INTRAUTERINE FETAL DEATH

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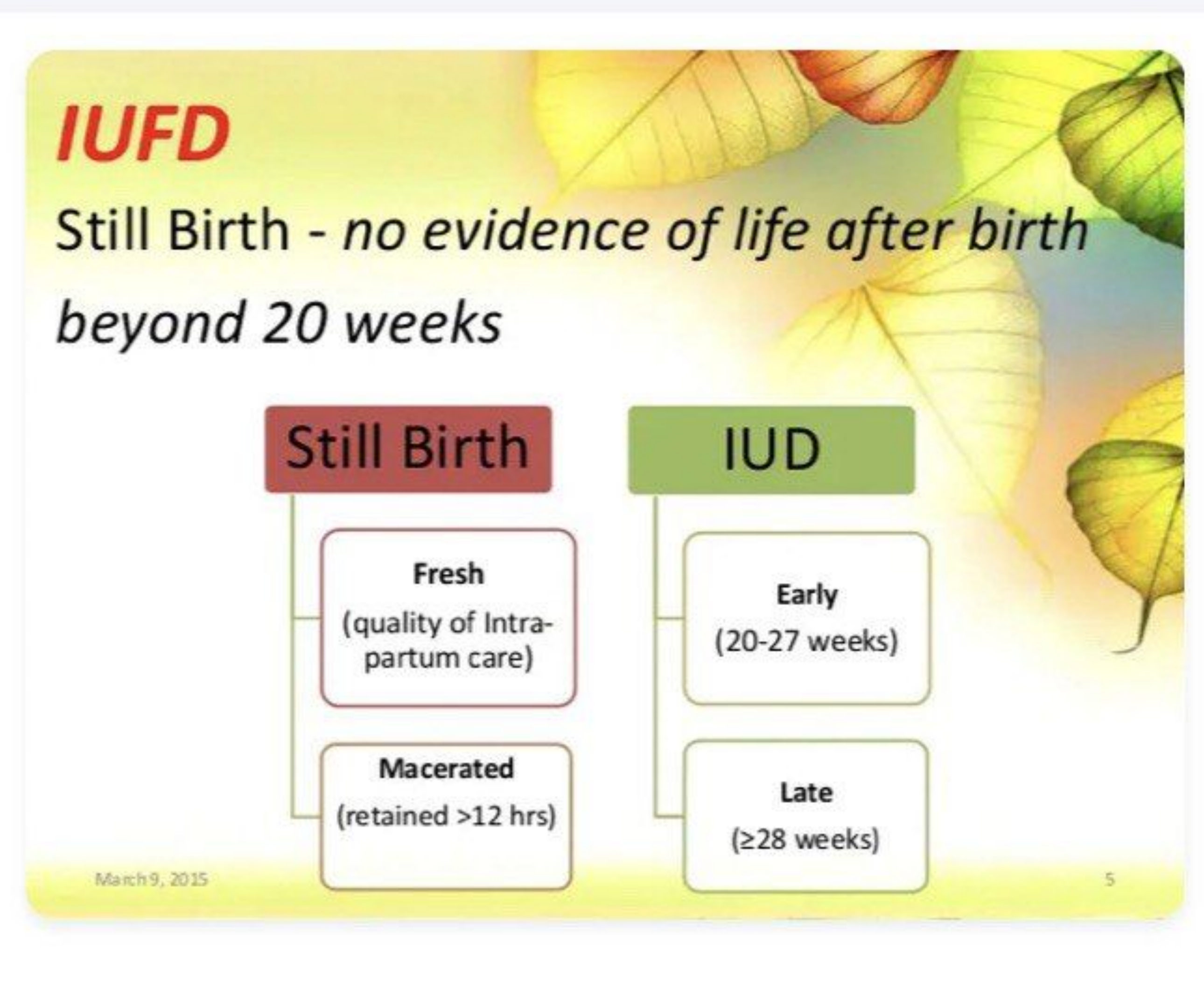
INTRAUTERINE FETAL DEATH (IUFD)

Fetal death before onset of labour or fetus with no signs of life in utero after 20 weeks of gestation

Definition varies : Gestational age | Birth weight

WHO :

An infant delivered without signs of life after 20 weeks of gestation or weighing >500 gms when gestation age is not known


IUFD
Still Birth - no evidence of life after birth beyond 20 weeks
Still Birth
Fresh
(quality of Intra-partum care)
Macerated
(retained >12 hrs)
IUD
Early
(20-27 weeks)
Late
(≥28 weeks)
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IMPACTS
Emotionally challenging for:
Doctors
Parents
Increases medicolegal risk
Indicator of country's health care system

FREQUENCY

Still Birth Rate : no. of SBs / Thousand Births

- Complicates 1 % of pregnancies
- In 50 % of cases cause is unknown

Current Trends

- 4.5 to 6.5(**2.95**) per thousand births in US
- **22.1** per thousand births in India(2009)
- Worldwide 18.9 / Thousand births (2009)

Rate depends on medical care and reporting system

ETIOLOGY

- Unknown in 50% of cases
- Known causes

S/No	Causes	%
1.	Maternal	5-10
2.	Foetal	25-40
3.	Placental	20-35
4.	Unexplained	15-35

MATERNAL CAUSES(RISK FACTORS)

- Obesity (>30kg/m^2): **proven, modifiable, highest ranking**
- Maternal (>35yrs)/paternal age
- Smoking/Alcohol/Drug abuse
- Infections (malaria, hepatitis, influenza, syphilis, Toxoplasma, sepsis)
- Medical ds –DM,HT,Thyroid Diseases
- Pre-existing diseases (HD, Anaemia, Epilepsy)
- Autoimmune Disorders (APS, SLE)
- RH incompatibility
- Hyperpyrexia
- Thrombophilias
- Trauma
- Cholestasis of pregnancy
- Obs cx – Abruption,PPROM,multifetal gestation
- Labour related (preterm, dystocia, uterine rupture)

FOETAL CAUSES

- Multiple gestation
- IUGR
- Congenital anomalies
- Infections
- Hydrops (immune & non-immune)
- G_6PD deficiency
- Birth Defects

PLACENTAL CAUSES

- Abruption
- Cord accidents
- Placental insufficiency
- Placenta previa
- TTTS
- Chorioamnionitis
- PROM
- Feto-maternal hemorrhage

Iatrogenic- ECV, Drug overdoses

DIAGNOSIS

Symptoms: Absence of foetal movements

Signs: Retrogression of the positive breast changes

Per abdomen

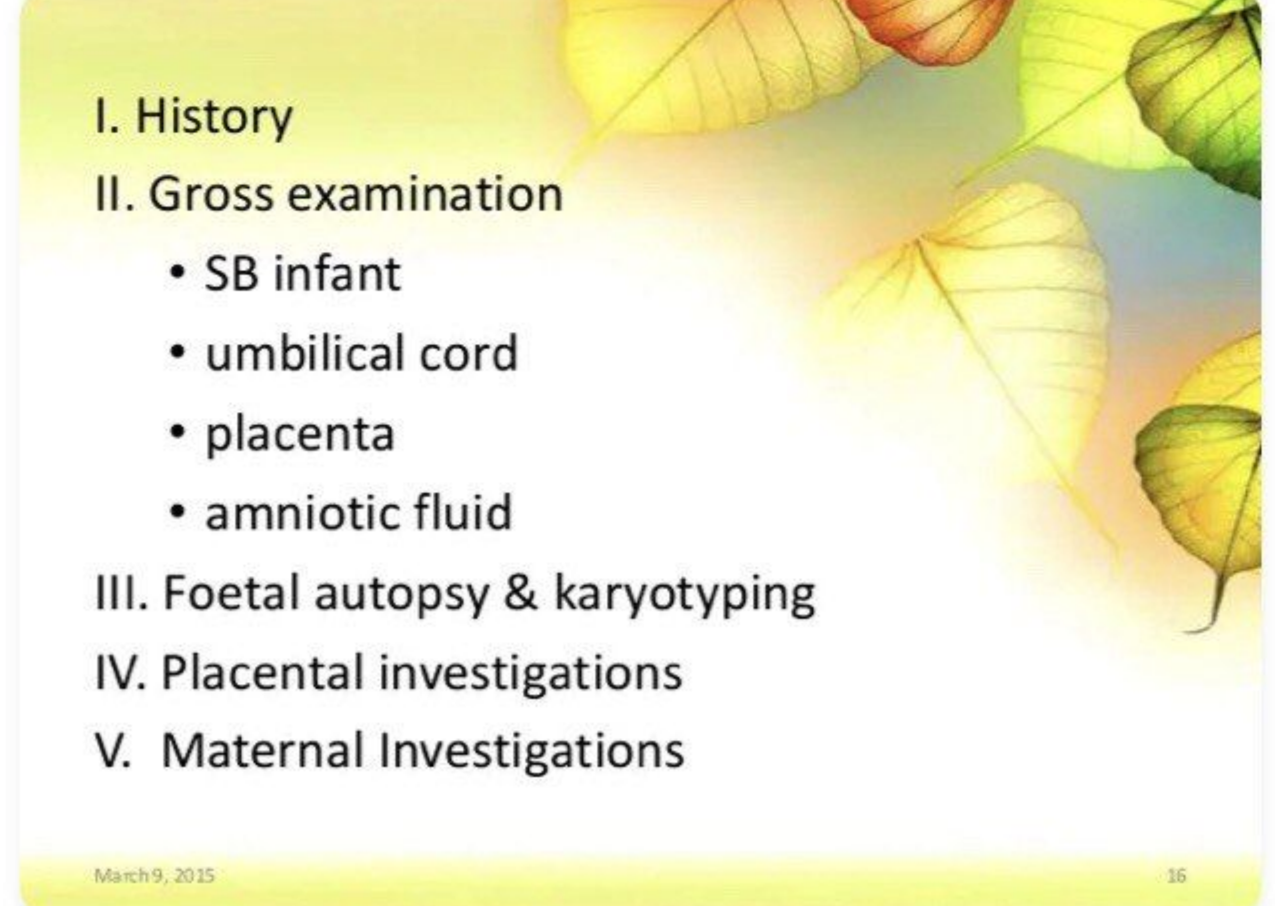
- Gradual retrogression of the height of the uterus
- Uterine tone is diminished
- Foetal movement are not felt during palpation
- Foetal heart sound is not audible

INVESTIGATIONS

- **USG** (100%) + Associated features can be noted (oligo, hydrops)
- Straight- X-ray abdomen (obsolete)
  - Robert's sign : Appearance of gas shadow (in 12 hours)
  - Spalding sign: Collapse skull bones (usually appears 7 days after)
  - Ball sign : Hyperflexion of the spine
  - Helix sign : Gas in umbilical arteries
  - Crowding of the ribs shadow

SYSTEMATIC APPROACH TO EVALUATION

- Varied recommendations based on experts opinion
- Yet, no scientific effective evaluation plan
- Study ongoing by Still Birth Collaborative Research Network
- Optimal evaluation is must for
  - chance of recurrence
  - future preconceptional counseling
  - Pregnancy management
  - plan prenatal diagnostic procedures
  - neonatal management
- Obvious cause - No further testing or limited testing (cord accidents, anencephaly)


I. History
II. Gross examination
• SB infant
• umbilical cord
• placenta
• amniotic fluid
III. Foetal autopsy & karyotyping
IV. Placental investigations
V. Maternal Investigations
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I. History

Family

- Recurrent abortions
- Congenital anomalies
- Abnormal karyotype
- Hereditary conditions
- Developmental delay

Maternal

- DM
- HPT
- Thrombophilias
- Autoimmune disease
- Severe Anemia
- Epilepsy
- Consanguinity
- Heart disease

Past Obstetrical

- Baby with congenital anomaly / hereditary condition
- IUGR
- Gestational HPT with adverse sequele
- Placental abruption
- IUFD
- Recurrent abortions

II. Gross Description

Infant description
- Malformation
- Skin staining
- Degree of maceration
- Color-pale , plethoric

Umbilical cord
- Prolapse
- Entanglement-neck, arms, legs
- Hematoma or stricture
- Number of vessels
- Length

Amniotic fluid
- Color-meconium, blood
- Volume

Placenta
- Weight
- Staining
- Adherent clots
- Structural abnormality
- Velamentous insertion
- Edema/ hydropic changes

Membranes
- Stained
- Thickening

III. Fetal Autopsy & Karyotyping

- These 2 are important tests in SB evaluation (Pinar, 2014)
- Crucial for future pregnancy
- Appropriate consent req to take fetal tissue,Autopsy
- Ideally should be done by perinatal pathologist
- If denied, post mortem MRI should be considered
- Radiographs if indicated for skeletal abnormalities
- Photographs

- Fetal karyotyping (ACOG recom in all cases) esp-
  - Dysmorphic fetus, FGR
  - Hydropic
  - Signs of chromosomal anomaly

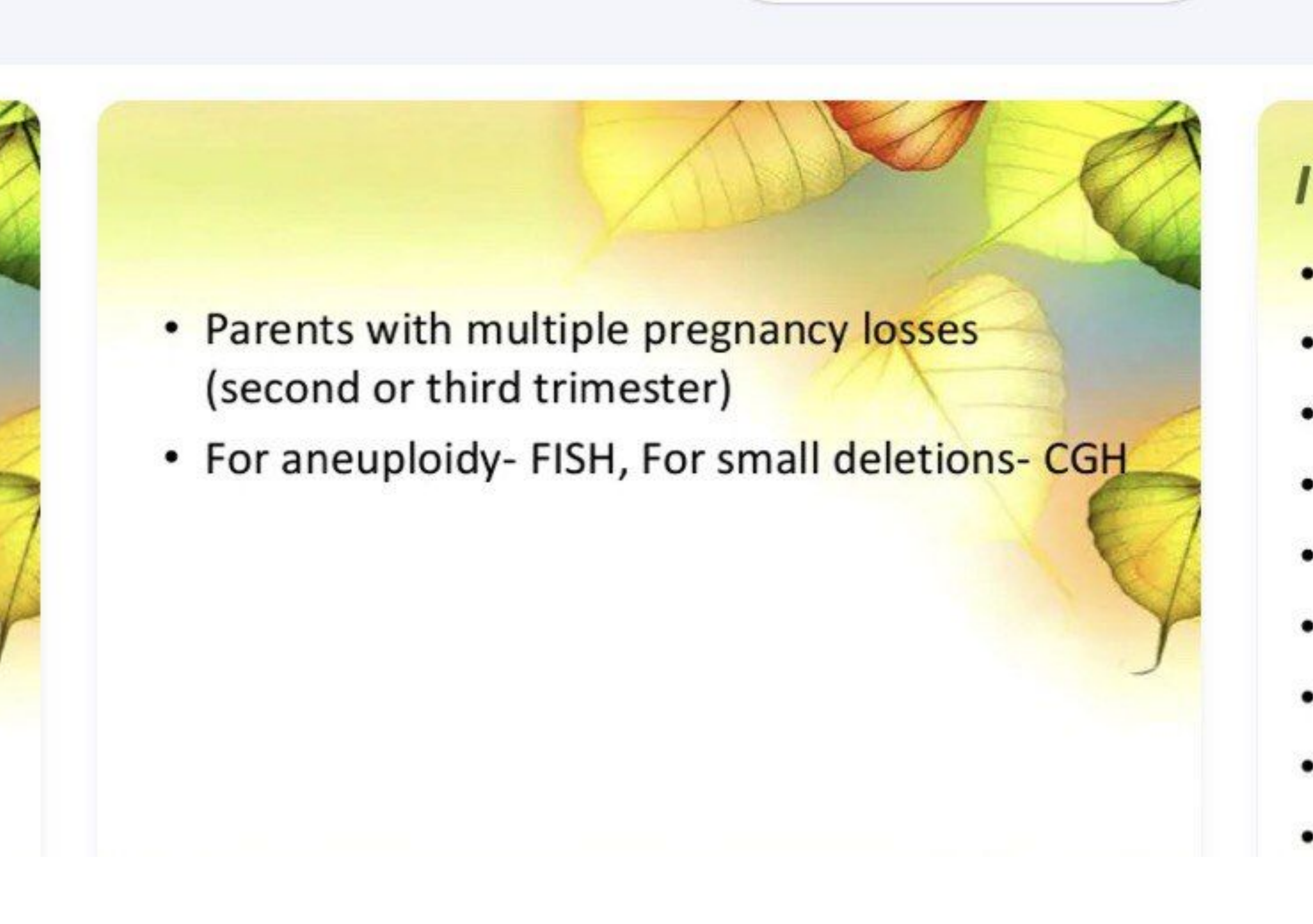
Samples-

- Amniocentesis –highest yield
- 3ml fetal blood from umbilical vs and or cardiac puncture-heparinized bulb
- If blood not obtained ACOG(2012)recommends at least 1 of the foll samples -

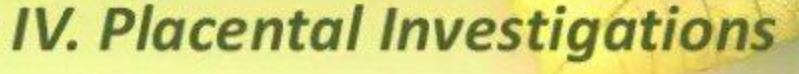
  1) Pl block 1x1cm

  RL 2) cord 1.5cm

  3) costocondral junction or patella(skin not recommended)



• Parents with multiple pregnancy losses (second or third trimester)
• For aneuploidy- FISH, For small deletions- CGH



IV. Placental Investigations

- Chorionicity
- Cord knot, vessels, thrombosis
- Infarcts, thrombosis, abruption
- Vascular malformations
- Signs of infection
- Placental block(1x1 cm) below cord insertion
- Umbilical segment (1.5 cm)
- Placental swabs for infections
- Bacterial cultures for E. Coli, Listeria

V. Maternal Evaluation

- CBC
- Hb electrophoresis
- Diabetes testing (HbA1c, FBS)(Silver,2013)
- TFT
- Additional Tests
  - Kleihauer Betke (for all women, before birth), in Rh-D negative second test after antidote
  - Serological Tests (TORCH, Syphilis, Parvovirus) ?? in all cases, opinion varies, rarely helpful

  If clinical findings suggest intrauterine infection (i.e., those with IUGR, microcephaly)

- **Antiphospholipid (LA,ACA**), Antiplatelet Ab if ICH detected
- ?? Thrombophilias screening (6 weeks postpartum) - factor V leiden mutations & deficiencies, antithombin III, protein C & S

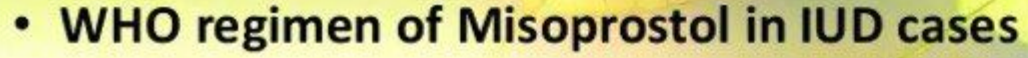
  Current ACOG practice bulletin does not recommend in cases of pregnancy loss
- Bile acids (Cholestasis of preg)- important cause, recurrence in 80% cases
- High vaginal & cervical swab for C & S
- Urine toxicology screening (cocaine, amphetamines are associated with abruption)

MANAGEMENT

- Depends on:
  - Single or multiple gestation
  - Gestation age at death
  - Parents wish (varied response)
    - Expectant approach
      - 80% goes in labour with in 2-3 weeks
      - Emotional burden, risk of Chorioamnionitis & DIC
    - **Active approach**

Induction of Labour

- Fetal death <28weeks
  - Mifepristone 200 mg followed by Misoprostol 400 µg 4 - 6 hourly most effective with shortest I-D interval
- Fetal death >28weeks
  - Cervical ripening (mechanical or chemical) followed by Oxytocin induction



- **WHO regimen of Misoprostol in IUD cases**
  - IUFD at term – 25 µg 6 hourly 2doses, if no response increase to 50 µg 6 hourly, do not exceed 4 doses.
  - Do not use Oxytocin in 8hrs of using Misoprostol
  - Contraindicated in previous CS cases (WHO)

- **RCOG & NICE Regimen**
  - <26 weeks - 100 µg 6hrly (max 4 doses)
  - >27 weeks - 25-50 µg 4hrly (max 6 doses)
  - Use of PGs is associated with increase risk of uterine rupture in cases of previous scar
  - Membranes should not be ruptured as long as possible
  - Pain management should be offered
  - Keep watch on CBC, coagulation profile, signs of infection
  - Active management of III stage of labour
  - Keep blood and blood products ready

Complications
– Infection
– PPH
– Retained placenta
– Abruption
– DIC
– Shock, renal failure
– Sepsis
– Maternal death

Post delivery

- Emotional support & Counseling as they r at increased risk of PPD(Nelson,2013)
- Keep in non maternity ward
- Suppression of lactation (tight breast support, dopamine agonists, estrogen)
- Counsel for future pregnancy, early ANC visit, preconceptional testing
- Assurance in cases of non recurring causes
- Contraceptive counseling

Management of future preg(RCOG)

Preconception or initial prenatal visit

- Detailed medical and obstetric history
- Evaluation and workup of previous stillbirth
- Determination of recurrence risk
- Smoking cessation
- Weight loss in obese women (preconception only)
- Genetic counselling if family genetic condition exists
- Medical prob like Diabetes should be managed prior
- Thrombophilia workup: antiolipid antibodies (only if specifically indicated)
- Risk of recurrence is 7-10 / 1000 birth
- Support and reassurance

- Dating sonography
- First-tri screen: pregnancy-associated plasma protein A, b HCG, and nuchal translucency*
- Folic acid

Second trimester

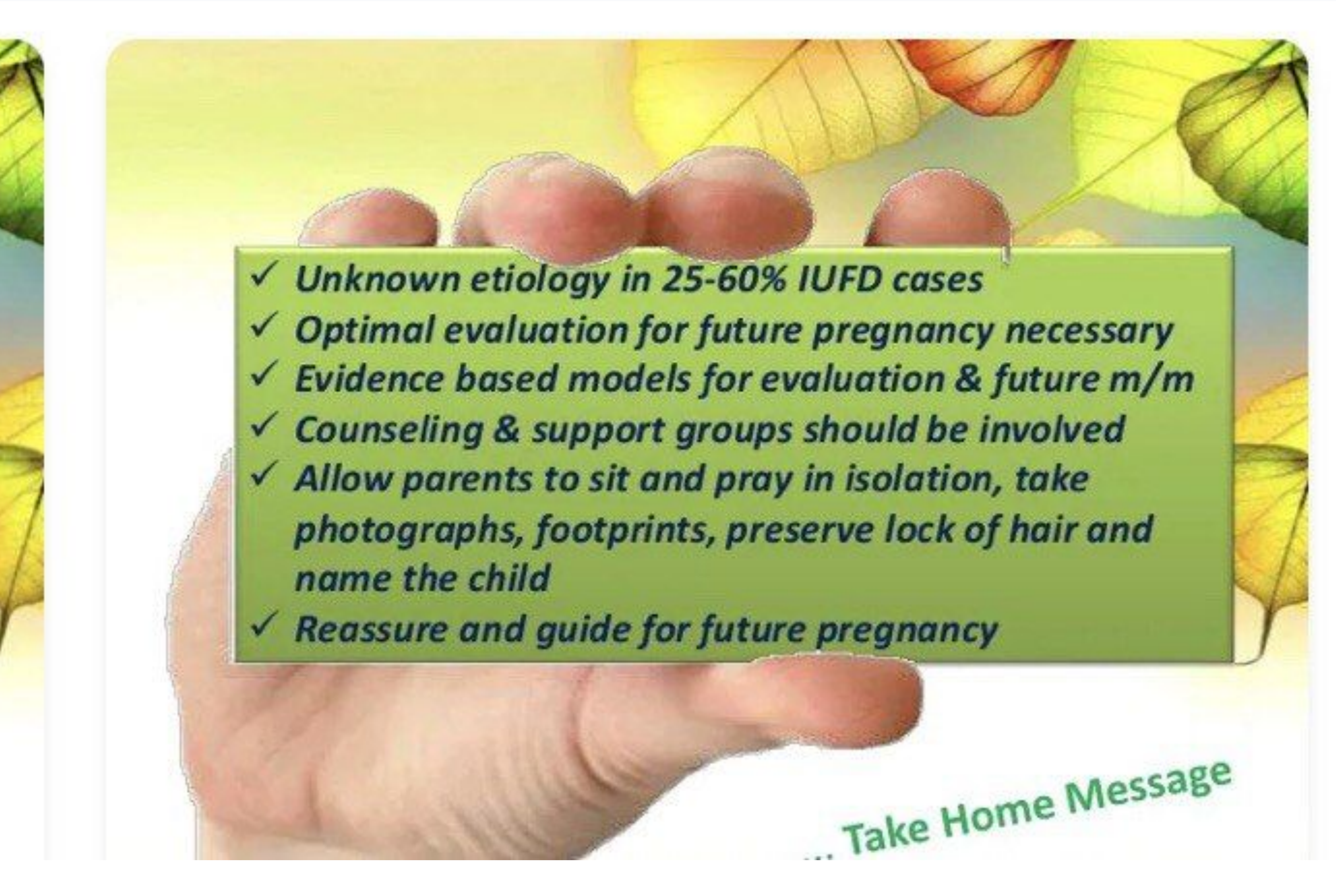
- Fetal ultrasonographic anatomic survey at 18–20wks
- Maternal serum screening (Quadruple) marker
- Blood investigations

Third trimester

- Sonographic screening for fetal growth restriction after 28 weeks of gestation
- Admission at critical period in high risk cases
- Kick counts starting at 28 weeks of gestation
- ***Antipartum fetal surveillance*** starting at 32 wks or 1–2 wks earlier than prior stillbirth (ACOG recommends at 32-34 wks in otherwise normal preg)
- Weekly FHR , BPP, Doppler
- Support and reassurance

STRATEGIES FOR PREVENTION

- No sure fire method to prevent
- Loosing weight, life style modifications
- Women should try to optimize their health prior to pregnancy
- Enough Folic acid before they get pregnant
- Good preconception and prenatal care
- Women with DM –tight control before and during pregnancy
- Educate women not to delay pregnancy


✓ Unknown etiology in 25-60% IUFD cases
✓ Optimal evaluation for future pregnancy necessary
✓ Evidence based models for evaluation & future m/m
✓ Counseling & support groups should be involved
✓ Allow parents to sit and pray in isolation, take photographs, footprints, preserve lock of hair and name the child
✓ Reassure and guide for future pregnancy
Take Home Message

many
Thanks!