LAB

Identification

Means,

Determination of a personal identity of an individual, it can be partial (or) complete & it can be done in a live person (or) in a dead body.

Criminal investigations
- Missing cases
- Inheritance of property / legal heir
- Massacre disaster
- Insurance cases
- Nullity of Marriages
- Sexual offence cases etc.

} Necessary

Corpus delicti

Body of crime / Essence of crime / evidence

Parameters

Help in identification

i) Race & religion
ii) Sex
iii) Age
iv) Stature
v) finger prints
vi) DNA finger printing
vii) Tattoo's
viii) Occupational marks
ix) Special physical features
x) Hair, teeth erm^n & gait
xi) Deformities, voice
xii) Handwriting, Tricks & Manners

Age

AGE DETERMINATION

Medicolegal importance

1 year ⇒ < 1 year → Infant

Deliberate killing of infant → infanticide

7 year ⇒ (Criminal responsibility)

Any person is less than 7 years, are not responsible for any criminal acts.

12 years ⇒ (Consent)

Any consent for less than 12 years, is invalid.

Above 12 years, they can give consent for simple medical exam's but not for any procedures or surgeries.

→ for any procedures & surgeries - Minimum 18 yrs required.

→ parents should not abandon any child who is < 12 years.

14 years ⇒ (Child labour)

No child would be employed < 14 years

Employed in non-Hazardous places 14-18 years

any place [Employed] > 18 years.

Minimum Eligible age to enter into Govt. Services - 18 yrs

18 years

< 18 years - Juvenile / child

> 18 years - Adult.

Attainment of Majority

→ Right to cast vote
→ Driving license
→ Bank account
→ Inheritance of property
→ Marriage for girls
→ Govt. Job
→ Consent is valid – above 18 years
→ procedures & surgeries.

21 years

→ Marriage for boys
→ attainment of majority – in insane persons.
→ Age for possessing the firearms.

25 years

→ Contest in MLAs / MPs in India

25 - 35 yrs – Vice president & president

60 yrs – Retirement of Govt. Jobs

70 yrs – Retirement of private. Jobs

17 yrs → Minimum age of Entrance in [NEET] Medical clg.

Age determination

Done by 3 following Exmn's.

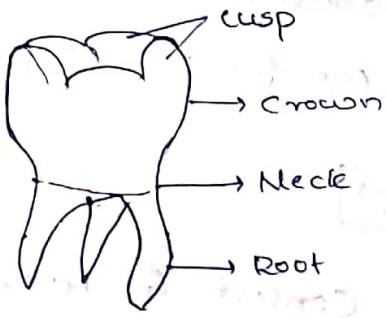
1. physical Exam^n
2. Dental Exam^n
3. Radiological Exam^n. (ossification test)

Physical Exam^n

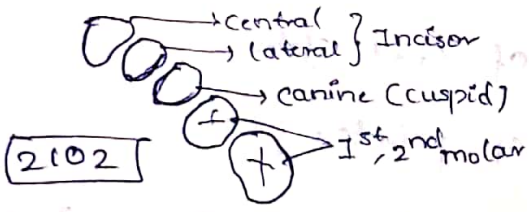
Age can be detected by Examining the growth of the person, Development of the body (physical features) like height, weight, built, hair & secondary sexual Characteristic features.

Dental Exam^n

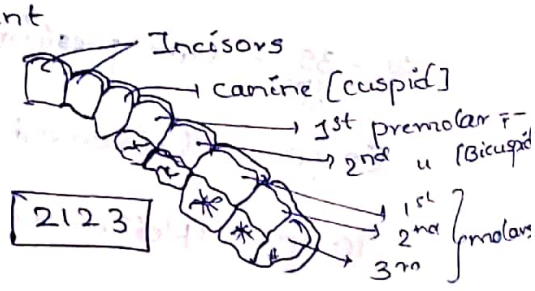
The puberty



Deciduous/Temporary



Permanent



Eruption of deciduous Teeth

Teeth		Age of Eruption
Central incisor	lower	6-8 months
	upper	7-9 months
lateral incisor	upper	7-9 months
	lower	10-12 months
1st molar		12-14 months
Canine		17-18 months
2nd molar		20-30 months.

Eruption of permanent teeth.

Teeth	Age of Eruptions
1st molar	6-7 yrs
Central incisor	6-8 yrs
Lateral incisor	7-9 yrs
1st bicuspid	9-11 yrs
2nd bicuspid	10-12 yrs
Canine	11-12 yrs
2nd molar	12-14 yrs
3rd molar	17-25 yrs

Diff. b/w Temporary & permanent teeth.

Trait	Temporary teeth	permanent teeth
Size	Smaller, lighter	heavier, stronger, broader
Direction	Ant. teeth vertical	usually inclined forward
Crown	China white - colour (or) Milky white	Ivory-white - colour
Neck	ridge / More constricted	less constricted
root	Roots of molars are Smaller & more diverged	Roots of molars are larger & less divergent.

Dental Exmn

Total No. of teeth present:

All teeth are permanent (or) temporary (or) mixed dentition:

Total No. of sockets present (Mandible)

Palmer's Notation

R | 8 7 6 5 4 3 2 1 | 1 2 3 4 5 6 7 8 | L

R | 8 7 6 5 4 3 2 1 | 1 2 3 4 5 6 7 8 | L

Mixed dentition - B/w 6-12 yrs

Presence of both temporary & permanent teeth in same oral cavity.

No. of teeth by 2-6 yrs = 20

7 yrs = 24 [4 permanent, 20 Temporary

10 yrs = 24 [16 permanent, 8 Temporary

12 yrs = 24 [20 permanent, 4 Temporary

Super added teeth:

those which are not having temporary predecessors

Call permanent molar teeth - 12)

Successional permanent teeth

Those erupt at places of temporary teeth - all permanent teeth except molars.

Super numerary teeth, & natal teeth.

Spacing of Jaw.

Natal teeth

Natal - Birth.

The 1st tooth in the oral cavity, at the birth is called Natal teeth.

MLI → Very friable, soft, easily dislodged, even with minute pressure.

Spacing of Jaw

→ it is space of Eruption of 3rd permanent molar, behind the 2nd permanent molar.

→ If space is present in all 4 quadrants of oral cavity, the age of person is minimum 15 years.

U/S - under section.

Age determination Exam^n proforma

Age determination exam^n requisition recieved from _____

of _____ P.S, was sent through PC/WPC;

Name - _____, NO. _____ of _____ PS

in crime no. _____ U/s of _____ Ps at

_____ time on _____ Date.

Preliminary Exam^n

Name of the individual -

Sex of the individual -

Adress of the individual -

Name of the parents & address -

Edeucational status -

Right Handed person con not -

Consent of the individual - Taken / not (Left thumb impression con signature)

Consent of the parent - Taken / not

Signature of the PC / WPC -

Name of the ♂/♀ attendant present at the time of Exam^n -

Date & time of the exam^n.

place of Exam

Age Alloged by individual

Age Alloged by parents

Age as per the police requisition.

Menstrual history

Age of menarche

Date of last menstruation period.

Whether the Menstruation phase / cycle is regular / not.

Marital status. if married - Age of marriage

No. of children

Age of 1st child

Age of last child.

Physical Exam.

Identification marks

1.

2.

Height of the individual

Weight of the individual

Built & Nutrition.

Circumference of chest - after inspiration & expiration

Circumference of abdomen at umbilical region.

Scalp hair - length & colour

papillary hair - " & "

pubic hair - " & "

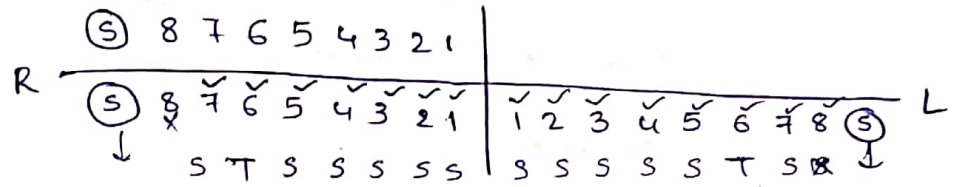
Moustache - " & "

Beard - " & "

- Voice
- Development of breast
- Development of External genitalia.
- Any congenital / other deformities.

(1) Dental examination

For mandible, (only downside)



Total no. of teeth present in the given mandible is (2)

& Socleets is (12)

✓ → Erupted
S → Socleets
T → Teeth
(5) → Space of jaw.

(Radiological Exam

the following Exercise to be taken,

1) AP view of Shoulder Joint (Rt) which include

i) upper end of humerus
ii) Acromion process
iii) coracoid process
iv) Glenoid cavity.
v) Medial end of clavicle.

2) AP view of Rt. Elbow joint, of which includes

i) upper end of ulna
ii) lower end of humerus
iii) Head of the radius

3). AP view of Rt wrist Joint, which includes,

i) lower End of radius & ulna.
ii) All carpal bones
iii) All Metacarpals
iv) All Phalanges/bones.

4. AP view of whole pelvis which includes

- Both iliac bones.
- Both ischial bones
- Both pubic bones
- Sacrum

- Both hip joints which includes
  - upper end of femur
  - head of femur
  - Greater trochanter
  - Lesser trochanter.

Findings in the x-rays,

Date of x-ray taken _____

Date of x-ray received _____

Opinion

Basing on physical, Dental, radiological Exmn, the individual is aged about _____ yrs.

Signature of
Medical officer

NOTE → The original age Certificate, all x-rays were submitted to the honourable court through police.

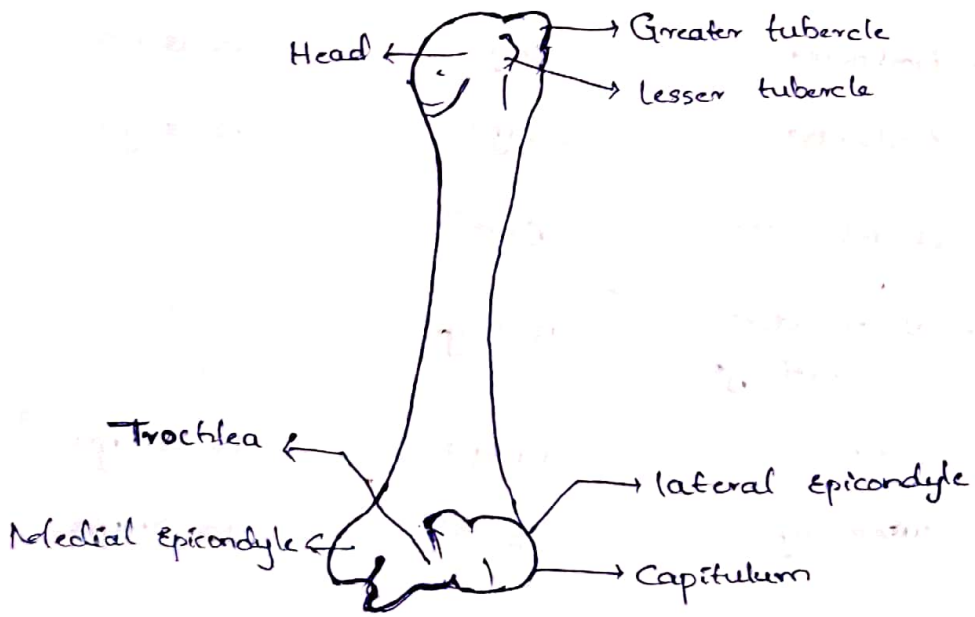
AGE DETERMINATION

X-Ray Exam^{n} for ossification test

Humerus

	Age of appearance	Age of fusion
Tip of acromion	14-15 yrs	17-18 yrs
Coracoid process	10-11 yrs	16 yrs
Head of humerus	1yr	18-19 yrs
Greater tuberosity	3 yr	18-19 yrs
lesser tuberosity	5 yr [6 yrs all three]	18-19 yrs

	Age of appearance	Age of fusion
Medial Epicondyle	5-7 yrs	16 yrs
lateral Epicondyle	11 yrs	16 yrs
Trochlea	10 yrs	16 yrs
Capitulum	1yr	16 yrs
Conjoint Epiphysis	13 yrs	15-16 yrs

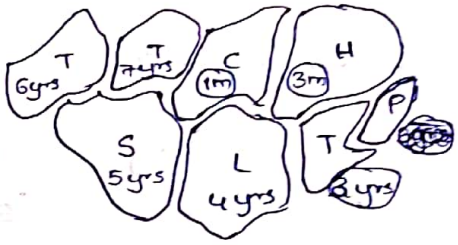


=>

	Age of appearance	Age of fusion
Head of radius	5 yrs	16 yrs
Lower end of radius	2 yrs	18-19 yrs
Upper end of ulna	9 yrs	16 yrs
Lower end of ulna	5 yrs	17-18 yrs

=>

Carpal bones	Appearance
Capitate	1 month
Hamate	3 months
Triquetrum	3 yrs
Lunate	4 yrs
Scaphoid	5 yrs
Trapezium	6 yrs
Trapezoid	6-7 yrs
Pisiform	10-12 yrs



→ Base of the 1st metacarpal [thumb] fuses by 16 yrs.

→ All phalangeal bones are fused by 15 yrs.

Ossification centre	Appearance	Fusion
Head of femur	1yrs	17-18 yrs
Greater trochanter	4yrs	17-18 yrs
Lesser trochanter	12 yrs	17-18 yrs
Fusion of ischiopubic rami	6 yrs	
Obliteration of triradiate Cartilage	13-15 yrs	
iliac crest	14 yrs	18-20 yrs
ischial tuberosity	16 yrs	20-21 yrs.

6/3/25

RACE

1. Caucasions [Whites]
2. Negroid [Blacks]
3. Mangoloid

⇒ Indians are Mixed race from Negroid & Mangoloid

Caucasians → are Europeans.
Negroids → Africans
Mangoloids → Japan, China - Asians
Caucasian & Mangoloids → Native Americans (Red indians)

→ colour of the skin

Eyes
Hair
Skeleton (bones)

⇒ Blumen beck's classification → Criteria → complexion

1. Negroid → Black complexion
2. Caucasians - White
3. Mangoloids - Yellow-white
4. Indians - Brown

⇒ Eyes [Iris]

Caucasians - Blue, grey, Green (rare)
Negroid - Black
Mangoloid - Brown
Indian - Brown

⇒ Hair → Short, thin, curly & tough, Black → Negroids
Long, tough, white (blonde) → Caucasians
Thick, hard, black → Mangoloids & Indians

Mangoloids & Indians → ⊙
Caucasians → ⬭
Negroid → kidney shaped
} Cut section of hair.

⇒ Skeleton

Cephalic index → $\frac{\text{Max. breadth of skull}}{\text{Max. length of skull}} \times 100$

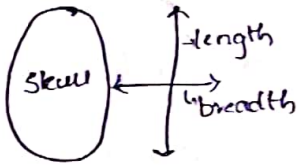
Dolico-cephalic – 70-75 → Negroids & pure Aryans (MC)

↓
length is more

Mesati-cephalic – 75-80 → Europeans & Indians (MC)

Brachi-cephalic – 80-85

↓
Breadth is more



→ Hyper brachi-cephalic → width is very more
↳ M.C in kyushu tribe of Japan

Orbit shape →

palate →

Nasal aperture →

RELIGION

→ Hindus are Not circumsized
Muslims are circumsized
} in ♂

→ Scars due to sindoor on fore head & Junction of fore head & hair line in hindu females

Most Muslim females have nose piercings.

Tatoo mark, Jewellery, Ornaments can help in identification.

SEX

if total skeleton is available - 100%.

if only skull is available - 95%.

if only pelvis is available - 92%.

if both skull & pelvis is available - 98%.

	Male Skull	Female Skull
physical feature	Heavier, larger	Smaller, Lighter
Surface	Rough	smooth
Muscular markings	More prominent	less prominent
Forehead	Steep & inclined	Vertical
Glabellae	More prominent	less prominent
frontonasal Junc^{n}	More depressed	less depressed
Supraorbital ridge	More prominent	less prominent
Frontal & parietal Eminence	less prominent	more prominent
occipital protuberance	More prominent	less prominent
Suprameatal ridge	More prominent	less prominent
Zygomatic arch	More prominent	less prominent
Foramina	Larger	Smaller
Mastoid process	longer, stouted	Smaller & thin
Digastric groove	More depth	less depth
Styloid process	Longer, Stouter	short & thin
palate	Larger & U-shaped	Smaller & parabolic
Orbits	Square, Larger, set higher Margins are round	round, Smaller & Circular Margins are sharp
Mandible	Angle of mandible everted	is not everted.
pelvis		

	Male pelvis	female pelvis
pelvis	Larger, heavier	Smaller, wider
Shape	funnel	flat bowl
Inlet	heart	round
iliac crest	Higher level	Lower level
ASIS	Higher level	Lower level
Obturator foramen	Larger, Oval Base - upwards	Smaller Apex - upwards
Greater Sciatic notch	more deeper less wider	Less deeper more wider
Ischial spine	Larger & inverted	Smaller & Everted
pre-auricular sulcus	Absent / not prominent	more prominent / deep
Sacro-iliac joint	Larger, 3½ Vertebrae level	Smaller, 2½ Vertebrae level
Acetabulum	Larger, 52 mm [D] Directed Laterally	Smaller, 46mm [D] Antero-laterally placed
Ischial tuberosity	Not Everted	Everted
Ischio-pubic rami	Everted	Not Everted
Sub-pubic angle	V-shaped Acute (70-80°)	obtuse [>85°]
Sacrum Promontory	more prominent	less prominent
Curvature (Sacrum)	less	more

Tattoo Marks

① Definition - These are the special patterns & designs made by needles by impregnating the colouring agents (or) pigments through multiple puncture wounds into the skin upto superficial layers of skin.

Temporary ↓
Permanent → persists for life long (or) slowly fade away.

Colouring agents are → Indian ink
Indigo
Cobalt
Carbon black
Prussian blue
Vermelion [lead tetra-oxide (or) Mercuric sulfide]

Erasing the Tattoo marks → By surgical excision
Burning the area - fire/flame/corrosive sub.
Laser beam technique.
↓
fading tattoo - Evaporating the colour agent.

M.C. locations.
- Fore arms
- Neck
- buttocks
- Dorsum of hands
- Cheeks
- thighs
- Ankles, Elbows
- Shoulders &
- Genital organs

→ Fading of tattoo mark can occur, which it is Superficial (or) Deep
→ When whole dermis is involved, pinpoint cytosis occur & Causes fading of tattoo marks.
→ Faded tattoo marks can be Visualized by U.V Village (or) Infrare photography

MLI
for identifying → • Person
• Race
• religion
• Behaviour of person
• Social status
• Educational status
• profession
• Economic Status

Chronic drug addicts use tattoo marks to hide the scars of the injection

Fingerprints

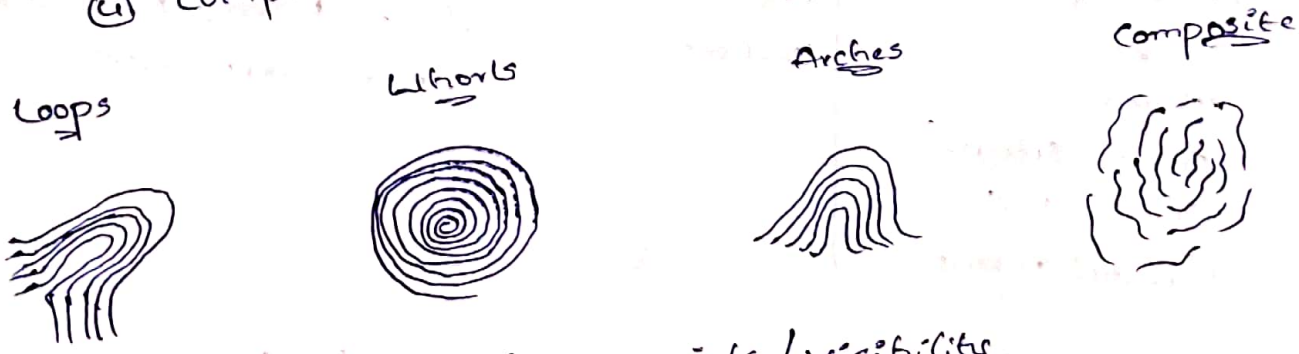
it is also called Dactylography (or) Dermatoglyphics (or) Galton-Herschel systems.

→ these are the patterns of the epidermal ridges on the pads of the finger. these patterns will be imprinted on the surface of contact due to constant streaming of sweat into the ridges.

→ In 1858, Galton identified fingerprints
→ in 1892, Herschel developed methods [1st] in kolkata

Types

1. Loops → 65%
2. Whorls → 25%
3. Arches → 7%
4. Composite → 3%



Based on lifting the finger prints / visibility

1. plastic prints - soft materials - soap, wax, paint (or) thickened blood.
2. Latent prints - invisible prints
   (trance prints) visualized by - U.V light, dusting powder (chalk+Hg)
   I.R photography
3. patent / visual prints - Normal surfaces
   blood, glass, metal, walls.

Method of collection

1. plain method
2. Rolling method.

Erasing

Applying the corrosives (or) burning the area (or) plastic surgery, cutting the finger pads with knife (or) Applying the CO_2 snow are the most important methods of Erasing.

Collection of fingerprints in dead body

Fresh body - All fingers (or) cutting the terminal phalanges of all fingers & preserving them in seperate containers.

Decomposed body - Degloved skin is useful to identify the fingerprints.

Incase of drowning, inj. of paraffin (or) glycerin into the fingerpads (or) give detail fingerprints [sodening].

MLI

Identification of person in Criminal investigations like Murder, theft, sex, kidnapping, Exchange of babies & Assault.

in civil cases like question documents.

Infant Deaths

Infanticide → Deliberate killing of a child / below one year.
(or)
Destruction of [Intention] child below one year age

Foeticide → killing of a foetus before birth.

filicide → killing of baby with in 24 hrs by "own parents."

Neonaticide → killing of baby within 24 hrs after birth

Investigation of infant death - should be done by following features.

1) To detect the Age of foetus.

2) To detect the viability of foetus.

Viability → the individual capacity of a foetus, to live it's own apart from the mother, by virtue of its development.

→ Attained by at the end of 7th months.

→ To know the cause of death & To detect whether it is Murder or not

- To detect it is a still born, live born or dead born.

At the end of the 1st month

" " "

Both Eyes - 2 Dark spots.

At the of 2nd the month.

" " "

At the End of 3rd Month

Length - 9cm

weight - 30 gms

Eyes closed

pupillary membrane appeared

Necle & Nails are appeared.

At the End of 4th Month

length - 16 cm

weight = 120 gms

→ Lanugo hair appears - Non-pigmented, Non-medullated foetal hair all the body.

Sex detection [Can be]

Convulsions of brain appears

Meconium present at duodinal region.

At the End of 5th Month

Nails will become distinct

Scalp hair appears

Vernix caseosa appears all oves the body

Meconium present at the beginning of L.I

length - 25 cm

weight - 400 gms.

* ossification centre - calcaneum appears

Vernix caseosa - White cheesy material [oily] present all over the body, secreted by sebaceous glands

At the End of 6th month

Length - 30 cm

weight - 700 gms

Eyebrows & Eyelashes appear

Meconium in Transverse colon

Both testes descend near the kidneys.

At the End of 7th month

Crocon Heal length [CHL] - 35 cm

CRL - 23-28 cm [Crocon Rump length]

weight - 900 - 1200 gms

Meconium - seen in transverse colon

Testes - at Ext. Inguinal ring

Ossification Centre for Talus appears.

Eyes open, pupillary membrane disappears.

At the End of 8th month

Rump - lowermost part of buttock

length - 40 cm

weight - 1½ - 2kg cot.

Nails reaches the tip of fingers.

Left testis reaches

Scalp hair - 1.5 cm lt & thick.

At the End of 9th month

length - 45 cm

weight - 2½ - 3 kgs

Ossification centre for lower end of femur.

Both testes will be in Scrotal sac.

Meconium - all over the L.I

Scalp hair - 4 cm lt & Black in Colour.

At the End of 10th month

length - 48 - 52 cm ≃ 50 cm

weight - 2.5 - 5 kg

placenta - 500 gm, D - 25 cm

Umbilical cord length - 50 cm.

→ Developing ovum means 7-8 days from date of Conception

[Implantation] after 8th week

- → Meconium is present
- → Languo hair present only at shoulder region.
- → Vernix caseosa seen all over the body.
- → Ossification centre for upper end of fibia appear.

Rule of Hassae & Morrison

The rule that helps in determining the age of foetus, if the length of the foetus is 25 cm (or) < 25 cm the Square root of the length of foetus gives the age of the foetus, if the length of the foetus is above 25 cm, the age of foetus is determined by the dividing the length with 5, it gives the age of the foetus.

Stature

- → it is the ht. of the person
- → it increases along with the age, upto 30-35 yrs of age, after that the stature will be decrease gradually, 0.6mm per year.
- → The stature will be decreases at 1-2cm at the evening times & it will increased in the lying back posture upto 1-2 cm.
- → it is imp. in identification, man-missing cases, skeletal remains in exmn of ~~this~~ ~~dismembered~~ ~~body parts~~. Dismembered body parts.
- → it can detected by measuring the tip of the middle finger of the rt. hand to the tip of the middle finger of left hand, when they are extended.
- → Only upper limb is available, the lt. of arm info (x2) 30 cm for both clavicles + 4cm of manubrium & sterni
- → if only skull is available, ht of skull x 8
- → if forehead, the vertex distance & chin x 7

} gives stature

→ if Whole skeleton is available, Total Lt of skeleton + 2cm.

→ if only long bones are available, the following studies help to

- Karl pearson formula
- Totter & Gesler formula
- Siddhiavi & siddhivi formula

Multiplication factor (MF)

36 → 36
44 → 44
52 → (+1) → 53 → 53
60 → 60
68 → (+4) → 64 → 64

3.6 - Femur
4.4 - Tibia & fibula
5.3 - Humerus
6.0 - Ulna
6.4 - radius.

⇒ Stature of the person = Lt of the long bone x MF [in cm]

To measure the bone → we used apparatus
↓
"Hepburn's osteometric board."

Ulna
⇒ Lt of the ulna = 29.5 cm
= 29.5 x 6 = 177cm ≃ [176-178 cm]

Femur
⇒ Lt = 45.3 ⇒ 45.3 x 3.6 = 163.08 cm ≃ [162-164 cm]

Humerus
⇒ Lt = 30.8 ⇒ 30.8 x 5.3 = 163.24 cm ≃ [162-164 cm]

Tibia
⇒ Lt = 34.3 ⇒ 34.3 x 4.4 = 150.92 cm ≃ [150-152 cm]

Fibula
⇒ Lt = 38.4 ⇒ 38.4 x 4.4 = 168.96 cm ≃ [168-170 cm]

Radius
⇒ Lt = 25 ⇒ 25 x 6.4 = 160 cm ≃ [159-161 cm]

Still birth

The baby delivered after 28th week of pregnancy & did not show any signs of live, after completing being born.

→ always viable foetus

[Signs - Crying, breathing & movements of body]

→ Before delivery, foetal movements felt by the mother & heart sound are felt by doctor, but death of the baby occurs during the process of delivery i.e., in birth canal.

Causes:- Anoxia
Trauma
Congenital malformations
pelvic disproportions
Erythroblastosis foetalis
Eccamplsia
Pre-eclampsia
Immaturity
Toxemias of pregnancy.
Placental abnormalities.

Dead born

The baby delivered with any one of the following features,

i) Maceration [Aseptic Autolysis]
ii) Rigor mortis
iii) Putrefaction (or) Decomposition.
iv) Adipocere
v) Mummification.

Maceration

- occurs in the foetus, which is died in the uterus.
- Lysosome of the dead cell distroys the other dead cells by autolysis, without any inflammation (or) microorganisms.
- Features- skin in Dusky colour & can be peeled off very easily & is called "slip sign".

By 24hrs → Multiple bullae will form in skin & by underlying tissues
Then by 48 hrs → discoloration of amniotic fluid, discoloured to reddish colour.

→ All tissues will be softened, all muscles will be laxed.

→ Hypersegmentation of bones & joints by 48 hrs.

→ By 3-4 days, Meconium will be released into peritoneal cavities.

→ By 1st week, Edema will occur all over skin, neck, tissue all over face.

→ at 2nd week, Edematous fluid disappeared, foetus into yellowish-green colour.

→ After few weeks foetus will be very thin like paper & called "foetalis paperaceious"

Radiological findings

→ these findings will recieve x-rays & radiological findings.

Robert's sign - presence of air in aorta, if occurs 12hrs of death.

Spalding's sign - Overriding of bones of the skull.

→ This will be +ve by 2 days after death, due to shrinkage of cerebral hemispheres.

Duel's halo sign - Air accumulation blw scalp tissues & periosteum, +ve after 3 weeks.

Live born

as per indian civil law, Live born is complete expulsion of foetus from the mother, & it shows any signs of life, irrespective of the duration of pregnancy.

Signs - Crying
Breathing
Movements of the body.

features :

Chest - flat in un-respired baby (or) Non-respiratory.
Drum shaped in respired body (Expansion of chest cavity)

position of Diaphragm - in un-respired baby, diaphragm lies at 4th & 5th rib level.
in respired baby, diaphragm lies at 6th & 7th rib level.

Examn of lungs -

	Unrespired lungs	Respired lungs
• size	Smaller	Larger
• Colour	uniformly red/Brown	Bluish brown/Reddish brown with mottled & marbled appearance.
• Surface	Smooth surface	Uneven elevation & depressions
• Mediastinum	Not covered	covered [BCOz Expansion of lungs]
• consistency	Firm, non-Crepitant	soft, spongy, Elastic Crepitant
• Margins	sharp	round.
• weight	35 gms	70 gm
• wt in relation with B.wt	1/70	1/35
• specific gravity	1.04 - 1.05	0.94 - 0.95

Hydrostatic Energy. Negative positive.

Hydrostatic tests [Ruggat's test]

Principle → Specific gravity

The specific gravity of the respired lungs will be used to 0.94 bcoz the Increase in the vol. is more than the Increase in the wt. of the lungs after respiration.

- Due to low specific gravity than water, respired lungs alwways float on water.

Procedure

phase-1 → Both lungs along with mediastinum & heart if cut & kept in water, along with this block, a piece of liver also kept in water as control [floats in decomposition.

- If lungs along with mediastinum is floating indicates that respiration has occured.
- If they sink, indicates respiration hasn't occured.

phase-2 → Seperate both lungs from the hila & should be kept in water seperately.

if float → respiration occured

if sink → no respiration occured.

phase-3 → Each lung cut into 20-30 pieces & apply some pressure with fingers & kept in water.

if they float → Indicates resp occurs.

Sink → No respiration occur.

Phase-4 - Take out all pieces of a lung from water, apply some pressure with a wt. on some cloth, again keep lung pieces in water.

If they float → confirms resp. occured.

FALLACIES OF HYDROSTATIC TEST

The following conditions even after respiration, lungs sinks to the bottom

1) Atelectasis
2) pulm. Edema
3) pneumonia consolidation
4) Alveolar duct membrane presence

Even without respiration, lungs will float in water,

1) putrefaction
2) Artificial ventilation
3) Vagitus uterinalis
4) Vagitus vaginalis.

→ Hydrostatic tests are not needed in the decomposed bodies & dead born foetus.

Breslau's second life test

Stomach & some part of S.I is cut into small ligatures & kept in bottom of water column & then open the stomach with a scissor.

→ If air bubbles appear → resp. occured.

→ presence of milk in the stomach is the surest sign of live born.

Changes in the Umbilical cord → indicates live born.

- During foetal autopsy, umbilical cord should be observed in the following manner.

1) Whether umbilical cord is present along with placenta or not

2) If present, cut of placenta, length of umbilical cord.

3) if it is not present,

Whether it is cut or not

if it is cut, cut Edges of the umbilical cord

whether they are clean cut, irregular edges.

4) whether the umbilical cord is ligated or not

if it is ligated, with what material [thread, clamp]

Changes in the umbilical cord, after birth;

SIM falls

1st day - shrinks & become dry

2nd day - Inflammatory ring present at base of umbilical cord around the umbilicus

3rd day - Mummification

4th day - No change

5th day - falls off, leaving an ulcer at the umbilical region.

This ulcer may heal by 1-2 weeks.

Caput Succedeniurn

=> it is due to pressure on the presenting part & contains Sero sanguinous fluid

=> size - larger

=> Incidence - very common

=> present on presenting part only

=> it appears immediately, after birth

=> Dissappears within 1 week

=> No colour change

=> location - may be present, diffuse multiple areas of skull

=> No complications

Cephalo Hematoma

=> Due to instrumentation, birth trauma & due to rupture of peritoneal blood vessels & contains pure blood.

=> smaller

rare

=> also may be seen on temporal region & may be underlying skull fracture.

=> Takes sometime, may 2-3 days

=> it will take 4-6 weeks.

=> colour change present

=> mostly localized & does not cross suture line

=> Jaundice, infection, ossification of blood (Sometimes)

Causes of death

- Natural → Causes - immaturity
  post-maturity
  Anorexia
  pre-natal infections
  pre-acclampsia
  Toxemias of pregnancy
  Congenital malformation
  Erythroblastosis foetalis
- Unnatural
  - Criminal
  - Accidental
    - During birth
    - After birth.

During birth → • Asphyxia due to smoothening, due to membranes attached to face.

• Drowning can submersion of face in amniotic fluid.

• precipitate labour can other discharges.

After birth → Intra-uterine

Intra-vaginal

Strangulation

collapse ~~of~~ of cord

prolonged labour

Death of mother.

Criminal [Methods of Infanticide]

- Acts of Commission
  - Smothering
  - Head injuries
  - Drowning
  - Burning
  - poisoning
  - Strangulation.
- Acts of omission
  - failure to do an act which is necessary.
    - By parents
      - failure to give protection to neonate
      - failure to provide nutrition to baby
    - By doctors
      - failure to tie the cord.
      - failure to apply suction in mouth & nose to remove the fluids from the body.

CHILD ABUSE

it is of following types;

1) Child neglect
2) Emotional / psychological abuse
3) Child sexual abuse
4) physical abuse
5) Chemical / poisoning / Miscellaneous

→ Child neglect is nothing but acts of omission, abandonment of child as per sec 93, Sec 94 of BNS [317, 318 IPC]

→ psycological (or) emotional abuse - Harrasement

→ physical abuse - Battered baby syndrome [caffey's syndrome]

it is also called non-accidental injured children

→ This is a clinical condition where parent (or) Guardian beat the children even with minute (or) Trivial provocation.

→ This is very common in children below of 3yrs of age, mostly male & commonly seen in low socio-economic families.

→ psychological & psychiatric diseases financial prbms are very common in families with child abuse, Also very common in families where parents were the victims of child abuse to their childhood.

Type of injuries → Abrasions
Contusions
Lacerations
fracture of long bones,
Dislocation of teeth
Loss of hair
Rupture of pendulum of upper lip.

Contusion around the pinna of ear, cheeks, contusions on the buttocks [~~back~~, Torsional] fractures of long bones with periosteum elevations due to twisiting of limbs Six penny bruise above major joint regions.

→ if these injuries (or) fracture are multiple with multiple healing ages, then it is Battered baby syndrome.

Diagnosis

- Delayed complaint (or) admission (or) consultation to the hospital
- Multiple injuries with multiple ages.
- Baby will be mostly unwanted (or) disabled (or) step child (or) born due to failure of conception (or) born before marriage.

MLI

→ it is a crime under sec. child neglect & child abuse & also under pocso act.

Sexual abuse

- it is rising rapidly in india.
  this can be deal with pocso act.

Chemical abuse/poisoning in children

→ Exact cause of death is not known → "cot Death"

↓

Sudden death of child while sleeping.

Shaken baby syndrome - Violent shaking of baby cause brain injury.