

The background of the slide features several autumn leaves in shades of yellow, orange, and green, scattered across a light, warm-toned gradient. The leaves are detailed, showing their veins and stems.

# ***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***

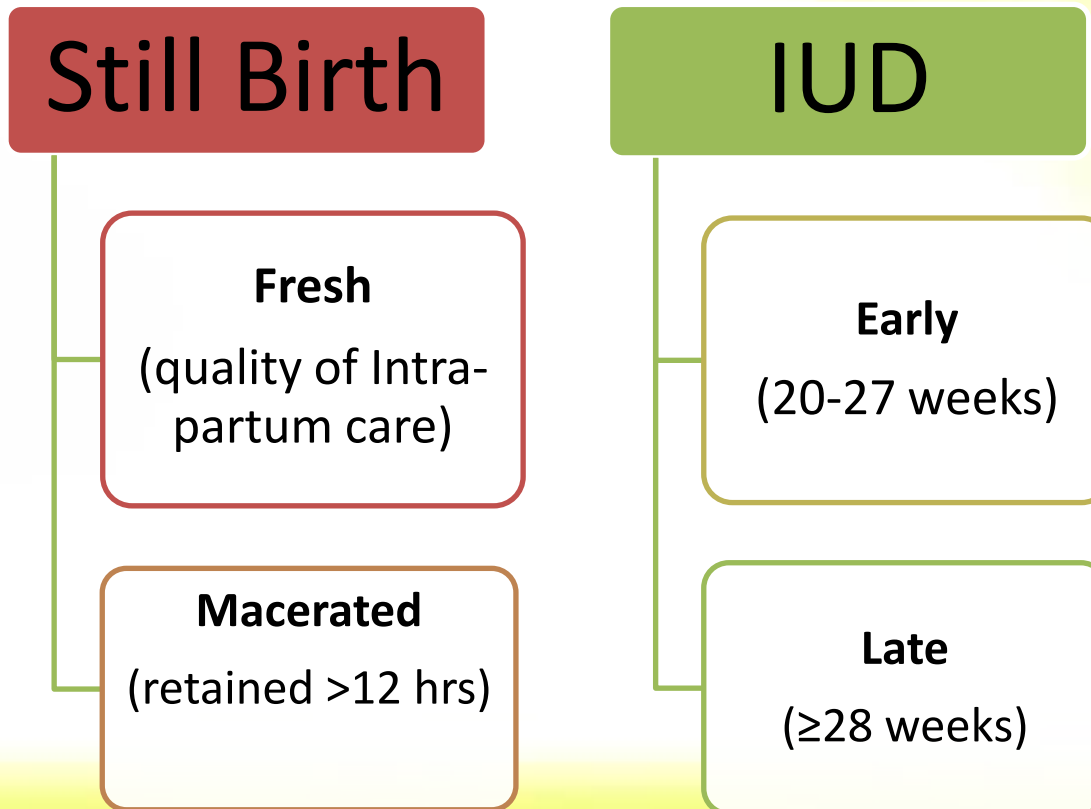
Definition varies : Gestational age | Birth weight

***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*



# ***FREQUENCY***

Still Birth Rate : no. of SBs / Thousand Births

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

## ***Current Trends***

- Worldwide 18.9 / Thousand births (2009)

Rate depends on medical care and reporting system

# ***ETIOLOGY***

- Unknown in 50% of cases
- Known causes

	<b>Causes</b>	<b>%</b>
1.	Maternal	5-10
2.	Foetal	25-40
3.	Placental	20-35
4.	Unexplained	15-35

# ***MATERNAL CAUSES(RISK FACTORS)***

- Obesity (>30kg/m<sup>2</sup>):
- Maternal age (>35yrs)
- Smoking
- 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)
- Birth Defects

# ***PLACENTAL CAUSES***

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

Iatrogenic- ECV

# ***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***

- 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

# 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
- Hematoma or stricture
- Number of vessels
- Length

### **Amniotic fluid**

- Color-meconium, blood
- Volume

### **Placenta**

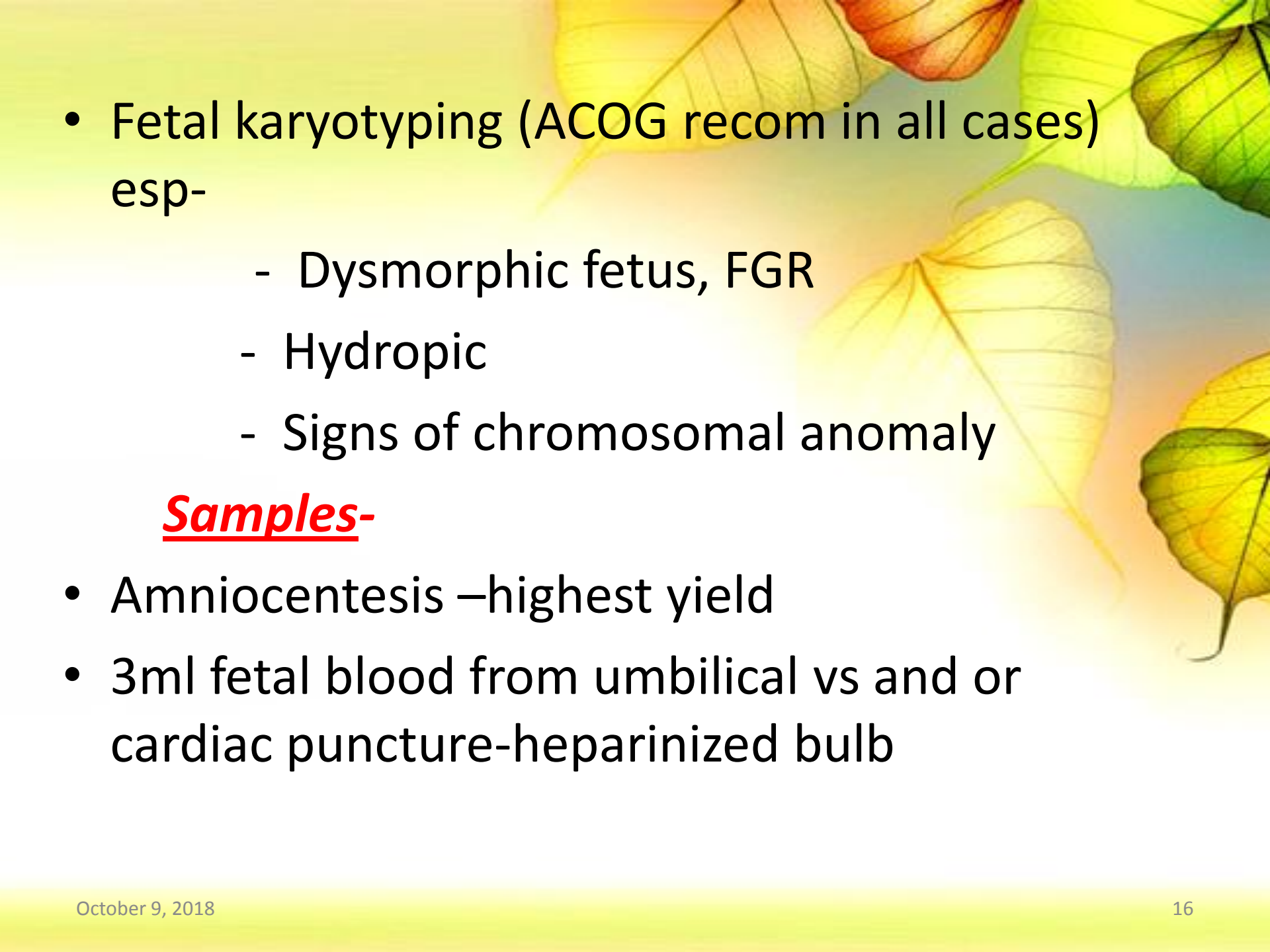
- Weight
- Staining
- Adherent clots
- Structural abnormality
- Velamentous insertion
- Edema/ hydropic changes

### **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

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- Parents with multiple pregnancy losses (second or third trimester)
  - For aneuploidy-

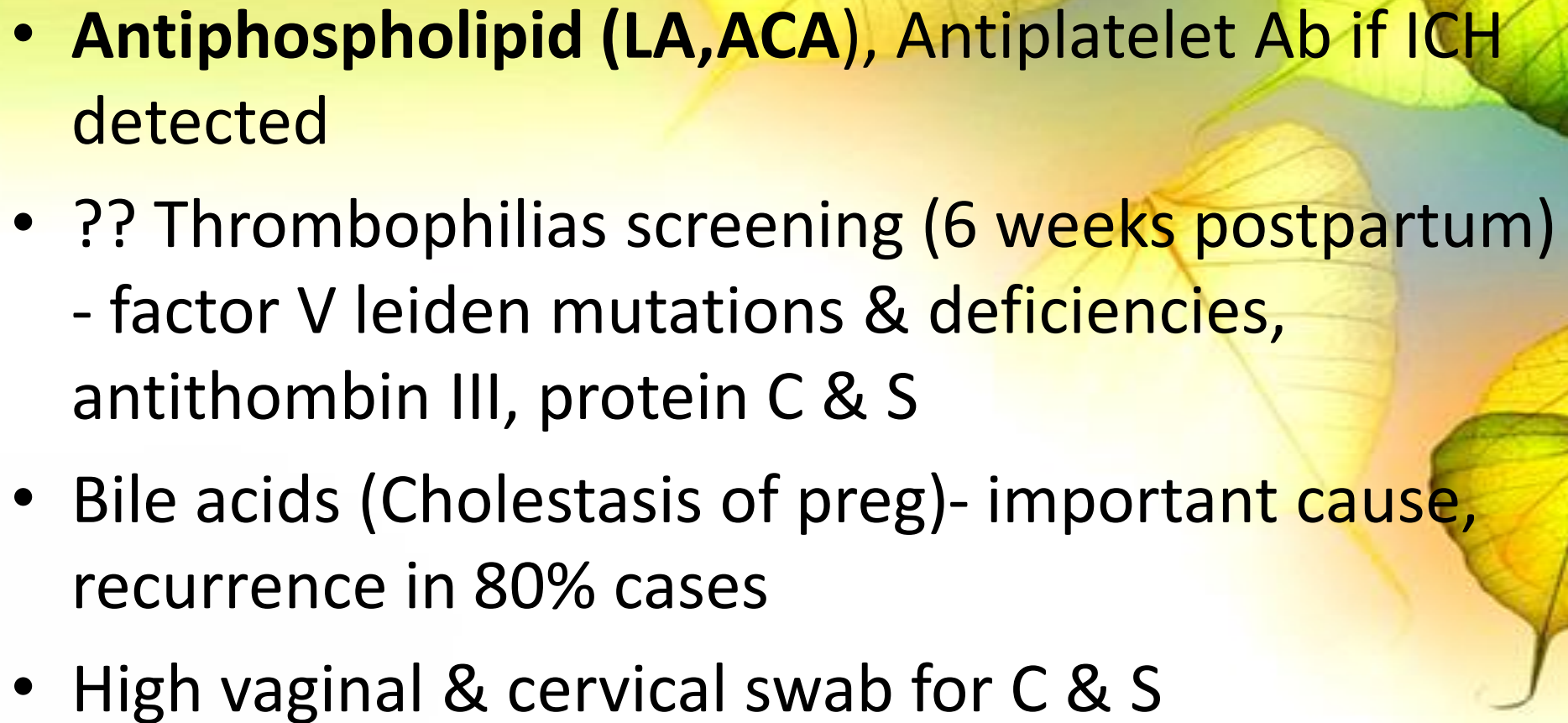
## ***IV. Placental Investigations***

- 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)

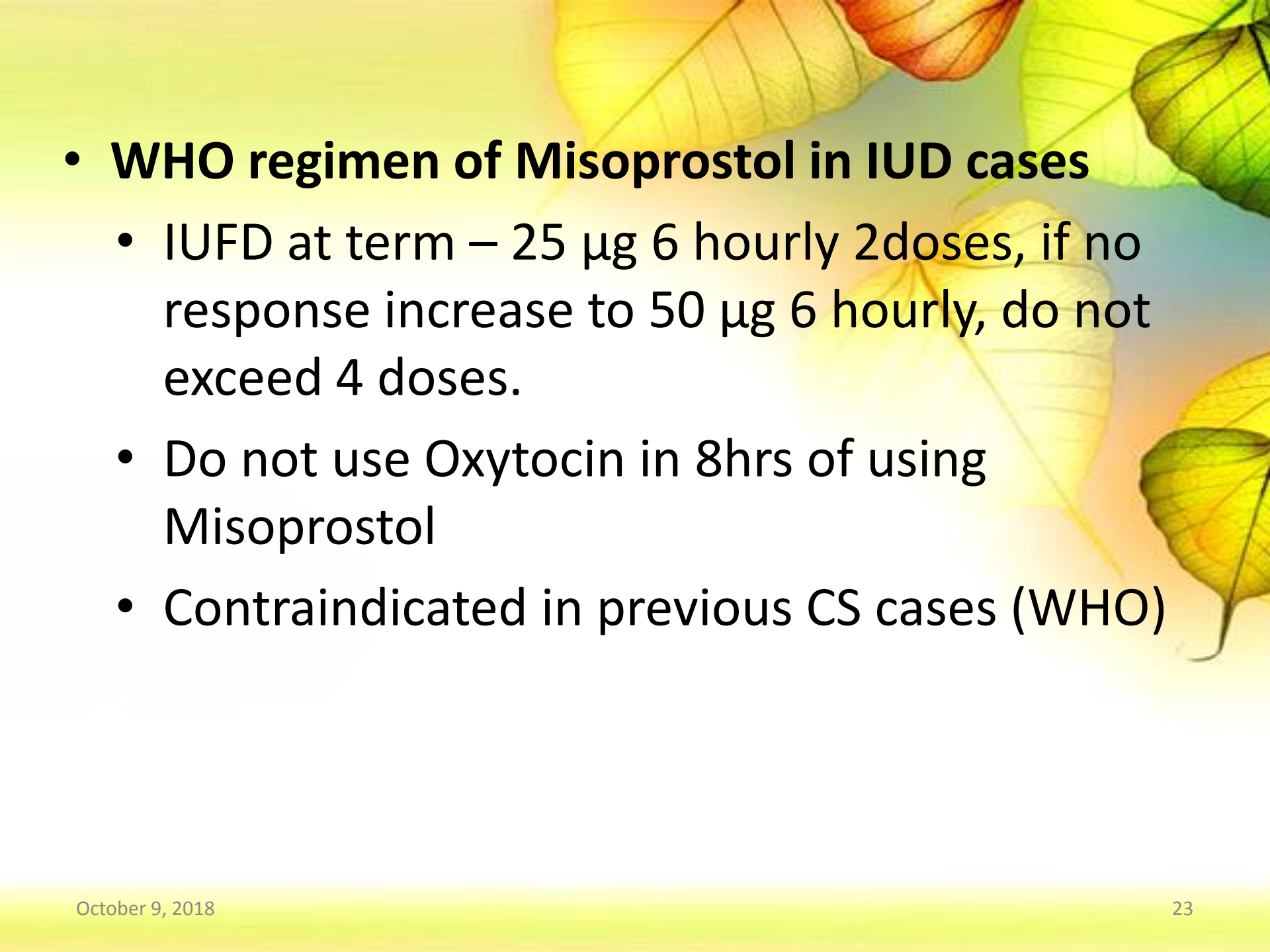
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- **Antiphospholipid (LA,ACA)**, Antiplatelet Ab if ICH detected
  - ?? Thrombophilias screening (6 weeks postpartum)
    - factor V leiden mutations & deficiencies, antithrombin III, protein C & S
  - Bile acids (Cholestasis of preg)- important cause, recurrence in 80% cases
  - High vaginal & cervical swab for C & S

# **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
  - Misoprostol 400  $\mu\text{g}$  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
- Abruptio
- DIC
- Shock, renal failure
- Sepsis
- Maternal death

# *Post delivery*

- Emotional support & Counseling as they r at increased risk of PPD(Nelson,2013)
- 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
- Weight loss in obese women (preconception only)
- Genetic counselling if family genetic condition exists
- Diabetes should be managed prior
- Thrombophilia workup: antiolipid antibodies (only if specifically indicated)
- Risk of recurrence is 7-10 / 1000 birth
- Support and reassurance



## *First trimester*

- 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
- **Antepartum 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



many  
**Thanks!**