

# **INFANTICIDE**

# **INFANTICIDE**

**Def: Deliberate/unlawful killing of a newly born child under the age of 1yr. It is regarded as murder in law**

In India, punishable under section 302 IPC, by death or imprisonment for life and also fine.

# INFANTICIDE

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- ◎ **Crime of Infanticide is generally committed at the time of or within a few minutes or hour after the birth of the child.**

# INFANTICIDE

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- ◎ Feticide: Means killing of foetus prior to birth.
- ◎ Neonaticide: Killing of Neonates.
- ◎ Filicide: It is defined as killing of a child or a step child, between 0 and 18 years, by his or her parents.

# **Motives behind Infanticide**

*Irrespective of sex of child: Illegitimate child*

*Male child: in cases of prostitutes.*

*Female child: to avoid liability of dowry during marriage.*

*Poverty*

# Issues to be decided are -

- 1) Whether the foetus has attained viability or not ?
- 2) Whether the child was stillborn or dead born or born alive ?
- 3) If born alive how long did the child survive?
- 4) If dead – caused by act of commission or omission
- 5) Cause of death ?
- 6) Connection between the identities of the child and mother

# Causes of death in Infants

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Death is caused by

- ① 1. Act of Commission
- ② 2. Act of Omission

# Causes of death in Infants

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## Natural Causes

- ① 1.Immaturity
- ② 2.Debility
- ③ 3.Congenital Annomalies
- ④ 4.Haemmorage
- ⑤ 5.Erythroblastosis fetalis
- ⑥ 6.Neonatal jaundice

# Causes of death in Infants

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## Accidental Causes

- ① Prolonged Labour
- ② Prolapsed of cord
- ③ Injuries sustained during labour
- ④ Suffocation
- ⑤ Precipitated labour.

# Causes of death in Infants

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## Criminal causes

- ① Act of Commission
- ② Acts of omission

## Other causes

- ① Sudden Infant death syndrome
- ② Battered baby syndrome

# Act of Commision

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- ① These acts are willfull done to cause death of Infant.
- ② 1.Suffocation
- ③ 2.Strangulation
- ④ 3.Drowning
- ⑤ 4.Head Injury
- ⑥ 5.Fractue-dislocation of cervical spine
- ⑦ 6.Concealed puncture marks.
- ⑧ 7. Poisoning

# Acts of Omission

- ① These acts are due to failure to take care of child or negligence towards the child during or after the birth.
  1. Failure to provide assistance during labour.
- ② Failure to clear the air passage after birth.
- ③ Failure to cut and ligate the umbilical cord.
- ④ Failure to feed the child.
- ⑤ Failure to protect the child from heat or cold.

# Medicolegal aspect of Infant deaths

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- ① Was child Still –born or dead born
- ② Was the child born alive (Live Born)
- ③ If born alive, how long the child survive the birth.
- ④ What was the cause of death.

## **Still born:( 6% live birth)**

A child who is born after 28<sup>th</sup> wk of gestation but did not show any signs of life at any time after being completely expelled from its mother.

# **Dead born**

A child which is died inside the uterus & shows one of the following signs after it is completely born:

1)*Rigor mortis*

2)*Maceration*

3)*Putrefaction*

4)*Mummification*

# **Maceration :Process of aseptic autolysis)**

## ***Prerequisites:***

- 1) Foetus is dead & remains inside the uterus for more than 24hrs, for better formation of maceration 3-4days should pass.
- 2) Foetus will be surrounded by sufficient amount of liquor amnii.
- 3) Membranes will remain intact.
- 4) Mother will be living.

## ***Features:***

- 1) Body becomes soft, flaccid & flattens out when placed on table.
- 2) Skin is soddened & reddish or purple coloration & peeled off easily/shows blisters containing serous or sero-sanguineous fluid.
- 3) Abdomen is distended.
- 4) Emits sweetish disagreeable smell.
- 5) Bones & joints: lax & abnormally mobile.
- 6) Spalding's sign: overriding of parietal bones d/t shrinkage of brain.
7. Body cavities contain reddish serous fluid



# MUMMIFICATION

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- ① 1.It is drying and shriveling of fetus occurring in uterus after death.
- ② 2.It results when liquor amnii is scanty and no air enters the uterus.

- ③ **PUTREFACTION**

- ④ If the membranes are ruptured early and air enters the uterus, then the dead fetus shows signs of putrefaction instead of maceration.

# Live born

A child who showed signs of life, even if part of it was out of the womb, though the child may not have breathed or born completely.

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# Signs of Live birth

Crying of a child.

Movement of a body.

Twitching of eyelid.

Degree of maturity

Signs of establishment of respiration

# Degree of maturity

- ⦿ Viability
- ⦿ Appearance of full term infant

## ◎ **Viability**

✓ Def: The physical ability of foetus to lead a separate existence after birth apart from it's mother, by virtue of a certain degree of development.

✓ after 210 days or 7 months or 30 weeks of intrauterine life.

◎ Weight

◎ Hasse's rule

◎ Ossification centers

# Signs of Live birth

- **Proof of live birth is essential in civil or criminal cases**

## **In Civil cases & Criminal cases.**

Crying of child is considered as strong proof of live birth but, at times, it is possible that fetus may cry even when it is in uterus or in vagina.

Following two conditions are considered

1. **Vagitus Uterinus:** Crying of a child even when it is in uterus.

2. **Vagitus Vaginalis:** Crying of child even when it is in vagina.

Hence, it may be possible that child may not show any signs when it comes out although cry of child is heard by people. Crying of child is not conclusive proof of Live birth.

# Criminal cases

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- In criminal cases, signs of live birth have to be demonstrated by autopsy examination of child.

## External & Internal Changes

- External:
  - 1. Changes in chest
  - 2. Changes in skin
  - 3. Changes in umbilicus and cord

# Criminal cases

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## Internal changes:

- ① Changes in lungs
- ② Position of Diaphragm
- ③ Changes in GIT
- ④ Changes in middle ear
- ⑤ Changes in kidneys
- ⑥ Changes in blood.

# Changes in Lungs

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- ◎ Un-respired Lung
- ◎ Respired Lung

# Signs of establishment of respiration

	Before respiration	After respiration
1) <i>Shape of chest</i>	flat	drum shaped
2) <i>Diam. of chest</i>	TD>AP	AP>TD chest circum. 1-2cm>than abd.circum.
3) <i>Intercostal spaces</i>	Narrow	Wide
4) <i>Position of diaphragm</i>	4-5 <sup>th</sup> rib	6-7 <sup>th</sup> rib

	Before respiration	After respiration
d) <b>Wredin's test:</b>	Gelatinous tissue present in middle ear cavity.	Replacement of gelatinous tissue by air in middle ear cavity.
e) <b>Stomach-bowel test</b> ( <b>Breslaw's second life test</b> ):	Sink in water	After ligation, both stomach & intestine float in water d/t presence of air inside it.
<i>H.P.E of lung tissue</i>	Alveoli collapsed, lined by cuboidal/columnner epithelium	Alveoli expanded, lined by flat squamous epithelium with increased vascular proliferation & dilatation.

	Before respiration	After respiration
5) <b>Lungs:</b>		
<i>Position</i>	Lying at the back of thoracic cavity , behind heart & thymus gland.	Medial edges covers the mediastinum
<i>Pleura</i>	Wrinkled & loose	Taut
<i>Colour</i>	Uniformly dark-red	Mottled pink
<i>Appearance</i>	Smooth but not marbled	Marbled d/t expanded air vesicles
<i>Volume</i>	Smaller	Voluminous & larger
<i>Consistency</i>	Firm, non- crepitant	Spongy, elastic, crepitant
<i>Margins</i>	Sharp	Rounded
<i>c/s</i>	-Exudes little blood only -Rubbing piece of lung close to ear, no crepitus sound	-Exudes frothy blood -Rubbing piece of lung close to ear, crepitus sound present.

	Before respiration	After respiration
6) <b>Tests:</b>		
a) <b>Static test</b> ( <b>Fodere's test</b> ): Wt. of lungs get doubled after respiration	30gms	60gms
b) <b>Plouquet's test:</b> Ratio of wt. of lungs to wt. of body.	1/70	1/35
c) <b>Hydrostatic test</b>	Negative	Positive

# Test for detection of Respired and Non-respired Lungs

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- Static test or Fodere's test
- Before respiration average weight of lungs (Both) is around 30 to 40gms
- After respiration the average weight of both lungs is around 60 to 70 gms
- Increase in weight is due to increase in blood circulation.

# Test for detection of Respired and Non-respired Lungs

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## Ploucquet's test

@ This test is based on ratio of whole lung weight of fetus and weight of both lungs.

@ Before respiration-Weight of both lungs is about  $1/7^{\text{th}}$  of the weight of whole fetus.

@ After respiration-Weight of both lungs is about  $1/35^{\text{th}}$  of the weight of whole fetus.

# Test for detection of Respired and Non-respired Lungs

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Specific gravity

Specific gravity of non-respired lung is 1.040-1.050.

Specific gravity Respired lungs is 0.940- 0.950

# Hydrostatic test

- ◉ Principle
- ◉ Test
- ◉ Inference
- ◉ Drawbacks
- ◉ Test not required

# Principle

It depends on *specific gravity of lungs d/t respiration.*

➤ Specific gravity:

Unrespired lungs-1050 (heavier than water) sinks in water.

Respired lungs-950 (lighter than water) floats in water.

# Test

Trachea with both lungs in situ



each lung



each lung cut into 12-15 pieces

Control: piece of liver.

# Inference

Sink- Unrespired

Float-Respired

Sink + float-Feeble respiration

Floating of lung pieces even after squeezing

under the water indicates positive hydrostatic test

& establishment of respiration.

# Drawbacks

<b>Expanded lungs sink</b>	<b>Unexpanded lungs float</b>
➤ Pneumonia	➤ Putrefaction
➤ Pulmonary oedema	➤ Artificial respiration
➤ Congenital syphilis	
➤ Obstruction by alveolar duct membrane	
➤ More air is expelled out than inhaled	

# Test not required

- ◉ Baby born prior to age of viability
- ◉ Macerated foetus
- ◉ Presence of milk in stomach
- ◉ Umbilicus cord separated and scar formed at umbilicus.
- ◉ Fetus has gross congenital anomalies, like anencephaly, which are incompatible with life.

# Other signs

- ◉ Changes in skin
- ◉ Changes in umbilical cord
- ◉ Changes in circulation
- ◉ Presence of milk in stomach
- ◉ G.I tract:
- ◉ Changes in ht.& wt.

# Changes in skin

- At birth: bright red
- 2 days: dark red
- between 3-5<sup>th</sup> day: yellowish d/t physiological jaundice
- resumes its original colour within 10<sup>th</sup> day.
- Vernix caseosa: white cheesy substance, secreted from sebaceous glands & epithelial cells seen at neck folds, axilla & inguinal region. Persist 1-2days after birth if not washed out.

# Changes in umbilical cord

- clotting at cut end:2hrs
- begins to dry:12-24hrs
- inflammatory ring at attached end:36-72hrs
- cord dry & shrivelled:3days
- falls off, leaving behind raw area:5<sup>th</sup> day
- healing of ulcer with formation of scar:10<sup>th</sup> day.

# Changes in circulation

## ➤ changes in RBC:

- Foetal RBC disappear 1-2 days after birth
- RBC count at birth 6.2millions reduces to 5.2 millions within a wk.

## ➤ changes in Hb:

- at 5<sup>th</sup> mth. of IUL:94% Hb is of HbF
- at birth:80%Hb is of HbF
- at 6<sup>th</sup> mth after birth: HbF replaced by adult Hb.

## ➤ Changes in blood vessels:

- beginning of contraction of umbilical arteries: few hrs after birth
- completion of contraction of umbilical arteries: 2 days after birth
- beginning of contraction of umbilical vein & ductus venosus: 2 days after birth
- completion of contraction of umbilical vein & ductus venosus: 4 days after birth
- beginning of contraction of ductus arteriosus from the aortic end: 4 days after birth
- completion of contraction of ductus arteriosus from the aortic end: 10 days after birth
- closure of foramen ovale: birth/2mth-2yr  
Or remain Persistent foramen ovale

## Features suggest newborn struggled for breathing:

- Presence of dark coloured fluid blood, haemoconcentration & formation of soft clots.
- Cyanosed expanded lungs (d/t oedema, obstructive emphysema, inhalation of liquor amnii)
- Tardieu's spots over visceral layers of pleura, pericardium & thymus.
- Hepatic & retroperitoneal oedema
- Ascites
- Distension of large gut with meconium

# Position of Diaphragm

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## Position of diaphragm

Non-respired –it lies at the level of 4-5<sup>th</sup> rib.

Respired- Descends and lies at the level of 6-7<sup>th</sup> rib.

## Shape of Diaphragm

Non-respired – Concave arch

Respired –Flattened and deppressed

# Changes in GIT

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## Radiological signs

- On X-ray examination-Presence of air in GIT is strong evidence of respiration.
- It is noted that during the act of respiration ,some amount of air is swallowed in stomach and due to peristalsis movement, air gradually descends in small and large intestine that can be demonstrated on X-rays.

# Changes in GIT

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## Breslau's Second life test

Test is based on following principle-

@ Air is swallowed in stomach during respiration, if air present then stomach and intestine, will float in water.

@ Stomach and intestine are removed after tying ligature at each end. Then placed in water- if stomach and intestine floats, it suggest that child has respired after birth.

If stomach and intestine sinks in water, it indicates absence of air and suggest non-establishment of respiration in a child after birth.

# Changes in GIT

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- ⦿ Drawback of Breslau's Second life test
- ⦿ @ The test is positive ( if floats in water ) If-
- ⦿ 1. If air or gases is present in stomach and intestine due to decomposition.
- ⦿ 2. If air or gases is present in stomach and intestine due to artificial respiration.

# Changes in GIT

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- ① Advantage of Breslau's Second life test
- ② @ This test is useful when air is prevented from entering into lung by-
  - ③ 1. Foreign body
  - ③ 2. Due to occlusion of bronchi
  - ③ 3. Due to presence of trachea-bronchial fistula.

# Demonstration of air under water

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⦿ If stomach is dissected under water, air bubbles will be released from stomach, if the child has respired.

⦿ **Presence of milk (or liquid food)**

In stomach is definitive evidence of live birth of child and establish that child had lived for some time.

# ABANDONMENT OF A CHILD

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- ① Section **317 IPC** deals with abandonment of child.
- ① Exposure and abandonment of child under 12 years by parent or person having care of it is punishable offence.
- ① Whoever being father or mother of a child under the age of 12 years or having 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.

# CONCEALMENT OF BIRTH

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- ◉ Intentional concealment of birth is punishable crime under section **318 IPC** deals with concealment of birth and provide punishment for the act.
- ◉ This section states that-Whoever, by secretly burying or otherwise disposes dead body of a child, wether such child die before or after 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.

# Sudden Infant death Syndrome

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@ It is also called as cot death, crib death or SIDS.

“The sudden death of any infant or young child which is unexpected by history and in whom a thorough necropsy fails to demonstrate an adequate cause of death”

**@Classified SIDS are –**

1. Death of infant occurs up to age of 1 year.
2. Thorough postmortem examination fails to demonstrate an adequate cause of death.
3. Death scene investigation is conducted and yield no evidence of un-natural cause of death.
4. Review of the infant and the mother's medical records reveal no history of medical condition that might have caused death.

# Causes of SIDS

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- 1. Allergy to cow's milk
- 2. Allergy to house mite
- 3. Spinal haemorrhage
- 4. Calcium deficiency
- 5. Selenium deficiency
- 6. Biotin deficiency
- 7. Magnesium deficiency
- 8. Vitamin C, D, E deficiency
- 9. Overlying
- 10. Metabolic enzymes defect
- 11. Prone sleeping position
- 12. Hypoxic conduction defect in heart.

# MEDICOLEGAL IMPORTANCE

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- ◎ SIDS may be mistaken for Infanticide.
- ◎ SIDS may be confused with battered baby syndrome.

# Battered Baby syndrome

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- ◎ It is also called as “Caffey’s Syndrome”,
- ◎ Child abuse Syndrome, mal treatment Syndrome, non accidental injury of child.
  
- ◎ It is defined as –
- ◎ “A battered child is one that suffers repetitive physical injuries inflicted by parents or guardian, and these injuries are non-accidental in nature”

# Battered Baby syndrome

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## ○ Features of Battered Baby Syndrome

- 1. Age is usually less than 2 years.
- 2. Commonly seen more in males.
- 3. Generally there is neglect of child
- 4. Disproportionate amount of soft tissue injury and history provided by parents is inconsistent with pattern of injury.
- 5. Occurrence of injuries at different time intervals.
- 6. History of multiple admission in hospital.
- 7. Childrens usually belong to broken families, low socio-economy strata or the child may be result on unwanted pregnancy or as result of illegitimate sexual relationship.

# Battered Baby syndrome

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- ① Medicolegal aspect
- ① In India incidence of Battered Baby Syndrome is usually less.
- ② If death of child occurs, a charge of homicide may be labeled against offending parent.

# Cinderella Syndrome

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- ① In this case single child ,particulary female child is chosen for battering.The child is usually youngest or eldest in family.
- ① The child is repeatedly abused while other children of same family are spared.
- ① The child may develop inattention disorder or temper tantrums. There may be failing of grades in school.Some child may leave the home.
- ① In some cases variety of syndrome, few adopted female child accuse their step-parents of maltreatment.

# Shaken Baby Syndrome

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- ① Shaken baby syndrome was first describe by Guthkelch in 1971.
- ① SBS is violent act of abuse that can cause myriad neurological, cognative and other functional deficits. In most serious case, death can result.
- ① It is form of child abuse characterized by retinal, subdural and / or subarachnoid haemorrhage caused by severe shaking.

# Shaken Baby Syndrome

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## ◎ FEATURES

1. Involves young children, usually less than 2 years of age.
2. The shaking injury may be induced by parent or child care taker who may be irritated with child's cry or due to psychiatric disorder.
3. Retinal haemorrhage may be noted and may be unilateral or bilateral.
4. There may be bilateral vitreous haemorrhage.
5. CT scan or MRI may be of great value in evaluation of brain injuries.

# Shaken Baby Syndrome

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## ⦿ Autopsy findings

- ⦿ 1. Intracranial haemorrhage may be seen in the form of subdural haematoma commonly located in the interhemispheric fissure, or cerebral oedema with subarachnoid haemorrhage.
- ⦿ 2. There may be brain stem damage.
- ⦿ 3. Optic nerve sheath and optic nerve intradural haemorrhages are also noted.

# MUNCHAUSEN'S SYNDROME BY PROXY

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- It is also called as factitious illness by proxy.
- It is form of child abuse where parents brought the child to doctor for false or induced signs and symptoms of illness with a fictitious history.
- Usually, mothers are involved for inducing the illness in child.
- Syndrome involved three forms of abdominal illness behavior as-
  - 1. False accounts of symptoms
  - 2. Fabricated symptoms
  - 3. Induction of symptoms

# FEMALE FETICIDE

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- ◎ It is killing of female fetus. In India there is constant decline in female births and problem is compounded by female feticide.
- ◎ The practice of sex determination is widely prevalent in India and with increased availability of ultrasound machines, a corresponding decline in female birth rate was observed.
- ◎ To overcome menace of female feticide PC & PNDT act 1994 was enacted. Subsequently it was amended, now called as PCPNDT Act 2003.

# FEMALE FETICIDE

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## ◎ Reasons for female feticide

1. For want of male child, female fetus is killed in conception period.
2. Traditional gender bias in India and male child is preferred over female child.
3. Due to rampant practice of dowry, birth of daughter in family is considered as an economic liability.
4. Due to typical mentality, in India son is considered as honor and pride of family and the son is entitled to use father's name.

**THANK**

**YOU**