**
2. **Can we use NIPT in twins discordant for fetal anomaly or NT?**
3. **What is the limitation of NIPT in twins?**

**Ans.**

1. Overall sensitivity of NIPS in twins is 95%.
2. No. As a general rule, NIPS should never be done in the presence of a fetal structural anomaly or NT >95th centile.
3. Screen positive needs invasive testing from both the fetuses as NIPS does not identify which fetus is at risk.

## SUGGESTED READING

1. Gil MM, Galeva S, Jani J, Konstantinidou L, Akolekar R, Plana MN et al. Screening for trisomies by cfDNA testing of maternal blood in twin pregnancy: update of The Fetal Medicine Foundation results and meta-analysis. Ultrasound Obstet Gynecol. 2019;53:734-42.
2. Khalil A, Archer R, Hutchinson V, Mousa HA, Johnstone ED, Cameron MJ, et al. Noninvasive prenatal screening in twin pregnancies with cell-free DNA using the IONA test: a prospective multicenter study. Am J Obstet Gynecol. 2021; 225(1).

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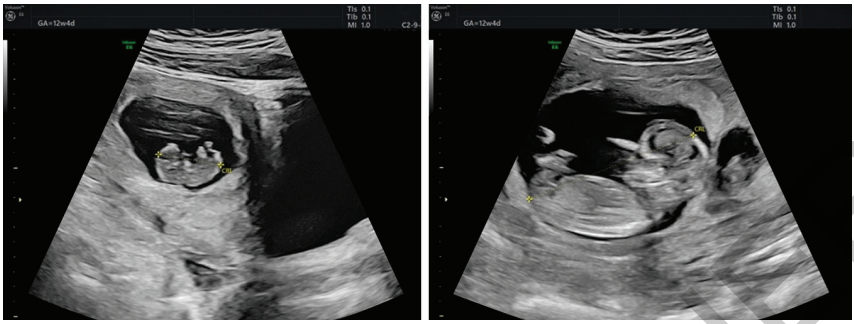
**STATION 7. A 28-year-old DCDA twins with early embryonic demise of one twin.**



1. **Which serum marker gets affected in a vanishing twin?**
2. **What is the ideal method of screening in vanishing twin?**
3. **What is the minimum interval beyond which serum screening can be done?**
4. **Vanishing twin in cases of MCDA twins can be sign of future_____.**

**Ans.**

1. Pregnancy-associated plasma protein-A (PAPP-A). PAPP-A multiples of the median (MoM) are higher both in the group with an empty gestational sac and in those with a dead embryo; in the latter group, the effect of a vanishing twin on PAPP-A MoM is larger the closer the demise of the twin is to blood sampling.
2. First-trimester screening for trisomy in pregnancies with a vanishing twin should rely on a combination of maternal age, fetal nuchal translucency thickness only or with serum free beta-human chorionic gonadotropin (β-hCG), without the use of serum PAPP-A.
3. Minimum interval is 14 weeks.
4. Twin reversed arterial perfusion (TRAP) sequence

## SUGGESTED READING

1. Chaveeva P, Wright A, Syngelaki A, Konstantinidou L, Wright D, Nicolaides KH. First-trimester screening for trisomies in pregnancies with vanishing twin. Ultrasound Obstet Gynecol. 2020;55(3):326-31.

**STATION 8. A 35-year-old woman, conceived on intrauterine insemination (IUI) with DCDA twins with USG findings of twin A at CFTS screening.**

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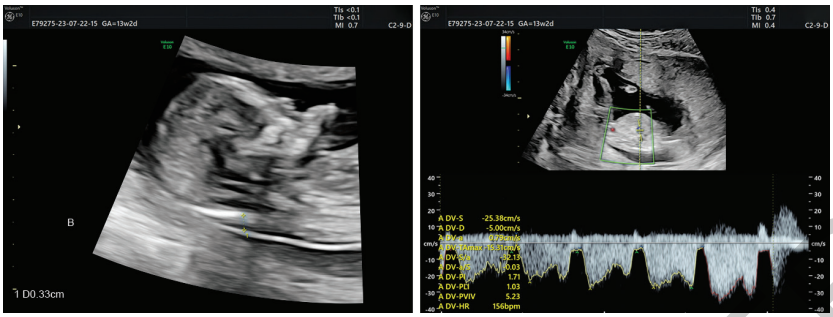



1. **Describe the ultrasound findings?**
2. **What is the next step?**
3. **Which invasive test is preferred in DCDA twins?**
4. **What is the most essential step before invasives in multiple pregnancy?**

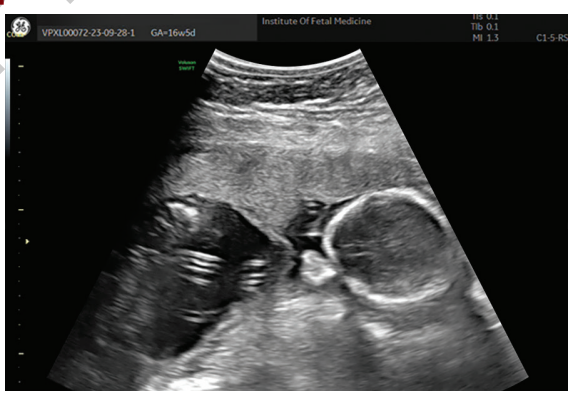
**Ans.**

1. Increased NT, hypoplastic NB, and "a" wave reversal in ductus venosus in one twin.
2. Ideally invasive testing should be the next step.
3. Both chorionic villus sampling (CVS) and amniocentesis can be done; however CVS has the advantage of providing early results.
4. The most essential step before an invasive procedure is correct mapping and labelling of the fetuses using as many details as possible.

## SUGGESTED READING

1. Khalil A, Sotiriadis A, Baschat A, Bhide A, Gratacós E, Hecher K, et al. ISUOG Practice Guidelines (updated): role of ultrasound in twin pregnancy. Ultrasound Obstet Gynecol. 2025;65(2):253-76.

## STATION 9.

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1. **What is the recommended method to perform invasives in twins?**
2. **Which is better—two puncture technique or single puncture technique?**
3. **What is the risk of fetal loss for invasives in multiple pregnancy?**

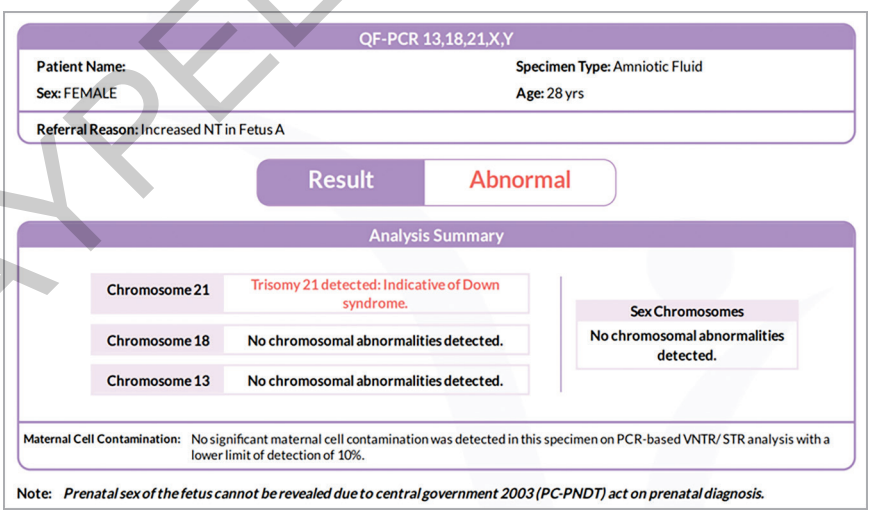
**Ans.**

1. Regarding invasives in multiple pregnancy, sampling of both the sacs is recommended. In MCDA twins, if fetal growth and anatomy are concordant, single sac sampling can be done.
2. Generally, two-puncture technique is preferred.
   With two-puncture technique there is a small risk of sampling same sac twice and with single-puncture technique, there is a risk of inadvertent amniotomy of the intertwin membrane. The risk of fetal loss has not been shown to be increased with the two-puncture compared with the single-puncture technique.
3. 2% risk of fetal loss. No increase in risk over baseline risk.

## SUGGESTED READING

1. Di Mascio D, Khalil A, Rizzo G, Buca D, Liberati M, Martellucci CA, et al. Risk of fetal loss following amniocentesis or chorionic villus sampling in twin pregnancy: systematic review and meta-analysis. Ultrasound Obstet Gynecol. 2020;56(5):647-55.

**STATION 10. Attached is the quantitative fluorescent polymerase chain reaction (QF-PCR) report following amniocentesis of DCDA twins with NT >95th centile in one fetus.**



QF-PCR 13,18,21,X,Y

Patient Name:
Sex: FEMALE
Specimen Type: Amniotic Fluid
Age: 28 yrs

Referral Reason: Increased NT in Fetus A

Result: Abnormal

Analysis Summary

| | |
|---|---|
| Chromosome 21 | Trisomy 21 detected: Indicative of Down syndrome. |
| Chromosome 18 | No chromosomal abnormalities detected. |
| Chromosome 13 | No chromosomal abnormalities detected. |

Sex Chromosomes: No chromosomal abnormalities detected.

Maternal Cell Contamination: No significant maternal cell contamination was detected in this specimen on PCR-based VNTR/ STR analysis with a lower limit of detection of 10%.

Note: *Prenatal sex of the fetus cannot be revealed due to central government 2003 (PC-PNDT) act on prenatal diagnosis.*

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**ABOUT THIS TEST:**

Prenatal Aneuploidy Test evaluates genetic information in the sample (amniotic fluid/CVS/POC) provided, to detect aneuploidy of chromosomes 13, 18, 21, X or Y. This test does not detect other chromosomal or structural anomalies. Low level mosaicism involving chromosomes 13, 18, 21 X or Y may not be detected by this procedure.

**PRENATAL ANEUPLOIDY TEST REPORT**

| | | | |
|---|---|---|---|
| Patient Name | Fetus of | Order ID/Sample ID | 722468/8100240 |
| Gender | NK | Sample Type | Amniotic fluid |
| Maternal Age | 28 Years | Date and Time of Samples Receipt | 15.08.2023 15:30 |
| Mother's Sample ID | 8100242 | Order Booked Date and Time | 16.08.2023 13:16 |
| Referring Clinician | | Date of report Generation | **21.08.2023** |

**CLINICAL DIAGNOSIS / SYMPTOMS / HISTORY**

The subject (Fetus B) is being tested for common chromosomal abnormalities by QF-PCR analysis. The antenatal findings revealed (DCDA twins). Twin A with increased nuchal translucency (>95th centile) and absent nasal bone.

**REPORT SUMMARY**

**No aneuploidy detected in Chromosomes 21, 18, 13 and sex chromosomes**

| Condition Tested | Result |
|---|---|
| **TRISOMY 21** | No aneuploidy detected. |
| **TRISOMY 18** | No aneuploidy detected. |
| **TRISOMY 13** | No aneuploidy detected. |
| **Sex Chromosomes** | No aneuploidy detected. |

**Interpretation:**

Results are consistent with two copies of chromosomes 21,18, 13 and two sex chromosomes. The Amniotic fluid is not contaminated with maternal cells/tissues.
Note : No maternal alleles (markers) were found in the fetal genotype at 11 loci which is consistent with either egg donor or surrogate pregnancy. A detailed history and clinical correlation are recommended.

**Testing method:**

DNA is isolated from amniotic fluid/CVS/POC and using Devyser Compact v3 kit the markers specific to the chromosomes 13, 18, 21, X and Y are amplified. The amplified markers are then subjected to capillary electrophoresis. The data is analysed using GeneMapper ™(Thermofisher) and interpreted to determine aneuploidy of fetus for specific chromosomes.

1. **What are the further options?**
2. **What is the most essential part of selective reduction following invasive testing?**
3. **What is the preferred method of selective reduction in DCDA twins?**
4. **What is the rate of pregnancy loss in cases of selective reduction in DCDA twins?**

**Ans.**

1. Continuation of pregnancy or selective reduction of the affected twin.
2. Ideally the same operator who has performed the diagnostic test should perform the selective reduction as well.
3. The preferred method is by USG-guided intracardiac potassium chloride (KCl) or lignocaine.
4. Between 2.1 and 5.8%.

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## SUGGESTED READING

1. Beriwal S, Impey L, Ioannou C. Multifetal pregnancy reduction and selective termination. Obstet Gynaecol. 2020;22(4):284-92.

**STATION 11. A 38-year-old P1 + 0, conceived spontaneously with MCDA twins with one twin with signs of acrania.**

1. **What are the further options?**
2. **What is the best method of termination in MCDA twins?**
3. **Why cannot KCl be used for selective reduction in MCDA twins?**
4. **What are the complications that can happen?**

**Ans.**

1. Selective reduction of the affected twin. For conditions that are lethal and carry a high risk of intrauterine demise, selective reduction of the affected twin should be done to protect the healthy cotwin against the adverse effects of spontaneous demise of the other.
2. Selective fetal reduction can be done by bipolar cord coagulation, radiofrequency ablation or intrafetal laser ablation.
3. Injection of KCl in the affected twin can cause demise of the surviving twin due to the presence of vascular anastomosis between the twins.
4. In MCDA twins, fetal loss is higher when the procedure is performed before 18 weeks of gestation. The overall survival is higher with bipolar cord coagulation (BCC) [BCC 84% vs. radiofrequency ablation (RFA) 73%], but the incidence of preterm premature rupture of membranes (PPROM) is lower with RFA.

## SUGGESTED READING

1. Beriwal S, Impey L, Ioannou C. Multifetal pregnancy reduction and selective termination. Obstet Gynaecol. 2020;22(4):284-92.

**STATION 12. A 28-year-old primigravida, conceived by in vitro fertilization and embryo transfer (IVF-ET) and DCDA twins has come with a quadruple screening report at 17 weeks which shows high risk of T21 in one twin.**

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Ref Dr. : Dr.DIBYENDU BANERJEE
Collection Date : 11/April/2025 02:18PM
Report Date : 12/April/2025 07:41PM

| Test Name | Result | Unit | Bio Ref. Interval |
|---|---|---|---|
| DOUBLE MARKER (MATERNAL) SCREEN 1ST TRI MESTER GEL SERUM | | | |
| PAPP - A (Method:CLIA) | 3.44 | mIU/mL | For biological reference interval of parameters papp-a and hcg-free beta, refer to the individual established moms corresponding to the specific test parameters; indicated in the supplementary risk assessment sheet. |
| HCG, FREEBETA (Method:CLIA) | 261 | ng/mL | |
| ESTIMATED TWICE WITH DILUTION | | | |
| NT Value (Method:MEASURED BY SONOGRAPHY) | F1-1.4/F2-1.5 | mm | |

| Disorder | Risk Ratio | Risk category | Screen Result |
|---|---|---|---|
| Down Syndrome (Trisomy 21) | F1-1.79<br>F2-1.84 | HIGH | POSITIVE |
| Edwards Syndrome (Trisomy 18) | F1-<1:10000<br>F2-<1:10000 | LOW | NEGATIVE |
| Patau's Syndrome (Trisomy13) | F1-<1:10000<br>F2-<1:10000 | LOW | NEGATIVE |

**Critical alert level ,**

**Immediate medical attention required.**

**Tried to contact with reffering doctor but failed due to unavoidable circumstances.**

**Patient data**

| | | | |
|---|---|---|---|
| Name | | Patient ID | PR0036483 |
| Birthday | | Sample ID | E03122303465 |
| Age at delivery | 39.7 | Sample Date | 11/04/25 |
| Gestational age | 12 + 4 | | |

**Correction factors**

| | | | | | |
|---|---|---|---|---|---|
| Fetuses | 2 | IVF | no | Previous trisomy 21 | unknown |
| Weight | 71 | diabetes | no | | |
| Smoker | no | Origin | Asian | | |

**Biochemical data**

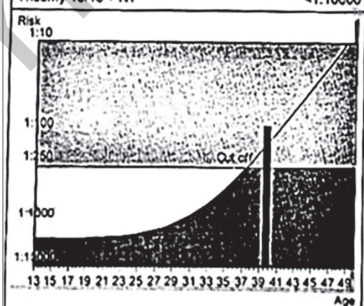
| Parameter | Value | Corr. MoM |
|---|---|---|
| PAPP-A | 3.44 mIU/mL | 0.71 |
| fb-hCG | 261 ng/mL | 3.65 |

**Risks at term**

| | |
|---|---|
| Age risk | 1:138 |
| Biochemical T21 risk | >1:50 |
| Combined trisomy 21 risk | 1:84 |
| Trisomy 13/18 + NT | <1:10000 |

**Ultrasound data**

| | |
|---|---|
| Gestational age | 12 + 4 |
| Method | CRL Robinson |
| Scan date | 11/04/25 |
| Crown rump length in mm | 63.92 |
| Nuchal translucency MoM | 0.91 |
| Nasal bone | present |
| Sonographer | DR D CHATTERJEE |
| Qualifications in measuring NT | MD |




**Trisomy 13/18 - NT**

**The calculated risk for trisomy 13/18 (with nuchal translucency) is < 1:10000, which represents a low risk.**

**Report**

**The calculated risk for Trisomy 21 (with nuchal translucency) is above the cut off, which indicates an increased risk.**
After the result of the Trisomy 21 test (with NT) it is expected that among 84 women with the same data, there is one woman with a trisomy 21 pregnancy and 83 women with not affected pregnancies.
The free beta HCG level is high.
The risk for this twin pregnancy has been calculated for a singleton pregnancy with corrected MoMs.
The calculated risk by PRISCA depends on the accuracy of the information provided by the referring physician.
Please note that risk calculations are statistical approaches and have no diagnostic value!
The patient combined risk presumes the NT measurement was done according to accepted guidelines (Prenat Diagn 18: 511-523 (1998)).
The laboratory can not be held responsible for their impact on the risk assessment ! Calculated risks have no diagnostic value!

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1. **How effective is quadruple screening in twins?**
2. **What is the next most appropriate option?**
3. **Can genetic sonogram be used as a screening method for aneuploidy?**

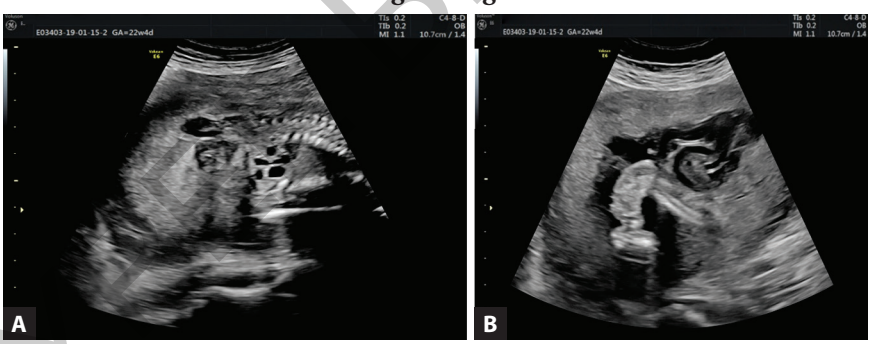
**Ans.**

1. Second trimester serum screening in twins leads to a high false-positive rate (about 10%) for a detection rate of 50–70%, depending on the number of markers used and the chorionicity. This method of screening in twins should not be offered.
2. Next most appropriate option is NIPS.
3. At present, there is insufficient evidence to make any recommendation about the use of second trimester genetic sonogram (soft markers) in twins for aneuploidy screening.

## SUGGESTED READING

1. Audibert F, Gagnon A; Genetics Committee of the Society of Obstetricians and Gynaecologists of Canada; Prenatal Diagnosis Committee of the Canadian College of Medical Geneticists. Prenatal screening for and diagnosis of aneuploidy in twin pregnancies. J Obstet Gynaecol Can. 2011;33(7):754-67.

**STATION 13. A 28-year-old woman with DCDA twins had an anomaly scan which revealed the following findings in twin A.**




1. **Describe the ultrasound findings.**
2. **What is the protocol for screening structural anomalies in twins?**
3. **What are the further options?**
4. **How does it differ in MCDA twins?**

**Ans.**

1. The ultrasound images A and B show an open neural tube defect and talipes in one twin.
2. The risk of fetal anomaly is greater in twins compared with singleton pregnancy. The rate per fetus in dizygotic twins is probably the same as that in singletons, whereas it is two-to-three times higher in monozygotic

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twins. Further MCDA twins have a higher chance of cardiac and brain abnormalities, hence fetal echocardiography should be performed in all MCDA twins.

3. Expectant management or selective termination of the affected twin by intracardiac KCl or lignocaine.
4. In MCDA twins, injection of KCl is not an option because of the risk to the healthy cotwin. Instead, cord occlusion, intrafetal laser ablation or RFA of the affected twin is necessary. The survival rate of the cotwin is approximately 80% and the risk of premature rupture of the membranes and preterm birth prior to 32 weeks is 20%.

## SUGGESTED READING

1. Khalil A, Sotiriadis A, Baschat A, Bhide A, Gratacós E, Hecher K, et al. ISUOG Practice Guidelines (updated): role of ultrasound in twin pregnancy. Ultrasound Obstet Gynecol. 2025;65(2):253-76.

## STATION 14.

**1. What is the risk of preterm births in multiple pregnancy?**
**2. What is the best method to screen for preterm labor in twin pregnancies?**
**3. Is prophylactic cervical cerclage indicated in low-risk asymptomatic twins?**
**4. What is the role of progesterone in prevention of preterm births in twins?**

**Ans.**

1. Both spontaneous and iatrogenic preterm births are more common in twins than in singleton pregnancy. More than half of twins are born before 37 weeks of gestation (60% and 12% of twin births occur before 37 and 32 weeks of gestation, respectively). The risk increases to 35% in trichorionic triamniotic (TCTA) triplets.
2. In asymptomatic women, a cervical length ≤25 mm at 20–24 weeks by transvaginal sonography (TVS), was the most accurate predictor of preterm birth before 32 and before 34 weeks.
3. No, prophylactic cerclage is not indicated in asymptomatic women with twins.
4. Vaginal progesterone does not prevent preterm birth, nor does it improve perinatal outcomes in unselected twin gestations, but it appears to reduce the risk of preterm birth occurring at early gestational ages

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and of neonatal morbidity and mortality in twin gestations with a sonographic short cervix. It may be considered in twin pregnancy with cervical length ≤25 mm.

## SUGGESTED READING


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2. Khalil A, Sotiriadis A, Baschat A, Bhide A, Gratacós E, Hecher K, et al. ISUOG Practice Guidelines (updated): role of ultrasound in twin pregnancy. Ultrasound Obstet Gynecol. 2025;65(2):253-76.


**STATION 15. A 24-year-old MCDA twins at 22 weeks with growth discordance and Doppler abnormalities in twin B.**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DOB,Age | 24 | | | AB | | | | | | |
| Sex | Female | | | Ectopic | | | | | | |
| | | | | Fetus | 2 | | | | | |
| LMP | 14.11.2022 | DOC | | EDD(LMP) | 21.08.2023 | GA(LMP) | 21w3d | | | |
| A GA(AUA) | 21w6d | B GA(AUA) | 19w3d | | | | | | | |
| A EDD(AUA) | 18.08.2023 | B EDD(AUA) | 04.09.2023 | | | | | | | |
| Perf. Phys. | | Ref. Phys. | | Sonographer | KOLKATA | | | | | |
| Comment | | Indication | | | | | | | | |

| EFW (Hadlock) | | Value | Range | Age | Range | GP (Hadlock) |
|---|---|---|---|---|---|---|
| A | AC/BPD | 512g | | 22w3d | | 91.6% |
| B | AC/BPD | 275g | | 19w0d | | <1% |

| 2D Measurements | | AUA | Value | m1 | m2 | m3 | Meth. | GP | GA |
|---|---|---|---|---|---|---|---|---|---|
| A | BPD (Hadlock) | ✓ | 5.26 cm | 4.42 | 5.26 | | last | 69.7% | 22w0d |
| A | OFD (HC) | | 6.85 cm | 6.06 | 6.85 | | last | | |
| A | HC (Hadlock) | ✓ | 19.51 cm | 17.04 | 19.51 | | last | 52.7% | 21w5d |
| A | HC* (Hadlock) | ⌊ | 19.13 cm | 16.56 | 19.13 | | | 37.8% | 21w3d |
| A | FL (Hadlock) | ✓ | 3.85 cm | 3.08 | 3.85 | | last | 71.6% | 22w2d |
| A | AC (Hadlock) | ✓ | 17.89 cm | 14.08 | 13.69 | 17.89 | last | 82.9% | 22w5d |
| A | Cereb (Hill) | ✓ | 2.14 cm | 2.00 | 2.14 | | last | 24.6% | 20w2d |
| A | CM | | 7.25 mm | 3.59 | 7.25 | | last | | |
| A | Vp | | 6.43 mm | 5.87 | 6.43 | | last | | |
| A | NF | | 4.06 mm | 2.24 | 4.06 | | last | | |
| B | BPD (Hadlock) | ✓ | 4.44 cm | 4.44 | | | avg. | 1.3% | 19w3d |
| B | OFD (HC) | | 5.94 cm | 5.94 | | | avg. | | |
| B | HC (Hadlock) | ✓ | 16.75 cm | 16.75 | | | avg. | <1% | 19w3d |
| B | HC* (Hadlock) | ⌐ | 16.39 cm | 16.39 | | | | <1% | 19w1d |
| B | FL (Hadlock) | ✓ | 3.11 cm | 3.11 | | | avg. | 2.9% | 19w5d |
| B | AC (Hadlock) | ⌐ | 13.59 cm | 13.59 | | | avg. | 1.2% | 19w0d |
| B | Cereb (Hill) | ✓ | 2.02 cm | 2.02 | | | avg. | 6.9% | 19w3d |
| B | CM | | 3.04 mm | 3.04 | | | avg. | | |
| B | Vp | | 7.73 mm | 7.73 | | | avg. | | |
| B | NF | | 2.37 mm | 2.37 | | | avg. | | |

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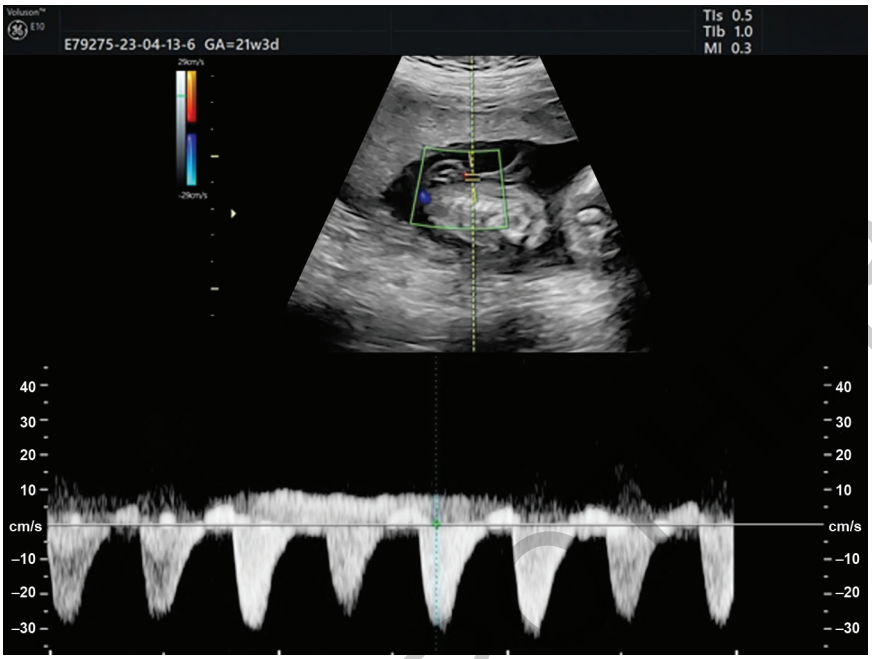


1. **How is screening for fetal growth restriction (FGR) done in multiple pregnancy?**
2. **How is growth discordance defined in twins?**
3. **How is FGR classified in MCDA twins?**
4. **How is FGR managed in twin pregnancies?**

**Ans.**

1. In DCDA twins, ultrasound monitoring needs to be done every 4 weeks and every 2 weeks in MCDA twins to screen for FGR.
2. Selective FGR is defined as a condition in which one fetus has estimated fetal weight (EFW) <10th centile and the intertwin EFW discordance is >25%.
3. Classification of selective fetal growth restriction (sFGR) in monochorionic twins depends on the pattern of end-diastolic velocity at umbilical artery Doppler and is divided into type I, where the umbilical artery Doppler waveform has positive end-diastolic flow. In type II, there is absent or reversed end-diastolic flow (AREDF) and in type III, there is a cyclical/intermittent pattern of AREDF.
4. In dichorionic pregnancies, sFGR should be followed as in growth-restricted singletons but there is limited evidence to guide the management of monochorionic twins affected by sFGR and is guided by the Doppler analysis.

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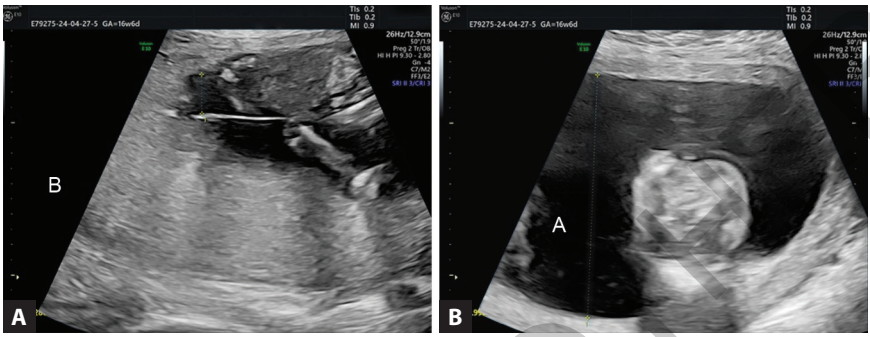
## SUGGESTED READING

1. Khalil A, Sotiriadis A, Baschat A, Bhide A, Gratacós E, Hecher K, et al. ISUOG Practice Guidelines (updated): role of ultrasound in twin pregnancy. Ultrasound Obstet Gynecol. 2025;65(2):253-76.

## STATION 16.




**The above images A and B show an MCDA twin pregnancy with deepest vertical pocket (DVP) of 8 cm in one twin and 1.5 cm in the other twin.**

1. **What is the diagnosis here?**
2. **How do we screen for this condition?**
3. **What is the best method of staging this condition?**
4. **What is the treatment of choice for the above condition?**

**Ans.**

1. Twin-twin transfusion syndrome.
2. In early pregnancy, discordant Crown-Rump length (CRL), NT and ductus venosus can be used to predict TTTS, however, discordant CRL has low predictive value whereas discordant DV and combination of discordant NT and DV have better predictive values with RR of 12 and 21 respectively. In second trimester, screening for TTTS should start at 16 weeks, with scans repeated every 2 weeks thereafter and if amniotic fluid discordance found, screening should be done weekly to exclude progression to TTTS.
3. Quintero staging still remains the best method of staging TTTS.
4. Laser ablation of the communicating vessels is the treatment of choice for TTTS at Quintero stages II, III, and some selective cases of stage I

## SUGGESTED READING

1. Khalil A, Sotiriadis A, Baschat A, Bhide A, Gratacós E, Hecher K, et al. ISUOG Practice Guidelines (updated): role of ultrasound in twin pregnancy. Ultrasound Obstet Gynecol. 2025;65(2):253-76.

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2. Stagnati V, Zanardini C, Fichera A, Pagani G, Quintero RA, Bellocco R, et al. Early prediction of twin-to-twin transfusion syndrome: systematic review and meta-analysis. Ultrasound Obstet Gynecol. 2017;49(5):573-82.

## STATION 17.

**1. What is twin anemia–polycythemia sequence (TAPS)?**
**2. When do you screen for TAPS?**
**3. How is this condition screened for?**
**4. What are the treatment options for the same?**

**Ans.**

1. Twin anemia–polycythemia sequence is defined as the presence of anemia in the donor twin and polycythemia in the recipient twin in monochorionic twin pregnancy.
2. Screening for TAPS should be done in:
   a. All monochorionic twin pregnancies from 20 weeks' gestation
   b. Monochorionic diamniotic twins complicated by TTTS and
   c. Monochorionic diamniotic twins treated by fetoscopic laser surgery
3. Monochorionic diamniotic twins are screened for development of TAPS using ultrasound assessment of middle cerebral artery (MCA) peak systolic velocity (PSV) every 2 weeks and TAPS is diagnosed when:
   a. There is a combination of MCA-PSV ≥1.5 MoM in the anemic twin and ≤0.8 MoM in the polycythemic twin.
   b. MCA-PSV discordance ≥1 MoM
4. The management options depend on the gestational age at diagnosis, parental choice, severity of the disease, and technical feasibility of intrauterine therapy and should be individualized. The commonest options include conservative management, early delivery, laser ablation, or intrauterine blood transfusion (IUT) for the anemic twin, combined IUT for the anemic twin and partial exchange transfusion to dilute the blood of the polycythemic twin.

### SUGGESTED READING

1. Khalil A, Sotiriadis A, Baschat A, Bhide A, Gratacós E, Hecher K, et al. ISUOG Practice Guidelines (updated): role of ultrasound in twin pregnancy. Ultrasound Obstet Gynecol. 2025;65(2):253-76.
2. Khalil A, Gordijn S, Ganzevoort W, Thilaganathan B, Johnson A, Baschat AA, et al. Consensus diagnostic criteria and monitoring of twin anemia–polycythemia sequence: Delphi procedure. Ultrasound Obstet Gynecol. 2020;56(3):388-94.

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**Jaydeep Tank** MD DNB FCPS FICOG FRCOG (Honoris Causa) is an Obstetrician, Gynecologist, and IVF Consultant, Ashwini Maternity and Surgical Hospital—Center for Endoscopy and IVF, Mumbai, Maharashtra, India. He is the current President, FOGSI (2024–2025); Chair, YGAA Committee, AOFOG; and Project Lead, FOGSI-USAID Projects (2020–2024). He has been the Secretary General, Federation of Obstetric and Gynaecological Societies of India (FOGSI) (2018–2021). He has been awarded the coveted, FRCOG Honoris Causa by the Royal College of Obstetricians and Gynaecologists, London, UK. He has been the Past President, Mumbai Obstetric and Gynaecological Society (MOGS); Immediate Past Deputy Secretary, Asia and Oceania Federation of Obstetrics and Gynaecology (AOFOG); Immediate Past Chair, The International Federation of Gynecology and Obstetrics (FIGO) Committee for Safe Abortion; Past Chair, Publication and Newsletter Committee, AOFOG; Past Chair, Reproductive Endocrinology and Infertility Committee, AOFOG; Past Chair, MTP Committee, FOGSI. He has contributed to the electronic membership management system and e-voting for FOGSI, developed a completely redrafted user-friendly constitution for FOGSI, and contributed and led the development of the FOGSI statements on Cesarean Rates, Hysterectomy Rates, Contraceptive Implants, ART Bill, Surrogacy Bill, the FOGSI WP's and Interventions in Supreme Court on PCPNDT, The IRIA case, The Oxytocin case and others, restructuring of the FOGSI cells, the minutes of the FOGSI-MCM and GBM's and several other initiatives. He has been instrumental in drafting the proposal for FIGO which resulted in a grant of 13 million dollars for a 10-country project (8 in Africa and 2 in South America) and was the technical lead for the project. He has also been instrumental in obtaining and is the Project Lead for the largest ever grant awarded to FOGSI for over 2 million USD (INR 16.6 crores) from the Bill and Melinda Gates Foundation. He is a Visiting Consultant for IVF at more than a dozen IVF centers and the Independent Director on the Board of API Holdings (PharmEasy) India's biggest e-pharmacy.

**Seetha Ramamurthy Pal** MBBS DGO MD FRCOG FICOG RCOG/RCR Diploma in Advanced Obstetric Ultrasound is currently working as Consultant, Department of Fetal Medicine and Obstetrics, Apollo Multispecialty Hospitals, Kolkata, West Bengal, India. She is presently the Chairperson of the Genetics and Fetal Medicine Committee, FOGSI (2023–2025) and the Honorary Joint Secretary of the Bengal Obstetric and Gynecological Society (2024–2025). She is also the current President of the Society of Fetal Medicine, Kolkata Chapter and the Clinical Secretary of the ISOPARB Chapter, Kolkata. She has vast experience of more than 20 years in the field of Obstetrics and Gynecology and has had her training in Fetal Medicine in the UK. Being a Fellow Representative of the IRC, East Zone, she had been actively involved as Faculty in the MRCOG Part 2/3 Courses and is also the Clinical Examiner of the MRCOG Part 3 Examinations. She is a Member of the National Board Specialist Committee of Maternal and Fetal Medicine and a peer Reviewer of JOGI and the Journal of Fetal Medicine.

**Jaya Chawla** MS FICMCH Fellow Maternal Fetal Medicine (AIIMS) is presently working as Professor, Department of Obstetrics and Gynecology, Atal Bihari Vajpayee Institute of Medical Sciences and Dr Ram Manohar Lohia Hospital, New Delhi, India. She has rich experience of 20 years of practice in Obstetrics and Gynecology and nearly a decade in Maternal Fetal Medicine. She has trained with the stalwarts in the field as Fellow, Maternal Fetal Medicine, All India Institute of Medical Sciences, New Delhi, and as Faculty at Base Hospital, Delhi Cantt. She is Faculty for undergraduate, postgraduate, postdoctoral, and DNB courses. An avid Researcher with ICMR, she is also a peer Reviewer for JOGI and Journal of SFM. She is an Executive Member of the Genetics and Fetal Medicine Committee of FOGSI and the Joint Secretary, Society of Fetal Medicine, Delhi Chapter. Her areas of interest include prenatal screening, fetal cardiac arrhythmias, fetal growth restriction, and medical disorders of pregnancy.

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