

PRETERM LABOUR

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Definition

-delivery between 23+0 and 37+0 gestational weeks.

-spontaneous onset of regular, painful uterine contractions associated with the effacement and progressive dilatation of the cervix and descent of the presenting part.

with or without “bloody show” or ruptured membranes

results: birth of neonate, expulsion of placenta & membranes

Epidemiology

-12% of births in U.S.A

-increasing rates due to increased prevalence of predisposing factors such as twin pregnancy (due to IVF advances) and maternal pathology (due to advanced age of first pregnancy).

Predisposing factors

- low socioeconomic status
- anxiety, depression
- upright posture, physical exertion
- abdominal surgery during pregnancy
- smoking, substance abuse
- maternal age >40years, <18 years
- black race
- poor nutrition
- anemia (hemoglobin <10g/dl at 1st trimester)
- low BMI

Predisposing factors

- antepartum hemorrhage
(placenta previa, placental abruption)
- asymptomatic bacteriuria
- pyelonephritis
- sexual transmitted infections
- cervical conization procedure
- short cervix at ultrasound

Predisposing factors

- multiple gestation
- polyhydramnios
- uterine abnormality
- leiomyoma
- history of second trimester miscarriage, preterm labour
- fetal abnormality
- intrauterine growth restriction

Classification

By gestational age

- extremely preterm: 23+0 – 28 weeks (5%)
- very preterm: 28- 32 weeks (10%)
- moderate preterm: 32-34 weeks
- late preterm: 34-37 weeks (85% : + moderate preterm)

Classification

By birth weight

-extremely low: <1000 gr

-very low: 1000-1500gr

-low: 1500-2500gr

Classification

By indication

- spontaneous: 70-80%
- preterm contractions: 40-50%
- preterm rupture of membranes: 20-30%
- iatrogenic: 20-30%
- multiple gestation: 10-30%
- preeclampsia: 12%
- antepartum bleeding: 5-10%
- intrauterine growth restriction: 2-5%
- other: 10%

Pathophysiology

Activation of hypothalamus-pituitary-adrenal axis

- maternal anxiety: increased cortisol production
- fetal uteroplacental vasculopathy stress \Rightarrow increased CRH production
- CRH, cortisol: increased prostaglandin secretion \Rightarrow contractions

Inflammation

- systemic, amniochorionic inflammation \Rightarrow TNF, IL-1, IL-6, IL-8 increase \Rightarrow endothelin, proteases increase \Rightarrow contractions

Pathophysiology

Decidual hemorrhage

-clotting factors VIIa, Xa increased \Rightarrow thrombin increased \Rightarrow contractions

Pathological uterine distention

-oxytocin receptors, PG increased \Rightarrow contractions

Pathological cervical changes

-cervical conization \Rightarrow mucus reduction

Clinical signs and symptoms

- menstrual like cramping
- low back ache
- pressure sensation in vagina
- vaginal discharge (mucus plug+blood) “ bloody show”

Complications

- preterm birth
- respiratory distress syndrome
- periventricular leukomalakia
- necrotising enterocolitis
- sepsis
- cerebral palsy
- neonatal death

Diagnosis

History

-past obstetric history, LMP

Vital signs

-BP, pulse, temperature

Abdominal examination

-uterine size, tenderness

-fetal presentation

Diagnosis

Speculum examination

- cervical dilatation: 3-4 cm
- assessment for infection (swab), ruptured membranes (fFN)

Vaginal culture

- posterior vaginal fornix swab

Fetal fibronectin test

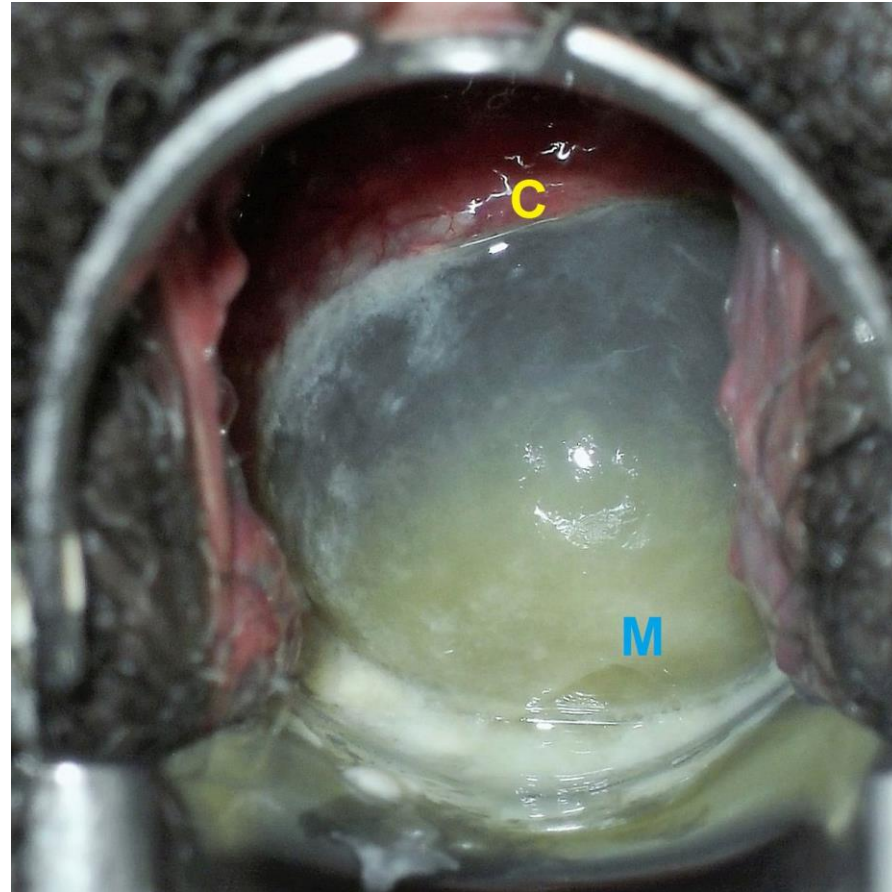
- positive: likelihood of preterm birth in next days

Digital examination (avoid)

- increases chances of infection, contractions

Diagnosis

Speculum examination



Diagnosis

Transvaginal ultrasound

-cervical length:more or less than 30mm

Urine culture

-asymptomatic bacteriuria

White cell count, CRP

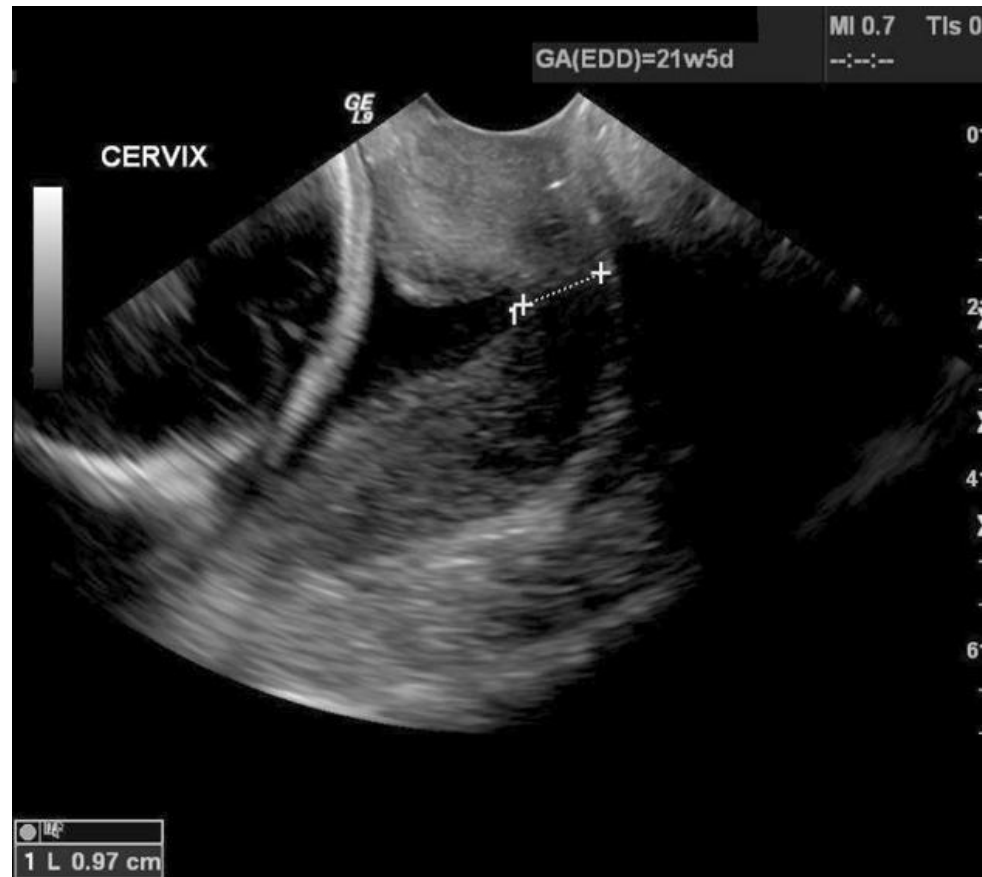
-increased WBC, CRP

Cardiotocogram

-contractions:4 in 20', 8 in 60'

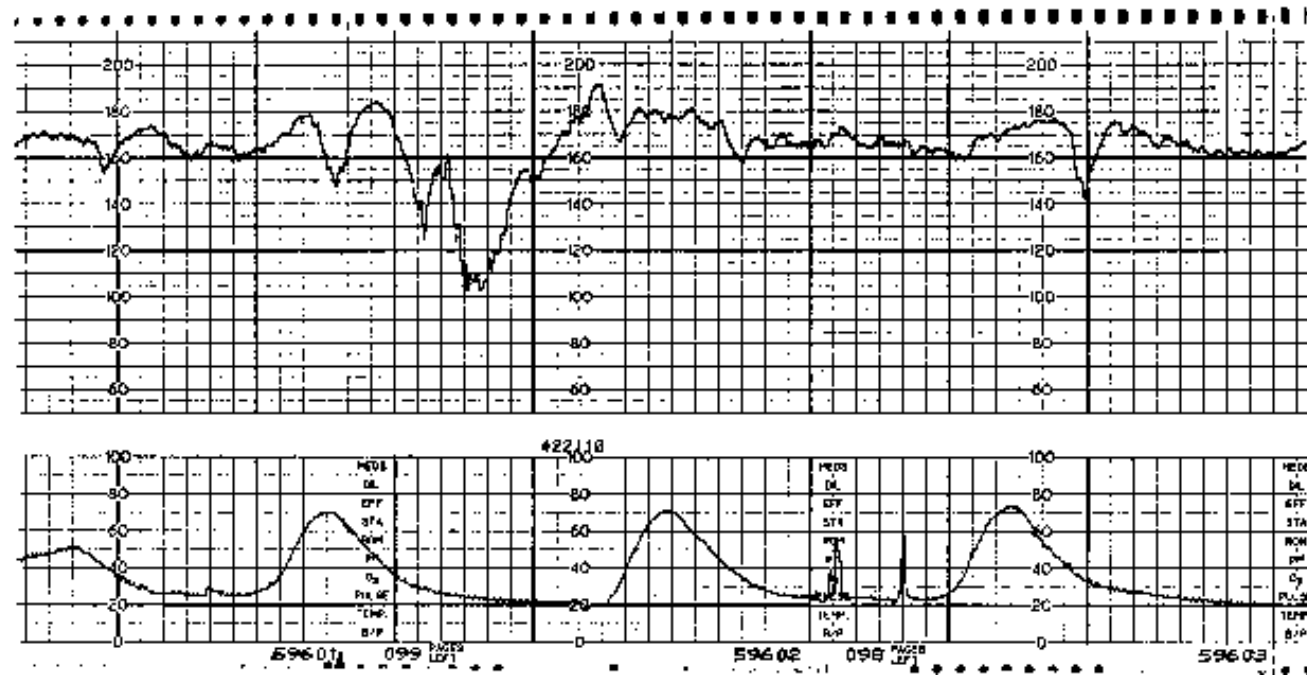
Diagnosis

Cervical length



Diagnosis

Cardiotocography



Differential diagnosis

- false labour: no cervical changes
- true labour: cervical changes (dilatation $>2\text{cm}$, effacement $>80\%$)
- preterm premature rupture of membranes

Management

Tocolytics

Categories

- oxytocin receptor antagonists (atosiban)
- calcium channel blockers (nifedipine)
- NSAID (indomethacine)
- beta adrenergic receptor agonists
(terbutaline, ritodrine, salbutamol-no longer)

Management

Administration

- 48h i.v in order to provide:
 - time for transfer to a setting with NICU
 - time for corticosteroid administration
 - cessation of contractions-avoid preterm birth

Contraindications

- infection (chorioamnionitis)
- antepartum bleeding
- fetal distress

Management

Adverse effects

-maternal:

palpitations (beta adrenergic agonists)

hypotension (calcium channel blockers)

gastritis (NSAID)

-fetal:

tachycardia (beta adrenergic agonists)

ductus arteriosus closure (NSAID \Rightarrow avoid in >32 weeks, $> 100\text{mg}$)

Management

Corticosteroids

Doses

- dexamethasone: 6mg, 1/12h, 4 doses, i.m
- betamethasone: 12mg, 1/24h, 2 doses, i.m

Action

- enhance lung maturation (type 2 pneumocytes that produce surfactant)
- reduction of all complications caused by prematurity.

Management

Adverse effects

- maternal hyperglycemia (caution in diabetic mothers)
- leukocytosis (~15000- 20 000)
- fetal reduction of cardiac variability

Contraindications

- infection (chorioamnionitis)

Prediction

Cervical length measurement

- transvaginal ultrasound: 11-13+6 weeks and 18-23 weeks ultrasound
- adjusted risk: history or preterm birth and cervical length (<30mm)
- vaginal progesterone suggested until 35 weeks

Prevention

Progesterone

-vaginal, oral, intramuscular injection

-if adjusted risk is high (>1:100)

-adverse effects:

depression

hot flashes

dryziness

Prevention

Cervical cerclage

- prophylactic (if previous history of preterm birth)
- rescue (if progressive shortening of cervix, bulging membranes)
- gestational age: 16-25 weeks
- adverse effects:
 - bleeding
 - contractions
 - ruptured membranes
 - infection

Prevention

Cervical cerclage on ultrasound



References

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2. Mercer BM, Goldenberg RL, Moawad AH et al: The preterm prediction study: Effect of gestational age and cause of preterm birth on subsequent obstetric outcome. *Am J Obstet Gynecol* 1216:181, 1999.



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