Pre-conceptional and Prenatal Genetic Counselling

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With the completion of human genome project in 2003, the human reference genome has become accessible to us. Hence, now it is possible to detect various pathological and benign variants. The rapidly developing sequencing technologies have helped to delve further in the genetics of rare diseases, infections, cancers etc. This has become helpful in prevention, diagnosis, and management of genetic based conditions. However, although the treatment of only a few genetic disorders is possible almost all are preventable. Over the years the earlier prohibitive cost of investigations too has become affordable.

The Genetic disorders can express anytime in life from embryonic to adulthood (adult genetic disorders) and are seen even in gametes. Due to complexity and heritability of the disorders and irreversible nature of results, the test needs to be offered with appropriate pre-test and post-test genetic counselling. Above all it is more critical in abnormal fetal results as the couple has to take a decision about continuation of the pregnancy.

Today the fetus is considered as a patient and the beneficence-based early life requirements are emphasized. The fetal organs start developing soon after fertilization wherein meiotic and post zygotic errors leading to chromosomal defects and reshuffling of genes may result in single gene disorders. During the next 12 weeks of sensitive, critical organogenesis period, environmental (pollution, infections, drugs) and epigenetic factors (DNA methylation, controlling the gene expression and the architecture of the cell nucleus) as well as nutritional deficiencies can affect the fetus, sometimes even before the female becomes aware of her pregnancy. These events can result in pregnancy wastage, infant morbidity, mortality, or systemic effects, with or without intellectual deficiency. Thus, prospective parents should avail preconception counselling from an obstetrician and if there is a history of any known genetic condition, from a medical geneticist. (Figure: 1)

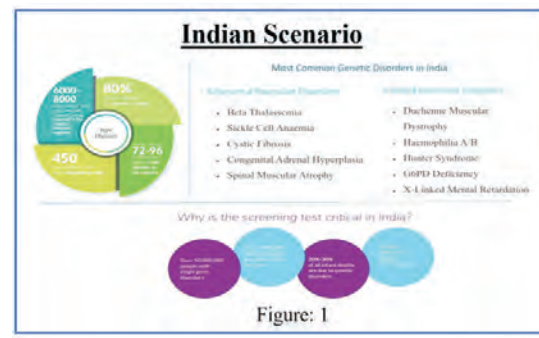


Figure: 1

The constantly evolving genetic information helps the patients understand the risks of inheritance, environmental insults, availability of tests for diagnosis and possibility of prevention of the condition. The entire process of disseminating this to the patient is through genetic consultation / counselling. The term 'genetic counselling' was coined by Sheldon Reed, the American biologist and Geneticist in 1947 and is defined as 'the process of helping people understand and adapt to medical, psychological and familial implications of genetic contributions to disease.'–(Resta, Biesecker, Bennett et.al, 2005.)

The indications for pre-conceptional or prenatal diagnosis can be overlapping.

Pre- conceptional genetic counselling

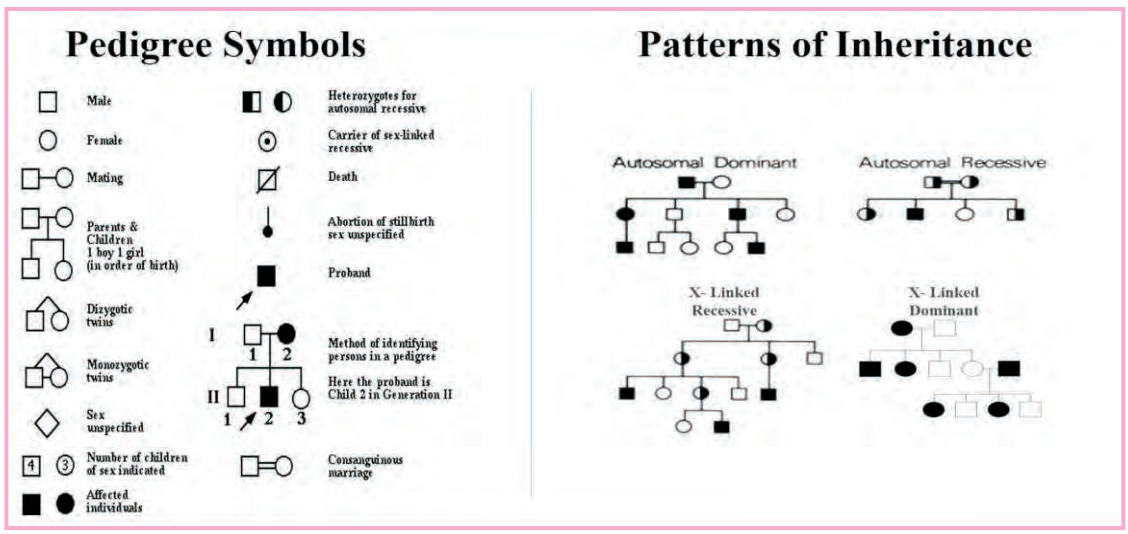
It aims to pick up high-risk cases of fetal genetic disorders and provide information

regarding preventive and diagnostic tests. The risk factors due to additional personal and / or family history of medical and /or genetic defects can change prior to or during each pregnancy & more additional tests may be required.

Most couples even with a family history of a genetic condition, seek an advice of obstetrician after conception. However, the modern era of media and internet is helping create awareness to some extent amongst the prospective parents to seek consultation.

Genetic evaluation of the index case (affected /carrier) or the stored DNA sample to identify the variant or reference to the previously confirmed report of the affected/carrier is most crucial. Considering the complexity of the genetic tests – timing, tissue, and long turnaround time, in case of ongoing pregnancy, the situation might turn out to be tricky if termination is needed. In that case, due consideration to the country specific legal limits is required. Therefore, the prenatal diagnosis should always have a planned approach and the action should be taken only based on a confirmed diagnosis.

The first and most important component of pre-conceptional and prenatal counselling is genetic history taking. It is noted in the symbolic form and known as pedigree charting. (Figure: 2)



Indication / History Taking

- Maternal / Paternal age
- Consanguineous marriage
- Ethnicity
- Any previous pregnancy or child or family medical history with single gene disorders (haemoglobinopathies) or chromosomal defects.
- In a primi or secondary infertility with genetic cause like sex chromosomal disorders, fragile X, Y microdeletions, Cystic Fibrosis.
- Any personal medical history of thyroid, lifestyle (alcohol, nicotine consumption) / multifactorial disorders like cardiac, hypertension, diabetes, neurological (seizure) psychiatric history. Disease specific medications in both and nutritional deficiencies in the mother.
- Immunisation status specifically Rubella: If not immunized, it can result in congenital heart / or cataract / or microcephaly.
- Onco-fertility

In pregnancy,

- All the above

- Positive maternal serum screening test/NIPT
- Abnormal ultrasound findings in the fetus

Advanced maternal / paternal age : In any pregnancy with advancing maternal age there is an increased chance of error in meiotic I and II stages. This can lead to a higher incidence of fetal chromosomal aneuploidy. Similarly, if the paternal age is >50, risk for some skeletal dysplasia in the progeny increases.

Consanguineous marriage : It means, a couple who are related as close as second cousin. Every individual has a few recessive genes with varied inheritance pattern but is asymptomatic. Thus, in any marriage there is a random chance of the couple having the same mutation. But in consanguineous marriages the risk is much higher; hence such marriages should be avoided. If not, carrier screening for the couple to identify the recessive gene is advisable and prenatal or preimplantation diagnosis should be considered. In autosomal recessive conditions, if both the partners happen to have the same recessive gene there is a 25% risk of a disorder in a progeny, 50% risk of the child being a carrier and 25% chance of having a normal offspring.

Ethnicity : It is necessary to take note of the couple's ethnicity in pre-conceptional and prenatal counselling. The pace at which fitness drops as the inbreeding coefficient (which defines the number of homozygous loci in the genome) rises is known as the 'inbreeding load.' It is much higher in South and East Asia as these people are more prone to rare genetic population-specific diseases than those elsewhere on the earth due to endogamous marriages or marrying within the same race, group, caste, or religion. This can result in considerable disparities in obstetrical outcomes, e.g., the incidence of Beta thalassemia in Mediterranean region.

Despite being >40% of the world's population, there is not much data available in this regard. Therefore in 2012, the 'GenomeAsia 100K Project' was initiated which aims to document genetic variation, population structure, disease correlations, and founder effects in this region.

Sardinia and Cyprus also had high prevalence of Thalassemia, Tay-Sachs and other cases were abundant in Jewish communities. With early carrier screening and prenatal diagnosis, the rate of affected individuals is brought down to near zero. In India, the carrier frequency of beta Thalassemia ranges from 3 to 17% across different communities and over 10,000 children are born every year with this disorder. Aggressive carrier screening at schools, colleges, pre-pregnancy, or early pregnancy stages with appropriate prenatal diagnosis is needed to reduce this burden on the family, society and the nation.

Other types of patterns of inheritance:

The above-mentioned conditions are single gene disorders. Other patterns of inheritance are X linked recessive (Haemophilia), X linked dominant (Rett syndrome), mitochondrial inheritance – maternal (certain myopathies) and autosomal dominant (Achondroplasia) In autosomal dominant inherited condition, index case (parent /child /family member) is mostly affected but may not show the symptoms due to nature of low penetrance / non expressivity. Some conditions however, like Retinitis pigmentosa can manifest due to autosomal dominant, recessive or X linked genes. Yet another pattern of birth defects is multifactorial inheritance (Neural tube defects).

Chromosomal Disorders

The most common genetic tests are for chromosomal abnormalities. These present as various clinical phenotypes which are due to alteration in number and/structure of autosomes or sex chromosomes. The resolution >5Mb can be detected through Karyotyping from different tissues. The risk of recurrence depends on the carrier status of the parents. This recurrence risk can vary from 9 – 10% (reciprocal translocation) to 100% (only in a parent with 21:21 chromosomal translocation.) In latter, the only option is gamete donation. In

others the prenatal diagnosis or pre-implantation diagnosis is possible.

The fetal genetic diagnostic methods and applications are given in Figure: 3

Genetic and Genomic Tests

Techniques	Resolution	What it can detect	Applications	Limitation
Karyotype	Up to 05 MB	Numerical/structuralabnormality translocations	BOH,/Pedi/infertility, Oncology	Microdeletions, UPD
FISH	190 KB	presence, absence of specific chromosomes, Aneuploidy, Microdeletions, known translocations	Aneuploidy screen, prental ,ONCO Micro deletion syndrome	For known specificed, Location can not detect other abnormalities
PCR	Deletion/ Duplication	can use uncultured specimen,Specific disease causing Mutation,ae of DNA acrossmplifies small pie	Fragile X, DMD, SMA, Myotonic dystro, Thal.	Polyploidy, Mosaic, translocation, uniparental Disomy
Microarray	Higher resolution Up to 100 Kb	Smaller changes in genome, UPD and Gonadal Mosaicism	Developmental delay, Intellectual disabilities, Multiple congenital anomalies, POC s	Balanced Translocation, inversions
Sanger	Point Mutation for specific gene/variant	Detect Point Mutation, 100% coverage of the gene, small insertions/deletions.	Mutation not detected by PCR, Confirm variants detected by NGS	Gene Specific, cant detect multiple gene simultaneously
NGS	Point Mutation for multiple genes	associaates gene mutation and disease,Detects disorders involving multiple genes, allowing parallel sequencing of 1000s of genes simultaneously	Developmental delay, Intellectual disability, Organ specific molecular genetic disorder, multiple gene for adisorder panels	Scientific evidence insufficient for some variants, Variant confirmation by Sanger is required

Figure: 3

Onco-fertility :

The disease or therapy can damage the gametes. Therefore, pre- treatment banking of eggs, embryo, sperm, tissue etc. can be availed with appropriate cancer genetic counselling.

Additional methods of screening and diagnostic are available for a pregnant woman.

Maternal Serum Screening: The diagnostic efficacy of DMT at 11-13.6 weeks **increases with ultrasound markers -** nuchal translucency (NT) done at a CRL of 45 – 84 mm. Between 15 and 21 weeks, triple marker and quadruple screen tests are available to detect trisomies and neural tube defects. The results of the first trimester combined screening and the second trimester biochemical screening are combined and the risk is estimated to enhance the rate of detection. The maternal serum indicators from both trimesters are included in the integrated test. These are specified for trisomy 21, 18 and AFP estimation. (Figure: 4)

Maternal Serum Screening

	FIRST TRIMESTER	FIRST AND SECOND TRIMESTER COMBINED			SECOND TRIMESTER
OPTION	FIRST SCREEN	SEQUENTIAL SCREEN	INTEGRATED SCREEN	SERUM INTEGRATED SCREEN	AFP4
Benefits	The Highest Detection Rate In The First Trimester	Early Answer And High Detection Rates	The Highest Detection Rates	The Highest Detection Rates Without NT	The Best Second Trimester Screening
Down Syndrome Detection Rate	83 %	90.4 %	92 %	87 %	81 %
FPR	5 %	3.7 %	5 %	5 %	5 %
OAPR	1 in 3	1 in 7 / 1.16	1 in 21	1 in 22	1 in 23
Trisomy 18 Detection Rate	80 %	90 %	90 %	90 %	80 %
ONTD Detection Rate	-----	80 %	80 %	80 %	80 %
Marker	NT, PAPP-A,hCG	NT, PAPP-A, hCG, AFP, hCG, Ue3, inhibin	NT, PAPP, AFP, hCG, Ue3, inhibin	PAPP, AFP, hCG, Ue3, inhibin	AFP, hCG, Ue3, inhibin
Timing	10wks-13wk	10wks-13wks 15wks-21wks	10wks-13wks 15wks-21wks	10wks-13wks 15wks-21wks	15wks-21wks

Figure: 4

Non-invasive prenatal screening test (NIPT) : This is a high-end screening test. The NIPT became available in 2011 and is the fastest adopted screening test in pregnancy from 9th week to 40th week. The test analyses cell free fetal DNA in maternal blood for common aneuploidies (13, 18, 21 and sex chromosomes), 22q11.2 deletion syndrome, 1p36 deletion syndrome, and Angelman/Prader-Willi syndrome. An extended NIPT test is available to other chromosomes as well (Low Validity).

Abnormal ultrasound markers : Since 1970 the ultrasound is used for dating, viability, chorionicity. In the first trimester, nuchal translucency (NT), nasal bone, ductus flow, fetal heart rate, tricuspid regurgitation, and aberrant right subclavian artery (ARSA) markers are available. These markers have a specificity for certain chromosomal abnormalities detectable by karyotype or microarray. In the second trimester, nuchal fold thickness, femur length, pyelectasis, and echogenic bowel are available. At 18 to 22 weeks of pregnancy scan, the fetal measurements can indicate various systemic effects like achondroplasia, open spina bifida, cleft lip, congenital heart defect. Besides chromosomes other molecular tests may be indicated.

Depending on the indications invasive procedures and lab tests are suggested. Balanced, non-directive, and empathic counselling is provided before the test. The suggested test's risks/benefits and cost effectiveness are stated in layman's terms. Once the patient gives her informed written consent for the obstetric and lab procedures, the referring physician is informed. It is advisable to send the sample to an accredited laboratory for the required test.

Invasive Tests

Amniocentesis - Introduced in 1956 for detection of Rh isoimmunization. Amniocentesis is performed during 15 to 17 weeks of gestation. 15- 20 ml of amniotic fluid is drawn under ultrasound guidance with aseptic precaution. The results of tests are extremely dependable.

Chorionic villus sampling : The chorionic villus sampling first performed in 1986. CVS is offered during 11 to 13 weeks of pregnancy. It entails the removal of placental villi by aspiration or biopsy using the transabdominal or transcervical technique. The villi are processed for chromosomal and molecular testing. The possibility of maternal cell contamination in CVS is high, hence, MCC test (maternal blood sample in EDTA) is necessary.

Even in expert hands both the obstetric procedures have 0.5-1% risk of miscarriage.

Cordocentesis : This method is introduced in 1985 and is mainly used for rapid fetal karyotype or when results from amniocentesis/CVS are non- confirmatory. (Figure: 5)

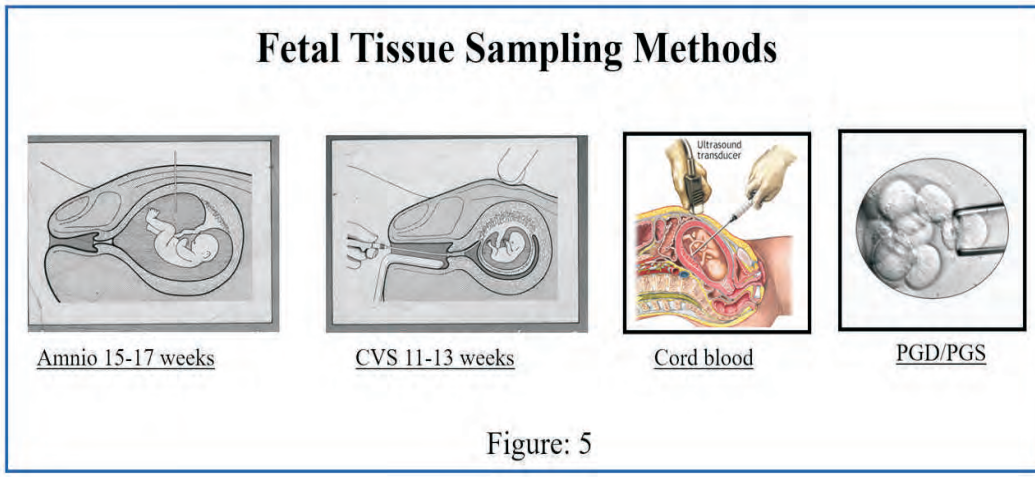


Figure: 5

It is always recommended to store the DNA from prenatal samples in case additional molecular tests are required.

Post-test counselling

The pre and post-test genetic counselling is an integral part of these tests. The genetic counsellor should be well versed with the genetic and genomic tests. He has to translate & communicate complex information in a simple way according to the aptitude of the person in front of him. He should have strong analytic skills and should be able to offer feasible patient centred solutions with strong ethical awareness & cultural sensitivity. In India, where we have a unique acculturation, it is critical to recognise the education, healthcare awareness, and cultural values of the patients to provide culturally sensitive and appropriate care.

In all the testing reports explanation is to be given in complete details with relevant significance. However, interpretation of chromosomal disorders is comparatively easier than the molecular tests. (Figure:6)

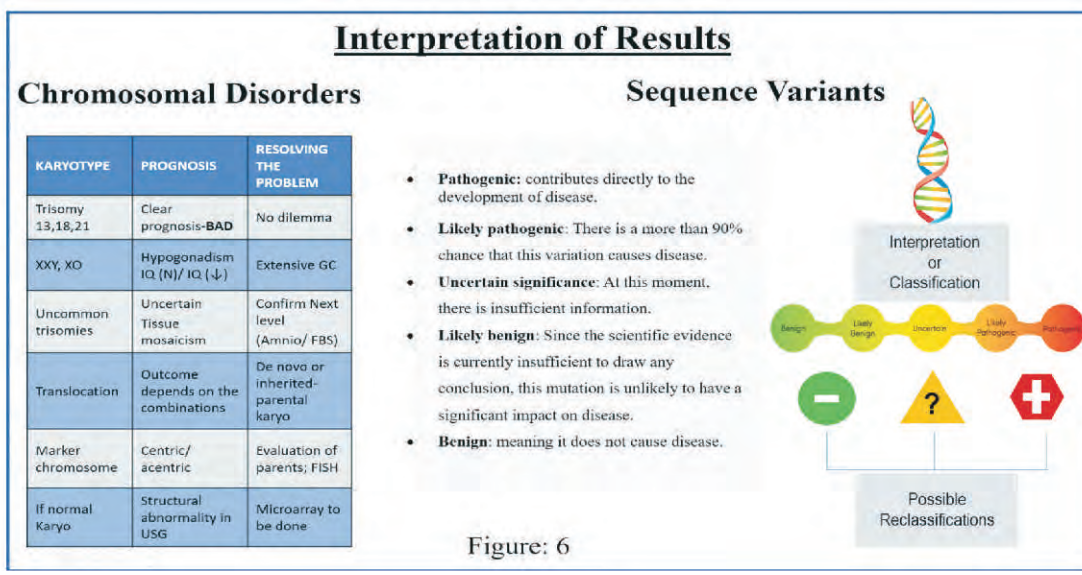


Figure: 6

In case of normal results further follow up is suggested and if there is any abnormality, the couple is given alternative options to consider for further investigation which may include post birth medical and / surgical management. The pre-warned parents can schedule the birth in a tertiary care facility where the infant can receive immediate proper care. For example, nearly 40% of Down Syndrome cases, have cardiac abnormalities that may necessitate rapid care after birth. In addition, if the parents are carriers, the recurrence risk is also explained with some advice to alert their extended family as well. The genetic counsellor can even suggest support groups of the patients.

Though most of the genetic tests are cost expensive, the conditions may need lifelong management, the couple may require financial support as well. Thus, the government of India has launched a new 'rare disease policy' and started a unique initiative with its own crowdfunding portal for rare diseases. Corporate and individual donors can make online donations to help people with rare diseases. (https://www.aninews.in › news › national › general-news)

Although prevention of genetic defects is the paramount goal, to conclude we can say that genetic evaluation, inclusive of the tests and counselling is not a crystal ball. we do not have one single test that can answer every question at present. We cannot foresee the degree of manifestation, age of onset, heterogeneity within the family. However, rapid advancements in genomic medicine have added more genetic tests to the prenatal testing menu for a variety of medical conditions, and preventative and therapeutic approaches, with promising applications. As a result, every new mother should make best use of them.

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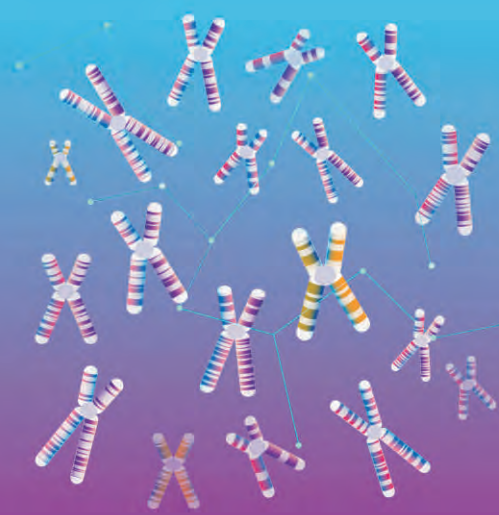
Claria
Reproductive Genetics

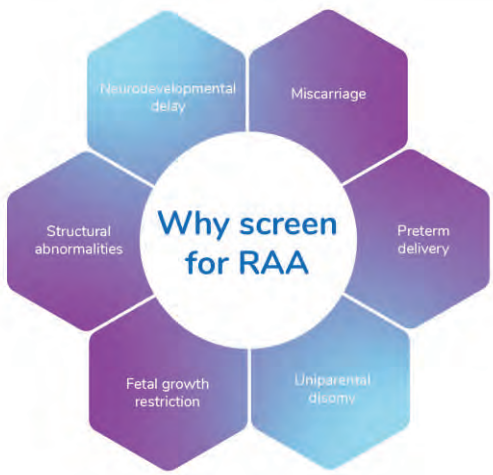
MEDGENOME



Introducing

Claria NIPT Advanced

Screening for **Rare Autosomal Aneuploidies**



What are Rare Autosomal Aneuploidies?

Aneuploidies including monosomy and trisomy of chromosomes other than Trisomy 13, 18, 21 are called Rare Autosomal Aneuploidies (RAA).

Talk to Our Genetic Counsellors to find out more:

1800 103 3691 diagnostics@medgenome.com www.medgenome.com

COVID-19 VACCINATION IN PREGNANCY

Dr Reena Wani :
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COVID-19 IN PREGNANCY:

- Increased risk of severe illness from COVID-19 as compared to non-pregnant women.
- Pregnant women were effected more seriously during second wave of COVID-19 pandemic compared to first wave.
- Most pregnant women will be asymptomatic or have mild disease, but their health may deteriorate rapidly and that might affect the fetal outcome
- Pregnant women with comorbidities are at risk of developing severe COVID-19 disease
- Higher risk of assisted ventilation, ICU admission, sepsis and death in pregnant women with SARS COV-2 infection at the time of delivery
- Increased preterm labour (partly Iatrogenic), increased stillbirth rate are found in some studies.
- Increased cesarean section rate noted in COVID Pandemic

VACCINE :

- Safety of COVID-19 vaccine in pregnant women specially regarding mid-long term adverse reactions & fetal and neonatal safety is currently not well established
- Initial experiences from mRNA vaccines is encouraging (used extensively in pregnancy in USA) and have been approved by WHO
- There have been infrequent but significant thrombosis-thrombocytopenia related complications with Adeno-vectored vaccines (Brazil, Belgium, USA) in young women, hence vigilance is required.

TIME

- Can be taken in any trimester of pregnancy
- Preferably 2nd dose should be taken before 26 weeks of pregnancy. Studies1,2 found that production of IgG antibodies and their subsequent transfer were improved following a second dose of vaccine.

DURING VACCINATION :

- Consent is not required.
- Pregnant lady should be priorly informed details about COVID vaccination-Based on the information provided, she will have the **choice** to take the vaccination.
- Gestational age at the time of vaccination should be recorded
- Can be vaccinated At any time of pregnancy.
- If a woman says she is pregnant : she has to be considered for COVID-19 vaccination, no proof required.

HIGH RISK PREGNANCIES:

- High risk mothers like preeclampsia, GDM, anemia etc should be given **Covaxin**
- Previous LSCS and Rh -ve : Not high risk.
- Epileptic mothers and heart disease mothers should be vaccinated in tertiary centres/ medical college after opinions of experts.
- Patient on heparin, aspirin, ivf conceptions, DVT mothers need to be vacccinated in tertiary care ...if needed we can get expert opinion

OTHER VACCINATIONS:

- Td and COVID vaccine can be given in the same day but at different sites , right and left arm (more safer side , then 2 weeks interval)
- Anti D and COVID vaccine can be given on the same day but at different sites.
- can be combined with Blood transfusion and iron sucrose, sterilisation.
- Interval between 2 doses of vaccine is the same as for non pregnant adults.
- Vaccine to be given for 18 yrs of age onwards only.

DOCUMENTATION

- **Vaccination status** of the mother to be written (preferably by a rubber stamp) in the RCH id card mentioning the date of first dose, what vaccine is given and date of second dose.If an ANC mother is not willing for vaccine even after repeated counselling, tat is to be highlighted in the RCH card
- Vaccinated mother should be followed up for 20 days by the VHN.
- ANC mothers referred to tertiary care for vaccination should be accompanied by the VHN.

AEFI REPORTING:

- **Non-obstetric events**
  - allergic reactions, anaphylaxis, other serious/ severe AEFIs etc. as in normal vaccinated person
- **Obstetric events**
  - Maternal deaths, hospitalisations, thrombotic events, hypertensive disorders of pregnancy, miscarriage/spontaneous abortions
- **Adverse birth outcomes**
  - Stillbirth, neonatal death, low birth-weight, preterm delivery & birth defect

OPPORTUNITIES TO COUNSEL

- COVID-19 vaccination centres
- Household visit by healthcare workers
- **Antenatal checkup** at the facilities outreach immunisation sessions
- Facility visits for other reasons and **other opportunities** of interaction
- Every pregnant woman admitted in ward or Labor Room

CONTRAINDICATIONS:

- Anaphylactic/allergic reaction to the previous dose of COVID-19 vaccine
- Anaphylaxis/allergic reaction to vaccines or injectable therapies, pharmaceutical products, food-items etc.
- Temporarily contraindicated in the following conditions:
  - Diagnosed COVID-19 infection – defer for 12 weeks from infection or 4 to 8 weeks from recovery
  - Active COVID-19 infection
  - COVID-19 infection treated with anti-COVID-19 monoclonal antibodies or convalescent plasma

❖ **Benefits of vaccination in pregnant women outweigh its potential risks**

❖ **Aim to cover as soon as possible all AN mothers by vaccination..**

❖ **Studies have established the presence of vaccine-elicited antibodies in infant cord blood and breast milk1,3**

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ABBREVIATIONS

Td: Tetanus, Diphteria toxoid

VHN: Village Health Nurse

GDM: Gestational Diabetes Mellitus

DVT: Deep Vein Thrombosis

AEFI: Adverse Effect Following Immunisation.

LOGICAL USE OF DOPPLER IN FGR
INTRODUCTION

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Fetal growth restriction (FGR) is a complex and a multifactorial disorder affecting the fetal development. It is both a common obstetric condition and a major cause of perinatal morbidity and mortality [1,2]

Fetal growth restriction is probably among the obstetric entities, where there is the great variation in clinical practice, in terms of monitoring and correct gestational age at delivery. Since nearly 30% of late 3rd trimester stillbirths are associated with FGR or small-for-gestational age (SGA), prevention strategies aim at antenatal detection of fetal growth restriction (FGR) [3,4]

DEFINITION:

SMALL FOR GESTATIONAL AGE (SGA) DEFINITION:

Fetus with AC or EFW <10th percentile and >3rd percentile for given growth chart with normal Doppler parameters including mean uterine artery (UtA)PI, umbilical artery (UA)PI, middle cerebral artery (MCA) PI and CPR.) [5,6,7]

FGR has further been classified into 2 phenotypes, early- onset FGR and late- onset.

EARLY ONSET IUGR : THE DELPHI CONSENSUS DEFINITION

GA<32 weeks with no congenital abnormalities
AC/EFW <3rd centile or UA-AEDF
Or
1. AC/EFW <10th centile combined with
2. UtA-PI >95th centile and/or *
3. UA-PI >95th centile

AC, fetal abdominal circumference; AEDF, absent end-diastolic flow; EFW, estimated fetal weight; GA, gestational age; PI, pulsatility index; UA, umbilical artery; UtA, uterine artery. Reproduced from Gordijn et al.

LATE- ONSET IUGR: THE DELPHI CONSENSUS DEFINITION:

GA>32 weeks with no congenital abnormalities
AC/EFW <3rd centile
Or at least two out of three of the following
1. AC/EFW <10th centile
2. AC/EFW crossing centiles >2 quartiles (50th percentile) on growth centiles*
3. CPR <5th centile or UA-PI >95th centile

Growth centiles are non-customized centiles *AC, fetal abdominal circumference; AEDF, absent end-diastolic flow; EFW, estimated fetal weight; GA, gestational age; PI, pulsatility index; UA, umbilical artery; UtA, uterine artery. Reproduced from Gordijn et al

NEWER CONCEPTS :

APPROPRIATE FOR GESTATIONAL AGE WITH FGR (AGA FGR) OR (AGA FRGP) is the novel concept in the field of FGR .It challenges the conventional theory that only SGA fetuses are at risk of placental insufficiency, fetal hypoxemia and FRGP.

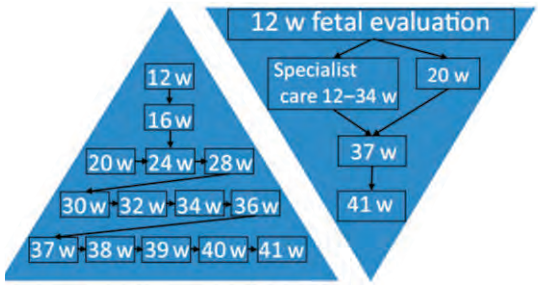
Doppler indices showing blood flow redistribution (low MCA PI and low CPR PI) have the potential to identify AGA pregnancies that are complicated by placental insufficiency and fetal hypoxemia[7,8]. Hence these Doppler indices help in identifying FRGP fetuses, regardless of their size [7,8].

Fetal size may not be affected in term FGR as the placental disease is mild and nutritional demands are met but the respiratory demands are unmet. The recent PORTO (Prospective Observational Trial to Optimize Pediatric Health in Intrauterine Growth Restriction (IUGR)) study questions the current definition of FGR, by supporting the usefulness of

doppler indices over fetal biometry for the diagnosis of FGR.

LOGICAL USE OF DOPPLER IN THE 1ST TRIMESTER – 11- 13+6 WEEKS

Some especially important complications that occur later in pregnancy can be predicted in the first trimester; thus, it is necessary to increase the focus of clinical evaluations in early pregnancy, thereby, inverting the pyramid of prenatal care (Fig. 1). By triaging pregnancies that are at the highest risk for complications occurring in the later in gestation and by identifying those that are at very low risk, a prenatal care plan can be developed that is tailored to individual patients.

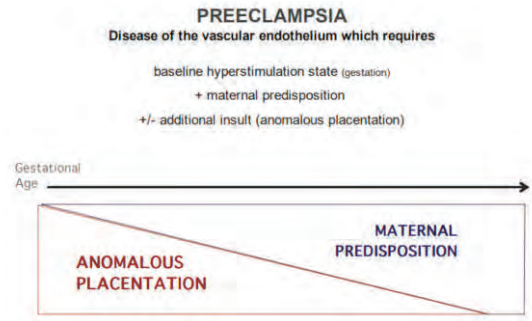


It has become apparent that most major aneuploidies can be identified at 11 to 13 weeks' gestation by a combination of maternal characteristics, ultrasound findings and biochemical testing of maternal blood. It is also becoming increasingly apparent that an integrated first hospital visit at 11 to 13 weeks combining data from maternal characteristics and history with findings of biophysical and biochemical tests can define the patient-specific risk for a wide spectrum of pregnancy complications, including miscarriage and fetal death, preterm delivery, preeclampsia, gestation.

USE OF DOPPLER IN PREDICTION OF PE AND FGR(MAINLY EARLY ONSET FGR)

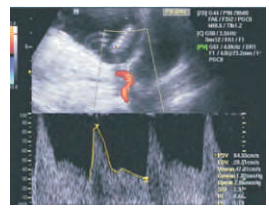
UTERINE ARTERY DOPPLER IN THE 1ST TRIMESTER FOR PREDICTION OF PREECLAMPSIA :

Maternal and fetal complications that are related to abnormal placentation are much more common than both problems combined. Most placental architecture, including placental maternal blood circulation, is established by the end of the first trimester; no further anatomic modifications are evident after the fourth month of pregnancy.

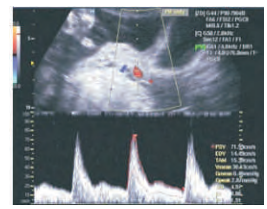


1 UTERINE ARTERY (UtA) DOPPLER:

Uterine artery Doppler assessment gives information about the conversion of the spiral arteries into uteroplacental vessels[74] (Fig14). In the 1st trimester, UtAPI is increased in FGR and SGA pregnancies[75]. A combination of maternal characteristics and UtAPI has a detection rate (DR) of about 43% with a 10%false positive rate (FPR)[74,75]

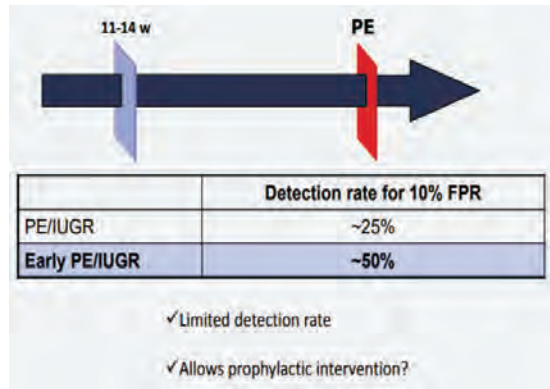


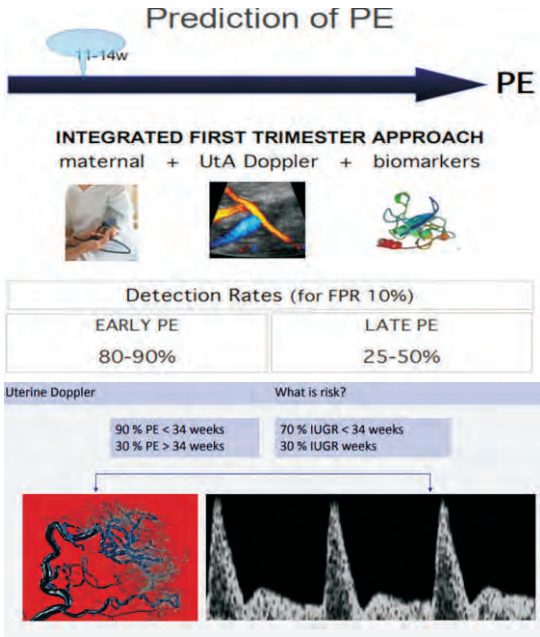
Normal flow in uterine artery with low PI



High resistance flow in uterine artery-

Fig14. Normal and abnormal flows in uterine arteries



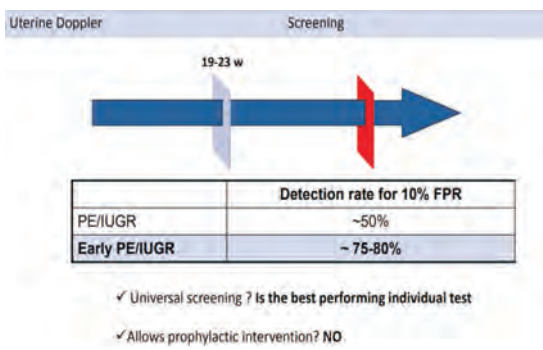


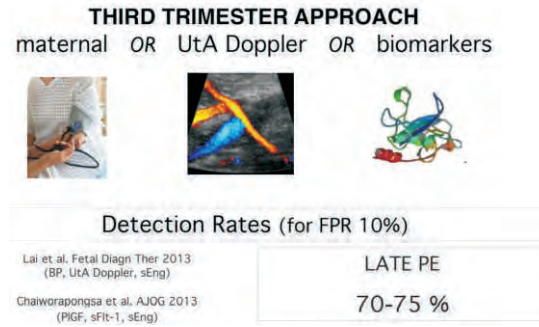
ASPRE TRIAL [9,10]:

Tab aspirin 150mg OD at bedtime till 36 wks to be given in all high risk patient <16 weeks, significantly reduces the risk for PE < 34 weeks – 50%.

The Fetal Medicine Foundation (FMF) algorithm suggests that, for a false-positive rate of 10%, detection of early PE (requiring delivery before 34 weeks' gestation) would be approximately 90% based only on historical factors, maternal blood pressure measurement, and uterine artery PI. The addition of PAPP-A and PlGF levels increases the detection rates to 96%.

UTERINE ARTERY DOPPLER USE IN 2ND TRIMESTER : GOOD PREDICTION BUT DOES NOT HELP IN PREVENTION





DOPPLER FLOWS IN DIAGNOSIS AND PROGNOSIS OF FGR

The purpose of surveillance tests in cases of FGR is not only the correct estimation of the risk for hypoxemia and prelabor acidemia, but also the rate of clinical deterioration [5-7]. Some indices are used for the diagnosis / identification of FGR from SGA, and consequently they are relevant for the delivery decision when pregnancy term is reached [8]. The other set of indices are used for prognostication, since they are useful to determine that there is a high risk of deterioration, and consequently they are used to indicate delivery before term is reached [7,8].

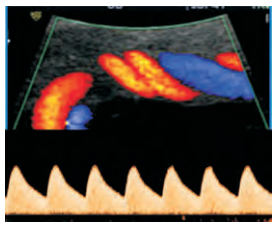
DOPPLER INDICES:

- ✓ DOPPLERS USED TO DIAGNOSE FGR: DISTINGUISH BETWEEN EARLY, LATE, SGA AND FRGP
- ✓ DOPPLERS USED TO PROGNOSTICATE FGR : HELPS TO DECIDE THE NEED FOR PRETERM DELIVERY <37 WEEKS
- ➢ UMBILICAL ARTERY DOPPLER (UA) [11-17]:

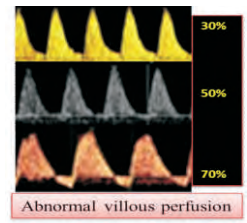
Umbilical artery doppler (UA)

- UA Doppler provides both diagnostic and prognostic information for the management of FGR(fig 12). An increased UA Doppler PI, alone or combined in the CPR, not only helps in the identification of FGR but also helps in assessment of the risks of injury or fetal death.
- Depending on percentage of placental dysfunction, changes will be seen in the UA.

- Thus UA Doppler flows are useful in identification of early –onset FGR [94] . However, in late onset FGR where there is a mild placental dysfunction, umbilical artery as a standalone parameter does not play a role in diagnosis nor prognosis.



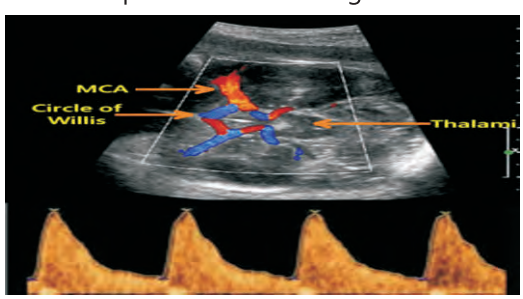
Normal flow pattern in UA



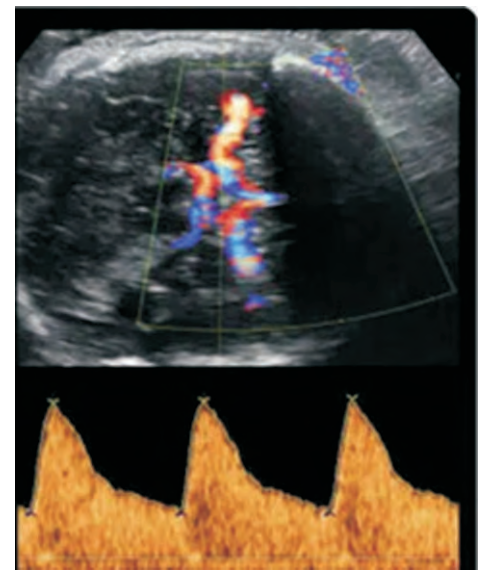
Abnormal flow pattern in UA

➢ MIDDLE CEREBRAL ARTERY DOPPLER(MCA) [5-7 &11-17]:

- In cases of FGR there is fetal hypoxemia / hypoxia that leads to redistribution of fetal cardiac output preferential to the cerebral arteries (brain sparing), coronary arteries and adrenal glands.
- Reduced MCA PI tells us that there is presence of brain vasodilation, a surrogate marker of hypoxia.
- In early FGR, MCA PI and CPR play no role in either diagnosis or prognosis.
- The crucial role of low MCA PI and more so low CPR PI lies in the identification of late onset FGR and FGRP and also in the prediction of adverse outcomes.
- Late FGRs with abnormal MCA PI have poorer neurobehavioral competence at birth and at 2 years of age and thus is an association between abnormal MCA PI and adverse perinatal & neurological outcome.



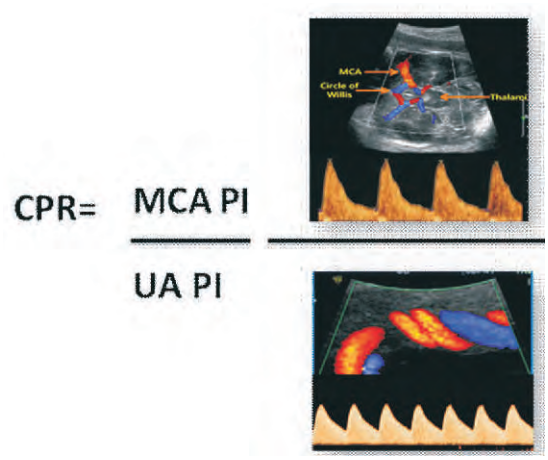
Normal flow pattern in MCA



Abnormal flow pattern in MCA

➢ CEREBROPLACENTAL RATIO (CPR) [5-7, 11]

- CPR combines the pulsatility index of the MCA and UA and is the ratio of MCA PI and UA PI .
- It is more sensitive to hypoxia than its individual components and it correlates better with adverse outcome.
- The CPR is mainly a diagnostic index. Thus, the CPR is already low when either of its components suffer mild changes, even though they fall in the normal ranges .



Cerebroplacental ratio

➢ CPR TREND IN AGA FETUSES AND OPTIMUM CPR VALUE TO DEFINE FRGP : NEWER CONCEPTS

Fetal Doppler assessment may be a better marker than fetal size in detecting these AGA pregnancies with placental insufficiency, fetal hypoxemia and FRGP. Since low CPR is a marker for fetal hypoxemia, fetuses with lower birth weight (BW) centiles (10-50th centile) and CPR <5th centile represent AGA fetuses affected with FRGP. CPR PI is very important in diagnosis, surveillance protocols and management of this late onset FGR/FRGP & AGA FGR /FRGP fetuses.

Since majority of the stillbirths occur in these late onset FGR and AGA FGR groups, future studies are needed to evaluate the role of CPR on the optimum timing of delivery and preventing neonatal morbidity and adverse long term neurodevelopmental problems.

➢ DUCTUS VENOSUS DOPPLER (DV):

The combination of arterial and DV Doppler is an accepted key component of longitudinal monitoring and the prediction of fetal deterioration in early-onset FGR.

DV Doppler flows is the strongest single parameter to play a major role in prognostication of early –onset FGR, as it helps to predict the short-term risk of fetal death. Severe placental insufficiency seen in early onset FGR is progressive and show systemic cardiovascular adaptation. These cardiovascular changes are associated with fetal deterioration and finally decompensation.

The median time interval between abnormal DV Doppler and loss of biophysical variables ranges between 1 and 8 days. In about 50% of cases, abnormal DV precedes the loss of short-term variability (STV) in computerized cardiotocography (cCTG)[56]. Since fetuses between 26- 28 weeks have an average of 2% increase in survival rate per day gained in utero, this median time interval could potentially increase neonatal survival by 14%.

The TRUFFLE study has now demonstrated that in early onset FGR after 26 weeks, DV Doppler, especially in combination with the computerized CTG, guides optimal delivery timing .

Normal flow in DV A wave reversal in DV

Fig 21:

➢ AORTIC ISTHMUS(AOI): NOT USED FOR DELIVERY DECISIONS

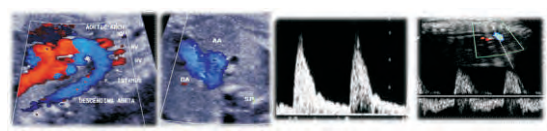
Aortic Isthmus(Fig 22 reflects the balance between the resistance of the brain and systemic vascular systems[131,132].

(AoI) Doppler can be used in prediction of fetal mortality and late neurological injury

In early onset FGR, reversal of flow in AoI (Fig22)is not a short-term indicator of stillbirth risk, as it precedes ductus venosus abnormalities by a week[10]. In early-onset FGR with positive DV flows, a reverse AoI indicates a very high risk of late neonatal neurological injury (57 vs. 9.7%).

Till longitudinal follow-up studies or randomised study protocols indicate a benefit from AoI use in clinical practice, it will continue to remain a research too.

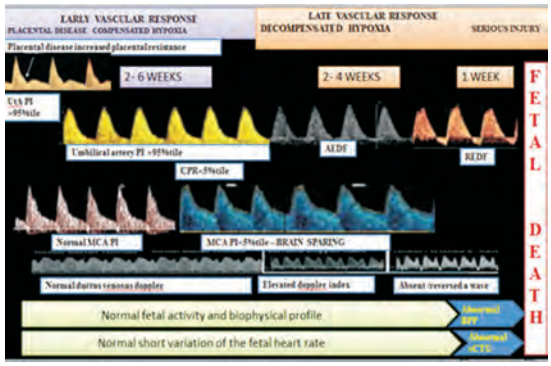
Large studies like the PORTO study did not show any benefit of monitoring AoI on small for gestational age fetuses[8].



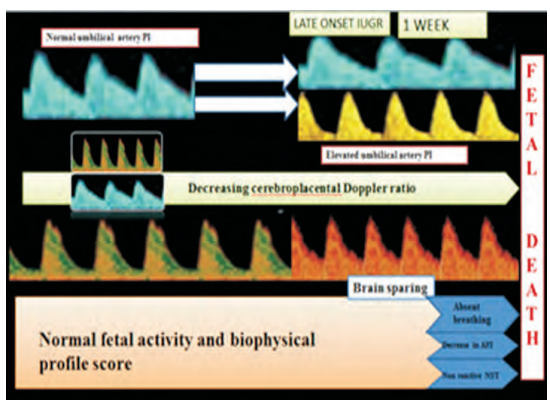
Normal flow in AOI Reversal of flow in AOI

THUS, WHEN WE SEE THE ABOVE USE OF SPECIFIC DOPPLER FLOWS, ITS LOGICAL USE CAN BE APPLIED ACCORDING TO THE TYPE OF FGR

EARLY ONSET FGR – FOLLOWS A CERTAIN A PATTERN AND HAS A CASCADE OF EVENTS (PROGRESSIVE DETERIORATION) [11,14,15]



The figure illustrates clinical progression of Doppler abnormalities seen in early-onset FGR <32 weeks. The early pregnancy scans show high resistance flow in uterine arteries (depicts the pathophysiology of improper trophoblastic invasion). Placental disease affects a large proportion of the placenta, and this is reflected in changes in the UA Doppler in majority of the cases. High resistance flow in UA indicates at least 30-40% of placenta being dysfunctional and thereby causing decrease in perfusion. Further worsening of placental dysfunction leads to loss of end-diastolic flow in UA and venous Doppler changes indicating fetal deterioration. Maturation of Fetal heart rate reactivity is a late event in early onset FGR and thus Computerized cardiotocogram (cCTG) or the biophysical profile (BPP) are the most important parameters to assess fetal well-being. Reversal of the ductus venosus a-wave is followed by an abnormal BPP or stillbirth if the fetus remains undelivered 4.2.1 Clinical evolution in late onset FGR OR AGA FGR/FRGP [15]:



The figure illustrates the clinical progression of late-onset FGR > 32 weeks of gestation. There is mild placental dysfunction and hence the umbilical artery Doppler index may be normal at diagnosis. The Cerebroplacental (CPR) ratio may be abnormal at diagnosis, either due to mild increase in the umbilical artery PI or mild decrease in the middle cerebral artery PI. The CPR may progressively decline. Isolated low MCA PI increases the risk for stillbirth within 4-7 days. Late onset FGR may also show deterioration in the biophysical profile score, such as loss of fetal breathing, low amniotic fluid index (AFI), and loss of fetal heart rate reactivity on the non-stress test (NST).

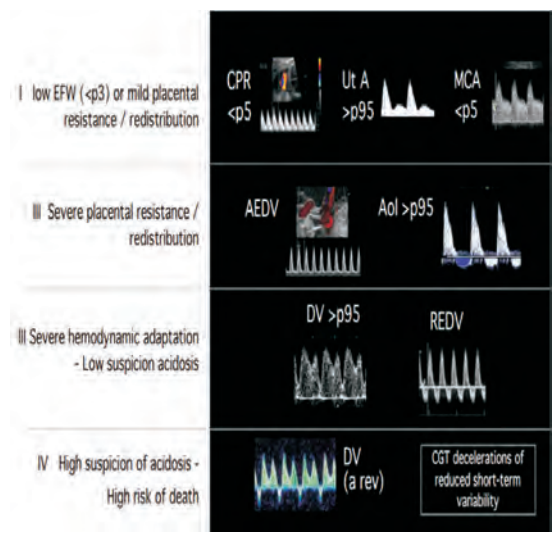
MANAGING FGR ACCORDING TO THE DOPPLER FINDINGS:

1. EARLY ONSET FGR [5-8,11,14,15]:

The crux of management is uterine artery, umbilical artery doppler and ductus venosus doppler flows.

A. THE BARCELONA FETAL MEDICINE STAGE-BASED PROTOCOL FOR MANAGING FETAL GROWTH RESTRICTION IN 2014.

The staging is based on the EFW, changes in doppler flows in either UtA, UA, MCA, DV,CPR and changes in cCTG. The protocol suggested the monitoring protocols and mode of delivery as per the stage of FGR[10].

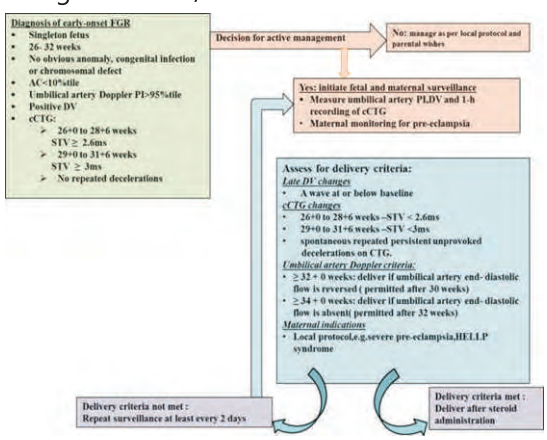


Stage	Pathophysiological correlate	Criteria (any of)	Monitoring*	GA/mode of delivery
I	Severe smallness or mild placental insufficiency	EFW <3rd centile CPR <p5 UA PI >p95 MCA PI <p5 UtA PI >p95	Weekly	37 weeks LI
II	Severe placental insufficiency	UA AEDV Reverse AoI	Biweekly	34 weeks CS
III	Low-suspicion fetal acidosis	UA REDV DV-PI >p95	1 – 2 days	30 weeks CS
IV	High-suspicion fetal acidosis	DV reverse a flow cCTG <3 msFHR decelerations	12 h	26 weeks**

Barcelona based staging for FGR. Any one of the doppler parameters in each stage is needed to classify the FGR in respective stages. 2 measurements 12 hrs apart of the abnormal doppler is needed for assigning the stage

B. MANAGEMENT OF EARLY ONSET FGR BY TRUFFLE STUDY [8,14]:

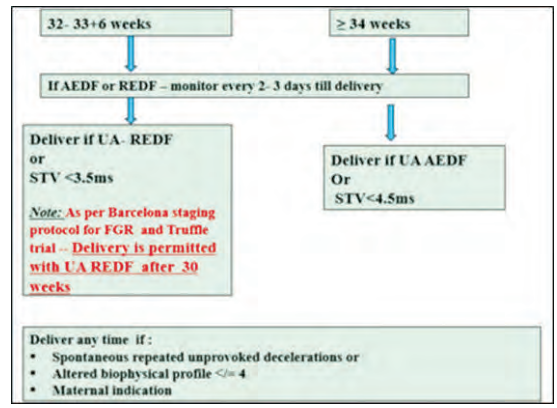
The crux of the management is Ductus venosus doppler flows and umbilical artery along with cCTG /conventional NST + BPP



Treatment algorithm for fetuses between 26 – 32 weeks ---Flowchart explaining protocol recommended by TRUFFLE study for monitoring and management of pregnancies with an early diagnosis of fetal growth restriction (FGR). AC, abdominal circumference; cCTG, computerized cardiotocography; DV, ductus venosus; EDF, end-diastolic flow; PI, pulsatility index; STV, short-term variation .

2.DOPPLER FLOWS IN FETUSES WITH FGR BETWEEN 32- 34 WEEKS [5,11,15]:

The crux of the management is Umbilical artery and ductus venosus doppler flows



3. ASSESSMENT OF FETAL WELL-BEING BY USE OF DOPPLER IN THE MANAGEMENT OF LATE ONSET FGR [5-8,11,15]:

The crux of the management is not fetal size but CPR and MCA PI

Even though late-onset FGR represents milder clinical form of placental dysfunction than early-onset FGR, it is still associated with poor perinatal outcome. . Fetuses near term have reduced tolerance to hypoxemia, because of their high metabolic rate, compared with fetuses at an earlier gestation. Thus, frequent monitoring of pregnancies with late FGR is warranted in the same way as for those with early FGR.

Since fetal size is a poor marker for adverse perinatal outcome in late onset, FGR,doppler indices as markers for fetal hypoxemia are of utmost importance .

Cerebral redistribution indicated by low MCA PI or altered cerebroplacental ratios (CPR) or umbilicocerebral ratios (UCR) have strong association with perinatal death than fetal size.

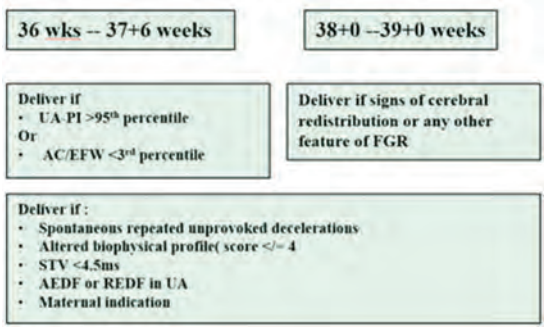
Altered CPR or UCR also predict poorer perinatal outcome, including stillbirth, higher risk of Cesarean delivery, and increased risk of abnormal neurodevelopment at birth and at 2 years of age. Subtle changes between placental and cerebral blood-flow perfusion can be better identified by using ratios of MCA PI and UA PI rather than evaluation of a single parameter.

MANAGING PROTOCOLS [5-8,11,15]:

MCA-PI and CPR PI are the most important Doppler parameters in the management of late FGR. If there is high UA PI (PI>95%tile), monitoring at least once or twice a week is indicated.

After 34+0weeks of gestation, a low MCA PI or CPR PI indicates strict fetal surveillance.A strict fetal kick count to be maintained by the mother with alternate days NST and alternate days assessment of CPR & BPP. If the CPR is low consistently then few schools of thought also encourage daily BPP. Fetal kick count assessment.

Interobserver variability of MCA-PI measure-ment has been seen and thus delivery decisions should not be based on a single MCA PI measurement. The MCA Doppler needs to be reassessed within 24 hrs, to avoid any false - positive results.



The only randomized interventional trial on FGR at or close to term is the Disproportionate Intrauterine Growth Intervention Trial At Term (DIGITAT)[16]. It supported the recommendation that in order to reduce the risk of severe FGR or stillbirth, all cases of SGA and FGR should be delivered by 38weeks and should not exceed 38+6 weeks. There is also no evidence on the optimum time of delivery in such cases. Till then, each hospital should follow a dedicated protocol, based on local experience and resources.

Thus Logical use of doppler flows in FGR will require:

1. Prediction of PE and FGR in 11- 13+6 weeks scan
2. Triage high and low risk patients and high-risk group to be started on Tab aspirin 150mg daily at bedtime till 36 weeks – prevention of PE and its effects (FGR)
3. Correctly diagnose the type of FGR – early or late FGR
4. In early onset FGR – the umbilical artery and ductus venosus doppler flows are the most important vessels to be interrogated. Application of algorithm for management of early onset FGR – Barcelona protocol may be used as it is simpler to understand and apply in daily practice. The Truffle protocol has to be understood and conventional NST +BPP should be combined with doppler flows especially Umbilical artery and DV doppler flows in very early onset FGR.
3. Late FGR needs strict monitoring due to sudden deterioration without the classic cascade. The use of CPR and MCA PI along with fetal kick count and BPP is the tool to decide the optimum time of delivery. Still, we do not have clear cut guidelines for delivery time in AGA FRGP /late onset FGR cases. Every case needs to be understood and delivery decision will be based on case-to-case basis or as per local or regional preferences.

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LIST OF PATRON MEMBERS OF MOGS

1 AGARWAL MEERA	30 GUPTE SUDHIR	59 PRABHU APARNA
2 AGASHE UMA	31 HANSOTIA MEHROO D.	60 PURANDARE C. N.
3 AGRAWAL JYOTI	32 HEGEDE APARNA	61 PUROHIT R. K.
4 ALLAHABADIA GAUTAM	33 INGLE KUMUD	62 RAO RESHMA
5 APTEKAR S	34 JHAVERI JAYSHREE	63 SANJANWALA SATISH
6 BALSARKAR GEETHA	35 KAPADIA VIPUL	64 SANKARI K.
7 BATWAR KIRAN	36 KARANDE C. J.	65 SARAIYA USHA
8 BELVI G.B.	37 KHAMBHATI VIJAY	66 SARAOGI RAJENDRA M.
9 BHALERAO -GANDHI ASHWINI	38 KHARKHANIS RAJESHREE	67 SARAOGI RASHMI R.
10 BHALERAO SARITA	39 KISHANCHANDANI D. H.	68 SHAH DURU
11 BHATIA PRAMILA	40 KRISHNA USHA	69 SHAH L. M.
12 DAFTARY SHIRISH	41 MANGESHIKAR PRASHANT	70 SHAH P. K.
13 DANDEKAR LATA	42 MANIAR RANJAN	71 SHAH SARYU
14 DASTUR ADI	43 MEHTA K.	72 SHAH T. P.
15 DASTUR NAYNA	44 OMPRAKASH USHA	73 SHERIAR NOZER
16 DATAR SUDHA	45 PAI DHILLON RISHMA	74 SHETH SHIRISH
17 DAVE DEEPAK	46 PAI DHUNGAT P. B.	75 SINHA RAKESH
18 DEODHAR LALITA	47 PAI DHUNGAT P. P.	76 SOLANKI H. M.
19 DESAI DIPAK	48 PAI HRISHIKESH	77 SOONAWALA R. P.
20 DESAI S. R.	49 PALANDE ANIRUDDHA	78 TAMBE PRATIK
21 DESAI SADHANA K.	50 PALSHETKAR NANDITA	79 TANK D. K.
22 DESAI SAROJ	51 PANDIT BIPIN	80 TANK JAYDEEP
23 DESAI SHYAM	52 PANDIT R. D.	81 TRIVEDI PRAKASH
24 DESAI VINAYAK	53 PANDYA MADHAVI	82 UPPONI R. K.
25 DESHMUKH K. K.	54 PARIKH MAHENDRA	83 VIRKUD AJIT
26 GALVANKAR PREETI	55 PATKI AMEET	84 VYAS PRITI
27 GANATRA ATUL	56 PATWARDHAN VASANT	85 WALVEKAR VANDANA
28 GANATRA SARALA	57 PENKAR SUBHASH J.	86 WARTY K. R.
29 GUPTE DEEPA	58 PEREIRA MARIE	

"APPEAL TO ALL MOGS MEMBERS, BECOME PATRONS!"

14th July, 2021.

Dear Member,

This is an invitation to you to become a Patron of our Society. You have been a Life Member and thus shown your lifelong interest in the Obstetrics & Gynecology. You are today a well established Professional and with your vast experience are able to give patronage to the Society and help it to develop further.

Most of us become Life Members a long time ago with a modest sum the interest on which is not adequate to cover FOGSI and JOGI dues. Our Society has grown and enlarged the sphere of activities. Funds are required to keep the Society going.

By becoming a Patron, you will be helping the Society to pay your share of dues and lightening the financial burden. Next year we will be having the Golden Jubilee Annual Conference. We hope to felicitate all Patrons by presenting a special Brooche which can be worn at all our functions. A special list of all Patrons will also be printed; also a Board giving the names of all Patrons will be put in our office.

To enable us to go ahead with our plans we urge you to return the enclosed papers together with your cheques by the deadline.

Thanking you,

Yours sincerely,

Dr. Sarita Bhalerao
President

Dr. Suvarna Khadilkar
Secretary

Dr. Shailesh Kore
Treasurer.

EXTRACT FROM THE CONSTITUTION OF THE MUMBAI OBSTETRIC & GYNECOLOGICAL SOCIETY

Patron's Fee :-

1) New entrants

   A one time payment of fRs.25,000/- or as exists at the time of joining. No entrance fee is payable.

2) Existing Life Members

   A one time payment of the difference between Rs.25,000/-(or the existing Patron's Fees) and the fees paid by the member at time of becoming a Life Member. No separate entrance fee is payable again.

3) Existing Ordinary Members

   A one time payment of Rs.25000/- or as exists at the time of joining. No separate entrance fee is payable.

_____To,

Dr. Suvarna Khadilkar

Secretary,

The Mumbai Obstetric & Gynecological Society.

Dear Dr. Khadilkar,

I would like to become a Patron member of the MOGS. I am herewith enclosing a cheque of Rs.25,000/- drawn on _____Bank,

_____Branch, No._____dated _____.

To return, kindly refund me my life membership fees paid earlier.

Thanking you and with kind regards,

Yours sincerely,

(Dr.) Mobile No.

Encl : a cheque of Rs.25,000/-

Deadline :-

Interview of

Dr Shyam Desai,

Chairman, Board of Trustees, MOGS
By Suvarna Khadilkar, Secretary MOGS

Dr Shyam Desai is consulting Obstetrician Gynaecologist, Endoscopic Surgeon, Hinduja Hospital, Nanavati Hospital. He has held several prestigious positions like President of FOGSI, President of MOGS, President IAGE, Vice Chairman ICOG. He has recently been elected to the post of president, SAFOG 2023 to 2025.

At the outset, I thank you for giving time for this interview ! Do you have any memories about Schooling?

I attended two schools the first being a Military School at Satara The Satara Sainik School from the tender age of 10 years till the age of 14 years ie 5th standard till the 9th standard. Proper sense of discipline instilled at an early age and good values taught with accent on physical fitness in culcated I subsequently attended and did my ICSC from the Bombay Scottish School in Mahim where I was exposed to the literary arts with Elocution and Debating. A sense of proper values in life were imbibed with the importance of putting ones best foot forward at every stage in life being stressed upon.

Where did you have college education?

Since I passed out with distinction and a good aggregate I could get admission directly into Inter science at St Xaviers College At St Xaviers College life was indeed a revelation with various aspects of life being up for experience-socializing and interacting with students of a different fraternity and walk of life since it was an Arts and Science College I Represented St. Xaviers at the Intercollegiate level in tennis and was short listed to represent Bombay University at the National level however it was my desire to do well at the final Inter science exam that made me relegate tennis to a second level.

How did you decide to take up medicine as your career?

Eventual aim was always to get into a professional course possibly Medicine so efforts towards that goal were pursued Medicine was an attraction mainly for three reasons. As a Service to humanity it seemed the best way to do something for your brethren, also those days it was considered a noble profession in comparison to other professions, and lastly though a difficult profession to follow in terms of stress, hard work, long hours not only during training but also later in life, it seemed the best profession by a long way.

You must have been brilliant academically what was the undergraduate medical education like?

Medical school Seth G S Medical College and KEM Hospital located in Parel was a far cry from the St. Xaviers College and so were the co students. A Cultural shock would be appropriate to describe it , but with the passage of time I got into the stream and spent great 5 years as an undergraduate

student Seth GS medical college. Since I had passion about sports, I was able to represent Seth G S Medical at the University and Intermedical Competitions in Tennis, Cricket, Footballl and Hockey with success.

Please tell us about your postgraduate days.

I completed the Final MBBS with Distinction in Ob Gyn and Midwifery and was awarded the H Desa Gold Medal for highest marks at the Final MBBS. Thanks to some excellent teaching at the Wadia hospital with eminent stalwarts like Dr. V. N. Purandare, Dr.Shirish Daftary, Dr. MN Parikh and Dr. N. D. Motashaw and Dr. M. R. Narvekar in KEM Obsterics and gynecology department, I developed affinity for Ob. Gyn. Postgraduation and so did residency in KEM hospital's Ob. Gyn. department. Also it was something very practical with both Medicine and Surgical procedures involved. Little did I realize that almost every aspect of it is an Emergency!! However, I was truly fascinated by the Subspeciality With a affinity for Ob Gyn postgrauation was a wonderful experience.

May we know how you met your life partner and what role she has played in shaping your career?

Well, it was in 1978 when I was a Gynaec Registrar and a very pretty young lady walked up to me and said she was my new Intern. Little did Meena or I realize that we would play such an important part in each other's lives beginning in the near futureI encouraged her to take up Pathology as a specialist so that at least one of us would be able to look after our children as they grew upIt was indeed providential that we came together and we have helped one another along to achieve our goals We have two wonderful children my son Gaurav who is an Asst Prof Ob Gyn at KEM and my daughter Radhika who is a Faculty at the Bristol Dental College in the UK Both are doing very well ad have made us parents very proud My daughter in law Shama is a National Marketing manager in a well-known international brand Unless one has a supportive spouse, it is not easy to achieve a lot professionally and though her specialization as an Onco-pathologist keeps her busy Meena always makes it to the National and International Ob. Gyn. Conferences and programs whenever possible.

It is often said that whatever skills you learn in residency they remain with you forever How was your experience during your residency? Who were your role models?

The Residency passed off in a flurry of heavy work load and hectic schedule of day and night emergencies. Out patient management, Labor management, operative training, interaction and learning lessons from teachers and seniors enriched my clinical acumen and management skills. Teaching juniors in itself was a learning experience. Besides we inculcated various skills with interaction amongst other specialists as a Registrar and Lecturer at the same time reading the post graduate texts and manuals presenting Papers at our MOGS conferences. Dr. S. N. Daftary was a constant support to me encouraging me to rise further in the Profession at every stage. Ob. Gyn. became indeed a passion I spent 10 years in KEM hospital as a House Surgeon, Registrar and Lecturer and as Asst Professor at Sion Hospital for a year a span of time and training that stood me in good stead as I headed off into private practice as a consultant.

What led you to take up Gyn Endoscopy as a subspeciality?

We were Fortunate to have Endoscopy introduced as a speciality during our training thanks to Dr. Motashaw Not only did we pick up this unique technique but by virtue of having done it ourselves mainly for Infertility but also by being Faculty at the Training programs that KEM organized for Professors and Asst

Professors from various parts of India Dr. V. N. Purandare took us as Lecturers on Lap Sterilisation camps to various small towns in Maharashtra Parbhani Hingoli Osmanabad Aurangabad and Jalgaon where we did large number of Sterilisations almost 200 to 400 cases in a single camp which was the need of the day for the Nation at that time This gave us tremendous confidence in performing the procedure.

Sir but I remember you were a postgraduate teacher for students of Grant medical college

My appointment as Honorary Professor at the Wadia Hospital was indeed a major event in my professional and academic life. Not only did it give a solid base as a teacher but also enabled me to achieve further recognition in our speciality both National and International. I took deep interest in guiding the thesis work done by postgraduate students assigned to me.

You have done tremendous work on the platform of many local and National organisations. How did it happen?

After joining Wadia hospital as honorary professor, I was amongst the well known Obstetricians and Gynecologists of the city and country attending the Hospital as Consultants Dr. R. P. Soonawala Dr. V N Purandare, Dr. Ajit Mehta, Dr. M N Parikh, Dr. R D Pandit, Dr. S N Daftary, Dr. Mehroo Hansotia and Dr. Dina Patel were amongst the seniors. They were all involved in the FOGSI, the IAGE and similar professional Organizations and it was but inevitable that I got involved in organizing conferences, seminars Workshops and interactions with foreigners in the Hospital Wadia hospital was at the peak of academic activity then with Prof. Kurt Semm, Dr. Bruhat, Dr. Paul Devroey, Dr. Chris Sutton being some of them. In 1992, I entered the MOGS and FOGSI at the same time. I was elected as Jt. Clinical Secretary in MOGS and Treasurer FOGSI both in the same year. This truly opened the doors for me at the National level being an Office Bearer in FOGSI Endoscopy as a passion continued to project me in the limelight and I started conducting training programs in operative Gynaecology in Wadia Hospital for the MOGS when Dr. Usha Krishna was the President. I had conducted workshops when Prof. Chris Sutton came as Faculty. He gave me an opportunity to showcase my ability as an operative Laparoscopic Gynaecologist. I went to Clermont Ferrand for training in Operative Gyn endoscopy at the invitation of Prof. Bruhat for 2 months and then to Keil Germany to Prof Semm's department for a month. This opened new vistas for me as I got the exposure at an International Centre A momentous workshop conducted by Prof Chris Sutton in 1996 gave me a tremendous boost when I showed the technique of suturing the Uterine artery and avoiding Electrocautery at Lap Hysterectomy. This impressed Prof Sutton immensely and Prof Sutton invited me to spend 2 months as faculty in his department at Royal Surrey County Hospital UK which was a referral centre for Laser treatment of Endometriosis I got first hand use of the ND Yag laser a popular modality at the time and was Immensely benefitted by the time I returned from UK.In the year 1997 I became the Secretary of the MOGS and was able to spend an eventful year with Prof Usha Saraiya as the President Not only was the Secretary post educative but also gave me a chance to interact with National and International personalities such as term breech trial fame Prof Mary Hannah. The year I worked with Dr.Usha Saraiya as Secretary MOGS which was really well spent and served me in good stead for my Secretary General FOGSI post which I began in 1998. The Secretary General post opened new vistas at the National level Not only did it open the National stage but gave

me a chance to meet and get to know almost every prominent gynaecologist in the country. I enjoyed interacting with them at the Office level, addressing them at conferences and CMEs or solving their queries with a view to help as much as possible in solving their difficulties. This close interaction with them which lasted for a long period of time immensely helped me.In fact I was Secretary General for 5 and half years and worked with Prof. Rajan, Dr. Mehroo Hansotia, Dr. Alokendu Chatterjee, Dr. Kamini Rao, Dr. Usha Saraiya and Dr. Sadhana Desai as Secretary General and we saw the FOGSI member ship grow to approximately 25000 by the end of my tenure.

Sir how did you start working for international organisations?

The Secretary post also opened up international exposure. I was appointed to the SAFOG Executive Council as Founder Deputy Secretary General in 1996. SAFOG which had just been established in Sri Lanka held a lot of promise because we as South Asian Countries, like India Pakistan Sri Lanka Bangladesh Bhutan Nepal and Maldives had so many common problems which were not addressed adequately in the other organisms such as FIGO and AOFOG. Fortunately the gynaecologists from the other countries were also enthusiastic enough to table the interaction to reach high levels at National Conferences and International CMEs. I held the posts of Secretary General SAFOG for 7 years then took over Vice President post for 4 years before being Director International Relations for 4 years. Dr. D. K. Tank was instrumental in making this happen. He got me into the organization and gave the necessary support. I became President of the IAGE in 2003 and was instrumental in opening up the IAGE to a National level. So far the Office bearers could only be from Mumbai but by organising activities in Bhubaneshwar Coimbatore Agra Lucknow and Pune and changing the Constitution so that the posts of office bearers could be open to all Indians. Thereafter more and more national activities began and the IAGE is now a well-known body recognised internationally.

How did you attain the AOFOG Chairmanship?

In the meantime at the AOFOG where I had been the FOGSI Representative from 2007 to 2009 I contested the post of Chair Maternal and Perinatal Health against a strong contender from Japan. What helped me in that election was the fact that I was Secretary General of SAFOG at that time and I highlighted the fact at my brief speech before the election that Maternal Mortality was highest in South Asia and that was where the Chairman of this committee should come from. Some of my Ardent supporters in the cause were the Pakistan delegation headed by Dr.Shahida Zaidi from Karachi and the Nepal President Dr. Pramila Pradhan and Dr. Rohana from Sri Lanka As the AOFOG Maternal Health Chair I got a lot of support in the SAFOG and more and more AOFOG sponsored workshops were held in SAFOG countries very successfully.

MOGS congratulates you and feels proud that you have been elected to the prestigious position of" President of SAFOG". Please tell us the story sir!

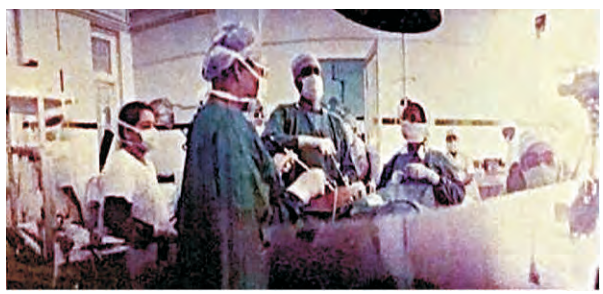
The election to the SAFOG President was held unofficially amongst the SAFOG Council Members and my long Standing interaction at a personal level ensured that every country backed me and elevated me to the Presidency. All my achievements could not have been possible without constant support from my family My wife Meena Children Gaurav and Radhika and my elders who took my forays over the week ends very

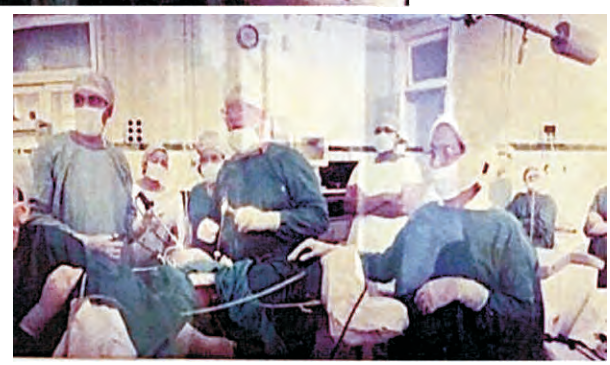
patiently and supported me at every step of the path to success I thank all the Office bearers and members in the Organizations that I headed, like MOGS IAGE FOGSI for supporting me in my journey to the Presidency of an International body.

Please give a message to young aspiring gynecologists and laparoscopic surgeons

With increasing awareness and enthusiasm amongst the present generation of Ob Gyn specialists in our country, the competition in climbing ladder in Professional organisations is bound to increase This means more hard work and involvement in the organizations to a greater extent If one is willing to put in the extra mile and with a little ingenuity one can make a mark One must keep up ones involvement and show your seniors that you are willing to work hard.

Thank you Dr. Suvarna Khadilkar for the opportunity to give an account of my journey in my professional career in this interview. I would like to congratulate you and Dr. Sarita Bhalerao for the excellent work you are doing as Secretary and President of the MOGS Your dedication and desire to excel shows in your efforts It is clear that running an organisation such as MOGS is not easy in these rather tenuous times. Thank you MOGS!!





MEMBERS ACHIEVEMENTS :

Dr. Ajit Virkud- YouTube channel

Dr Suvarna Khadilkar :

- Dr. Suvarna Khadilkar has been awarded the title Editor Emeritus of Journal of Obstetrics and Gynecology of India(JOGI) FOGSI, for 24 years after completing her tenure as editor in Chief, JOGI.
- Dr. Suvarna Khadilkar has taken over a deputy secretary general of FOGSI

Dr Rajshri Katke :

Contribution to Women's Health

- Since last 23 years. Presently working as a professor at Grant Government medical college mumbai. Great academician and Teacher. Global known Researcher who has published

100+ articles and 220+ citations. Crossed one lakh readers across the globe. Reviewer in International journals and written Editorials. Recipient of various prestigious awards. Worked as Excellent Administrator as a superintendent of Cama and Albless Hispitals mumbai. Worked as Member on pocso manodharya committe and state PCPNDT committee too.

- Headed various committees. The work was appreciated by the United Nations General Secretry Honourable Ban ki moon sir. Done many health camps at the Rural and urban area in Maharashtra. For the Beed mahaarrogyashibir Honourable Chief minister sir gave appreciation letter.
- Invited speaker on Digital media on health awareness programs in women's issues.
- Recently awarded by Lokmat women's acheivers award 2021. Mumbai acheivers award and Waghini puraskar.
- Contributions of articles for Human milk banking and also worked as in the field of HIV as PPTCT Incharge. Work on unwed mother's published article.

Dr Nandita Palshetkar:

- Fellowship honoris causa from RCOG for achievement in the development of women's healthcare September 2021 at London
- Received CME Dronacharya Award for exemplary contribution towards Gynaecology & IVF 2021
- Received CSR Award for contribution in Women & Child Health initiative 2020
- Received FOGSI DC Dutta Prize for Best FOGSI Publication - FOGSI FOCUS on Recent Advances in Infertility 2021
- Received "ICOG Vidya Bhushan Award" for her outstanding work in ICOG 2021
- Received Dr BN Purandare outstanding social services award by MOGS 2021

Dr. Hrishikesh Pai :

1. CME Excellence Voyager Award by IHW Council & Omnicuris at CME Excellence Awards, August 2021.
2. Felicitated for Dr P K Devi Oration by Nagpur Obstetric & Gynaecological Society, July 2021.
3. ICOG Vidya Bhushan Award by Indian College of Obstetricians & Gynaecologists, June 2021.
4. MOGS Mr. N.A. Pandit & Mrs. Shailaja N. Pandit Award for outstanding work done towards Women's Empowerment by Mumbai Obstetric & Gynaecological Society, 2020-21.
5. Recognized by The Economic Times – Business Leaders 2020-21 as leading IVF Specialist at Mumbai, March 2021.
6. The Economic Times – ET Panache for his exemplary achievements as Iconic IVF & Infertility Specialist at Times Interact Achievers 2020 at Mumbai, January 2021

Dr Rishma Dhillon Pai achievements in 2020-2021

- Awarded the Lifetime achievement award by Indian society for the study of reproduction and fertility. ISSRF -2021
- Vidya Bhushan award by the ICOG-2021. .
- COVID Essential heroes award 2021-
- CME North star award for PG education by CME Excellence awards.
- Appointed as Asst Treasurer of International Federation of Fertility societies- IFFS. A federation of 64 member countries.

Dr. Niranjan Chavan:

1. **POSITIONS :**

   Joint Treasurer, FOGSI (2021-2024)

   Vice President, MOGS (2021-2022)

   Secretary General,MAGE (2019-2023)

   Joint Treasurer, AFG (2021-2022)

   Member, SAFOG Oncology Committee(2020-2023)

2. **AWARDS-**MOGS SPECIAL AWARD for Outstanding contribution to Women's Health, by MOGS President Dr Rishma Pai on 29th April 2021.

   MANYATA AWARD by FOGSI on 22nd July 2021.

   MAHARASHTRA HEALTHCARE EXCELLENCE AWARD at the hands of *NITI AAYAOG* Member on 28th July 2021.

   MOGS TEACHERS DAY FELICITATION AWARD for valuable contribution in O & G by MOGS President Dr Sarita Bhalerao on 5th Sept 2021.

3. **Editor in Chief of 3 Journals.**- Journal of Global Obstetrics and Gynaecology (JGOG), Fertility Enhancement and Minimal Ascess Surgery Journal (FEMAS) and Times of Anaemia Journal (TOA)

FORTHCOMING PROGRAMS

Sr. No.	Date	Program
1	25.09.2021	FOGSI MCM meeting with Outreach Program A. Talks - 1. Oral Contraceptives- Benefits beyond Contraception 2. Preterm Labour B. Panel discussion on PPH
2	25.09.2021	NA Purandare Teaching Program at HBTMC Cooper Hospital
3	26.09.2021	World Contraception Day & International Safe Abortion Day FOGSI with MOGS
4	30.09.2021	GBM of MOGS
5	16th & 17th October, 21	MOGS With AMOGS Conferenece on New Vistas in Fertility Dr. M Y Raval Oration - Orator - Dr. Nandita Palshetkar
6	October, 21	Dr. N A Purandare Teaching Program at Wadia Hospital
7	October 27	MOGS HBTMC Cooper Hospital Training Program for Comprehensive Health Response to Violence Against Women and Children
8	12.12.2021	MOGS CME on "New Vistas in Gynaec Oncology"
		MOGS - Dr. Subhash Penkar & Dr. Marie Pereira Oration - Orator - Dr. Neerja Bhatla
9	Feb., 2022	MOGS Dr. Nandita Palshetkar POST GRADUATRE CME
10	March, 2022	Annual Conference of MOGS Dr. Shirish Sheth Pre Conference Workshop

WORLD BREASTFEEDING WEEK (WBW) 2021 – MOGS REPORTS

MOGS Activities planned for WBW 1st to 7th Aug were diverse and extensive:

DATE	VENUE	AGENDA	CONVENORS	REMARKS
1st Aug Sunday	Online during New Vistas in Endometriosis MOGS CME	Launch of BF video released by Dr Rishma Pai for launch of MOGS Activities for WBW	Dr Sudha Tandon and Dr Nagarkatti asking questions to MC members on Breastfeeding FAQs	Google drive link with a 25 minutes video exhaustively covers Breastfeeding. and a 4 minute video synopsis
3rd Aug	Hybrid Program Live at Dr. R N Cooper Hospital and on zoom	Inauguration of WBW Celebrations In association with Mumbai BF Promotion Committee	Dr Reena Wani	Release of training module and Comprehensive booklet on BF, 80+ attendees and 50+live on Zoom
3rd Aug	Saifee Hospital	In house training with Pediatricians	Dr Sujata Dalvi, Dr Bhumika Kotecha	
4th Aug	Radio show	LIVE on air at FEVER FM 104 answering questions on Breast Milk	Dr Niranjan Chavan	4 episodes live talk show
4th Aug	Webinar	MOGS-FOGSI on WBW Theme	Dr. Suvarna Khadilkar, Dr. Priya Vora, Dr. Pradnya Changede	Total attendance was 210 (delegates & faculties)
5th August	TNMC & BYL Nair hospital 10.30am to 1.30pm.	Community awareness program for WBW	Dr Shailesh Kore	Part of Nair centenary year celebrations
5th Aug	V N Desai Hospital	Health talks and posters on BF	Dr Komal Chavan Dr. Lalita Maydeo	180 patients
6th Aug	V N Desai Hosp. in person	CME Key issues in Breastfeeding	Dr Komal Chavan Dr. Lalita Maydeo	Program was attended by 42 delegates
6th Aug	N Wadia	6 Health talks. Poster competition for Nursing staff and Nursing mothers	Dr Sujata Dalvi	38 participants
7th Aug	MOGS Outreach program via webinar	Summary of WBW Activities, Panel discussion on BF & Declaration of results of poster competition	Dr Punit Bhojani, Dr Mansi Medhekar, Dr Pradnya Supe	Total registrations were 418 with total live attendance of 288
All Week	Radio Show	Fever FM Radio Activity	Dr. Kedar Ganla, Dr. Rana Choudhary, Dr. Nishita Parekh	

PROGRAM HIGHLIGHTS :

MOGS MBPC & Department of Obstetrics and Gynaecology at HBT Medical College and DR RN Cooper General Hospital organized "WBW-2021" inaugural program on **3rd August 2021** between 1 to 4.30 pm in the PSM Lecture hall. The theme for WBW 2021 is " Protect breastfeeding- a shared responsibility". Keeping in mind the pandemic situation the programme was conducted in a "hybrid" manner with over 80 delegates attending physically and over 50 people attended on zoom virtual platform. The program was recorded and uploaded on Youtube.

Dr Mangala Gomare (Executive Health Officer) MCGM was the Chief Guest for the programme. Dignitaries from Breastfeeding Promotion Network India (BPNI)- Maharasthra and MBPC graced the occasion with their presence physically and online.

Dr Reena Wani (President, MBPC) gave the introduction to WBW2021 theme "Protect breastfeeding- a shared responsibility". The highlight of the event was Release of Breastfeeding training Module " Breastfeeding : A precious Bond" at the event. A copy of this training module was distributed to all colleges along with a pendrive containing PPTs of the chapters for training of doctors and healthcare workers. The editorial team for the booklet Dr Reena Wani, Dr Prashansa Raut and Dr Sayli Wankhedkar were lauded for their efforts.

Dr Mangala Wani (President BPNI) and Mrs Sangeeta Vakharia were awarded with Dr NB Kumta Award for their contribution to the field of breastfeeding awareness .Ms Rekha Samant (Senior NICU nurse and Project Coordinator –FBNC,RCC,KEM Hospital)was awarded with MBPC Lifetime Achievement Award . Prize winners were awarded certificates and cash prizes. Judges and Conveners for poster and streetplay competition were felicitated. 2 prizewinning streetplays (Doctors category- Terna Medical College and Nurses Category- TNMC and BYL Nair Hospital) were performed live for the audience which were very enjoyable.

The zoom link for programme was provided by MOGS. Lunch boxes were provided by SUN senora Pharma. Emcure Pharma helped out with Breastfeeding training Module and pendrives. Indian academy of Pediatrics(IAP), MOGS and BPNI helped with Cash prizes and other logistic expenses.

MOGS-FOGSI live webinar on Protect Breastfeeding : A shared responsibility, Wed 4th August from 4pm to 5 pm. Dr.Priya Vora & Dr.Pradnya Changede were the conveners.

The program started with the welcome address given by Dr,Suvarna Khadilkar,Secretary Mogs. Following which a video message of Dr. Shantha Kumari , President FOGSI was played.

This was followed by an interactive panel discussion on Breastfeeding in Special situations which was moderated by Dr.Priya Vora & Dr.Pradnya Changede.

The Panelists were Dr.Y.S Nandanwar ,Dr.MangalaWani, (PresidentBPNI,Mah),Dr .Sandeep Mehta (neonatologist) and Manju Verma (lactation consultant).The various cases were discussed in depth by our experts and they gave very important take home points .

The next session was chaired by Dr Sarita Bhalerao ,President Mogs and Dr. Suvarna Khadilkar .

Dr.Madhuri Patel (Secretary General FOGSI) gave a very informative talk on Breastfeeding in the modern world ,Benefits ,problems & interventions .

This was followed by Q &A and vote of thanks was given by Pradnya Changede.

MOGS with Department of obstetrics and gynecology of TNMC & BYL Nair hospital arranged community awareness program on occasion of Breast feeding promotion week as part of centenary year celebrations on Thursday 5th August between 10.30am to 1.30pm. The program had patient sensitization talks by Dr. Rajeshree, skit by nursing students, video message by MOGS office bearer & ObGy students, lectures for UG & PG students by Dr. Vandana & Dr. Munira and

poster exhibitions by ObGy residents n nursing students. This program was possible because of efforts of residents Dr. Gauri, Dr. Anurupa, Dr. Cara, Dr. Ketki, Dr. Bhakti n Dr. Juveria well supported by SMO Dr. Neha & Assistant professor Dr. Munira & Dr. Shweta. Sincere thanks to Sister Tutor n Nursing students of Nair.

Glimpses of WBW 2021 2days program at V N Desai Hosptial 5 th & 6 th August 2021 with MOGS & FOGSI Medical Disorders in Pregnancy Committee

5 th August Awareness Program with Health talks and Posters by Resident doctors. More than 180 patients attended and took Pledge.....

6th August 2021, CME started with video message of FOGSI President Shanthakumari. Participants were overwhelmed by wonderful message by MOGS President Dr Sarita Bhalerao. Following which MOGS Office bearers Video was played. Talks were given by Dr Komal Chavan , Dr Pallavi Pandey Dr Lalita Mayadeo, Dr Shweta Kashikar , Dr Maullik Shah, (Paediatrician), & Dr Dharmashri Kadam (Surgeon) .

Grand Finale: MOGS Outreach Program Webinar Saturday 7th August 5-8pm

Conveners of the program were Dr Punit Bhojani, Dr Mansi Medhekar, Dr Pradnya Supe and the MOC were Dr Bhavini Shah, Dr Kausha Shah, and Dr Mridula Sarda. Total registrations were 418 with total live attendance of 288.

The programme started by welcome address by our secretary Dr.Suvarna Khadilkar who welcomed the entire faculty and highlighted the focus of this programme on breastfeeding as well in view of celebration of the World breastfeeding week. Dr.Sarita Bhalerao gave the Presidential address and explained in detail all the activities done by MOGS during the breastfeeding week.

This was followed by Breast feeding week Poster competition prize announcement. The judges for the poster competition were Dr.Madhuri Patel and Dr.Sneha Bhuyar. Dr.Ganpat Sawant was the Managing Council member in charge of the poster competition. Dr.Ridhhi Desai and Dr.Kinjal Shah were the co -ordinators for this competition and announced the prizes for the same. There were 17

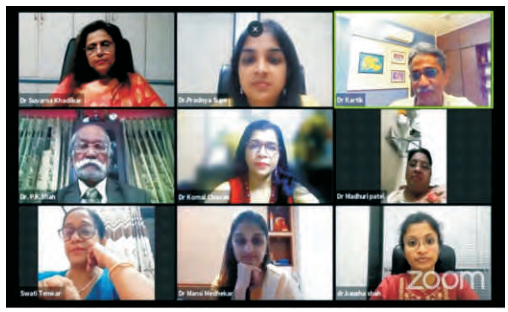
poster entries in total. The winners of the MOGS Poster competition were as follows:

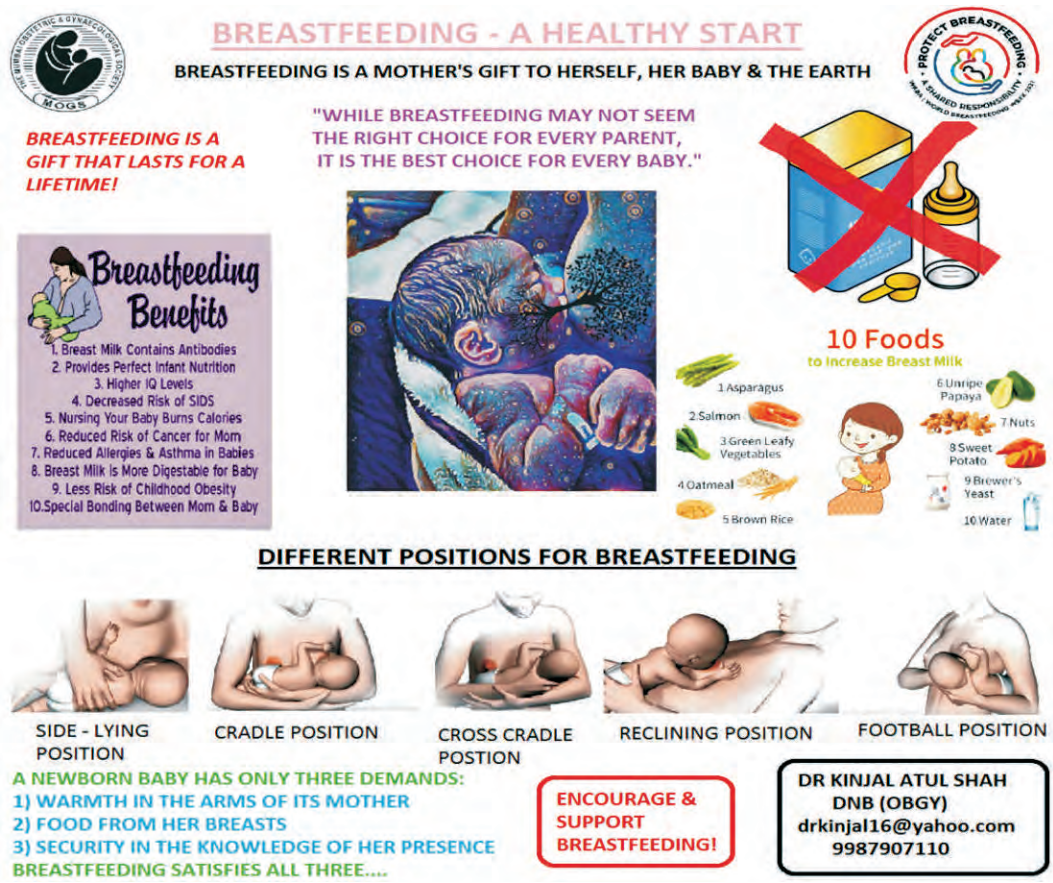
First prize(Esbeda bags) : Dr.Bhavini Shah, Dr.Kinjal Shah

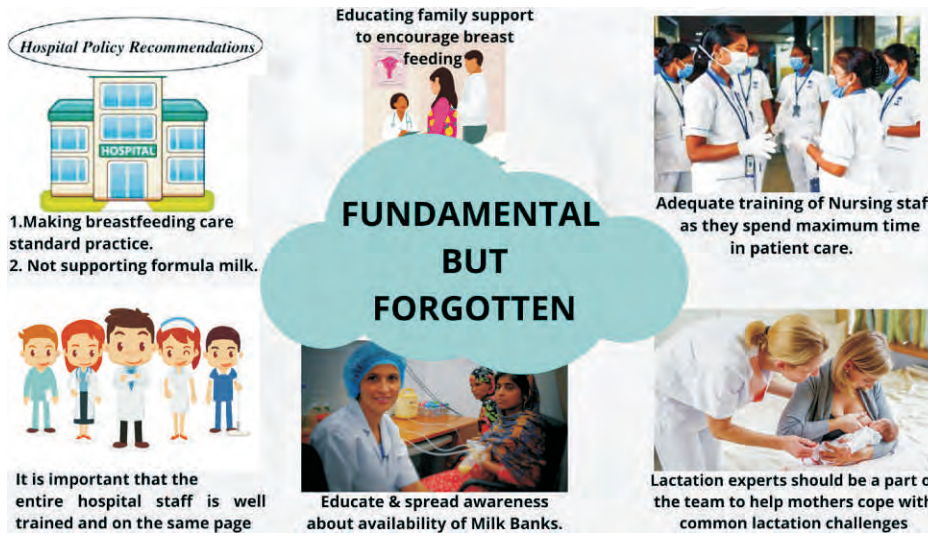
Second prize(Premium bedsheets) : Dr.Riddhi Desai,Dr.Somya

Third prize(Syska Power Bank) : Dr.Dheera Samdariya, Dr.Reena Avkire, Dr.Prachi Risbud

The final session of the programme was a panel discussion on "Breast feeding – Common problems, Easy solutions" which was moderated by Dr.Suvarna Khadilkar and Dr.Pradnya Supe.The eminent panellists were Dr.P.K.Shah, Dr.Madhuri Patel, Dr.Komal Chavan, Dr.Karthik Bhagat, Dr.Kausha Shah, Dr.Prashant Gangal(Paediatrician) and Mrs.Swati Temkar(Lactational Consultant).It was a very informative and animated panel which troubleshooted a lot of very practical breastfeeding problems faced.







FIRST PRIZE WINNERS: Dr Bhavini Shah & Dr Kinjal Shah

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