



# INFANTICIDE

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L/O/G/O



# Definition

- **Infanticide** : Killing infant ( birth to 12 months).
- **Feticide** : Killing fetus ( any time before birth).
- **Filicide** : Deliberate killing of Child by parents.

# Fetal Age Timeline

- Fertilization to implantation : **Pre-embryo (14 d)**
- Implantation to end of 8<sup>th</sup> weeks **Embryo**
- End of 8<sup>th</sup> week to delivery : **Fetus**
- Birth to 1 year of Age : **Infant**
- First 28 days after birth : **Neonatal period**



# Rule of Hasse

First 5 months of pregnancy

Age in months = Square root of crown heel length (in cm)

Last 5 months of pregnancy

Age in months = crown heel length (in cm) divided by 5

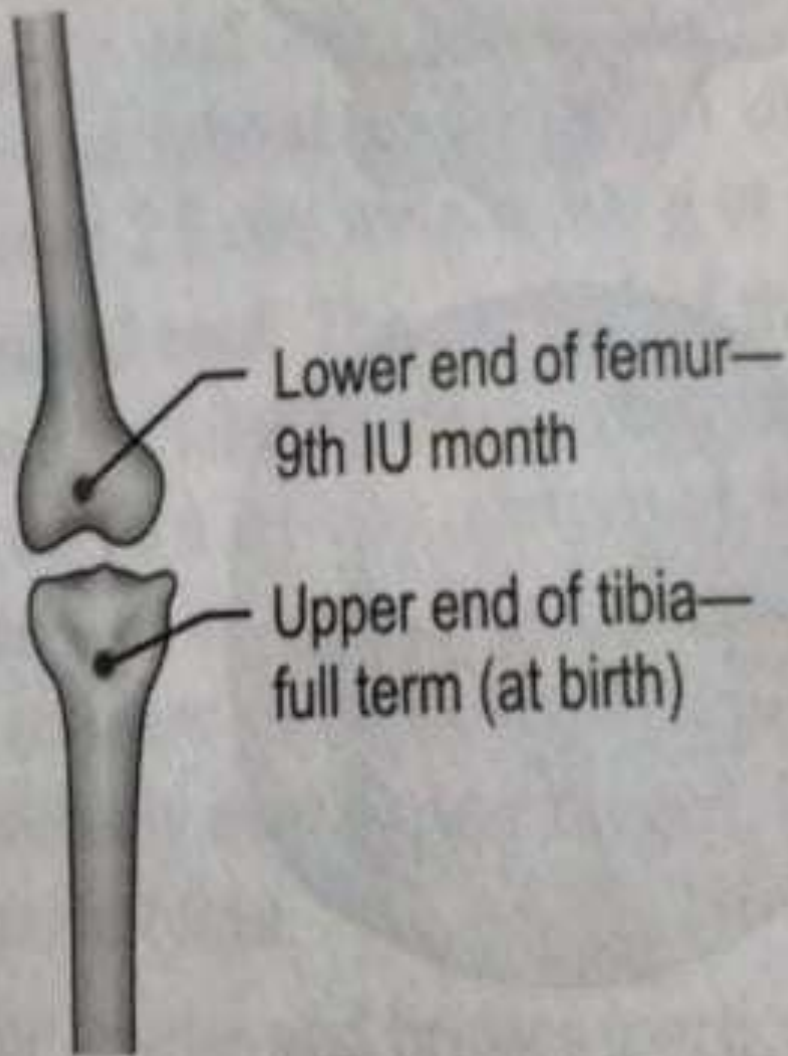


## Appearance of Ossification Centers in Infant

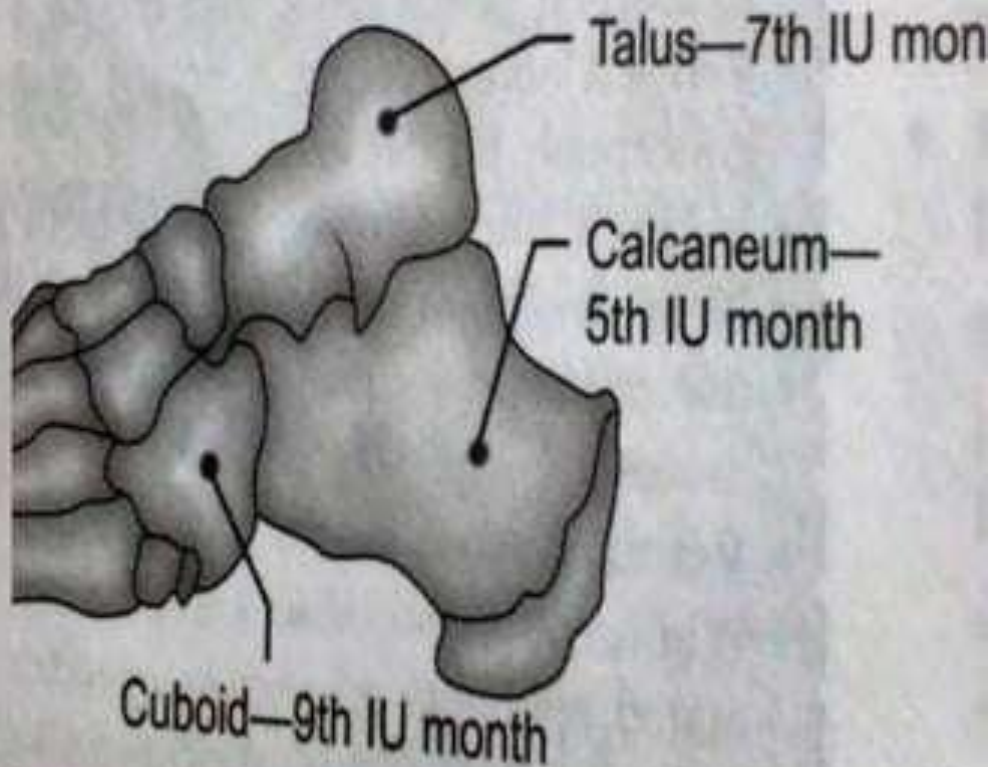
<b>Age in month</b>	<b>Ossification centre</b>
<b>5</b>	<b>Calcaneum</b>
<b>7</b>	<b>Talus ( fetal viability )</b>
<b>9</b>	<b>Cuboid , capitate , lower end of femur</b>
<b>10 / full term</b>	<b>Upper end of tibia</b>

Table 20.1: Determination of age of fetus<sup>1,2</sup>

Lunar months	Features
1st	Length: 1 cm, weight: 2.5 g. Eyes are seen as 2 dark spots and mouth as cleft.
2nd	Length: 4 cm, weight: 10 g. Eyes and nose recognizable, hands and feet are webbed. Anus is seen as dark spot. Placenta is formed.
3rd	Length: 9 cm, weight: 30 g. Eyes are closed and pupillary membrane appears, nails appear, neck is formed.
4th	Length: 16 cm, weight: 120 g. <b>Sex can be recognized</b> ; lanugo hair is visible on body; pupillary membrane is visible and meconium is seen in the upper part of small intestine. <sup>1</sup>
5th	Length: 25 cm, weight: 400 g. Nails are distinct and soft, vernix caseosa appears on the body. Fine hair on scalp, meconium at the beginning of large intestine. <b>Centre of ossification for calcaneum appears (Fig. 20.2A).</b>
6th	Length: 30 cm, weight: 700 g. Eyebrow and eye lashes appear, eyelids are adherent and pupillary membrane is still present; skin is red and wrinkled for want of fat; testes are close to kidneys and scrotum is empty; meconium is seen in upper part of large intestine.
7th	Length: 35 cm, weight: 900-1200 g. Eyelids are open, pupillary membrane disappears; nails are thick, but do not extend to the tips of fingers and toes; skin is dusky-red, thick and fibrous; meconium present in entire large intestine. <b>Centre of ossification for talus appears (fetal viability)<sup>3</sup> (Fig. 20.2A).</b>
8th	Length: 40 cm, weight: 1-1.5 kg. Scalp hair is thick; nails reach the tips of fingers; skin is not wrinkled; lanugo hair on face; left testes in scrotum, right testes near the external inguinal ring.
9th	Length: 45 cm, weight: 2.5-3 kg. Scalp is covered with dark hair; lanugo hair is seen only in shoulders; vernix caseosa is present over the flexures of joints and neck folds; scrotum is wrinkled and contains both testes. Meconium is near the end of large intestine. <sup>4</sup> <b>Ossification centres for lower end of femur (36-37 weeks), cuboid and capitate appear (Fig. 20.2A).<sup>5</sup></b>
10th (Full term)	Length: 50-53 cm, weight: 3-3.5 kg. Lanugo hair is seen only in shoulders; nails project beyond finger tips, but reach only the tip of toes; rectum contains dark green or black meconium; six fontanelles are present. Umbilicus is midway between xiphisternum and symphysis pubis. <b>Centre of ossification for upper end of tibia appears (38-40 weeks) (Fig. 20.2B).</b>



**B**



**A**

Lower end of femur and upper end of tibia: Ossification centres in (A) Tarsal bones





## Lanugo hairs



Fine , unpigmented hair on the body of fetus or new born







## Lanugo Hair and Age Correlation

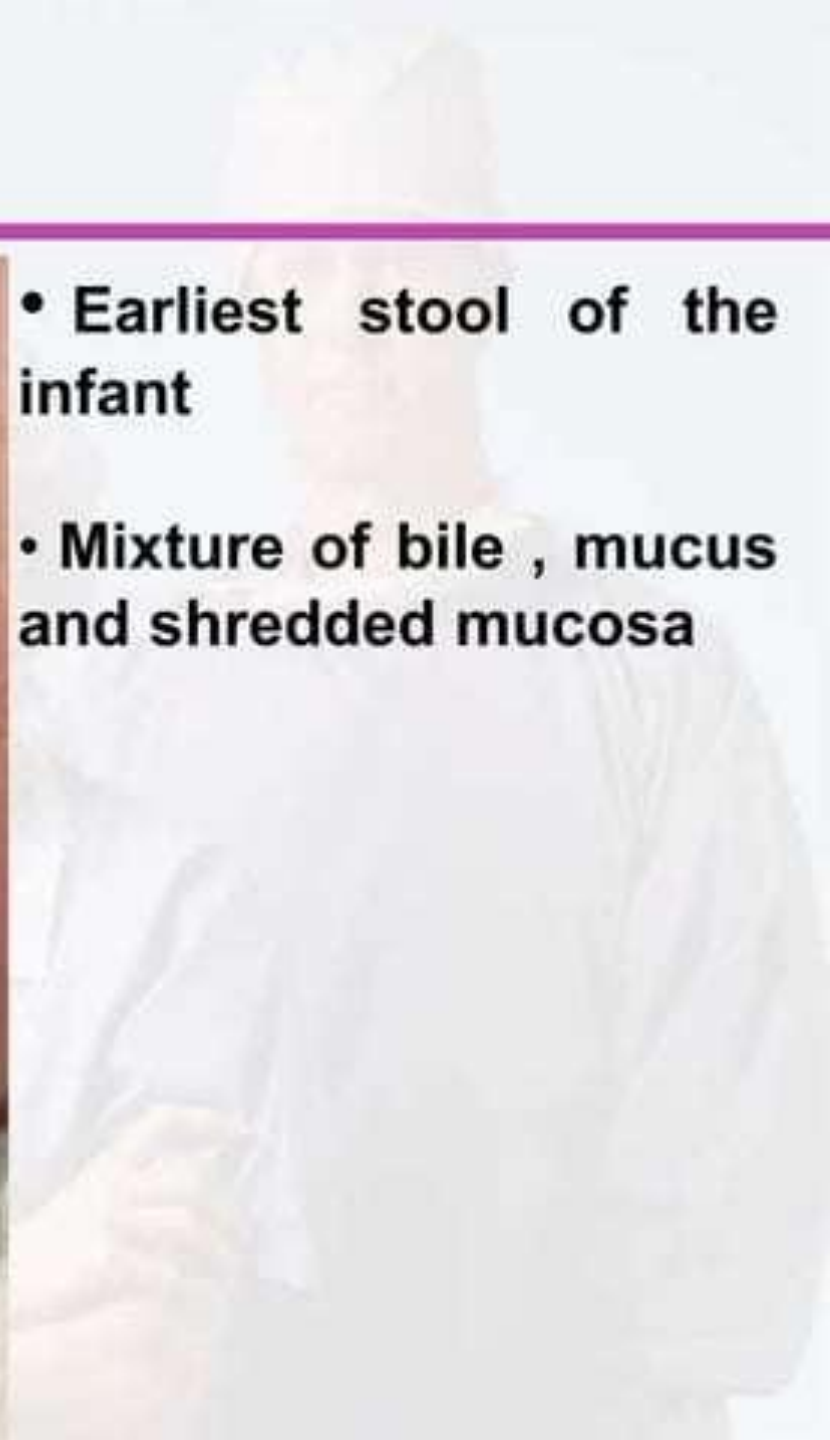
<b>Age In Months</b>	<b>Lanugo Hair</b>
<b>4 Months</b>	<b>Visible On Body</b>
<b>8 Months</b>	<b>On Face</b>
<b>9 Month To Term</b>	<b>Only On Shoulder</b>



# Meconium



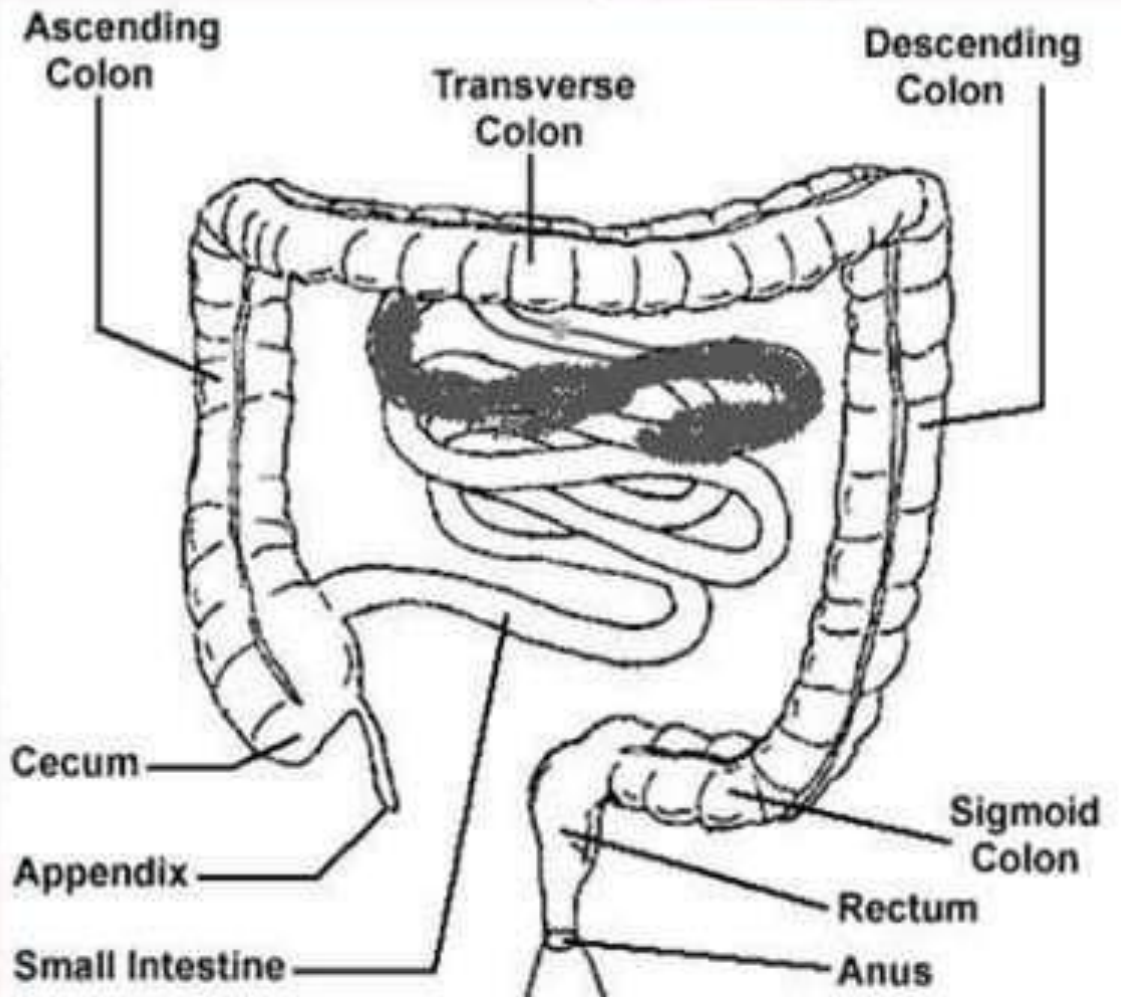
- **Earliest stool of the infant**
- **Mixture of bile , mucus and shredded mucosa**



# Meconium and age correlation

4<sup>th</sup> month

Upper Small  
intestine

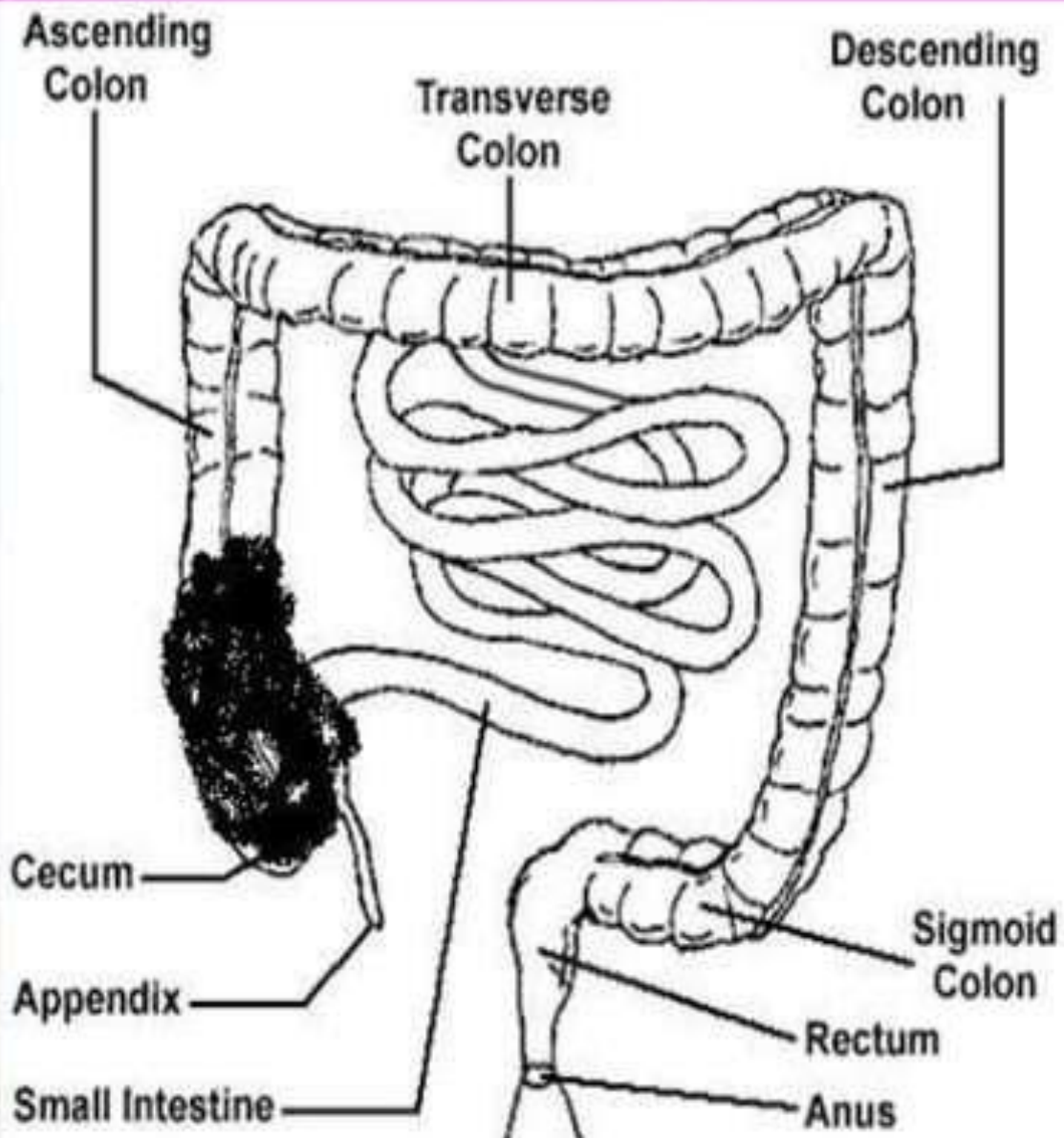




# Meconium and age correlation

**5<sup>th</sup> month**

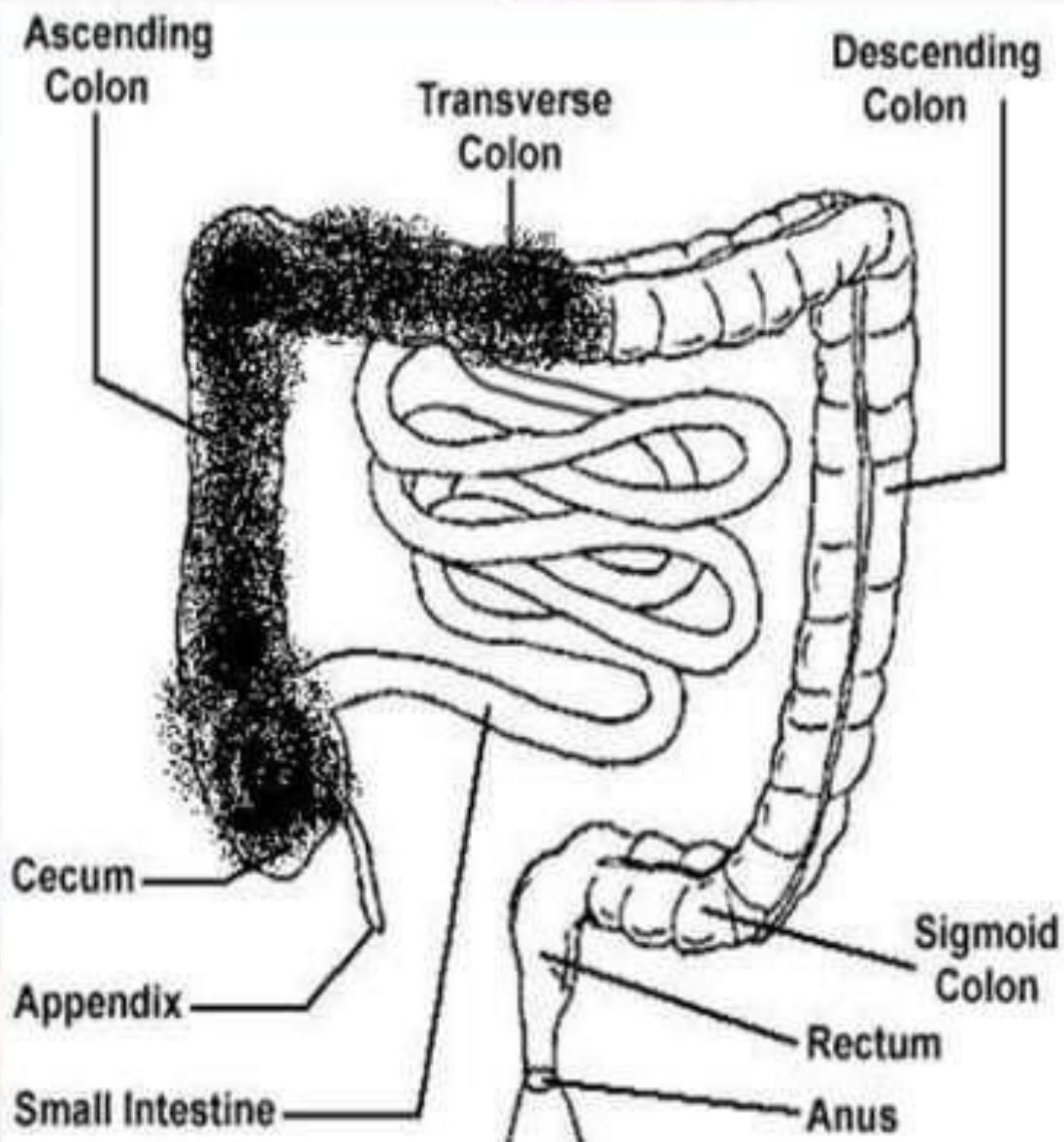
**Beginning  
of large  
intestine**



# Meconium and age correlation

**6<sup>th</sup> month**

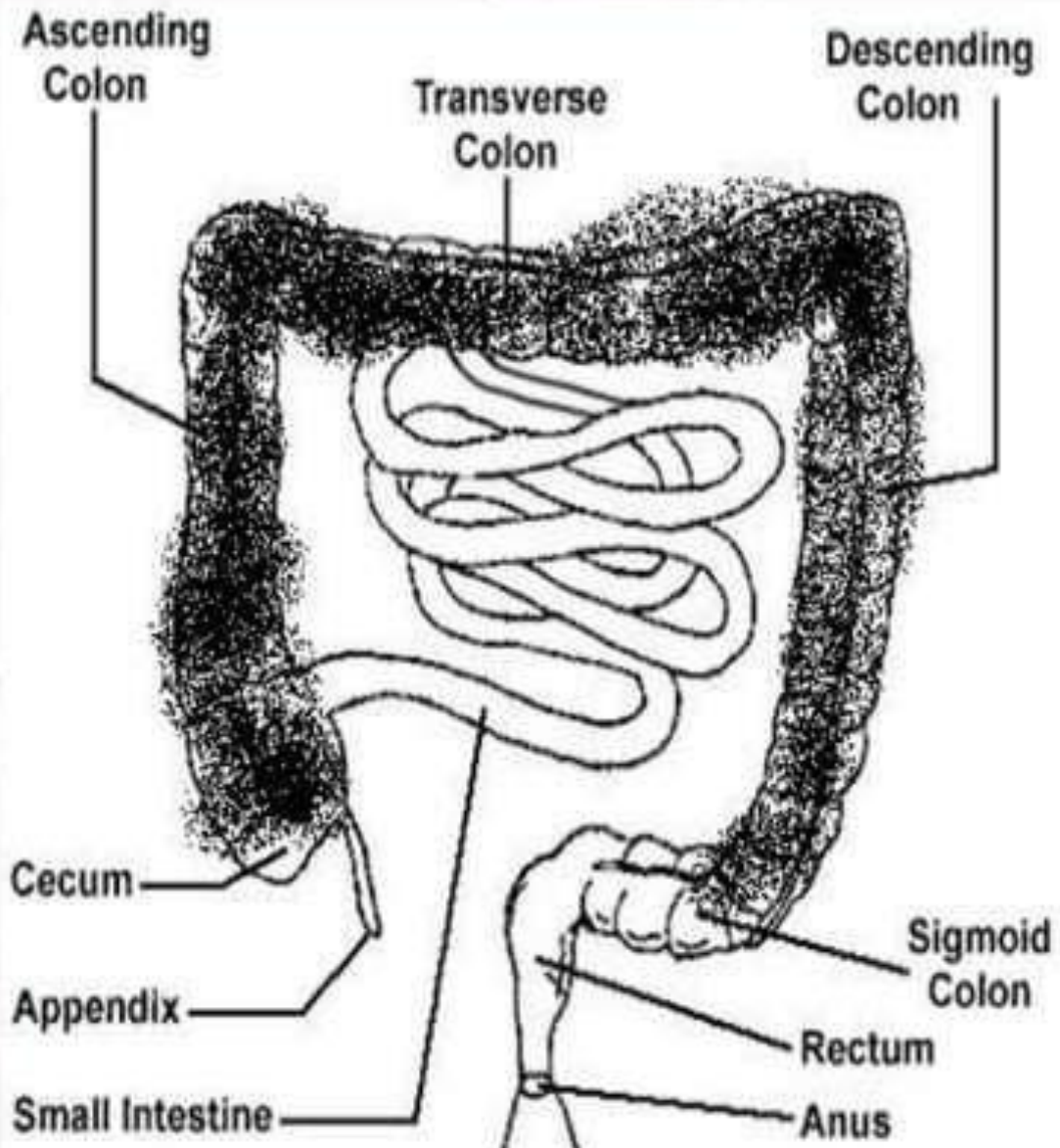
**Upper large intestine**



# Meconium and age correlation

**7<sup>th</sup> month**

**Entire large intestine**

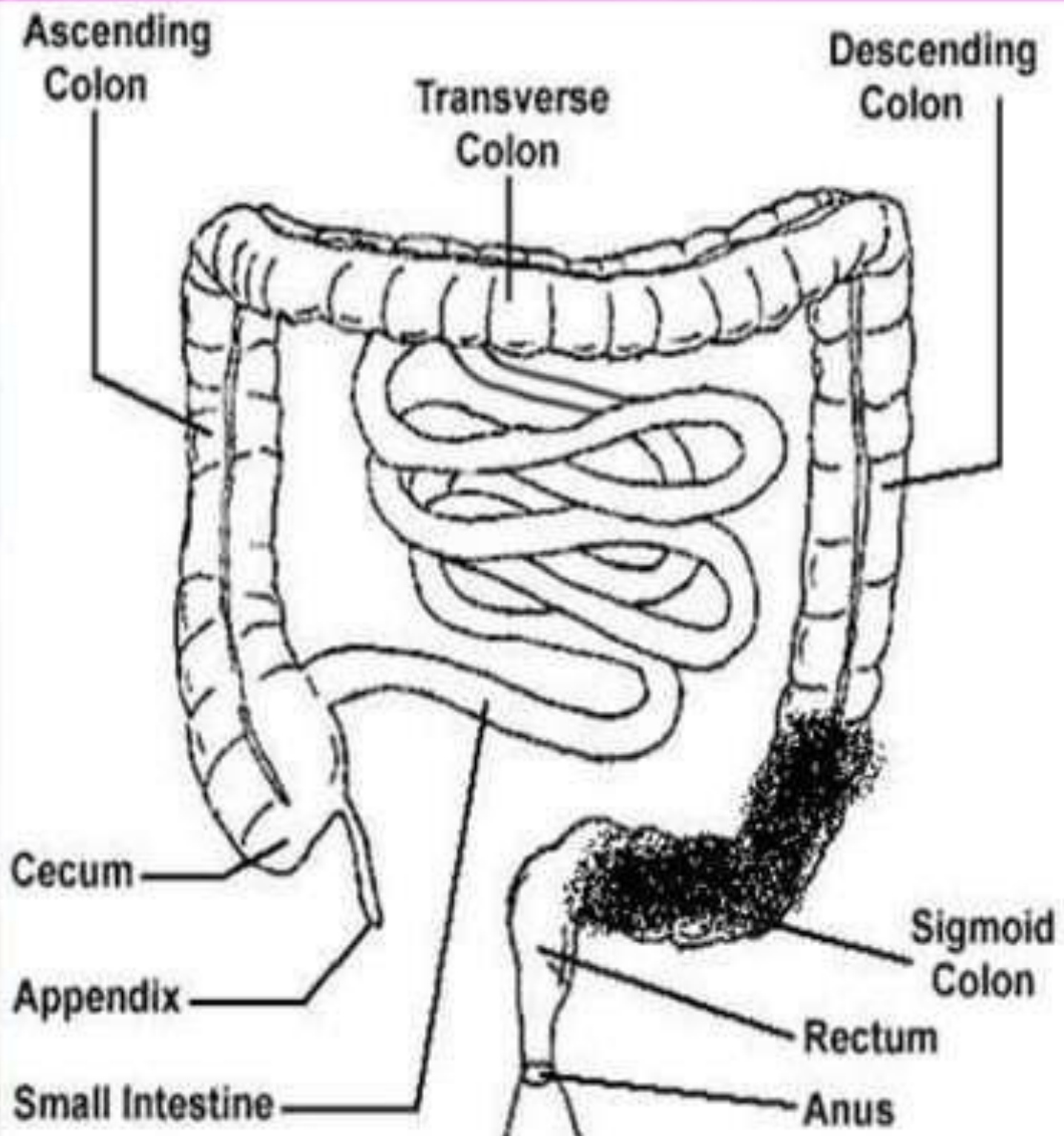




# Meconium and age correlation

**9<sup>th</sup> month**

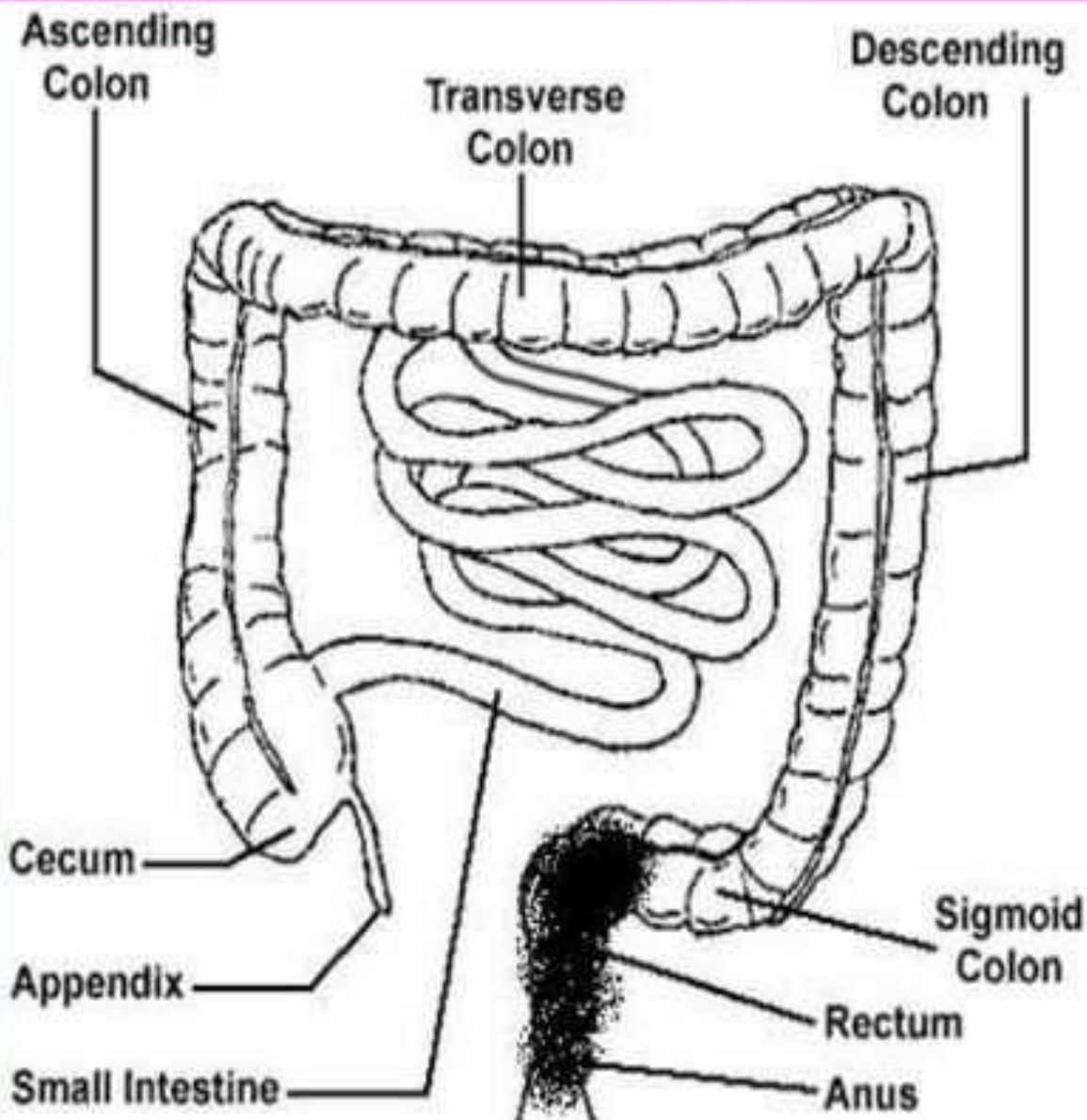
**End of large intestine**



# Meconium and age correlation

**Full Term**

**Rectum**



# Vernix Caseosa



- **White cheesy substance**  
**Covering the skin of fetus**
- made up of **sebum** and  
desquamated **epithelial**  
**cells**
- **Visible from 5<sup>th</sup> month**





## Meanings of Viability of Infant

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- **Physical ability of fetus to lead a separate existence after birth, apart from its mother.**
- **Legally age of viability**  
**30 weeks or 210 days or**  
**7 months.**

# Features Seen in a Dead Born Fetus

## • Rigor Mortis

- *rigor* "stiffness", *mortis* "of death")
- Stiffness of body after death due to ATP depletion
- Only seen if **age > 9 months**

# Features Seen In A Dead Born Fetus

## • **Maceration**

- **Aseptic autolysis**
- **Dead child remain in-utero for 3-4 days surrounded by liquor**
- **Earliest sign = slippage of skin ( 12hrs )**
- **Fetus = soft and flaccid**
- **sweetish disagreeable smell**
- **no gas formation**
- **Internal organs show autolytic decomposition except lung and uterus**



# Features Seen in a Dead Born Fetus

- **Maceration**



# Features Seen in a Dead Born Fetus

## • **Spalding sign**

- **Pathognomic of intra-uterine death**
- **overriding of skull bones seen on X ray**
- **Due to liquefaction of cerebrum and softening of ligaments support**
- **7 days after death**

# Features Seen in a Dead Born Fetus

- **Spalding sign ( USG)**







# Features Seen in a Dead Born Fetus

- **Mummification**

- **Dried up and shriveled fetus**
- **Deficient supply of blood or scanty liquor**

# Features Seen in a Dead Born

## Fetus

- **Mummification**



# Features Seen in a Dead Born

## Fetus

- **Robert's Sign**

- **Gas shadow in chambers of heart and blood vessel.**
- **12 hrs after death.**
- **Difficult to interpret.**



# Features Seen in a Dead Born

## Fetus

### **Other Signs**

- **Hyper flexion of spine**
- **Crowding of ribs**



## Difference Between Still Born and Dead Born.

<b>Feature</b>	<b>Still born</b>	<b>Dead born</b>
<b>Definition</b>	<ul style="list-style-type: none"><li>• Born after 28 weeks</li><li>• No sign of life after birth</li></ul>	Fetus died in-utero
<b>Condition in uterus</b>	Alive	Dead
<b>Predominance</b>	illegitimate child and immature male child of a primi parae	No such predomination

Feature	Still born	Dead born
Features seen	Signs of prolonged labour <ul style="list-style-type: none"> <li>• Skull bleeding / edema</li> <li>• Caput succedaneum</li> </ul>	<ul style="list-style-type: none"> <li>• Rigor mortis</li> <li>• Spalding sign</li> <li>• Robert sign</li> <li>• Maceration</li> <li>• Mummification</li> </ul>
Cause	Anoxia Prematurity Birth trauma	Congenital anomaly ABO /Rh incompatibility



# Signs of Live Birth

- Fetus was **alive** after **complete birth** or when **at least one part** of the body was out of womb

## Civil cases

### Baby's Cry ;

- Vagitus Vaginalis : In Vagina
- Vagitus Uterinus : In Uterus

Muscle twitching

Sneezing

Yawning

## Criminal Cases

**Demonstrated  
by  
Post Mortem  
examination**

# Signs of Live Birth (

PMD)



External

**1**  
**Findings**



**Internal**  
**Findings**

**S**



# Signs of Live Birth (PM)

## External findings

- **Vernix Caseosa is absent**
- **Chest**
  - **Dead born : Flat**
  - **Live born : expanded ( drum shaped)**



# Signs of Live Birth (

## PM)

### Umbilical cord changes External findings

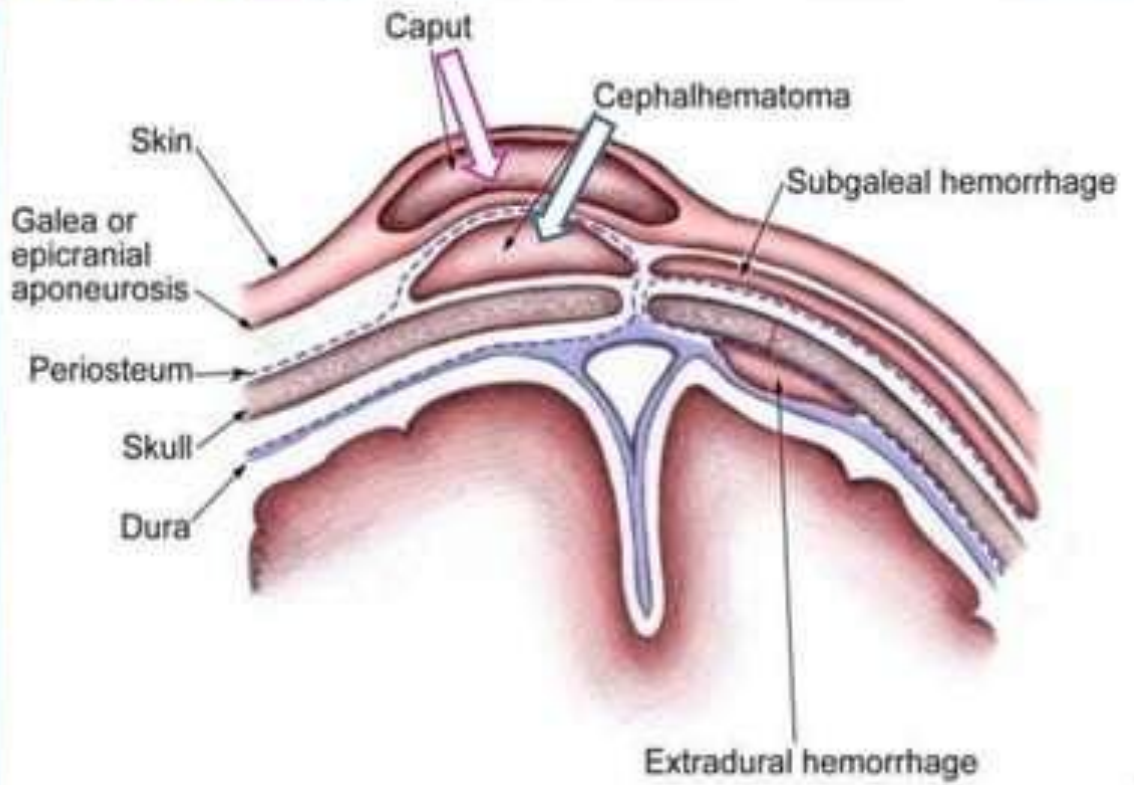
<u>Changes</u>	<u>Time since birth ( days )</u>
<b>Drying up of cord</b>	<b>1</b>
<b>Inflammation at the base</b>	<b>2</b>
<b>Obliteration</b>	<b>3</b>
<b>Falls off</b>	<b>5</b>
<b>Scar formation</b>	<b>10</b>

# Signs of live Birth (

## PM)

### Cephalhematoma and Caput Succedaneum

#### External findings





# Signs of Live Birth ( PM)

## External findings

<b>Cephalhematoma</b>	<b>Caput Succedaneum</b>
<b>Blood collection between periosteum and skull</b>	<b>Between layers of scalp</b>
<b>Due to rupture of emissary vein</b>	<b>Due to stagnation of fluid in skull layers</b>
<b>May be due to Forceps delivery</b>	<b>Due to compression of scalp against the pelvic girdle</b>



# Signs of Live Birth ( P.M)

## External findings

Cephalhematoma	Caput Succedaneum
Unilateral	May be bilateral
No impulse on crying	No Impulse present
Limited by skull suture	not limited
Never present at birth Develops <b>12hrs – 24 hrs</b> after birth Reduces by <b>6 – 8 weeks</b>	Present at birth and Disappears within <b>24 hours</b>



# Signs of Live Birth (PMD)

## External findings

### Changes in Skin color.

<b>Color</b>	<b>Time since birth</b>
<b>Bright Red</b>	<b>Just born</b>
<b>Darker</b>	<b>3 days</b>
<b>Yellow followed by normal color</b>	<b>1 week</b>

# Signs of Live Birth (

## PM)

### Internal findings

#### Unrespired lung

#### LUNGS

#### Respired lung

**Bluish color**

**Mottled**

**Small volume**

**Large**

**Pleura loose**

**Taut**

**Dense and firm**

**Soft and spongy**

**Smooth surface**

**Uneven**





# Signs of Live Birth (

## PM)

### Internal Findings

<b>Unrespired lung</b>	<b>Respired lung</b>
<b>1 / 70 of body weight</b>	<b>1 / 35 of body weight</b>
<b>30 – 40 gms</b>	<b>60 – 70 gms</b>
<b>ON CUT SECTION</b>	
<b>Froth less blood</b>	<b>Frothy blood</b>
<b>Alveoli not exapnded</b>	<b>Alveoli expanded</b>

# Signs of Live Birth (

## PM)

### LUNGS Internal findings

- **Fodere's Test**

- After birth →  
enters lung

Breathing →

Blood ↓

Lungs weight

doubles

False positive :

Lung edema

Pneumonitis



Increased lung  
weight even in  
unrespired lung

# Signs of Live Birth (

## PM)

### LUNGS Internal findings

- **Ploucquet's test**

- **Unrespired Lung** → **1/70 of Body Weight**
- **Respired Lung** → **1/35 of Body Weight**



# Signs of Live Birth ( PM)

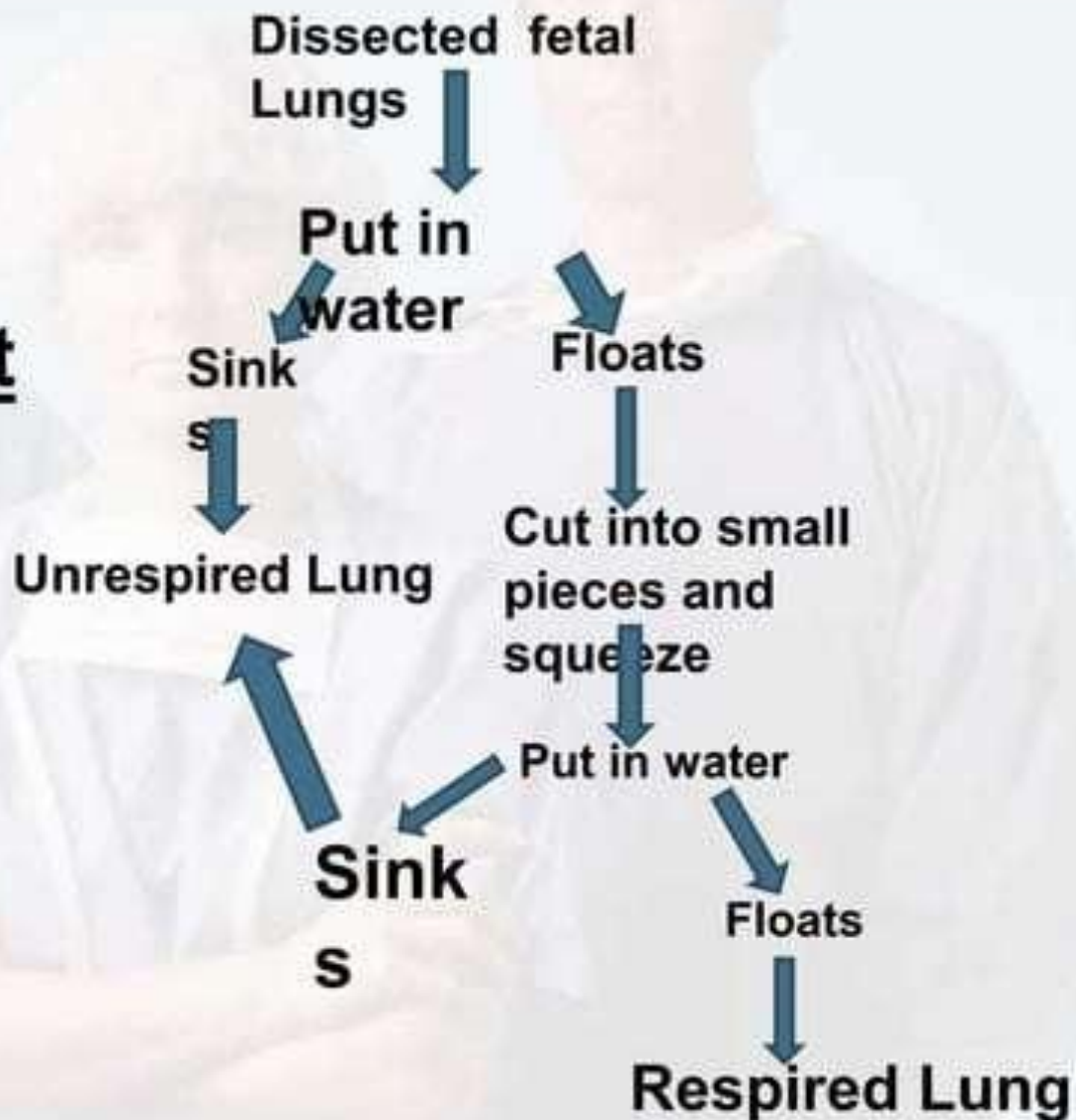
## Internal findings

### LUNGS

## Hydrostatic test

### Specific Gravity

Respired Lung	940
Unrespired Lung	1040
Water	1000



# Signs of Live Birth (

PM)

LUNGS  
Internal findings

- Hydrostatic test : Explanation :

If Breathing has taken place residual air cannot be squeezed out by pressing

<b>False Positive</b>	<b>False Negative</b>
<b>Putrefaction gases</b>	<b>Atelectasis</b>
<b>Artificial inflation</b>	<b>Pneumonia</b>
	<b>Congenital Syphilis</b>



# Signs of Live Birth (

# PM)

## LUNGS Internal findings

- Hydrostatic test

**No need of Hydrostatic test in following conditions**

- ✓ Birth before < 180 days gestation
- ✓ Congenital anomaly like Anencephaly
- ✓ Macerated fetus
- ✓ Umbilical cord separated and scar present
- ✓ Stomach contains milk





# Signs of Live Birth (PM)

## Middle Ear Changes

### WREDIN TEST

FETAL LIFE	AFTER LIVE BIRTH
Middle ear has gelatinous connective tissue	Middle ear has air.



# Signs of Live Birth ( PM)

## Internal findings )

### Stomach and Intestine Changes

**Breslau second life test / Stomach bowel test**



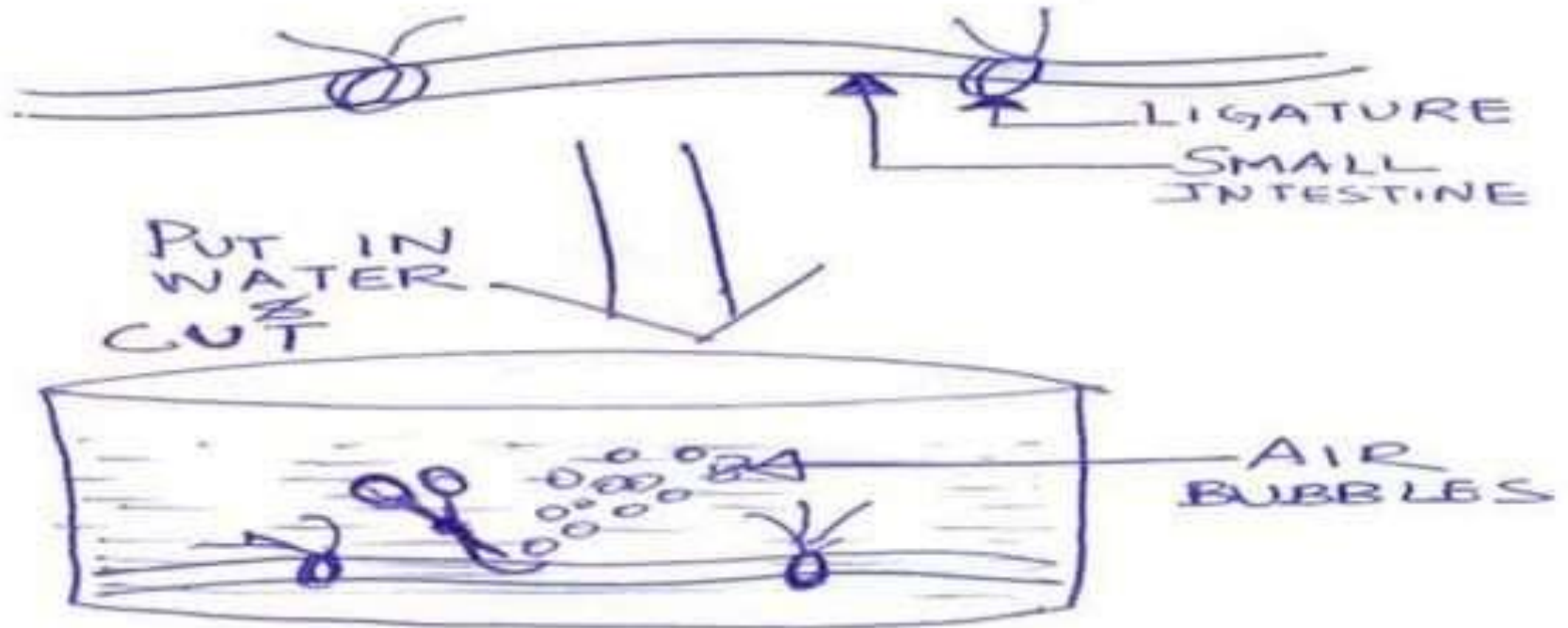
# Signs of Live Birth ( PM)

Internal findings

## Stomach and Intestine

### Changes

Breslau second life test / Stomach bowel test







# Signs of Live Birth ( P.M)

## Internal findings

### Changes in blood vessels

<b>Vessel</b>	<b>Time of obliteration</b>
<b>Umbilical arteries</b>	<b>12 hrs to 3 days</b>
<b>Umbilical vien</b>	<b>4<sup>th</sup> day</b>
<b>Ductus venosus</b>	<b>4<sup>th</sup> day</b>
<b>Ductus ateriosus</b>	<b>10 Days</b>



# Signs of Live Birth ( PM)

## Internal findings

### Changes in Heart

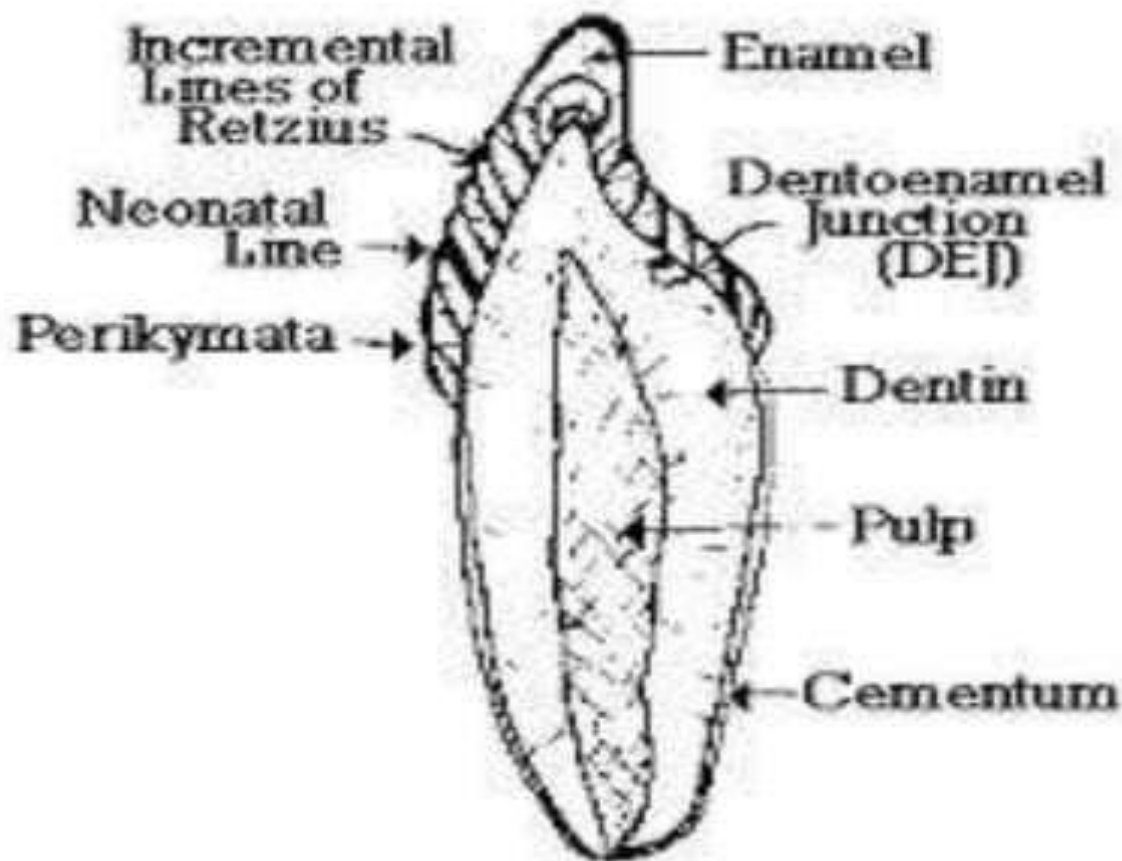
**Foramen ovale closure occurs  
2-3 months after birth**



# Signs of Live Birth (

## PM)

### Changes in Teeth



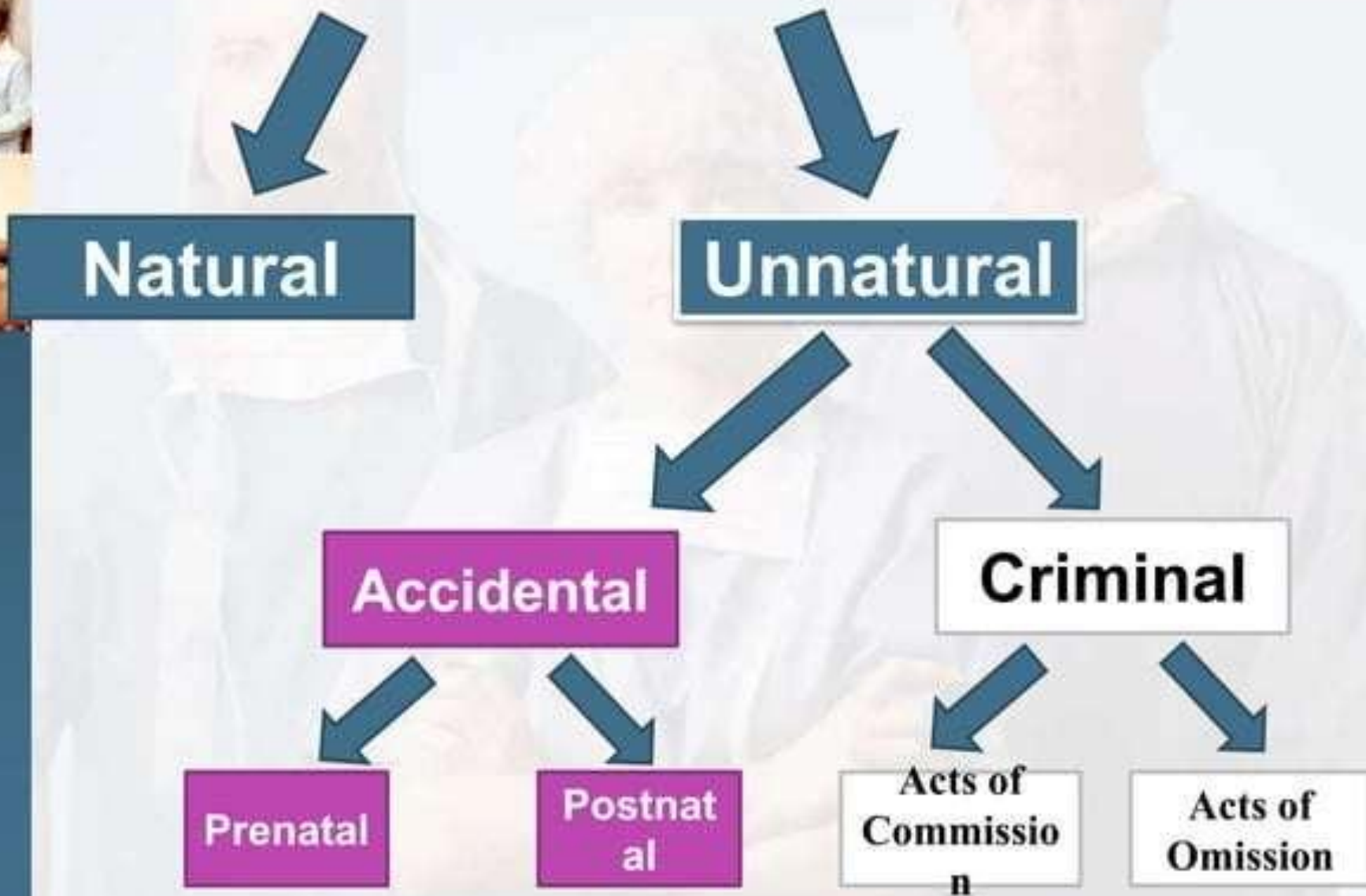
**Neonatal incremental line on enamel is formed at birth**



**One of the surest sign of live birth**



# Causes of Infant Death



# Causes of Infant Death

## NATURAL CAUSES

Prematurity

Neonatal infections

Post Maturity

Congenital malformations

Birth Trauma

ABO / Rh incompatibility


Birth Asphyxia

Sudden infant death syndrome



- 312. Causing miscarriage
- 313. Causing miscarriage without woman's consent
- 314. Death caused by act done with intent to cause miscarriage.
- 315. Act done with intent to prevent child being born alive or to cause it to die after birth





•

316. Causing death of quick unborn child by act amounting to culpable homicide

•

317. Exposure and abandonment of child under twelve years, by parent or person having care of it

•

318. Concealment of birth by secret disposal of dead body



## 312. Causing Miscarriage: -


- Whoever voluntarily causes a woman with child to miscarry, shall, if such miscarriage be not caused in good faith for the purpose of saving the life of the woman, be punished with imprisonment of either description for a term which may extend to three years, or with fine, or with both, and, if the woman be quick with child, shall be punished with imprisonment of either description for a term which may extend to seven years, and shall also be liable to fine.
- **Explanation:- A woman who causes herself to miscarry, is within the meaning of this section.**



### 313. Causing miscarriage without woman's consent:-

- whoever commits the offence defined in the last preceding section without the consent of the woman, whether the woman is quick with child or not, shall be punished with ,
  - **Imprisonment for life or**
  - **Term which may extend to ten years, and**
  - **Shall also be liable to fine.**





## 314. Death caused by act done with intent to cause miscarriage

- whoever, with intent to cause the miscarriage of woman with child, does any act which causes the death of such woman, shall be punished with imprisonment of either description for a term may extend to ten years, and shall also be liable to fine.
- **If act done without woman's consent:-** And if the act is done without the consent of the woman, shall be punished either with <sup>1</sup>[imprisonment for life] or with the punishment above mentioned.
- *Explanation.-this section is not intended to prevent the trial of the offender for murder or culpable homicide, as the case may be, if the child die in consequence of exposure.*



### 315. Act done with intent to prevent child being born alive or to cause it to die after birth:

- - Whoever before the birth of any child does any act with the intention of thereby preventing that child from being born alive or causing it to die after its birth, and does by such prevent that child from being born alive, or causes it to die after its birth, shall, if such act be not caused in good faith for the purpose of saving the life of the mother, be punished with imprisonment of either description for a term which may extend to ten years, or with fine, or with both.



- **316. Causing death of quick unborn child by act amounting to culpable homicide:-** whoever does any act under such circumstances, that if he thereby caused death he would be guilty of culpable homicide, and does by such act cause the death of a quick unborn child, shall be punished with imprisonment of either description for a term which may extend to ten years, and shall also be liable to fine.





- **317. Exposure and abandonment of child under twelve years, by parent or person having care of it.-** Whoever being the father or mother of a child under the age of twelve years, having the care of such child, shall expose or leave such child in any place with the intention of wholly abandoning such child, shall be punished with imprisonment of either description for a term which may extend to seven years; or with fine, or with both.
- **Explanation.-** this section is note intended to prevent the trial of the offender for murder or culpable homicide, as the case may be, if the child die in consequence of exposure.



- **318. Concealment of birth by secret disposal of dead body.** - whoever, by secretly burying or otherwise disposing of the death body of a child whether such child die before or during its birth, intentionally conceals or endeavours to conceal the birth of such child, shall be punished with imprisonment of either description for a term which may extend to two years, or with fine, or with both.