F.M.T

PG-NOTES

2019

JAIN STATIONERY

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PH: 9654691327

9811982449

FORENSIC

FMT Mechanical injuries

Injury –

44 IPC

↓

Injury

↓

Illegal Harm:

Body | mind | Reputation | property

1) One of the following is not under Sec - 44 - IPC.

a) Infirmity

b)

c)

d)

319 IPC

↓

HURT

Bodily pain | Disease | infirmity (weakness)

physical | Mental

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380 IPC - Grievous Hurt

All grievous hurt are Cognizible offence → Arrested Court warrant (Cr.P.C - 216)

↓

① Emasculation – only for males not females

↳ Removal of Testis – Impotent

✗ Removal of ovaries

② Permanent defect in vision / hearing

Irrespective of medical Rx / Sx Rx

(not small) large perforation of TM – grievous

% is irrelevant

heals spontaneously

③ Loss of any member

– organs / part of body which has got its own function

④ Transection of nerves | tendon | muscles

⑤ ≠ Dislocation of bone | teeth
(or subluxation)

⑥ permanent disfiguration - Head | face
↓
that cause scar formation → Injury beyond dermis

⑦ Hurt - endangers life → Dangerous Injury

Abrasion - Not grievous
Laceration - grievous

⑧ Hurt - unable to daily work | > 20 days
severe body pain

occupation Not involved

But corneal abrasion ∥ grievous hurt

Not admission into hospital

Singer { Not able to sing - Not grievous
Not able to talk ↓ grievous

Hospitalization for 20 days - Not grievous

Multiple contusions - Grievous

Abrasion is never grevious until it's on cornea

1) Which of following constitute grievous hurt ?

Incised wound of thigh

// Complete avulsion of nail - Nail function ie scratching

Laceration of the forearm

Black eye

// Incised wound of scalp }

= ≠ Tibia

2) A teacher slapped student - the eyesight from 20/ Hearing loss - This was corrected by surgery — Grievous

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Dangerous weapon

324 & 326 IPC

↓

Any instrument

- Used for cutting, shooting or stabbing
- used as weapon of offence is likely to cause death
  - Hammer
  - Rice particles
  - Towel

- Anything is dangerous weapon

Dangerous injury — Any injury which pases immediate danger to life

- All dangerous injury are grievous injury but not vice versa.

323 → punishment for voluntarily causing Hurt → 1 yr.

324 — By dangerous weapons - 3 yr

325 — Grievious Hurt - 7 yr

326 — " By dangerous weapon - 10 yr

334 — punishment for voluntarily causing Hurt on provocation (E | court dangerous weapon) — 1 mnth ± 500/—

335 — " " grievous Hurt " " — (E | court dangerous weapon) 4 yr ± 2000/—

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325, 326, 335, 336 → Rash & Negligence act

Abrasions → but some fluid out → lymph → (Scab)

No bleeding

Only epidermis is involved — No scar formation

Abrasion (MC injury)

- Scratch / linear → pin, thorn, Nail etc
- Graze / Brush burn → Broad rough surface
- sliding / scraping → multiple linear marks (MC)
- Imprint abrasion — Contact / Impact — whip slap
- pressure abrasion — Sustained pressure — whip tighted around neck.

Scab = Age of Abrasion

1-3 day → Reddish brown

~1 wk → Heals → So abrasion all over body except cornea are Not grievous

Imprint → Pattern ← pressure

Patterned abrasions — Best term to use

Friction / Brush burn → Type of graze

Friction forces → Heat

No separate linear mark

Contusion / Bruise → Not only surface also on organs

Margins are diffuse

Blunt object — extravasation of blood

Extravasation of Blood in surrounding tissues & intact epithelium

Contusion on internal organs — Grievous hurt

Multiple contusions on surface — Grievous hurt

ectopic bruise

(1) Black eye — Contusion of eye

Bl - Black eye — Spectacle haematoma (or) Racoon eye (or) panda eye.

(2) Battle sign

- # MCF
- Contusion on mastoid

Causes

- Direct impact
- # of Anterior cranial fossa (ACF) → Contusion in periorbital region
- Frontal impact → Bruise appears at other than at the site of impact (due to gravity)

Ectopic / migratory / percolatory bruise

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Patterned Bruise → Tram | Railway line bruise (double line) – cane, Rod, stick, pipe

Tramtracking – MPGN

Tramtrack sign ↳ Sturge weber Syndrom

Six-penny bruises – 25 paise coins size – Due to finger tips / finger pulps – Rounded Contusion around neck – manual strangulation (Throttling)

↳ Shattered – Baby syndrom Shaken

scalp – Contusion better felt than seen

	Incised wounds	Lacerated wound	chop wound	Heat rupture
Margins	Regular	Irregular	Regular	Irregular
Edges	Not contused	Contused	contused	Not Contused
Neurovascular bundle	Not intact	Intact	Not intact	Intact

Artificial bruise – Semecarpus anacardium, Calotropis – Abortifacient, Conjuctivitis, plumbago, Dithrinof – Root – To control Cobra

Intact Neurovascular bundles ⟹ called as Tissue bridges

DD of Antemortem abrasion – pressure sores, Ant bite mark, Excreta

Age of Contusion –

<3hrs – Reddish – oxyHb

3hr-3day – Bluish – deoxyHb

4th day – Bluishblack – Hemosiderin

5th, 6th day – Greenish – Hematoidin

7-12 day – yellowish – Bilirubin

~2wk – Heal – (N)

SCH → Subconjuctival Hage ↓ Contusion not shows any color changes as exposed to air

Contusions anywhere – Not grievous

Tramtracks

Pulm – Bronchial wall thickening, Bronchiectasis – x-ray, CT

Neph – MPGN – (type-I) – microscopy

Neuro – optic nerve sheath meningioma, Sturge weber syn ↓ cerebral atrophy, calcification (CT)

mammary gland – Ductectasia – mammograp, USG

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Lacerations - Blunt weapons

- Split / Incised / lacerated wound
  - Scalp / cheek, chin, skin etc (underlying bone)
  - Force of impact
  - Perpendicular
- Stretch / avulsion
  - Tangential
  - Directed below upwards
- Avulsion / degloving / flaying / shearing
  - RTA
  - Horizontal
- Tear
  - swallow tails
  - Irregular
- Crush
  - total or near total amputation



Swallow tails may be seen in Lacerated wound

Tearing at the ends, at angles diverging from main one

- Fish tail
- Tailing

IPC 354 - Assault (Force) to outrage the modesty of ♀

509 - Insult (words)

Amended in - 2013 -

354 (A) ⇒ Sexual Harrasment

(B) ⇒ Disrobing a ♀ in public (Removing clothes)

(C) ⇒ Voyeurism

(D) ⇒ Stalking - following a person & dishonest intention

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Incised wound – sharp weapons

- Bevelling
  - ↓ Tangential
    - ↓ one margin undermined
- Flap wound
  - ↓ Horizontal (like skin grafting)
- Tailing
  - ↓ direction
- Hesitation cuts / Tentative cuts
  - ↓ suicide

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Bevelling cut is a feature of
// Homicide

Artificial bruise
- Exposed part
- sharply demarcated margin
- Itching
- Content – Not blood
  - Irritant fluid – Acrid serum
- No colour change – Brown

- A 16yr old girl failed in exams. she cut across the front of wrist, at flexor retinaculum. she rushed to hospital
All damaged except:
// Ulnar nerve ← ~~Deep~~ ~~Superficial~~ – but cut on lateral side
Median nerve – ~~Deep~~ Superficial ~~Deep~~ deep of medial side – superficial cut
Palmar cutaneous branch of median nerve
superficial branch of radial artery

If surgeon noticed that cut was superficial

354(D) ⇒ stalking ⇒ 1st offence → ≤ 3yr (Cognizable + Bailable)
- physical
- Digital

2nd offence → ≤ 5yrs (Cognizable + Non bailable)

Lacerated looking incised wound

↓

Loose wrinkled skin

- Scrotum
- Axilla
- Neck
- Back of elbow

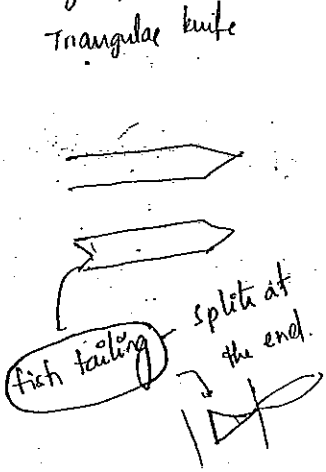
Incised wound on genital is seen commonly in

- suicides
- Accident
- postmortem artefact
- ~~Homicides~~

Shape of Stab wounds

Depth is - the greatest dimension

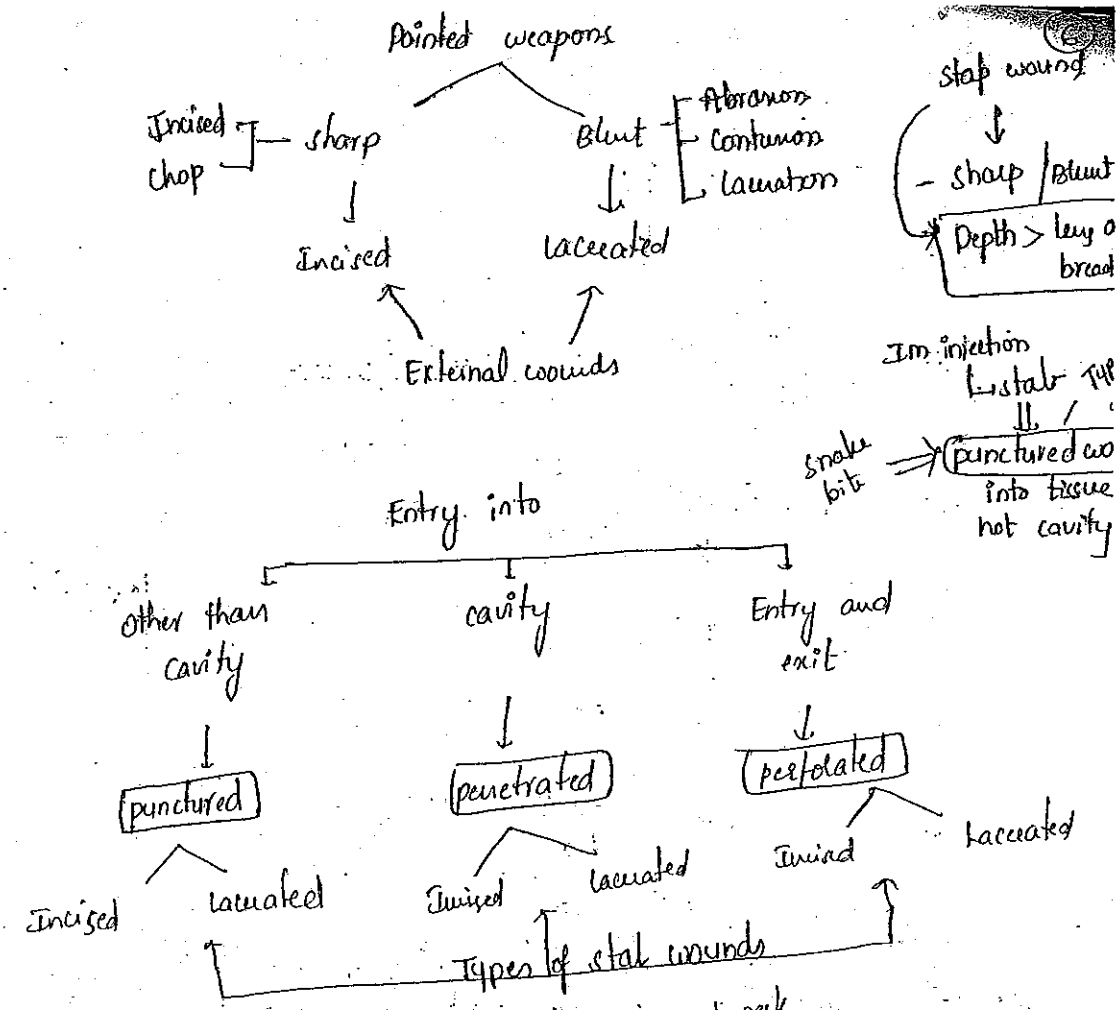
single edged (kitchen knife)	Double edged (Dagger)	Blunt pointed	Ice pick	Twisth the bl
↓	↓	↓	↓	↓
Wedge / Triangular knife	spindle	stellate / cruciate	circular	Heart shape



Weapon — stab

- lt → depth
- width → lt
- Thickness → Brea

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penetrating injury to neck

⇓

Violation of platysma

Cleavage lines of Langer

⇓

Imaginary lines.

↓

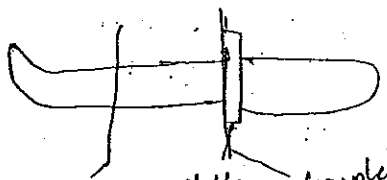
Distribution of collagen & elastic fibres

↓

Determines the gaping of wound.

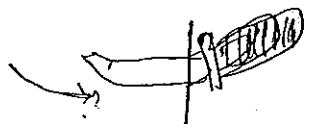
↓ to Langer ⟶ gaping scar.

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partial penetration — Hilt — Complete penetration — Hilt contusion on skin

Hilt contusion
- Complete penetration
- Amount of force
- Direction of force
- Time since injury



Hara kiri — Method of suicide — Japan (Sun is god)

Penetrating wound → open the abdomen by knife → pull out intestine → show it to the god → Cause of death → Shock, Hemorrhage

Defense wounds are usually not seen over
- Dorsum of hands
- Inner aspect of forearm
- Outer aspect of forearm
- Sole of the feet

Laceration		Incised wound
Sharp	← Weapon →	Blunt
Irregular margin	← Margin →	Regular margin
↓ (Vasoconstriction of BV)	Hage	↑
⊕	Tissue Bridge	⊖

↓
Intact nerves & deep tissue fibers

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Skull

- C intact scalp - 400-600 psi [pound square inch]
- C out scalp : 25 psi

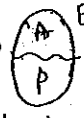
Types

① linear # | fissure # — MC
- polar # — type of linear # (By Hitting Head to wall and applying pressure)

② Depressed # | Signature # → 2nd MC

③ ponds # → Infants

④ Gutter # → Bullet

⑤ motor cyclist | hinge # ⟹ 

Base of skull

⑥ Ring # ⇒ FFH (fall from Ht) ⇒ # around foramen magnum 

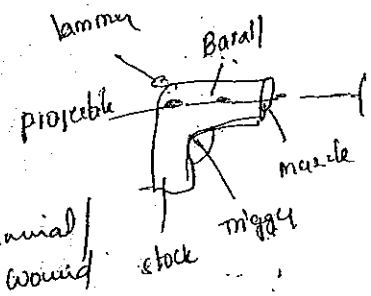
⑦ Communited # ⟹ Spider web appearance 

⑧ Sutural | Diastatic # ⟹ Separation of skull sutures

⑨ Intracranial Hages

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Fire arm & Fire arm injuries



Ballistics

- Internal / proximal Ballistics → Changes within the gun → From pressing of trigger to projectile comes out of tip
- External / Intermediate → Trajectory of projectile → From time the projectile out till it hits the target
- Terminal / Wound → Effect on body

Domain of ballistics concerned ~ forensic pathologist is terminal ballistic.

Firearms

- Smooth bored / eg → shot guns → Interior of the barrel is smooth → Internal measure of shot gun → Gauge
- Rifled → Interior of the barrel is cut into spiral grooves. eg - Rifle, Revolves, Pistol
- paradox → A shot gun, terminal part is rifled
- Air gun → Not a firearm
- Stud gun → Industrial tool

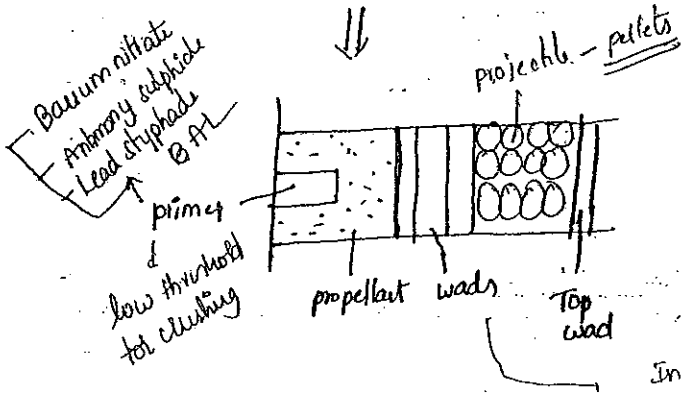
454 g (Pb) ~ 1 pound of Pb ⟹ 34 34 35

⟹ 14 — 12 12

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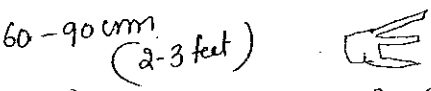
Shot gun catridges

~~Rifled~~ ~~gun~~ ~~Catridge~~



In some wads are replaced by power piston

cron pattern abrasion seen in shot blw 60-90 cm (2-3 feet)





Burn
- Flame - Singeing
- smoke - Blackening
- Unburnt particle of Gunpowder → Tattooing

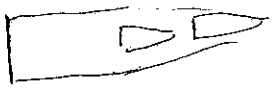
3 effects seen both in shot gun & Rifled bcoz it: dlt burning of gunpowder

Rifled fire arm catridge

No wad

projectile is (Bullet)

Tandim catridge → 2 Bullets as projectile.



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Visualisation of gunpowder residue (GSR) on blood stained clothes

idubbed by Infrared rays

[GSR on skin | clother — Infrared photography]

Riffling is done by broach | Lapper

↓

gives spin to bullet

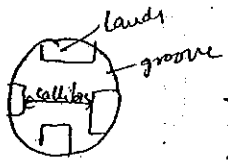
spinning gives stability to bullet

Bullets spirally cut

elevated area - Lands } - Rifling

Depressed area - groove }

distance Blw lands - Calibre (or) Internal measure of a Rifled weapon



primary / class characteristics -

↓

To identify manufacturer of gun

- as a single broach is used by manufacture

↓

Macroscopically

Rifling

primary / manufacturer class characteristics

↓

Due to Rifling (Impression of lands)

↓

Specific to the model / make of gun

↓

Macroscopic

secondary / Individual gun characteristics (Bullet fingerprinting)

↓

Due to irregularities on surface of land

↓

Specific to individual gun

↓

Microscopic

Take out bullet by gloved fingers (or) rubber tipped forceps not by pointed objects

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Crime bullet — Suspected gun

↓

Forensic science laboratory

↓

Fire the gun – Bullet – Test Bullet

If Test bullet is compatible to crime bullet or not by Comparision microscope

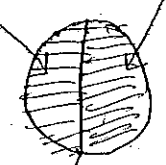
↓↓

Field A — B

↓ Test bullet

↓ Crime bullet

↓ Rotate by 360°



Demarcation line

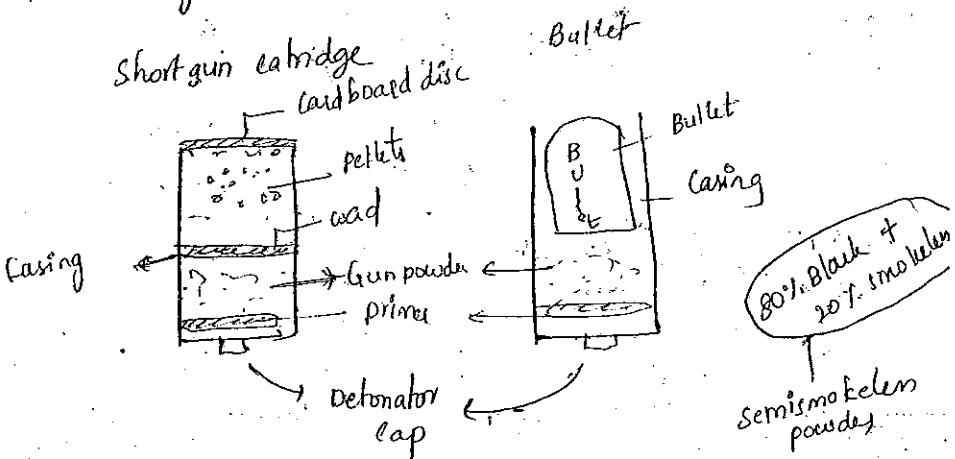
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primary marking are dlt

Rifling

1° & 2° marking over a metal are used to identify the weapon

Short gun cartridge



Gunpowder

- Black
  - KNO_3 – 75% [O_2]
  - S – 10% [↑ Density]
  - Charcol – 15% [Fuel]
  - 3000 – 4000 cc/gm
  - F-fine g-granules
  - Fg | FFg | ~~FFFg~~ → Belly not burnt
- Smokeless
  - Single base → Nitrocellulose
  - Double base [Nitrocellulose + Nitroglycerin]
  - Triple base [NC + NG + Nitroguanidine]
  - 12000 – 13,000 cc/gm of powder

Which shot gun the inner diabeter of barrel is widest?

10 bore
12 bore
16 bore
18 bore

12 Bore shot gun = 1 pound of lead → 12 balls of equal size & shape

↓

Each ball precisely fitting the interior of the barrel

More the the bore → lines the diameter

Dispersion of pellets of shot gun

Shot gun

↓

Constriction of teminal barrel

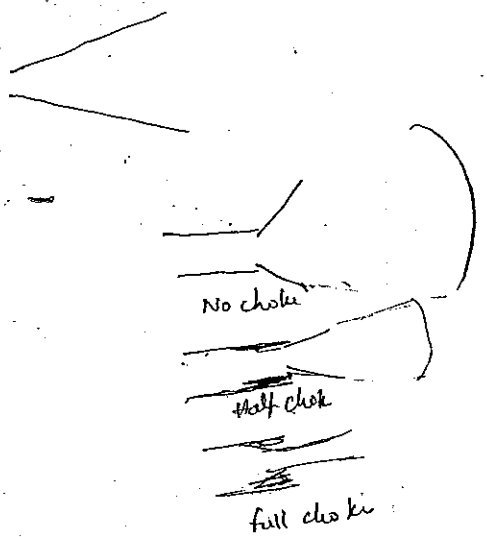
↓

CHOKING

Reduce dispersion → ↑ Range

↓

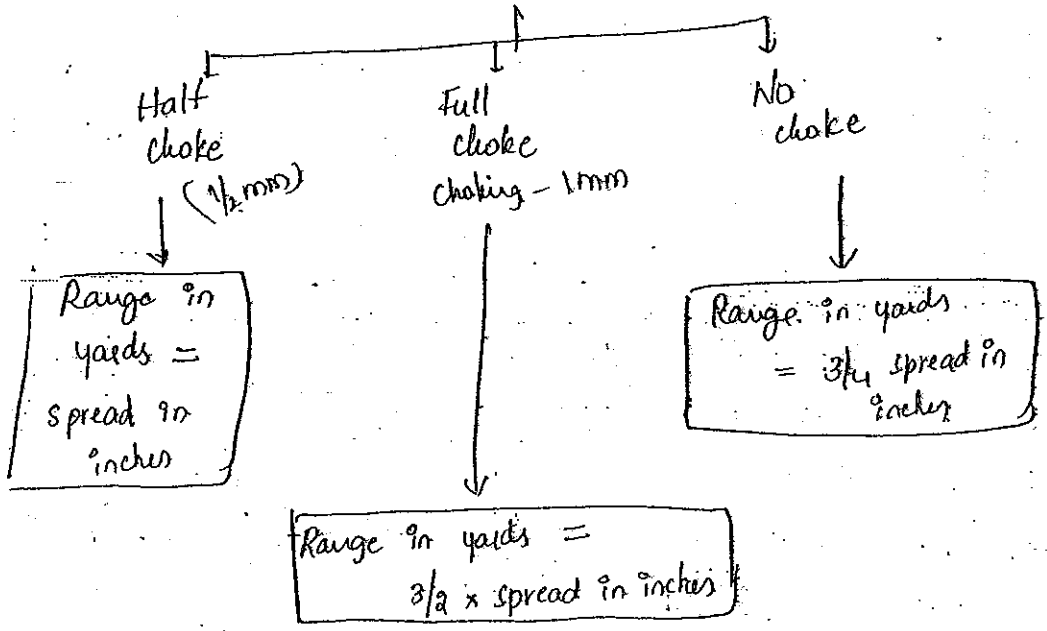
Greater damage

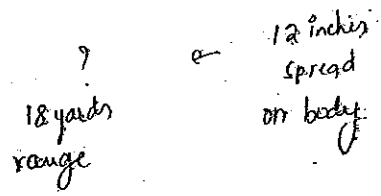


Improved cylinder / True cylinder ⟹ No choking

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Range of shotgun & choke





In a firearm injury, burning, blackening, tattooing around the wound.

Gunshot Residue (GSR) — To detect the gun is recently fired / not

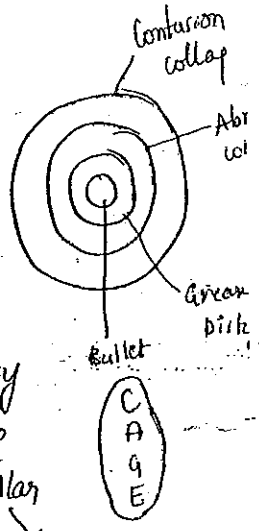
Best ↑order

1. Dermal nitrate/paraffin wax test
2. Harrison & Gilroy test — To detect primer — BARL
3. Neutron activation analysis
4. Atomic absorption spectroscopy (AAS)
5. Flameless atomic absorption spectroscopy (FAAS)
6. SEM-EDX – energy dispersive x-ray

Best → 6 To detect any metal

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Products of firing & its effects.



Flame & Hot air	Smoke / soot	Partially unburnt powder	Bullet
↓	↓	↓	↓
Scorching / Burning & singeing	Blackening / smudging	Tattoing / peppering	Wound of entry Grease collar Abrasion collar ↓
15 cm - shotgun 8 cm - Rifled.	30 cm in both shot & Rifled	60-90 cm in both shot Rifled	Seen only by Rifled

C A G E

← Entry wound →

Contact shot (muzzle / stellate)
Contact ⊂ Body.

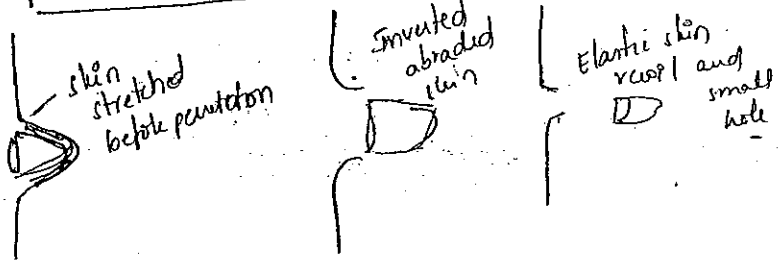
Close shot (oval) (< 30 cm)
⊂ in range of flame

Near shot (< 1 mt) (Rathke)
Beyond flame
⊂ in reach of smoke & powder

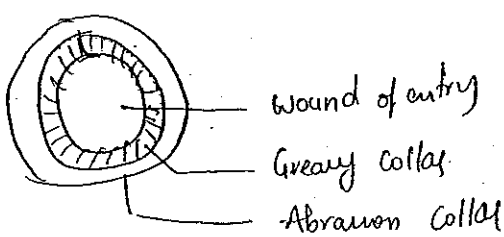
Distant shot
only Bullet enters

	smoke/soot	powder
Rifled	8 cm	15 cm 40-50 cm Handguns 60-100 cm Rifles
Smooth	15 cm	30 cm 60-90 cm

Distant shot



If bullet enter perpendicularly.

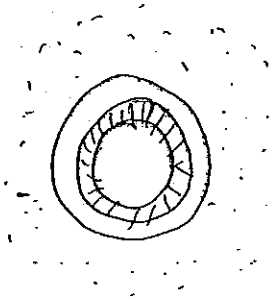


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If force of bullet tangentially —
then abrasion collar is not circular

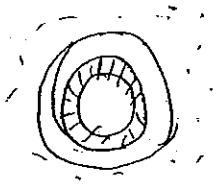
Abrasion collar helps to know direction of bullet

Near shot — ~~Intermediate range~~



— Blackning / smudging
— Tattoing / peppering

Near shot - Intermediate range — Beyond soot & in powder

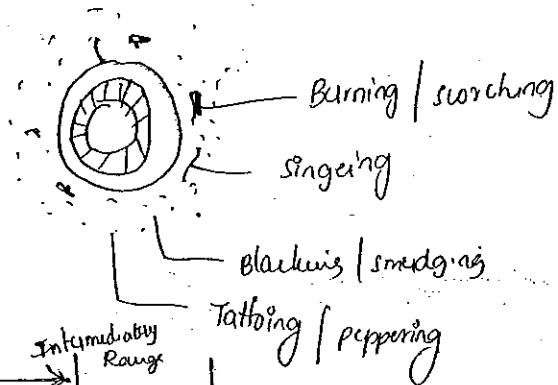


— Tattoing / peppering only
No blackening.

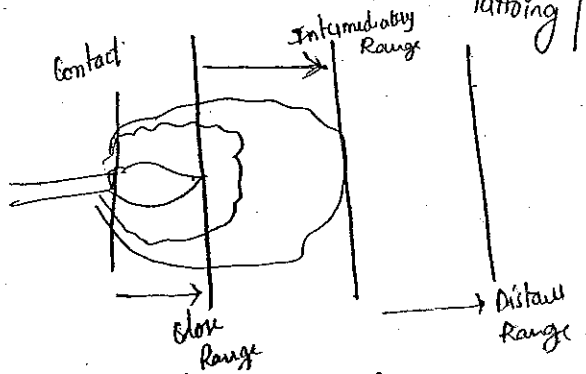
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Close shot

Contact - Circular lacerated
< 30cm - oval
< 1mt - Rat hole wound
< 2m → wad (+)
> 2 mt → satellite wound
> 4mt → Individual pellet wound



— Burning / scorching
— singeing
— Blackning / smudging
— Tattoing / peppering



Contact shot → Large irregular entrance wound

Hard | firm
Indentation of skin
Muzzle impression MI

Loose contact
No indentation of skin
MI +
Corona (Soot) +
Scorching +
Singeing (+ bt air)
Soot around the wound
No tattooing
Attenuation from other shot
Singeing | Blackening | Tattooing
Cherry red discoloration
Entry wound
By Rifled & shot gun
CO (smoke) + Hb = COHb
Contact
Close
Near (C in smoke)

Angled
Partial MI +
Blackening +
Tattooing +
Scorching +
Singeing

Back spatter
Gases reentry into muzzle in contact shot

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Orders in

Contact shot on Head

↓

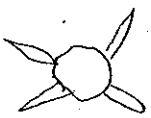
Escape of gas into loose areolar tissue

↓

Formation of temporary bulge

↓

Forcible escape of gas through the wound of entry



↓

Splitting of skin

↓

Cruciate / stellate wound — entry wound

Exit wound

- **Unsupported skin** → ↓ → Everted ragged edges
- **Supported skin** → ↓ → Shored exit wounds → ↓ → Abrasion around wound of exit

Bullet

- **Low velocity** → ↓ → Permanent cavity
- **High velocity** — Tissue quake
  800 ft/sec → ↓ → permanent + Temporary cavity.

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Rat hole wound of entry is seen at a firing distance of

0-30 cm

30-100 cm

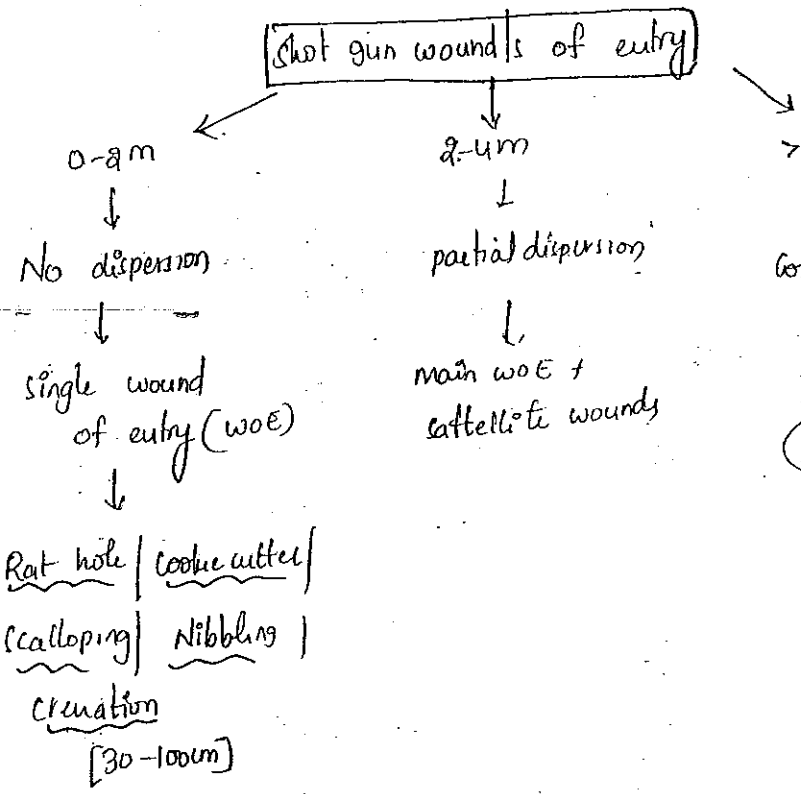
100-200 cm

200-400 cm

<3m – single entry

=4m – single entry surround multi pellet

>4m



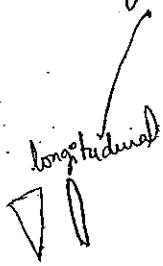
satellite used only when WOE is present

If satellite wound ⊕ in shot gun wound — Intermediate range

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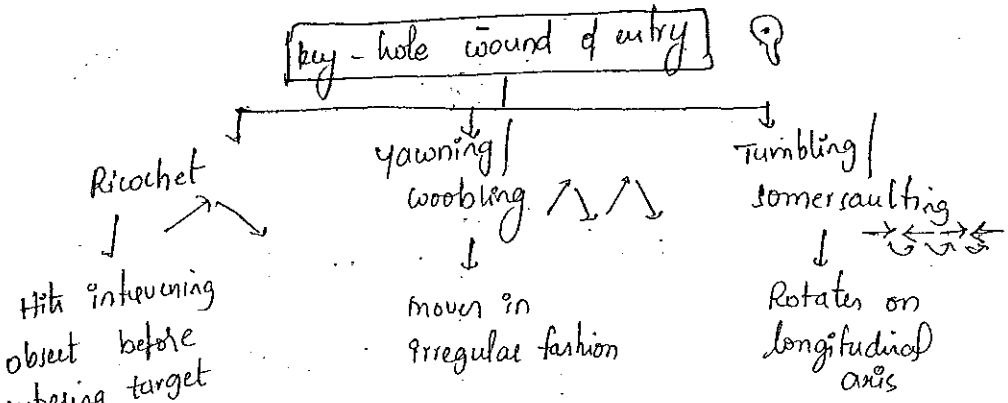
Exit wounds are not found in shot gun if found it is in contact shot

— keyhole bullet entry is a feature of



Tandem
Dum Dum
Ricochet
Fragmentary

(N) 

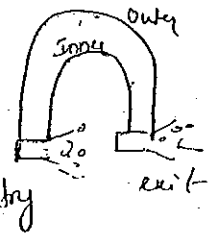


crater like outer table of skull is seen in

a) Entrance wound of gun shot
b) Exit
c)
d)

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Bevelling



Bullet injury to skull

- Wound of entry
  - outer table → clean cut
  - Inner table → Bevelling
- Exit wound
  - Inner table → clean cut
  - outer table → Bevelling

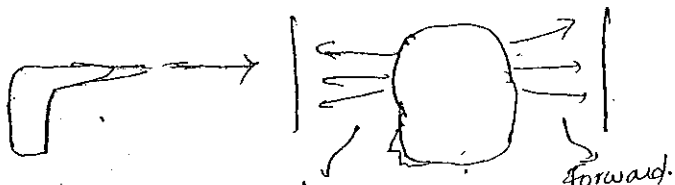
Crater formation

Keyhole defect

- It is seen in if bullet hits the skull & goes
  seen ⊂ yawning / wobbling bullet

Dum Dum bullet
- Expands on striking
- max damage
- Banned

Tandem / Piggy back Bullet
○○ → single entry wound



↓

Blood directed back towards the source of energy

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Krönlein shot (Evisceration of brain)

- high speed contact shot gun injury

Souvenir Bullet / Retained Bullet

Bullet present in body for long time → Complication is pb poisoning

on removal → More loss (damage)

Explosive bullet

Bullet tip is drilled out and a (lead azide) canister is inserted — Bullet itself explodes

Incendiary bullet

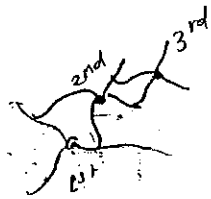
Front half of core of Jacketed bullet is filled with (white phosphorous)

→ Which rule — sequence of shots fired based on fracture line of skull involved

— puppei rule by madea

‖

A fracture line will not cross an already existing fracture line



Pellets (Pb) → molten Pb → slug → from paradox gun.

Bird shot (small)

Buck shot (Large)

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Kennedy phenamenon → Sx artifact
→ prevents distinguishing entry & exit
↓
we don't know the direction of fire.

Common organs involved in blast injuries

- Air → ① Ear drum ② Lung
- Immersion → GIT (if head is out)
- Immersion → Ear drum (if head is inside (or) complete submersion)
- Solid → Bones

More the homogeneous — less is the injury — Liver

Stippling

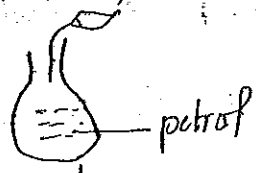
- powder → Tattoing / peppering.
- Body → Marshal's traid (in Bomb's blast)
  - not directional injury d/t burn of air blast
  - Punctate abrasion
  - Punctate contusion
  - Punctate laceration

Blast injury

- 1° Shock wave → (me) Eardrum, Lung
- 2° projectile → skin (me)
- 3° Blast wind
- 4° miscellaneous factors eg- fire flood etc

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Molotov's cocktail →



Home made Bomb

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Medical Law & Ethics

Professional Negligence | Malpraxis | Malpractice :

Act of commission — do things which are not going to do

" omission — not doing thing which have to do

↓

Civil Negligence (TORT)

↓

Compensation By money → only diff Depends on pt will

criminal negligance

↓

1) Illegal act ← criminal abortion kidney removal

2) Gross ignorance ~~+~~ By slc → operation of rt eye instead of lt

~~+~~ swabs

3) Undue interference

↓

"Paternalism"

↓

disrespecting the autonomy of patient.

↓

Compensation + penalty ← Not compensated by money

Not related to medical negligence

351 IPC

312 IPC

338 IPC

304 IPC

↳ a ~~Rash~~ Rash negligence

304 b — Homicide not attempt to murder

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Rash & Negligence act

- 336 → Endangering life by rash & Negligent act → med negligence, RTA
- 337 → Causing hurt by Rash & Negligent act — 6month ± fine.
- 338 → Causing greivous hurt — 2yrs ± fine
- 304A — Causing death by rash & Negligent act — Imprisonment upto 2yrs
- 269 IPC → Infectious disease — 6m ± fine.
- 312–316 — Causing miscarriage
- 284 IPC — poisonous substances → 6month ± fine.
- 351 — Assault (operating without Consent)
- 304 (PA) → Ras & negligent causing death — 2yr ± fine

Ingredients of negligence (4D's)

- Duty of care — pt can't sue doctor unless he treated him
- Dereliction | Deviation — Negligence
- Damage
- Direct causation — damage must be d/t dereliction of doctor
- Reasonable forseeability —

Intention to hurt/kill

Malignant act → 270 IPC — Infectious disease — 2yr ± fine

Following are the ingredients of negligence except

a) Duty owed
b) Breach of that duty
c) Direct causation
d) Damages

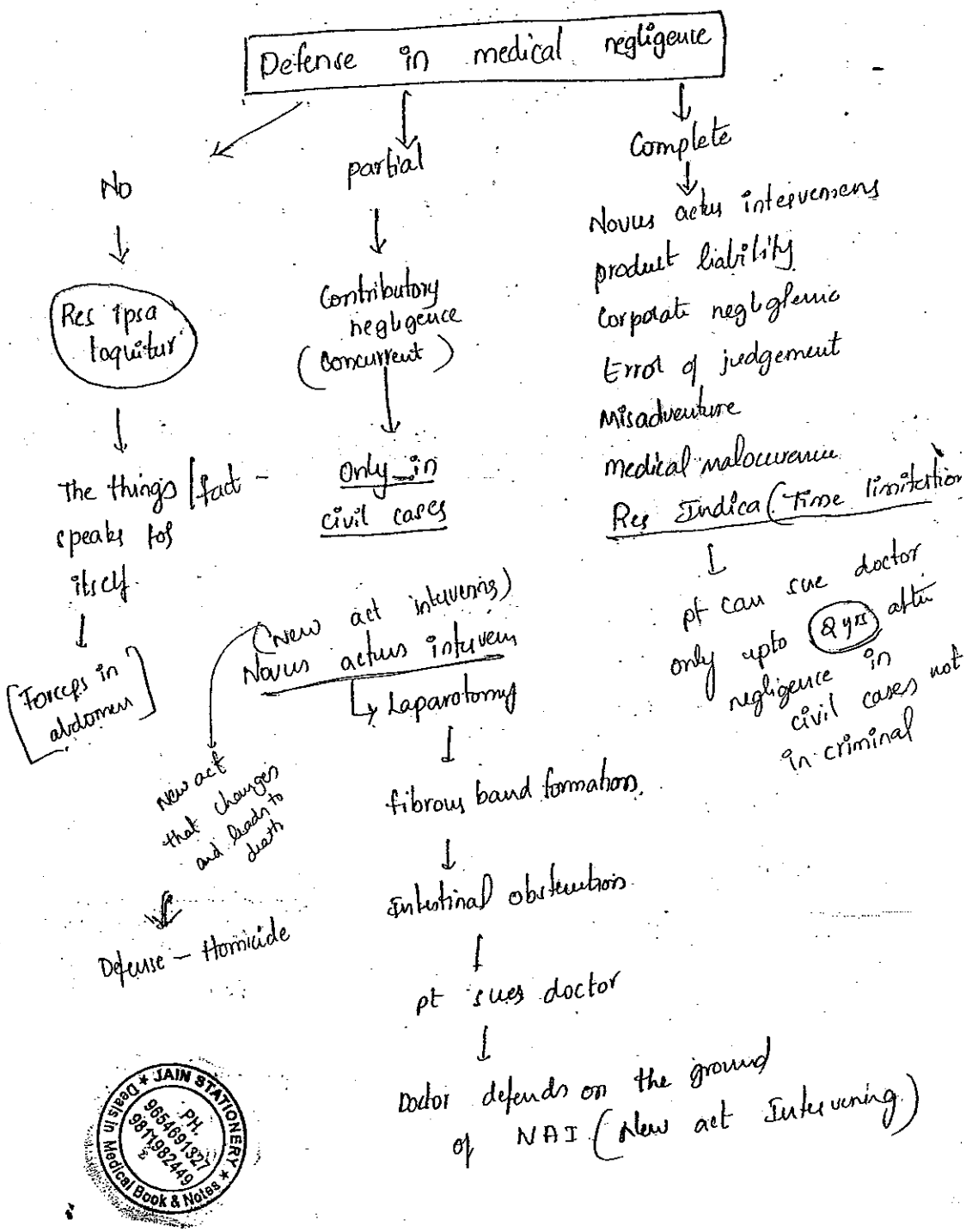
Damage means loss to the pt

Damages means compensation

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One of the following is not a defence in case of criminal negligence

- Therapeutic misadventure
- unforeseen complications
- Error of judgement
- Contributory negligence – civil



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Contributory negligence (Concurrent) (Both Dr/pt are negligent)
↳ Civil case — only money
↓
who are greater mistake
↓
They have to pay for another

Avoidance consequence rule
↓
For the Patient (pt is Responsible)
↓
pt could have avoided

Last clear chance doctrine
↓
For the doctor (doctor is responsible)
↓
doctor had a chance to rectify but he's not corrected it

→ Product liability — product manufacturer is liable
Not doctor

→ Corporate negligence — Hospital is liable
↳ Infrastructure, equipment, manpower

→ Errors of judgement — FNAC — 2 patho — Ca breast
But Actually fibroadenoma

→ Therapeutic Misadventure — Test dose — (N)
after full dose — ↓ penicillin — Anaphylactic shock
↓
civil + criminal negligence

→ Medical malocceurence — c/s sanitize for fever
↓↓
but septicemia
↓↓
Death

→ Res Judicata (let the decision rest) → If a negligence
↳ Doctrine of double jeopardy 1 before & 1 now
their punishment
is only for
now situation

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← Vicarious liability — only for payment of damages

Other person only for payment of damages

Respondeat Superior → Senior & Junior

↓ Captain of ship doctrine

Let the master answer

↓

Employer (Hospital) is liable for employee's negligence

Doctrine of deep pockets

Borrowed servants doctrine

↓

Eg- Visiting surgeon to the hospital is liable.

Captain of the ship doctrine

↓

Eg- Chief surgeon is liable for his subordinate's negligence

Vicarious responsibility pertains to contribution towards pt's damage

i) Hospital responsibility

ii) Patient

Disgraceful & dishonorable act

⇓

professional misconduct

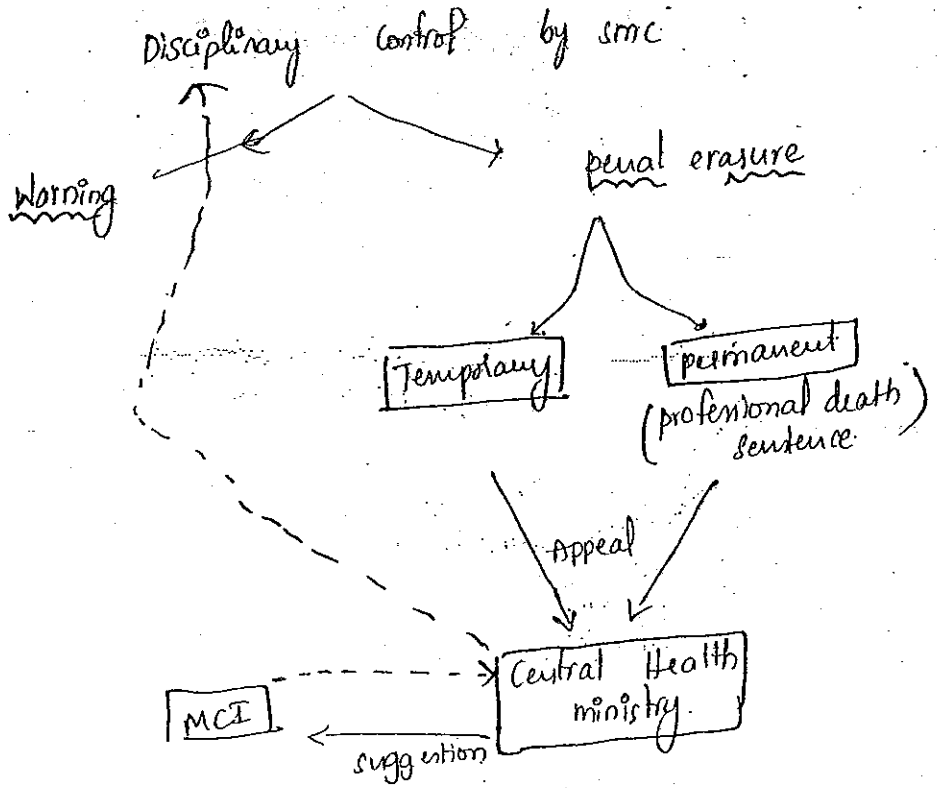
⇓

Disciplinary action

State medical council → SMC → Mainly

MCI → Exceptional case

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Warning by SMC

↓

Disciplinary action taken by medical council against doctor

Warning Notice

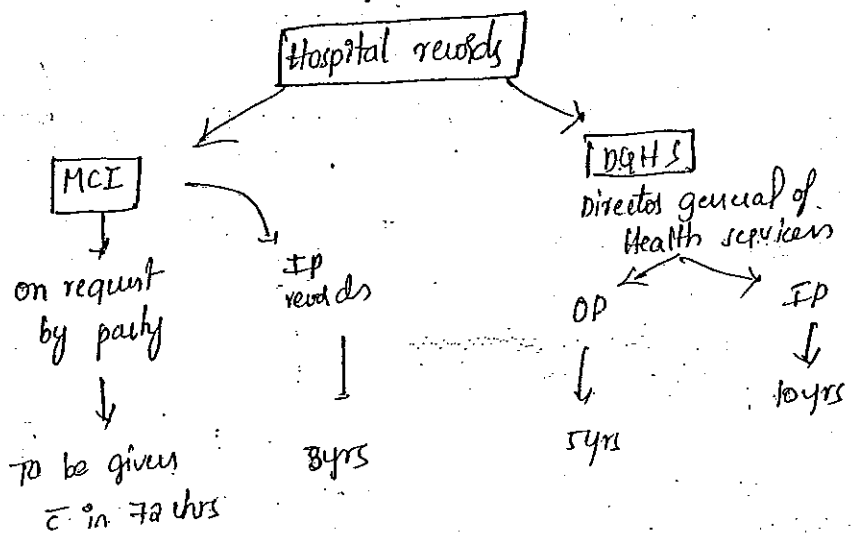
↓

Code of conduct for the doctors prescribed by the medical council

↓

Contains etical and unethical notice i.e received by all doctors

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416 Cr.P.C → Commutation (Reduction) of death sentence of pregnant lady
↳ to life imprisonment

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Sexual dysfunction

- Males
  - Vasculogenic (MCC *)
  - Impotency
    - ↓ sexual intercourse
    - ✓ Divorce
    - ✗ children → ↑ sterility → ↓ Divorce
  - Quoad hanc [Selective impotence]
    - Impotency to a particular female
    - ↓ psychological
    - ↓ Nullity of marriage (if wife)
- Females
  - Frigidity
  - Vaginismus (MCC)
    - MC Temporary cause
    - ‖ Psychogenic

Nullity of marriage

- Non Consummation of marriage
- minor (18-♀ 21-♂)
- Impotency — ↓Right from time of marriage
- Mental illness
- STD in a Communicable form
- Intoxication at the time of marriage
- Both are of same sex
- marriage by force, fear of death, fraud etc
- Accidental marriages

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Blood stains

Stain →

1. Screening
   - ① Benzidine → Dark blue → most sensitive
   - ② phenolphthalein kastle meyer test → MC used → pink colour
   - ③ Luminol → Blue colored florescence → spray, a washed stain → MC test used for crime scene investigation
2. Confirmatory
   - microchemical
     - Teichman Test / Glacial acetic acid
     - Hemin or Hemochromog Takayama test
   - Spectroscopy
     - Best
     - Best for old blood stain
     - most sensitive

Pi
fe

Artificial reproduction Techniques

ICMR guidelines

Artificial Inseminated donor (AID)

- No mixing of semen
- Age 21-45 yrs
- Healthy
- unrelated
- Racial similarities
- Consent of spouse
- Dont reveal the identity

Surrogate mother

- 21-35 yr
- Consent of both
- Not > 5 live births
- At least one intended parent (sperm or ovum)
- Should be biologically related
- Birth certificate - Name of biological mother

oocyte donor age → 18-35 yrs

Consent of both spouse is required for

- Abortion
- sterilization
- Artificial insemination
- All of the above

} Consent of spouse not required

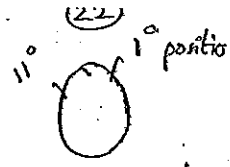
But divorce in view of this.

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(22)

Hymen – Glaister keen Rod.

- Semilunar / Crescentic → most common
- Fimbriated → multiple notches → mimics torn hymen
- Cribriform → multiple sieves
- Marginal → wide opening



masturbation / fingering → II° & I° position

Tags of Hymen

- Carunculae myrtiformis → Remnants of hymen → After vaginal delivery
- Carunculae Hymenalis → Frequent sexual intercourse

Female

- Virgin → Never had sexual intercourse
- Deflorate → loss of virginity (dilatation of vagina)
- False virgin → deflorate but intact hymen → d/t elastic hymen

Intact Hymen – Not related to virginity.

– Most imp. sign of defloration is

a) ~~Dilatation~~ of vaginal canal

b) Ruptured hymen

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Rupture of hymen is unlikely to occur in case of

Gynaecological examination

Masturbation

~~Riding~~, Jumping, dancing

Sexual Intercourse

During sexual intercourse → Hymen commonly ruptures at
- posterolaterally

In rape of a virgin - semilunar Hymen ruptures at

a) In midline position
b) Anterior
c) one side only
d) on both side

Rupture of Hymen

Sexual intercourse → posteriorly. 6°, 5°, 7° clock position (or) posterolateral (MC)

Digital penetration → Anteriorly 12°, 11°, 1° clock (or) Anterolateral (MC)

Hymen Deeply seated in children → may not rupture.

Consent of spouse

MTP — (X)

Artificial insemination — (✓)

Sterilization — (X)

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Twin pregnancy

Superfecundation
↓
2 ova released in same menstrual cycle get fertilized by coitus of 2 different people

Superfetation
↓
Fertilization of 2 ova released at 2 diff. menstrual cycle (fetus over the fetus)

pregnancy caused by deposition of semen over vulva or inner aspect of thigh → Fecundation at extra.

Foetus papyracea →

Abortion (miscarriage)
Expulsion of products at any time before full term

- Spontaneous
  - Natural
    - Fear or Joy
  - Accidental
- Artificial
  - Justifiable (MTP act)
  - criminal (312-316 IPC)
    - 312 IPC
      - ↓
      - with Consent
    - 313 IPC
      - ↓
      - without Consent
    - 314 IPC
      - ↓
      - death of moth

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Commonest complication of criminal abortion — ~~Sepsis~~ Hemorrhag

MCC of death " " — sepsis

Criminal abortion

Hemorrhage → MC Complication

Sepsis → MCC of death

MCC of death in case of burns — 2° shock

Pseudocyesis spurious / phantom pregnancy

Menopause women thought — she was pregnant

ut gain but no fetu

Dead born child not shows Adipocere

→

IUD dead born

Rigor mortis → Absent in < 7 m

Maceration → Aseptic Autolysis (Decomposition ↓ out microorganism & no cold change so no cold change) → Bacteria is (+) lysis only by enzymatic activity

Mummification (① Scanty liquor ② No air) → Dericeation

Intact Amniotic (AM) membrane

putrefaction → AM not intact

Feticide - killing by parent

Neonaticide - killing of child (≤ 24 hr) not 1 yr

↓ punishment → 315 IPC / 302 IPC

Dead born — IUD

still born ≥ 28 wk during the process of birth

Live born — sign of life after birth → If any part of child outside mother body & ↓ cry

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Skin slippage

↓

Earliest sign of maceration (6-12 hrs)

Radiological signs of fetal death — all ~~except~~

Gas shadow in aorta (Robert's sign)

Radiological signs of IUD
- Robert's sign (Gas shadow in aorta) } great vessels
  Earliest sign - 12 hrs
  1st Radiological sign
- Duel Halo's sign (Red pericranial pad of fat
- Hyperflexion of spine
- Crowding of ribs
- Spalding's sign - overriding of skull bones (5-7 days)

Triad of Shaken Baby syndrome (SBS) — under BBS

- SDH — Subdural Hemorrhage → MC
- Retinal hemorrhage → Flame like; Dot & Blot Hemorrhage (smaller) (larger)
- cerebral edema

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Fracture in Battered Baby Syndrome (BBS)

- Skull → Egg shell #
- Rib → string of bead appearence
- long bones
  - Bucket handle # → Avulsion of metaphysical head from diaphysis in Tibia
  - Corner # → collateral ligaments avulse pa of femur

Ex- Baby gram

Sexual offences

- Natural → As per order of nature agnst law → ♂→♀ penivaginal penetration
  - Rape (375)
  - Adultery (497)
  - Incest → ♂ Blood Relation → Not punishable in India
  - Cheating on spouse Infidelity
- Sexual Perversions → gratification ♂out intercourse
- Un-natural (377 IPC) → Against the order of nature → other than penivaginal penetration
  - Sodomy (Anal intercourse)
  - Buccal coitus (sin of Gomorrah)
  - Beastiality - Intercourse ♂ lower animal
  - ♀ Tribadism (or) lesbianism → Not punishable
  - Homosexuality

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Rape + (man) is said to commit rape if

375 IPC

- penis → Vagina, mouth, urethra, Anus
- object / part of body → into Vagina, urethra, Anus
- mouth → into Vagina, urethra, Anus
- manipulating the woman to cause penetration → into Vagina, urethra, Anus

→ ① against will
② w/o consent
③ w/ consent – fear
④ " – impersona
⑤ " – intoxication
⑥ w/ or w/o consent
↳ age < 18 yrs

except in
① medical exam & R
② husband & wife age not < 15 yrs
Sexual intercourse even w consent

③ unable to communicate consent (coma)

Girl < 18 yrs

married woman < 15 yrs

Rape (statutory Rape) → < 18 yr & w/ or w/o consent

Quantum (or) Min. punishment for rape is imprisonment for 7 yrs
" " 10 yrs
for custodial rape
Eg: Jail officer
medical officer

♀ [Rape – (X)
Gang rape (≥ 1) – (X)

After mrg – w/o consent
↓
not rape

If any Hospital violates 357(C)
↓
166(B) IPC
↳ 1 yr & fine

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(2013) Rape punishment - 376

376 A → Resulting in death (or) PVS (persistent vegetative state (coma)) → 20y to death → Nonbailable

376 B → sexual intercourse by husband during separation w/o her consent (not rape) → Not punishable in India.
sexual intercourse marital (not rape) → 84-7y on wife's complaint → only Bailable offence

376 C → Sexual intercourse (not rape) by person in authority → 5-10y → Nonbailable
↳ consent of ♀ to not rape for promotion
eg.

376 D → Gang rape → 20y to life → Nonbailable

376 E → (proved to guilty) → in 1st offence → Repeat offenders → Life to death sentence → Nonbailable
Life sentence is reduced by governor to 14yr

- Marital rape — 376 B (wrong ques !!)

Exam of Rape accused
- lugol's iodine → vagi. epi cell glycogen
- smegma → after 24 hr accumulate

Rape victim → Toludine blue test to detect micro trauma in sexual assault

Glaister keene Rod - To examine torn hymen

Consent →
- Cr.P.C - 53(A)
- Cr.P.C - 164(A) medical examination of rape victim. RMP (♀ / ♂)
  Consent ✓, (12yr minor age),
- Cr.P.C 327 - In camera trail ≠ misnomer
  ↳ Rape - only limited no. of ppl are allowed
- Cr.P.C 357(C) (2013) - Role of Hospitals for victims of sexual assault & acid attack (2013)
  ① Any Hospital (Pvt & Govt)
  ② Free Rx ★

2013
- 326(A) IPC: 10yr to life imprisonment ← Acid attack
- 326(B) IPC: attempt to acid attack → 5-7yrs

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Incest – not punishable

- Oedius complex – mother & son
- Electra complex – daughter & father
- pharoan complex – Brother & sister

Buggery / Sodomy (Greek love / Buggery)

- Active
  - Pedophile → Prefer children for anal intercourse
  - Gerontophile
- pasive
  - Child (Catamite)
  - old man → Gerontophilia

Action – Paederasty / Paedophilia

~~Active agent that prefer old~~

- lateral buttock traction test is positive in complete relaxation of anal sphincter
- Habitual pasive agent of sodomy
  - Tyre sign (+)
    - Bluish discoloration is seen around anal margin
- Intact genitalia is seen in
  - Hijrahs
  - Zenanas
  - True hermaphrodites
  - pseudo h

Homosexuality

- ♂ → punishable
- ♀ → Not punishable

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- Lesbianism / Tribadism → Sexual perversion

  - Active → Butch / Dike → Bulldyke
  - passive → Femme

Punishable sexual paraphilias

- Frotteurism – 290, 354 A, 354 IPC — Rubbing sexual organ of unsuspecting individuals in public
- Exhibitionism – 294
- Necrophilia – 297 → Deadbody – Trespassing of burial place etc; → showing disrespect to dead body; → 1yr + fine
- Necrophagia – 297
- Voyeurism – 354 C — peeping tom (scoptophilia)

1st off – 1-3y – Cog + Bail
2nd – 3-7y – Cog + Nonbail

Watching on ↓ undressed ② Doing intercourse

Non punishable sexual perversion

Stealing refers to
- Exposing breast
- buttocks
- genital

① Sadism – pain – partner
② Masochism – pain – self
- Bondage ③ — am of sadism + masochism
  - Autoerotic asphyxia ↓ strangulate himself

④ Transvestism or cross
⑤ Fetishism ↓ object of desire
⑥ partialism ↓ desire for part of body (not relevant to sexual in

Exhibitionism ← Display of put part in public
- 294 IPC 3m ± Fine
- Running naked

Flashing ↓ Any body part normally covered

Mooning ↓ Buttocks

Stealing ↓ Running naked

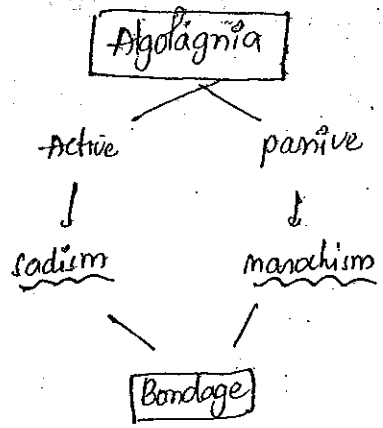
⑦ Klismaphilia ↳ By enema

⑧ Coprolalia / scatiologia ↳ obscene abuse language

⑨ Urolagnia – Urophilia / Sight / Smell / fundi thoughts of urine

Onanism / Ipsation / Masturbation in public

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Pygmalionism → with statues

Undinism → sexual pleasure by passing urine on others

Zoophilia → " c animals

Formicophilia → creeping insect

Coprophilia → " c faecal matter of opp. sex.

Cunnilingus — licking the vulva. (female genital)

sexual oralism

↓

Application of mouth to the sexual organs

- Annilingus → Anus
- Cunnilingus → Female genitals
- Fellatio (pennilingus) → Penis

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Transvestism (Eonism) — wearing clothes of opp. sex

Fetishistic transvestism → sexual motivation → Identifys himself as opp. gender

Dual role transvestism → No sexual motivation → To experience the opp. sex temporarily

Not a sexual perversion → lesbianism also

Not sexual paraphilia — lesbianism.

Gender identity disorder. ♂

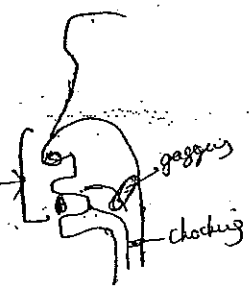
498 (A) IPC — Cruelty on ♀ by husband / Relatives [torture & domestic violence]

Ground for divorce — Both ♀ & ♂

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Asphyxia

Hanging	Strangulation	Suffocation	Drowning
Constricting force — wt of body	- other than wt of person		
1) Complete	1) Ligature	1. Smothering	
2) partial	2) Manual (or Throttling)	2. overlaying	
3) Typical	3) Mugging - By elbow	3. Gagging	
4) Atypical	4) Bansdola - 2 sticks	4. choking	
	5) Garotting ⇓ Judicial strangulation	5. Traumatic asphyxia	



Suicide pact — More than one person decided to died together

① Typical Hanging.

knot - occiput

ligature → usually oblique & above the level of thyroid cartilage
hanging

ligature strangulation → Transverse & Below

manual strangulation — six penny bruises

Mugging — 2 Hand around neck

Bansdola — 2 sticks

Garotting

② Atypical ← Judicial Hanging
- (i) Angle of mandible
- # C_2-C_3

knot - other than occiput

Most characteristic sign of Hanging

most characteristic sign of Antemortem Hanging
- Dribbling of saliva
- Lafacies

Sympathetic ⇓ Compression of cervical sympathetic chain
- Same side
- Eyelid open
- pupil dilat

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Spanish windlass technique - type of garroting
↳ Judicial ↓ metal around neck

Smothering - pillow, hand
↳ Bruise / laceration on inner aspect of lips

Endotracheal intubation ↓ smothering

Overlaying → Heavy wt on baby

Intubation injury resembles - choking

Traumatic asphyxia (wt on chest)
- Cyanosis
- petechial hemorrhages
- Line of demarcation

Cardial features:
Bursting — Homicidal [smothering & Tr. Asphyxia]

Drowning

1) Typical drowning (wet drowning) / true drowning
froathy lung — due to resp. movement in water
Ribmarks on lungs
crepitus (+)

2) Atypical drowning
a) Dry drowning (laryngeal spasm)
No froath
↳ No water in lungs
↳ water into larynx

b) Immersion syndrome (vagal inhibition) / Hydrocute
No froath
↓
d/t coldness of H2O

c) Submersion of unconscious
↳ proper resp. movement — No froa

d) Near (secondary drowning) — Death after 24 hr
(>1 day) post immersion d/t obligation of metabolism

Froath (+)
metabolic acidosis
d/t electrolyte imbalance
Aspiration

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Lynching – public hanging

Ligature knot

Fixed

- Inverted V-shaped ligature mark – not continuous
- oblique

Running noose / slip

knot mark present on skin

- continuous
- oblique

Parchmentization – Hard & leathery ligature mark

Definite signs of Antemortem Hanging

- Pribbling of saliva → dlt ligature on salivary glands → most imp
- Carotid intimal tear ± ecchymosis → as at side of knot → Neck stretched max → carotid artery stretched → especially seen in Hanging ± a drop (Judicial hanging)
- Facies sympathique → At eye open ± dilated pupil & Lt eye closed ± small pupil in Rt sided knot → dlt pressure upon cervical sympathetic, the eye on the same side remaining open and pupil dilated

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The knot in judicial hanging → side of neck
~~Angle of Jaw~~
Below chin

Angle of mandible > Below the chin

Angle of mandible > side of neck > Below the chin →

⇓

most effective position of knot in Judicial hanging

Cervical #

C_1 — Jefferson #

$C_2 - C_3$ — Hangman's #

$C_6 - C_7$ — undertaker's #

Hypoxia

⇓

sexual stimulant

⇓

Thin line b/w sexual stimulation & unconsciousness

⇓

Sexual asphyxia → mode is by plastic bag asphyxia

⇓

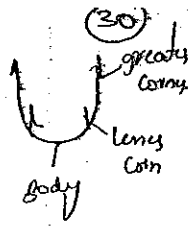
Ex: **Kotzwainism, Hypoxyphilia, Autoerotic hanging** → Common method

⇓

MC method - Hanging ; in old days Hutting

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Hyoid bone



→ # s occur usually after 40 yrs (calcification)

→ At junction of inner ⅔ & outer ⅓

Throttling → max. bruises seen
→ # ends displaced inwards
→ # of superior horn of thyroid cartilage

Antemortem # → Ecchymosis under periosteum

# of Hyoid in ligature strangulation is rare

Hanging → Hyoid against cervical vertebrae
ends displaced outwards

of Hyoid bones in asphyxial deaths

(Antero-posterior)
A-p (outward) Compression #
(or) abduction #
↓
Hanging (15-20%)

Inward compression #
Adduction #
↓
Throttling (30-50%) (MC)
↓
# of Sup. horn of Thyroid cartilage.

Sudden Contraction of neck muscles → Avulsion / traction / Rug / Tear #

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Cafe coronary — Roger Haugen

↓

Intoxication — Alcohol / sedative

↓

Inhibition of gag reflex — (N) — food enters into trachea — cough

↓

Bolus of food in larynx / pharynx

↓

Vagal stimulation → ↓ vagal inhibition occurs → ↓ chocking → ↓ Asphyxia

↓

① Cardiac arrest

COD

② Asphyxia because of chocking

No asphyxial changes in body

R/ — Heimlich maneuver

Fresh water drowning

Salinity of blood > salinity of fresh water

osmosis

water from lungs into blood → Hemodilution

↓

swelling of RBC

↓

Hemolysis (RBC ↑ K+)

↓

Hyperkalemia

↓

Ventricular fibrillation

↓

Death in 3-5 minutes

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Salt water drowning

Hypertonic

↓

H_2O from blood to lung ← pulmonary edema → Asphyxia

↓

Hemoconcentration

↓

Hypernatremia

↓

Bradycardia

↓

Cardiac arrest

↓

Death in 6–8 minutes

8–10 min.

Lung

- Typical / wet drowning → Edema + copious froth → Emphysema aquosum
- ↓ submersion of an unconscious → Edema + minimal froth → Edema aquosum
- postmortem submersion → Edema cum froth → Hydrostatic lung

Pm → Flowing H_2O drowning → No Hypostasis

Gram + weed in Hand — Pm drowning (Am) — most characteristic sign of Pm drowning

Drowning → ↑ strontium

Except

↓

GW in Hand >

emphysema aquosum >

Paltauf tag >

Diatom in Systemic >

Froth at mouth

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Definite signs of Ante-mortem drowning

- Cadaveric spasm → most imp
- Copious froth → Emphysema acquorum (water into lungs) / Voluminous Bulky (Rib markings ⊕, engulf heat) → alveoli rupture
- ? Diatoms

Cadaveric spasm > Copious froth > Diatoms

Diatoms – microscopic algae

Best organ - femur → Not used bcz mutilation of body
Commonly used - sternum
Best soft organ - kidney

Siliceous fungi

↓

Frustule

↓

Resistant to acid, heat & putrefaction

↓

Recovered by **Acid digestion technique** → Conc. HNO_3

↓

$> 60\mu$ can't enter into pulmonary circulation

✓ diatoms in systemic circulation s/o Ant drowning

No petechial haemorrhages in drowning

↓

Paltauf's spot.

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Paltauf's hemorrhage — microvascular rupture

Rupture of alveolar membrane → petechial subpleural hages

seen in lower lobes
Ant. surface (on)
Inter-lobar septa

Drowning

- Goose skin / cutis anserina
  - Am + pm
  - ↓ bcoz of Rigor mortis
  - ↓
  - Spasm of erector pilorum
- washer woman's Hands & feet
  - ↓ Am + pm drowning
  - ↓
  - sign of submersion
  - ↓
  - 18-24 hrs
- Tardieu's spot / bone Hages
  - ↓
  - also in Head injury Hanging Co poisoning
- Reaction phenomenon
  - ↓
  - Retraction of scrotum & penis

Hyperventilation before drowning – can cause immediate death
↓
bcoz of lack of CO_2 tension

Deep inspiration above the water level may cause

↓

- late floatation
- Early floatation
- ~~No~~ effect on flotation

floating d/t putrefacted gases

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Hanging Compression — 1st more → Venous Congestion

2 kg – Jugular veins

5 kg – Carotid artery – 2nd more → Cerebral anemia

15 kg – Trachea → Asphyxia

20–30 kg – vertebral artery

MC of death in Hanging – (Asphyxia) (Not venous congestion)

Strangulation

Force of compression other than wt of body

#	Hanging	strangulation	Throttling
Hyoid	15-20%	30-40%	40-50 %
Thyroid	⊖	⊕	⊕
cricoid	⊖	Rare	⊕ 2nd

Throttling

Adduction # | Inward Hyoid ⊕ 1st character feature

Compression #

Lynching Homicidal hanging by mob

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Father of Toxicology ← Toxicology
J.B. orfila.

Drug & Cosmetic Act 1940 → Revised 191
Schedul
C - Biological agent
E - poisonous substance.
F
H - prescription drug
S - standard

Best

Emetic	cathartic (purgative)	chelating agent	diaphoretic (sweating)	Gastric lavage tube
↓	↓	↓	↓	↓ RT - children
Ipecac syrup	sorbitol	DMSA Dimercapto succinic acid ↓ least nephrotoxic	pilocarpine	Lavacuator tube

Not suitable for gastric lavage - ① Ewald's (Boas) Rudrubbag tube
② Edlich
③ Ryel's
④ Lavacuator

At Lateral position.
150 cm → Adult

Risk of perforation

very painful

Abs CI
except Corrosive poisining

Burn of thick/leathery stomach wall ← carbolic acid ← phenol

Contraindications →

penicillamine	EDTA	Atropine
↓	↓	↓
Arsenic	mercury	cyanosis ↓ ventricular fibrillation

Relative CI for Gastric lavage
① Recumbent position
② Coma
③ Hypothermia
④ Lower esophageal varices
⑤

Best lavage fluid - KMnO4 / 1:1000

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Hospital (39 Cr.P.C)

- Private
  - Inform → Homicidal
  - No need to inform → Suicidal, Accidental
- Govt → Inform → All

Death: Pvt, Govt → Inform

Parmananda Katara v/s Union of India
AIR

Whenever any MLC comes to the hospital, the MO on duty should inform the duty Constable

Corrosives

Acids
- → Coagulative necrosis
  - Except – Hydrofluoric acid → liquefactive
- → perforation of stomach
- → Acid Hb → Acid hematin → (Coffee ground vomitus)
- → Acid forms eschar

Alkalis
- → Liquefactive necrosis
- → stricture of esophagus (Alkali also)
- → Danger Alkali > Acids
- Alkali penetrate into tissue

Redline ← No → singeing
No → Blisters

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Mineral acids

H_2SO_4 → Black discoloration except Teeth → chalky white → Stomach – wet blotting consistency

HNO_3 – Brown urine

protein + HNO_3 → Xanthoprotein → Yellow → Stomach – Dark brown (Acid hematin)

HCl → Greyish discoloration → Stomach – Dark brown (Acid hematin)

ENT: eyes, Nox, lung, Throat } HNO_3 (fumic) > HCl

Vitriolage (Haley) – oil of vitriol → All turns black except teeth → chalky white teeth

Throwing corrosives on body → punishable

- 326A → Act → 10 yrs to life
- 326B → Attempt → 5–7 yrs

Ether ⇓ sweet oil of vitriol

Rx: weak alkali – MgO, $Mg(OH)_2$; steroids prednisolone → esophageal stricture

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Oxalic acid – Forgery (Ink removal)

↓

Ca^{2+} in body

↓

Hypocalcemia

↓

Tetany → Ca gluconate (Antidote) → Also in Hydrofluoric acid & Ethylene glycol

Contraindication — Excessive water

↓

As no dilution – ↓↓ absorption

Monohydrate crystals

prism/Needle shape

Dihydrate crystals

- postal envelope shape ✉

Oxalic acid

Trousseau's sign

↓

Inflate BP cuff

↓

carpal spasm

Obstetrician hand/

Accoucher's hand

Chvostek sign

↓

Tap on facial nerve

↓

Twitching of facial muscle

K ↓ Kerosene

CI in B Benodiazepine

C - Curare

Phenol (or) Carbolic acid

↓

Nephrotoxin RyoC – Hemodialysis

(+) B – Barbiturates

L – Lithium

A – Alcohol

S – Strychnine

T – Theophylline

pinpoint – (miosis)

lockjaw

Carbolueria

① Opium

② OP

③ phenol

Colourless urine during voiding → Green

oxidation of phenol → Hydroquinone + pyrocatechol → Ochronosis

Oxidises

Blackish pigmentation

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[Carbolic acid]

↓

Metabolic end products

↙ ↘

Hydroquinone pyrocatechol

↘ ↙

carboluria

↓

Green urine.

Antidote – $MgSO_4$

Chronic phenol poisoning

↓

phenol marasmus

↓

Deposition of Hydroquinone & pyrocatechol

↓

Skin, sclera, cartilage

↓

Bluish/greenish pigmentation

↓

Exogenous ochronosis

: Alkaptonuria (or ochronosis)

Spine - x-ray

||

Universal disc calcification

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Boiled lobster appearance — Boric acid poisoning
(Exfoliation)

phosphorous

- Hg → Dhruti poison → Spontaneous combustion (>30°C)
- White / yellow → Toxic → fumes → Glow with yellow fume → luminosity – luminiscent vomitus
  - preserved in water
  - Smoky stool syndrome → (fumes from faecal matter)
  - ARSON → For burning of fibres
- Red → Non toxic → matchboxes

priapism

POY

→ Hepatotoxic

- Initially → Necrobiosis
- Later → Acute yellow atrophy – Acute liver failure.

→ Hypoprothrombinemia

→ Bleeding diathesis & epistaxis

① **Inhalation of fumes** –

→ Toothache, swelling, (caries tooth mint)

② loosening of teeth

→ Osteomyelitis

→ sequestration, necrosis of jaw ⊃ multiple sinuses → Osteonecrosis of mandible

seen in prophylactic Bipha

Garlic smelling pus

phossy / glass

Rx Sympt

KMnO4 – chem. antidote.

Vit B/C/(K)

Me

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Chronic iodine poisoning – mumps

Conditions in poisoning

- Basophilic stippling / punctate basophils → Lead poisoning
  - Arsenic
  - Zinc
  - → Coarse type
- Priapism (penis remains erect even in absence of stimulation)
  - Cantharides
  - Phosphorous
  - Scorpion
- Burtonian line → Lead, Mercury, Bismuth, Iron, Silver, Copper (Clapton's)
- Formication (Tactile hallucination)
  - Cocaine (Delusion of persecution)
  - Ergot
  - Arsenic
  - Amphetamine
  - Alcohol withdrawal

OP

- ↑ secretion of all glands
  - Wheezing → mimics asthma
  - Lacrimation → chromodacryorrhoea (Red tears)
  - Urination → Incontinence of urine
- Atropine* (Antidote)
  - ↓ stop atropine when tracheobronchial tree cleared

Specific Rx for OP poisoning – Atropine (Role of oximes is doubtful)

Atropine is stopped in OP poisoning when

- ⊖ AchE
- ↑ Ach
- ↓ Nicotinic receptors at NMJ

Not a plant insecticide

- Nicotine
- Pyrethrine
- Rotenone
- Endrin

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Household mosquito repellant — pyrethrin

OP

↓

↓ ChE level (N = 4000 - 11,000 IU)

True / RBC ChE — pseudo / plasma ChE

↓ — ↓

more specific — more sensitive, Easy to assay

Aluminium phosphide

- Cannon Subendocardial / cardial hemorrhage
- Arsenic > Alp
- Alp + HCl → phosphine
- Oesophageal stricture
- Inhibits cytochrome - c oxidase

* Metals per se is not a poison - only compounds are poisonous. Exception - lead -

Mercury not poison methyl mercury is poison

Arsenic powder - Fukuitsuka powder

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Metal poisons:

Arsenic — White AS / Sankhya ; fatal dose - 0.1-0.2gm
pinch → 5-6 individuals death

King of poison / poison of kings — Mc used Homicidal poison — Arsenic

Mc Ideal " " " — Thallium — Not easily available

Napolian — Inheritance powder — Le poudre de succession

Mimics cholera

Regular consumption of AS → Arsenophages — Hyperpigmentation - mimics addisson's disease

mimics fading measles rash

Toluate AS - 0.3gm — Mixed neuropathy - (Symmetric peripheral) Sensory predominant Glove & stocking.

① Acute / Fulminant AS P
- death 1-3 days
- death <3hrs → dose is more 3-5gm

Red velvety stomach

Focal hemorrhages - Flea bitten appearance - stomach

Sub endocardial hemorrhage - Arsenic

Aluminium phosphide — Acute
- Gastroenteritis sym ~ Acute GE
- Narcotic Sym → CNS

③ Chronic poisoning — earliest sign - emaciation

Catarrhal changes - sneezing, Rhinitis, Lacrimation, Conjuctivitis, Bronchial catarrhal

② Subacute - AS P N cholera — differentiated by sequelae of symptoms

① Hair - Alopecia
② Skin
③ Nail
④ Bone
- pancytopenia
- Bonemarrow depression
- Burnt Bones (identified later) — so not ideal

Skin ↓
Rain drop appearance of skin — Brown pigmentation
Resemble additions
& Fading measles Rash
Hyperkeratosis of palms & soles
PVD - Black foot disease

Nails → Aldrich - Mees lines — Transverse white bands on nails
Also in Thallium poisoning

① Throatpain → ② purging
② Thoa
① purg
Urine

① Cancer
- Bowen's disease
- SCC
- Basal cell Ca
- Lung Ca

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Basophilic stippling / punctate Basophilia

presence of small dots on periphery of erythrocytes not Basophils

Represent Ribosomes

Golden hair discoloration — also in Cd & Cu by consumption

Acute yellow fatty liver

Rigor mortis - persists longer

Acute poisoning → highest quantity found in liver

Acute yellow atrophy - liver
" " Phosphorous

chronic poisoning — Bone, skin, Hair, nails, muscles + Routine Viscera → preserved in chronic As poison

Arsenic, Antimony
Radium, Thallium
HART

Formication

Best method for detection of Arsenic

① Flame less Atomic Absorptive Spectroscopy

② Neutron activation Analysis

FAAS

Gas chromatography - alcohol

Fatembolism

Test — Reinsch >> Marsch >> Gutzeit

Rx — Gastric lavage by freshly prepared Ferric Hydroxide (Fe(OH)$_3$)

BAL - Dimercaprol

Mercury → organic >>> Inorganic

Mercuric >> Mercurous

Deep (IM)

Arachis oil

methyl mercury

(mercurous) Mercurous chloride

TD - 1-4 gm

most toxic

Minimata Bay disease

place

eating Fishes

Acrodynia / pink disease / Swift's disease / Selter / Bilderbeck / erythredema polymorphia

pink, pain extremities

mimics pheochromocytoma

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Chronic mercury poisoning → **Hydrargyrism**

- **Brown malt reflex (mercuria lentis)** → Earliest sign → Brown spot in Ankerior lens capsule (Not effect vision) → Dx by slit lamp → malt Brown Reflex.
- **Erethism** → abnormal response & irritability → Neuro Psychiatric manifestation (inappropriate shyness)
- **membranous colitis** (not bleed) → mimic diphtheria (diphtheric colitis) → stool grey color

Acrodynia
- children
- Finger

Ptyalism [Cu > Hg] — ↑ salivation

shaking palsy

Viscera preserved → R/v + Hair

Tremors in Hg poisoning → **shaking palsy**

→ **Coarse & Intention**

- **Danbury** → Handwriting effect → mild
- **Hatter's / Glan blower's shakes** → moderate (Glan blowers Cataract → Blackout)
- **Concussio mercuralis** → severe

Diwali poison ← **Pharoah's Serpents** — Individuals on Roads — masks & bombs — contain mercury thiocyanate

mimics kawasaki disease — strawberry tongue

Scarlet fever like rashes

Nephrotoxic — PCT → Cu, Hg, phenol, Cd, oxalic acid

Rx — G/L — Sodium sulfoxylate formaldehyde

Rx of C — BAL

EDTA — CI
↳ Nephrotoxic

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Lead

Lead acetate → FD = 20g
" carbonate → 40g

MCC in the world. for chronic poisoning — plumbism (lead) / saturnism

Earliest sign of plumbism / saturnism — circumoral / facial pallor → Blood vasospasm / Anemia

Blood initially polycythemia → Anemia

Blue / Bluish grey / purple line later → Clopton's line

Eosinophilia is more common than Basophilia stippling of RBC

Inclusion bodies → Caput ring → punctate Basophils → punctate Basophils then Earliest manifesta

pb / Hg / Bi / Ag / Fe / Cu

Burtonian line — pbS — in teeth

Blue line on gums

pb + H2S (putrified food in caries) = pbS

Increased metaphysical density — lead line in x-ray

more white

Growth altered

Rupture of RBC → Hemoglobinuria

Retinal stippling

wrist drop & lead palsy — <10% cases

Not neuropathy.

peroneal nerve → foot drop

Earliest symptom — Neuropathy → - LE, - pure motor

Late feature — colicky & constipation

→ Infertility in both sexes

Diarrhoea — Rare

Azotemia → ↑ urea and creatinine

Rx: CaNa2EDTA + BAL ← Encephalopathy → Encephalopathy — seen in almost all cases of plumbism in one or other form

most dangerous

fatal 85%

- MC complication
- Caused by Tetraethyl lead
- MC in children

Dx: ① Blood lead level >10 µg/dl

② Erythrocyte protoporphyrin >35 µg/dl — precursor of Heme — Raised in Iron impairm

Rx — ① Succimer (DMSA) — least nephrotoxic chelating agent ② CaNa2EDTA + BAL ③ CaNa2EDTA.

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$CuSO_4$ – Blue vitriol $ZnSO_4$ – White vitriol

FD – 20 g ⟶ If He takes more > 20g pt not die bcoz Cu is gut stimulant so vomiting.

Copper metal – Non poision (metal per se)

Cu subacetate – Verdigris

↓

Greenish on Cu vessels

||

food poisioning

$CuSO_4$ – Green plantation → Vineyard sprayer lung disease

↓

Granulomas - lung

Acute poisioning – Hemolysis

Algicidal Cu Compounds

↓

swimming pool

↓

swims

Greenish discolorations of hair

d/t water contamination

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ptyalism – Cu & Hg

Chalcosis – Deposition of Cu in tissue

↓

Cornea – Kayser Fleischer Ring → Descement's membrane.

Wilson's disease – Hepato renal lenticularis

↳ Antidote – penicillamine

Dx – Cu – whole blood > 100 µg/dl

urine > 600 µg in 24 hrs

Rx BAL (for vomiting) as chelating agent → penicillamine orally

↓

penicillamine test

Hemodialysis → CI

Ether – sweet oil of vitriol

Thallium triad

- Alopecia
- Butterfly rashes
- peripheral neuropathy → Glove & stocking → mimic GBS / Guillian Barre

Mees' lines

Poision	Condition
Zinc (Fe/Cu)	metal fume fever - Resembles malaria. Fever, chills, malaise
Flouropolymers	polymer fume fever - " " "
	[meat wrapper's asthma] + wheezing
Maganese	parkinsonism symptoms; Anguruga syndrome; maganese madness
Iodine	painful parotitis
Nickel	Lung Cancer
Cobalt (Beer)	Cardiomyopathy (Beer drinker's heart)
Cadmium → Nephrotoxic-PCT	Ouch Ouch disease (painful bony lesions)
Alcohol	Holiday heart Syndrome

Boric acid → Boiled lobsty syndrome

Cattle - Restless leg syndrome

MC suicidal poisioning — OP poision

Ideal " " — Cyanide

mc method of suicide — Hanging

Parasuicide — [No intention to die]

mc method of parasuicide — Drug ingestion

Type of self mutilation

oxalic acid

Remove Ink - forgery

Wall scraping

↓ Hypocalcemia

⑤ oxaluria

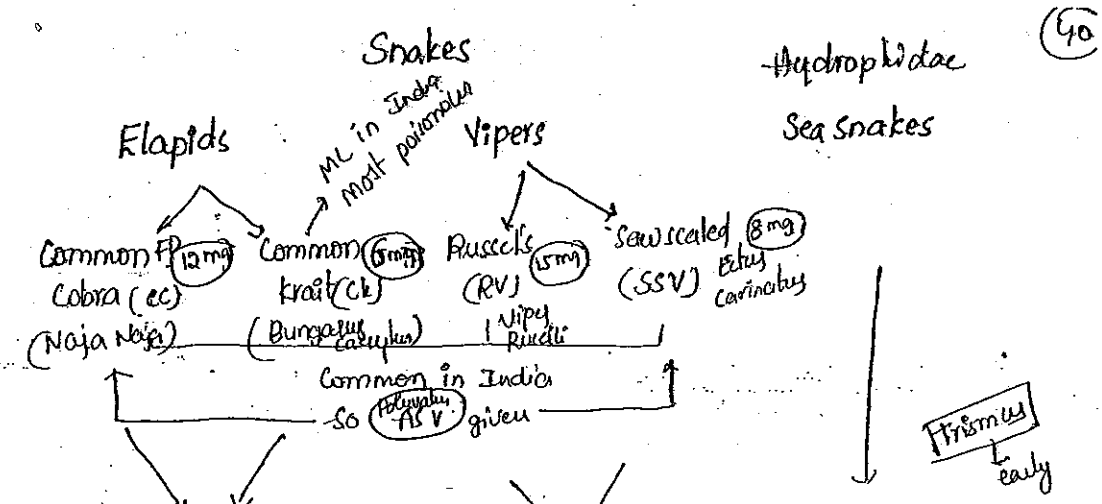
envelope shaped crystals of Ca oxalate

Rx for ① HF acid (acid & liquefactive necrosis) ② Ethylene glycol

Rx [10% Ca gluconate 10 ml IV
exam water ↓ Absorption oxalic

All metal may give parkinsonism symptoms

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Common Cobra → Hood & Spectacle mark

↳ 3rd supralabial touches both eye & nostril

↳ 4th infralabial — Largest

Common krait → Dorsum — central row of hexagonal scales

Vipers → Triangular head & narrow neck

↳ 3 rows of diamond shaped marks on body

King Cobra — Raj Nag — ASV not used

Hypnale Hypnale — Hump nosed viper — ASV not used

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Local signs

Hemotoxic — max. local signs

- Common Cobra (6-8 min) → minimal
- Common krait → Nil
- Vipers → maximum
  - pain - 8 min
  - swelling - 15 min.
  - Persistent bleeding - Blister - (12 hr)
  - ↓ Intravascular Hemolysis

Most Common — Not Common — NIL

Convulsions

Treatment

1st step - Reassure - Me death ↓ Fear ↓ 85% cases

First aid

1. Immobilization (splint application)
2. ? Wash - Soap-water ✗
   - ↳ gently

Antivenin - As monovalent snake venom

- ↓ to collect smear from wound
- ✗ Incise at site
- ✗ suck
- ✗ Tourniquet ↓↓ Now southerland wrap

Tourniquet — CI as venom pass through lymphatics by tourniquie we can't block lymphatics

3. IT ↓ max oral organisms → viper ↓ local sign → ✗ wrap

Crepe bandage

Hospital

polyvalent ↓ PASV → only ↓ in systemic inflammation or sys. toxicity

Begin ĉ 8-10 vials

- CC
- CK
- RV
- SSV

Neostigmine

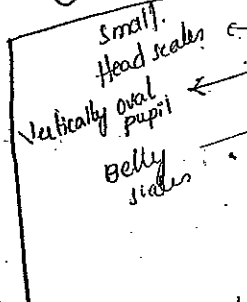
ĉ 4hr - Best
→ 24 hr - waste

Heparin prevent DIC

against Fixed Neuro toxins

1st running pressure immobilizing bandage also in elapids.

Poisonous snake



- Small Head
- Large belly
- Tail
- Constricted
- Nocturnal Habits

2 fangs multiple teeth

PASV → Systemic sign

NT → Diplopia ptosis

VT / HT → Bleeding (↓ ↓ 20 min WBC ↓ whole blood CT)

myotoxi → MT

ASV → 8-10 vial

Test dose ✗

↳ epinephrine - with

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Scorpion - priapism

Neurotoxic → predominant

Hemotoxic

cardiotoxic → Delayed toxic myocarditis → so admit min period of 24 hrs

Spider venom - Neurotoxic.

Most potent venom

1) Jelly fish.
2) Scorpion — but it's inject small amount — so fast mortality
3) Common krait — FD — 6mg — Fetal period
4) Saw scaled viper — 8 mg
5) Common cobra — 12 mg — 1/2 – 6 hrs
6) Russell's viper — 15 mg — 1–2 days

Red & Black

Alcohol poisoning

30 mg% — permissible for drivers

80 mg% (40–100) — Alcohol gaze nystagmus

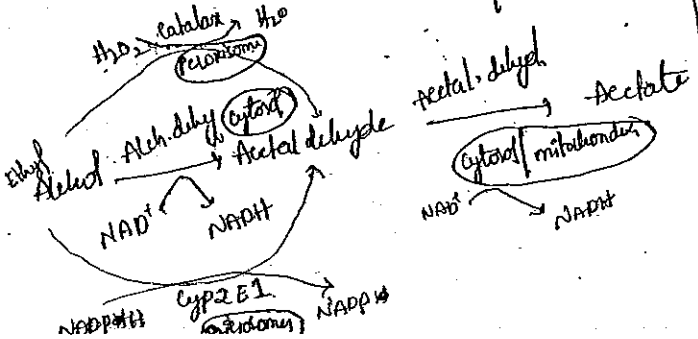
80–150 mg% — Under the influence

150 mg% — critical level - driving impairment

150–300 mg% — Drunk (or) intoxicated

>400 mg% — Fatal (150–210 ml absolute alcohol in 1 hr)

Blood & urine — 3 : 4 | 1 : 1·33



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In a female consumption of same amount of alcohol, the blood alcohol level in comparison to male of same body weight will be — 25% more

Alcohol more in ♀ because ♀ have more fat compartment it is ~~less~~ so enter into blood.

methyl alcohol [wood Alcohol] FD — 60-200 ml

- Severe Abdominal pain → Earliest symptom → lead pipe ↓ narrow lumen
- ⑤ optic neuritis
- Pin Hypopion → Blair
- → Poppy husk BHUKI

- Formic acid
- Snow field vision
- Papilloedema
- Optic neuritis → Temporary blindness
- Optic atrophy → permanent blindness
- Hooch tragedy
  - Illicit liquor
  - Blurring of vision

- Antidote
  - ① 4-methyl pyrazole (Fomipazole)
  - ② Ethanol IV
  - ③ Hemodialysis

for Ethylene glycol also

Opium (unripe fruit of papaver somniferum)

from unripe poppy capsule

Main Constituent - Morphine

crude opium → longitudinal Incision — Lancing on fruit

- pinpoint pupil
  - Carbolic acid
  - OP's → Constriction of pupil
- Secrete in stomach ev
- Dyspnea - stokes breathing
- Excessive perspiration (sweating)

Rx @ GIL
- ① KMnO4 1:500
- ② Naloxone IV

crude opium → standard opium → contains 10% morphine

So stomach ← wash ↓ even if taken in IV or IM form

Cyanosis → purple hand

Toxic Hypothermia → All body secretion ↓ except sweating

withdrawal features
- ↳ Drowsiness | ↑ Body secretion
- Rhinorrhea

θ_N → Marquis test

FD — opium — 2g
morphi — 0.2gm

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Barbiturate

- Oliguria → Conc. urine → mole yellow → Golden colored urine
  - pm – globus pallidus, corpus callosum necrosis
- Forced Alkaline diuresis
- Hemiperfusion ± charcoal
- Cutaneous blisters → Axilla, thigh
- Automatism – Person – conscious he perform act but doesn't know that act that perfo ↓ acidic self poisoning

CO

40% – Amphetamine excreted in urine – (N)

Liquid gold = Amphetamine Abusers
Not barbiturate
① sell this – for Amphetam
② use for again for injecting

IIDs ← Datura – embryo outwards
FD = 100 seeds ~ chilli seeds [embryo inwards, Hanna's hand]

Datura stramonium – Thorn apple

earliest manifestation
① ~~Bitter taste~~
② Diplopia
③ Dry hot skin
Hyperthermia

seeds – Hyoscine
Hyaramine
Atropine

Cornpickers pupil ← Bilat dilat pupil

Datura

- Railway platform poison
  - Road poison → Delirium poison → passengers
  - Suppression of all secretion → opp to op's, pupil dilate / dryness present
  - Carphologia → pulling out imaginary threads
  - Antidote
    - ④ Delirium → mattu
    - pilocarpine → pill r mo
    - physostigmine → tear
    - Neostigmine
      - crosses BBB
      - Rapid
      - G/E – kinnar r weak tamir aud

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Cannabis (Marijuana) — Burn rope smell

Δ9 - Tetrahydro Cannabinol

Δ9-THC — 20 mg/kg PO

M. Cigarettes / Joint / weed / Reefers

↓ effect → 1-6 hr

Run amok (Impulse to kill)

↓

Delusion of persecution

↓ poor

Not liable (84 IPC)

FD - 2g

Amotivational syndrome

↓

No motivation

FD - 10g/kg

Alp

BHANG - Dried leaves — 15%

Majoon - sweet (Bhang) — 15%

Ganja - Flower (♀) — 25%

Charas - Resin — 40%

Hashish oil — most toxic — 60%

Cocaine (Aphrodisiac, Caution)

only local anesthetic ← is vasoconstriction

Contact dermatitis

Bitter taste

method of drug abuse → Snorting

effect lasts for 1 hr

Not sniffing

goes inside nostril & roll

Δ⁹ - Gold chloride Test

Black tongue & teeth

excited delirium

Nasal septal ulceration & perforation

Hallucination

mc - visual

≫ Tactile

Antidote

Amyl nitrite

also NTG Diazep

Cocaine Bug / Magnan's symptom

also by cyanide, H_2S

Formication → Insects / Insects crawling under skin

Crack → Cocaine + Baking soda

↓ most potent, smoked

Speed ball → Cocaine + Heroin

Strychnos nux vomica (Kuchila)

Seeds - Dog buttons → used to kill straydogs

Castor (Ricinus communis)

Alp - RICIN

Castor oil - Non toxic

FD - 8-10 seeds

Rx - Symptomatic

ABRUS PRECATORIUS

↳ Ratti wt 100 mg

Active principle - ABRIN

↓ Viper venom

Vasculotoxic

MLI ⟹ "Scis" — Needle

medicolegal importance

looks like Fang marks

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Strychnos nux Vomica → Strychnine | Brucine | Loganine

Inhibits glycine (⊖ interneuron) [Renshaw cells in ant. horn] → Excitation → FD – 1 crushed seed → GTCS → ↑ Blw convulsions

All muscles go for spasm at a time → Conscious ✓ tell end

Spasm of facial muscles → Risus sardonicus (Rictus grin)

Spasm of muscles of mastication → Trismus → lock jaw → late feature

Rigor mortis sets early passes off quickly → ↑ pm calorie

Rx – Diazepam, ~~Barbiturate~~

Strychnine → Opisthotonus (Backward arching of spine) | Emprosthotonus (Forward Bending) | pleurosthotonus lateral bending

CO – ⊖ Cyt a3, ⊖ Cyt p450

- ⓝ – upto 5%
- smoker – 10%

- earliest → Headache → Anemic anoxia
- 0–10% → No symptoms → Cherry red dilation
- 10–40% → mimics alcohol intoxication
- 50–60% → fatal death

Antidote → Hyperbaric Oxygen
only if ① CO > 40%
② Neuro/Cardiac Complication

postmortem → Bilateral symm necrosis & cavitation of Basal ganglia (globus pallidus + putamen)

Cantharides | Spanish fly | Blister Beetle

Rx – Cantharine → Aphrodisiac → ↑ sexual desire

Cf – ~~Strychnism~~ | scorpion, cantharides, phosphorous

① Blisters → CO
② Automatism → Barbiturates

methanol ← Necrosis of putamen (Bilateral)

Barbiturate → globus ca

CO → B

lenticular N = putamen + globus pallidus

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Double compounds of cyanide Not poisonous

Potassium ferrocyanide – Not poison

Cyanide ① Cyt ox inhibitor
Carbon anhydr.

Fatal dose – 100–200 mg
KCN – 0.2–0.3 g
FD – 2–10 min

smell → Bitter Almond → 20–40% Not perceive smell → dft X-Receive trait

Aldehydase (Immune to cyanide) → No symptoms

Cyanosis → Late feature [35% CarboxyHb]

Hydroxo Cobalamine → Drug of choice

Hypoxia's → dft cyanomethHb → Bright red / Brick red

Stomach mucosa – Black

R. ① ELI LI'S KI:
Inhalation → Amylnitrite
IV → Sod. thiosulfate
② Hydroxycobalamin
→ Sod. nitrite IV
→ dicobalt acetate
→ PAPP – para Amino propriophenone
→ Vit B_{12}

Sewer gas → CO_2, H_2S, methane

H_2S → Closed space

Antidote:
Amylnitrite + sodium nitrite

Closed space → mixing household detergents

Japanese Detergent Suicide Technique

Inside Room – Mix two detergent

Chasing the dragon – Method of inhalation

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- Amanita phalloids Death cap — Antidote
  ↓
  Benzyl penicillin

- Amanita muscaria (Fly agaric) — Antidote
  ↓
  Atropine

Speed ball refers to — Heroin + Cocaine

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slang words

- Speed ball → Heroin + Cocaine
- Crack → Cocaine + Baking soda → Smokable form
- Hot shot → Heroin + strychnine
- Micky Finn → Alcohol + chloral hydrate (Dry wine)
- Angel dust → phencyclidine PCP
- Liquid gold → Amphetamine
- Ecstacy → MDMA → methylene diamine meth-Amphetamine
- EVE → MDEA → E-Eth
- Love drug → MDA → methylene diamine Amphetamine

γ-Hydroxy butyrate
Ketamine
LSD
methamphetamine
methcathinone (Mews meow)
← Rave drug

Not used for therapeutic purposes

Designer drug (Rave party drugs)

LSD – mind expander

(Croton tiglium) Croton

A/p – Croton
FD – 4-5 seeds
Croton oil – Toxic

Tox albumin
Ricin | Croton | Abrin
↓
Ag reaction – Hemolysis (Nausea, vomiting)

ASV

Liquid | Lyophilised

Liquid → 2yr ← Shelf life → 5yr

Cold chain ✓ | Cool place

NT → Cobra → Neostigmine (Blood Resp. fast) — Not in Kraits

pretreat with Atropine → To counteract cardiac effect of Neostigmine

Symptomatic Rx

Heroin | smack | Brown Sugar

Diacetyl morphine – Synthetic derivative of Morph

↓

Designer drug

IV | Shot

Hot shot → Heroin + Strychnine
- To kill a person
- Instant death not even remove needle

Shooting galaxy –

↓

Legalised place where Heroin is injected

Chasing the dragon

Stupefying agents (stunned)

Dhatura | Cocaine | Cannabis

Datura seed | chilli seed

Embryo

single Fruit clusters

Formication – Insect
- Cocaine – magnans symptoms
- Amphetamine → meth mite
- Ergot – St Anthony's fire ↓ ~ sciatica
- As

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Magistrate Inquest

Judicial — JMFC, CJM

Executive — DM, ADM, SDM, DC, AC, Tahsildar, Dy. Tahsildar

DM - District magistrate
ADM - Addition DM
SDM - Subdivisional
DC - Distn collector

- Death in police custody
- Police firing
- Police interrogation
- ~~Death in police custody~~ on ~~travellers~~ in prison. Rape in custody

→ Enquiry by Judicial Magistrate

- Exhumation ← Executive magistral / Tahsildar / (on subdivisional magi. (on collector = District mag)
- Death in psychiatric hospital
- Dowry death → 304 b IPC

death → pm conducted by 2 medical officer

C. in 7yrs after mrg by burns, unnatural causes, she is subjected to cruelty before death by husband or his relatives, women has to die on the acc

Min. Imprisonment - 7yrs

If mother in law kills her → then its murder → life time imprisonment

Dowry prohibition act (1961) — punishment → 5yr + 15,000/- + Return dowry

Offence

- Cognizable → Can arrest C out warrant
- Non Cognizable → cannot arrest C out warrant

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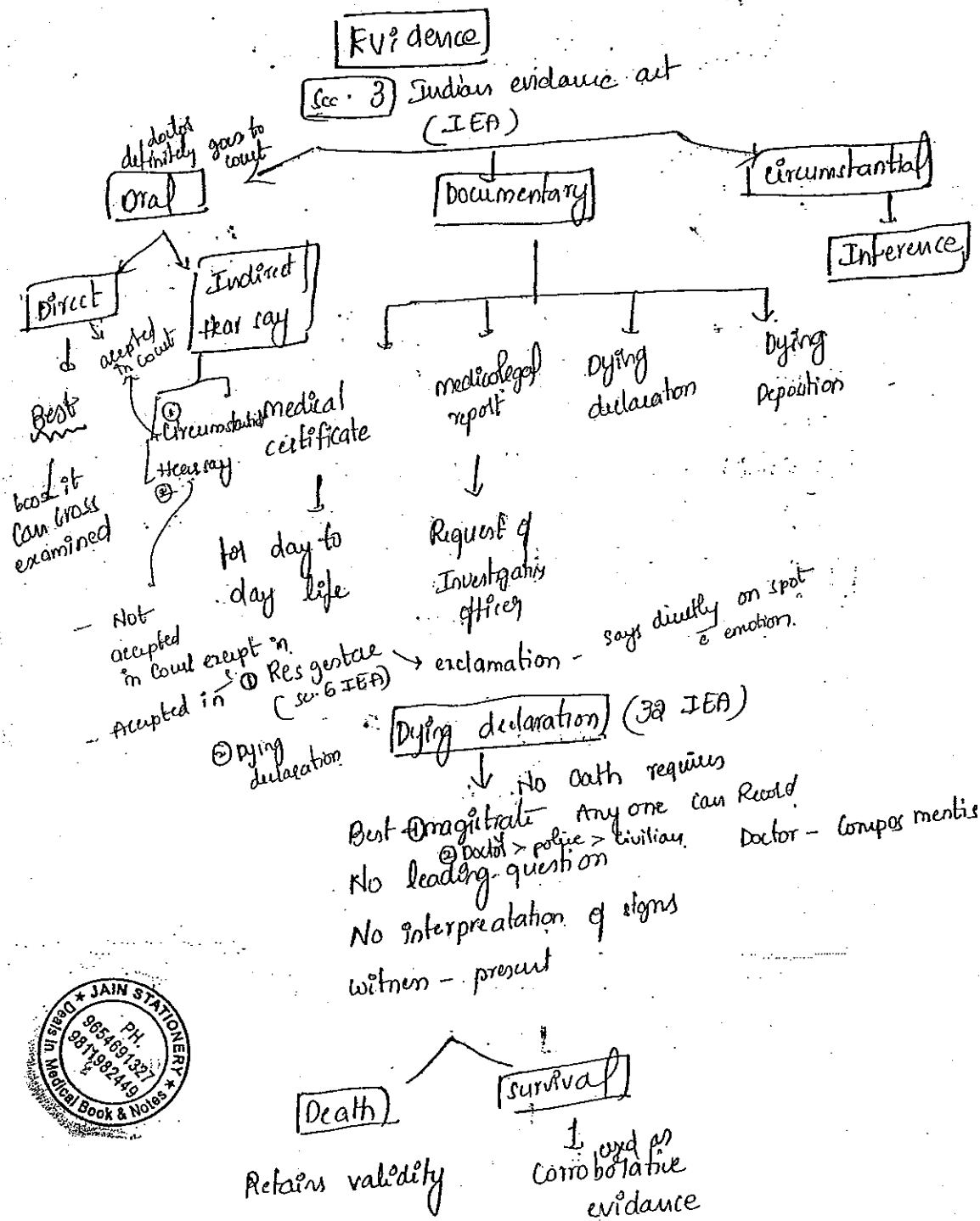
All of following are cognizable offence except

Rape

Dowry death

~~Suicide~~ (Attempted suicide)

Ragging



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Criminal courts in India

Punjab, Haryana — same High court
Assam — No High court

Supreme (1) (India)

High (24) (State)

Session (District)

Asst. session

All powers

All powers

upto 10 yrs
unlimited fine.

No trail
only appeal

Death sentence
Unlimited imprisonment

Should be confirmed by High court → It can give or not give. → lowest court that reduce/comm death sentence

Judges

Amnesty (president of India) → Totally forgive

magistrate's court

* Judicial magistrate second class
JMSC

JMFC
First

CJM
Chief JM

1 y

3 y

7 y

5000/-

10,000/-

unlimited

Prior to 2006
1000 ↓ → 5000/-

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minimum level of Court which can pass death sentence is

Session Court – principal

~~Additional~~ Sessions Court

Juvenile Justice board → max. 3yr imprisonment

↓

3 members

- JMFC preferably female
- Female social worker (Must)
- Male social worker

Except 16-18 y. involved in heinous crimes.

↓

Tried as adult

↓

a crime min. imprisonment > 7yrs

Juvenile offender – ≤ <18yrs

Inquest Enquiry in cause of death

- Police 174 CrPC → ≥ min. rank – Head constable (for medicolegal autopsy min rank – Sub inspector)
- magistrate 176 CrPC → Executive / Judicial
- Coroner → Abolished (not in India now) — 1978 – Kolkata, 1999 – Mumbai
- medical examiner → U.S.A → Best
- procurator Fiscal → (Not in India) → Scotland

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Dying deposition → Not followed in India

Magistrate
Oath
Accused / third party

only outside court everything should be done

Cross examination — Examination in chief — Reexamination

So its better than declaration i.e leading Question allowed

Death → Retains validity
Survival → Retains validity

perjury but at end truth → only will (193 IP punishment)
perjury

prosecutor

Doctor 91 both common & Expert witness

Witness

Common / Ordinary (First Hand knowledge) Rule → perceiving by senses

Expert (45 IEA) → eg Doctor to give pm Report

Hostile (154 IEA) → Gives evidence against the interest of the party that cited him as witness

False statement under oath perj

Contradicts statement

prosecutor can ask leading Question

Ex. in chief | cross exam | Re ex

Summons 61-69 (CrPC)

Civil — criminal

Compulsory appearance

Non-attendance

punishable

174 IPC

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Attending to summons

Higher > Lower.

criminal > civil

If same level

Received early > Received late

Summons | Subpoena (under penalty)

Subpoena Ad Testificandum (Testify) → Oral evidance

Subpoena Duces Tecum (Document Testimony) → Production of documents

Summons

Civil → Conduct money → Given by the party calling the witness

Criminal → Diet money, Travelling Allowance & Daily Allowance → Given by govt (court)

Summon (61-69 Cr.P.C.)

↓

Not go in 1st, 2nd

↓

Then Notice (Sec 350 Cr.P.C.) is given

Person has to show (cause) also

↓

Bailable ⟵ Non bailable

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Perjury - 51 IPC → (<19yrs) Not required

Oath
- Theist (Belcive in god) (Book)

Solemn Affirmation
- Athiest (don't belcive in good)

Lie

perjury

- Definition → 191 IPC
- punishment (≤ 7yrs) → 193 IPC –

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Recording of evidance

- chief Examination → Same lawyer
- cross (No time limit) examin → opp. lawyer
- Re examn → same lawyer
- Re cross examn → opp. lawyer
- Court Q → Judge → ask Q at any time at any time

No leading question – unless witness become Hostile

Yes | No

Sec. IEA. Sec. 141 → Judicial evidance act

Identification

Cephalic Index ← Skull

↓

max. breadth / max. length × 100

- Dolichocephali → CI – 70–74.9 → Negroes, pure aryans
- Mesaticephali → 75–79.9 → Indians, Europeans, Chinese
- Brachycephali → > 80 → Mongolians

Corpus Delicti
⇓
Body of offence / essence of crime

Craniosinostosis
⇓
premature closure of

- Saggital → Scaphocephaly (elongated)
- Coronal → Brachycephaly (transversely elongated)
- Metopic → Trigonocephaly (Trigone)

Race =

- Mongoloid
  - shovel shaped incisors
  - Taurodontism / Bull tooth [wide & deep molar pulp cavity]
  - Long pointed canine
  - Enamel pearls
  - frequent absence of 3rd molars
- Caucasoids → Carabelli cusps
- Negroids → Distinct femur (less curved)

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Hair

Animal → Thicker medulla
M.I > 0.5
Scales: cortex, medulla, cortex, scales

Human – Scale pattern Morita type VII
↓
Thinner medulla
M.I < 0.3 = Diameter medulla / Diameter of whole ×10

M.I – Medullary Index

Continuous → usually in mongoloids / Caucasian / Caucasoids

Fragmented pigment (unevenly distributed) → Negroids Caucasians

Absent

Sex determination of an athlet ∈ disputed sex in olympics is done by
- Actual examination of genitals
- Nuclear sexing study
- Harmone studies
- All of above

sex from bones can be assessed only after puberty
⇓
Exception – Greater sciatic notch
⇓
can be differentiated even in fetus

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Identification
① Species → ppt test, Hair
② Race → Hair, Teeth – mongoloids → Chisel shaped Incisors, Carabelli's Cusp → extra cusps more in Caucasoids not mongoloids, molar 4 cusps, Absence of 3rd molar; extra cusps more on lingual aspect; Skull

Gender → sternum → **Ashley's rule**

sternal index	♀	♂
Manubrium / Body	0.54	0.46

length of manubrium + body

- male → > 149 mm
- female → < 136 mm

Gustafson's method (only in dead individual)

- A — Attrition
- P — paradentosis — loosening of tooth (only before extraction)
- S — secondary dentine → 2nd most Reliable
- R — Root resorption — most difficult to recognise & assess
- T — Transparency of root — Best criteria / most reliable
- C — cementum apposition

Last reliable

Used b/w 25–60 yrs

Anterior teeth > posterior teeth

C, T is Best, 3rd molar worst

Central Incisors

Temporary teeth — 1st temp erupted – lower Inc (6–7 mm) — last – Mx 2nd and lower (20–

I	C	P	M
2	1	0	2

= 2

Common location of Supernumerary teeth – Central Incisors

primary dentition – 5 in each quadrant – total no of teeth – 20

successional teeth – are teeth which replaces primary teeth

Incisors to 2nd premolars

Superadded teeth – which doesn't have predecessor teeth

1st 2nd & 3rd molars

I	C	P	M
2	1	2	3

permanent

mc extra teeth – upper central incisors

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M F E B B C M M

Mummy Is Sin Bed Baby cries moth milk

1st molar | central incisor | lateral incisor | 1st bicuspid premolar | 2nd premolar | canine | 2nd M | 3rd molar

6-7y | 7-8 | 8-9 | 9-10 | 10-11 | 11-12 | 12-14 | 17-25

outside of temporary teeth

upto 6yrs only primary dentition - 20
└ central & lateral incisor

1st molar → from age of 6 ⇒ 24

period of mixed dentition - 6-11 yrs
└ Total no. of teeth - 24

9 yr old child → Permanent teeth = 3×4=12
Temporary teeth - 24-12=12

M I I | B
6-7 | 7-8 | 8-9 | 9-10

30m - 2½y ⇒ (20)
6y+4 ⇒ 24
12y +4 ⇒ 28
18y + 4 ⇒ 32

M I I B | B

10yrs = 16
4×4=16 permanent
24-16 = 8 temporary

Permanent teeth = (Age - 5) × 4 (PT)
Temporary teeth = 24 - PT

formula used in 6-12yr only

Teeth erupt always raw

Charting of left lower canine in all except

? at an yr - if no ans

Permanent Teeth — (Age - 5)4

formula used in 6-12y

Temporary

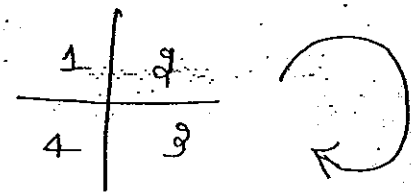
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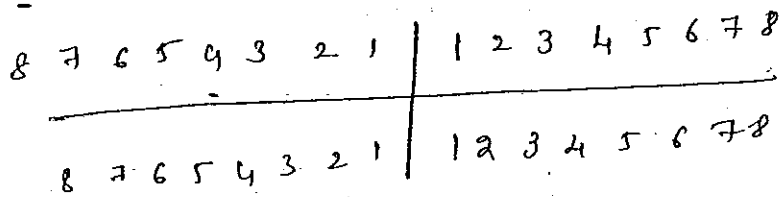
FDI Formula

French Dentine Internationally

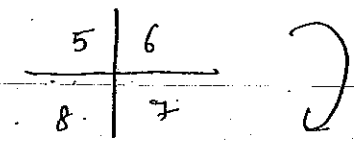
permanent teeth



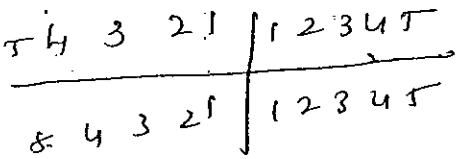
Teeth number



Temporary teeth



Teeth number

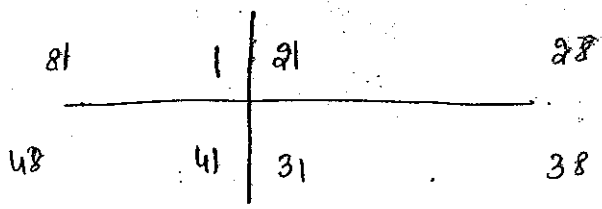


Numbers as — Quadrant no. followed by tooth No.

FDI — 34 — lower left 1st bicuspid

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permanent

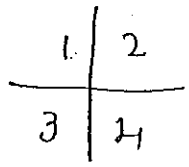


Temporary

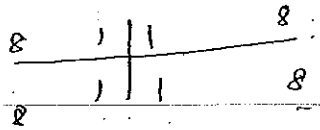


MFDI formula

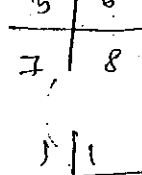
For permant teeth



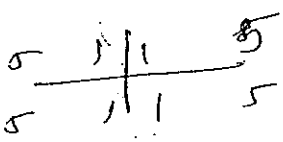
(2)



Temporary teeth



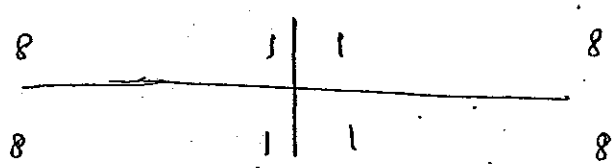
(2)



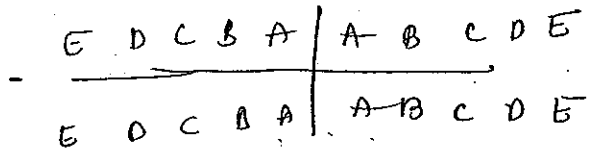
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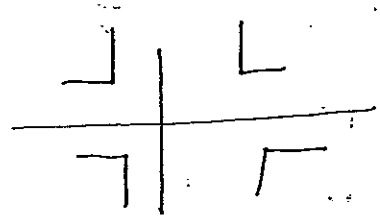
Palmer's notation

permanent teeth



Temporary teeth

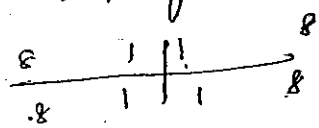


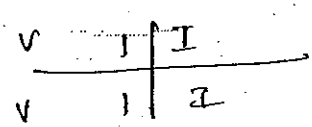


4⌋ → upper right 1st bicuspid

Zygmondi's method

similar to palmar's but Roman number for temporary teeth

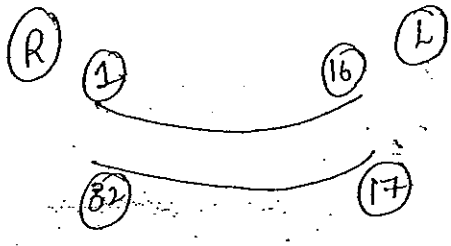
permanent 

Temporary 

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universal system

Permanent



Temporary

mid sagittal plane

R	A B C D E	F G H I J	L
	T S R Q P	O N M L K	

Haderup system

permanent

E.	D.	C.	B.	A.	3.	2.	1.	+1	+2	+3	+4	+5	+6	+7	+8
								-	-1	-2	-3	-4	-5	-6	-7	-8

Temporary

+03	+02	+01		+01	+02	+03	+04	+05
02	01	-		-01	-02	-03	-04	-05

Fingerprinting
- discovered by - Sir William Herchulle
- systemised by - Sir Francis Galton
- improved by - Dr. Henry deforest

1st used : criminal case

Vaultech
↓
Und

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To make positive identification ∴ help of partial finger print, the point of similarity should be at least

→ 8 (or) 10-12 (or) varies from country to country

(2) (3) (1)

Most common pattern of fingerprint — (1) Loops
(2) Whorls 25%
(3) Arches 6-7%
(4) Composite or mixed 1-2%

Which finger is not used in finger printing
— Little finger not used in finger print reader

Fingerprints

Invisible / latent / chance
↓
most common

visible / patent

plastic
↓
soap, cheese etc

Locard's method / poroscopy — for fragmentary fingerprinting
⇓
study of opening of the sweat duct
Each mm of ridge contain 9-18 sweat pores

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Suzuki's classification of cheiloscopy.
lip prints – 6 types

Rugoscopy – study of palate – by Harrison Allen

↓
Anterior rugae is preferred

- primary – 5mm (or) more
- secondary – 3-5 mm
- fragmentary – < 3 mm

- Ideal depth for permanent tattoo – Superficial layer of dermis

Tatto marks

- Ideal depth → Superficial layer of dermis
- Revealing latent tatto
  - Living → U.V rays
  - Death → Regional LN biopsy
    - ① pelvis
    - ② sternum
- Laser → Best method to remove

Gender – Bones – Best bone – ① pelvis

♀
- wide inlet
- shallow
- wide outlet
  - Sub pubic Angle – obtuse
  - Ischial tuberosity – everted
- Chilotic line
  Pelvic part >> sacral part
- preauricular sulcus – prominent
  ↓
  bicos attachment of anterios sacroiliac ligament

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Criminal responsibility

< 7 yrs	7 to 12 yrs	< 18 yrs	> 18 yrs
82 IPC	83 IPC	Juvenile	
Not liable	Depends on mental maturity	max. 3 yrs Except in Heinous crimes	Fully responsible

Best method for age 20-30 yrs = pubic symphyseal changes

Estimation of gestational age by Crown Heel length CHL

Rule of Haare
↓
H < 25 cm
↓
$\sqrt{CHL}$

Morrison's Rule
↓
H > 25 cm
↓
CHL/5

↘ ↙
Gestational age

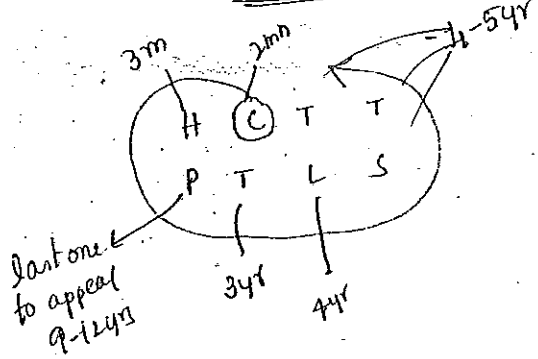
Exception — 9 months → 9 cm

Caupal bone

appearance of ossification centre of Sternum ↓

- 5m IUL → 60-70 yrs
- 2 yrs: 0 - 5m IUL
- 0 - 7m IUL
- 0 - 7m IUL
- 0 - 10m IUL.

Fusion of ossification centres 14 yrs → 34 yrs → 40 yrs



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Bone	multiplication factor
Femur	3·7
Tibia / fibula	4·5 (3·7 + 0·8)
Humerus	5·3 (4·5 + 0·8)
Ulna	6·1 (5·3 + 0·8)
Radius	6·5 (6·1 + 0·8/2)

3·7-6·5 ∴ Kati's pearson coefficient

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Hepburn osteometric board – To estimate length of long bone

– Length of humerus × 5·3 ± stature

→ ~~Female~~ Males →

study before exam

Head of Humerus ↑ fusion 18-19 → knee

Head 17-18 femur

18-20 Iliac crest

Hip

Ischial tuberosity 20-21

Elbow

16-17 → ankle

17-19 ♂ | 18-20

♂ Iliac crest – (A) – 14 yrs ♀ 14y
(B) – 18-20 yrs 17-19

" tuberosity – (A) – 16 yrs 16y
(B) – 20-21 yr 19-20y

20-22 clavicle Inner end

for ossification ≠ Not for appearance

In case of females – subtract 1 year

age
- 2° sexual characters – Tanner's (Sexual maturity Rt.) SMR
- Dentition → 14yr → Head - Humerus / Femur; Capitulum lower end - Tibial fibula
- ossification centre – 1st o/c → Clavicle – 4th–5th ♂ ♀ IUL; mandible – 6th wk IUL; Calcaneum – 5th m IUL; Talus – 7th m IUL; lower end femur – 9th m IUL Just before birth

appear at birth
① Cuboid
② upper end tibia
③ 4th part body of sternum

Period of viability

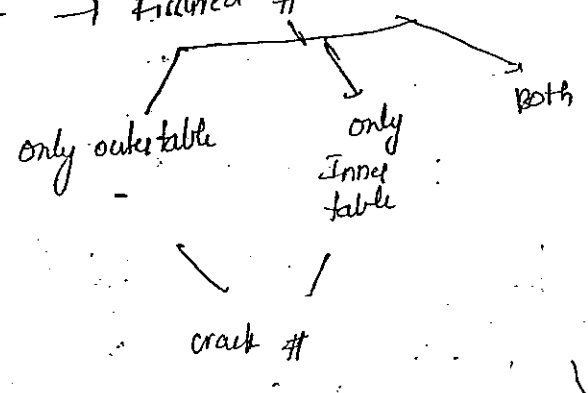
Regional Injuries

R.T.A & Thermal injuries

Most fragile bone of cranium — Temporal bone

min force required to pierce skull — 70 Newton
Con to # skull

Commonest # → Fissured #



may # Radiating from single point — Radiating #



Comminuated # → 
Con spider web #
mosaic #
multiple # lines ∴ fragmentation of bones

Depressed # / signature a-la # → Heavy weapon ∴ a small striking surface Eg - Hammer

Elevated # → A hit on head
Tangential impact from a heavy sharp object

pond # / Indented # → New born / Infant → Elastic bone

Cutter # → Glancing bullet injury

Blow out # → # of orbital wall but rim is intact
caused by object larger than the orbital aperture

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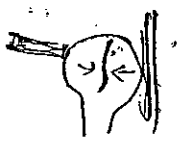
Sutural / Diastatic # → Common in young adults
↳ sutures are not fused completely
↳ Usually involves sagittal

Expressed # → shattered skull

Penetrating # → into cavity

perforating # → wound of entry & exit

Polar (Bursting) # → # not at site of impact but away from it
↳ fissured #



Ring # → # around foramen magnum

Hinge # / motor cyclist # → Horizontal # passing through sella turcica
↳ MC

Type I
II
III

Cerebral injury
- stationary Head → Coup injury → At the site of impact
- movable Head → Contre-coup → opp. side of impact
- movable Head → Intermediate Coup → b/w coup & contrecoup

Frontal (> rough) MC
occipital (smooth skull) least common

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Boxers

SDH → mc H'ge

Boxer's # → metacarpal #

Bonn's hemorrhage → pontine Hemorrhage — Not SDH

~~Intracranial~~

EDH → mc site – rupture of middle meningeal artery

↓

Temporoparietal

Lucid interval seen — EDH — Always traumatic

mcc = Ant. br. of middle meningeal artery Rupture

- Tentorial coning of Jefferson (Images) → uncal herniation
- cerebellar coning of Cushing (Images)
- Kernohan's Notch
- Duret H'rhages (Gliding contusion)

plaque Jaunes – old healed cerebral contusions

Incidental finding on PM

SDH

Commonest source → Bridging veins

spontaneous/traumatic

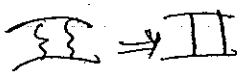
common in

- old age → cerebral atrophy
- Alcholics → cerebral thinning
- child abuse → SBS (Shaken baby Syndrome)

Increased SD space

↓

Tortous blood vessels become taut



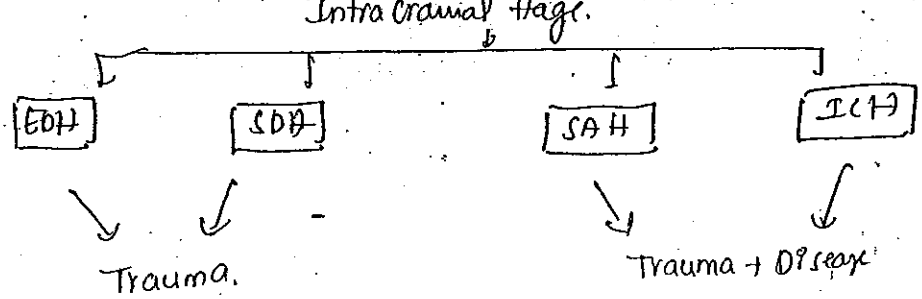
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SAH > SDH > EDH

→ SAH — Traumatic | Spontaneous → Berry's Aneurysm

→ Intra cerebral Hage

→ Pontine Hage



Glangow | Chelsea smile or

glasgow | chelsea | cheshire grin Buck 50 injury

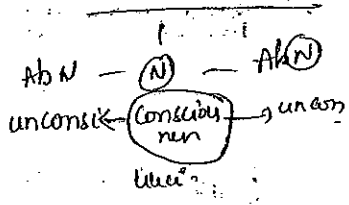
⇓

Requires 150 stitches

Manner of 'Bobbitising' is → Homicidal

Bobbitt syndrome → Cutting of male genitals

Lucid interval



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RTA -

Pedestrian injuries

- primary impact injury → Initial impact → Bumper impact → Bumper # → Tibial - mc, Wedge shaped #, pyramidal #
  - Ortho: # medial condyle of tibia
- Secondary impact injury → Falling over (same) vehicle
- Secondary injury (on 2° impact injury) → Falling over the ground / Another vehicle
- Run-overs → 2° inj → Tyres passing over

Injury caused by same vehicle even after ground - 2° impact

c loss - 2° impact injury not occur

Rolling injuries - vehicle passes over the body & touches it
Hit by a vehicle of low chassis

Sparrow feet lacerations / Dicing injuries / Windshield injury ⟹ Wind shield breaks & dices on face
↳ on driver & front seat passenger

Whiplash injury → Caused by Hyperextension followed by Hyperflexion of cervical spine (MC danger)
- partly Hyperextension → Hitting from back → Hyperflexion followed by Hyperextension of cervical spine
- Hitting from front → Hyperextension followed by Hyperflexion of cervical spine

see

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Whiplash injury → dlt tear of Anterior longitudinal ligament

↓

most common in front seat passenger than driver bcoz driver is more alert

Ladder tears → Transverse & multiple intimal tears of aorta
→ dlt acute hyperextension of back causes stretching of aorta
→ MC in drivers

Seat belt injury → Sternal # | lumbar spine # | AIT tear

Compressive force
- Driver: seat belt ~ lt → Spleen
- Front seat passenger: seat belt - Rt → Liver

Deceleration force
↓
Mesentry & small intestine
↓
MC organ involved

If belt around abdomen → flexion of upper body, contact of lower body
↓
flexion distraction injury

Tail gating → Decapitation of motorcyclist dlt. impact into heavy vehicles from behind

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Hypothermia -

mild Body Temp < 35°C → Hypothalamus → Vasoconstriction, shivering ↳ Blood from periphery to centre to ↑ core body T

moderate shivering stops at 32°C

Hypothalamus regulation fails at < 30°C

Foetal hypothermia ← severe T < 28°C

Wischnewski spots / Ulcers // stomach

Fat necrosis of pancreas

paradoxical undressing, hide & die syndrome

pm findings

Hypothermia → (N) vasoconstricts

↓

Failure of hypothalamus (< 30°C)

↓

Reflex vasodilation (core) Centre to periphery blood flow

↓

warm feeling

↓

Removal of clothes ← paradoxical undressing

↓

Tend to hide in enclosed spaces → to- some sexual crim

Terminal stages → Confused state (animals like)

↓

Death d/t hypothermia

↓

Hide & die syndrome	Terminal burrowing behaviour

. Heat stroke
Op poison
opium
pontine Hg

CF of heat stroke

① Temp ↑↑
② absence of sweating
③ pinpoint pupil
④

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Definite signs of death dlt burns

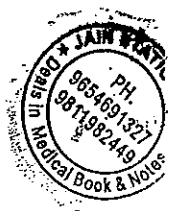
Am Burns

- Soot in trachea
- Blister [Albumin (exudate), chloride] * Red line.
- Cherry red discoloration
  - ↑ Carboxy Hb < >10% – Smoker
  - >30%
  - >5% – Normal

Burns → 144°C → 6 hrs
→ 65°C → 1 sec

pm blisters contain gas

Mcc of death in burns – Secondary shock
Not sepsis



Cause of death in burns

- Immediate → Neurogenic shock
- Early < 48 hr → Secondary shock (Hypovolemic shock)
- Late > 48 hrs → Sepsis

Pugilistic Attitude → Seen in both Antemortem & postmortem burns
- min temp required is 65°C
- universal flexion except paraspinous muscles
  - Extension

Fencing posture (or) Boxer's attitude

Systemic effects → dlt coagulation of muscle proteins

Body
- (1) Heat cramps / mine cramp — sweating, vasodilation by Hypothalamus
- (2) H. Syncope / H. Exhaustion / H. prostration → ↑ vasodilation ⇒ ↓ venous return ⇒ ↓ Hypoxia ⇒ syncope; sweating by Hypothalamus
- (3) H. stroke / sunstroke → >41.5°/106°F ⇒ Hypothalamus (X) ⇒

Crow-feet sign

Sparing of deposition of soot at eye creases

↓

person was aware at the time of burns

(Antemortem burn)

In unconscious pt's — it is not seen

Inhalation burn

↓

Inhale the hot air

↓

Hoarseness of voice

Hypoxia

Nitrous dioxide — yellow sputum

PM Burns → appearance → Heat rupture / fissure ⟹ No injury to BV

margins are irregular ↓ similar to laceration ↓ Injury to BV — differential feature

No contusion

Neurovascular bundles intact

PM Burning → Heat hematoma ~ EDH

d/t rupture of dural venous sinuses bcoz of heat

It mimics extradural hematoma

chocolate brown in color

penetration of gases → Honey comb appearance on cut sections — bcoz of collection of air

cherry red if carboxyHb > 30%

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pm Burns → Heat # → Cross suture line

Bursting # (Skull) → steam pressure

Surface # → Rapid drying & contraction of both side of knuckles radiating upwards crosses the sutural line

Curved # / Street & Avenue # → Bone extremities

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Electrical burn / Electrution

Wound of entry — Joule / endogenous burn — Central depressed area & elevated margin

MC of death — Ventricular fibrillation

HPE — ① Streaming of Nuclei ② Vacuolisation of cells

Most dangerous path ① Head — Brainstem ② Lt hand to Rt feet — Heart (VF)

Metallisation — To see ↓ site of entry of current

Miniscule amount of metals impregnates skin at site of contact

Most resistant body tissue to electrical injury

Dry skin > Bone > Tendon > Fat > Skin > muscle > Nerves > Bl. vessel

High voltage current → Crocodile skin flash burn (or) spark Burn

Palisading appearance — Elongation of cells
Streaming of nuclei
Vacuolisation

Lightening

Filigree burn / Arborescent / Lichtenberg's flower

Keeranographic burns (or) Feathering

Heme component

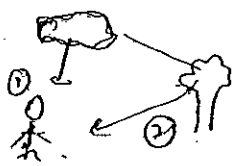
Inverted fir tree appearance

Infront of lightening (or) ④ expansion force

③ Below lightening → Compressive force

MC site — shoulders ↓ flanks

Mechanism of injury
① Direct strike
② Indirect strike



Mechanism of lightning flash

① Direct effect of electric burn

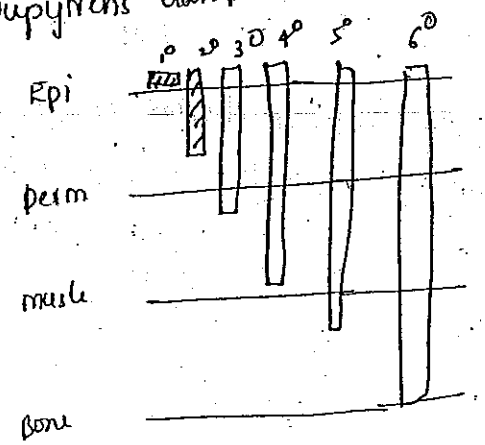
- Superheated air
- Expanded & repelled air
- Compressed air pushed before the current

Medicolegal nature of injury

- Necessarily fatal → person has to die
- Sufficient in ordinary course of nature to cause death → Recovery is surprising or survival
- Likely to cause death → death is surprising

⇒ 1/3rd surface area of body

Dupytren's classification for Burns



Wilson classification for Burns

1° + 2° ⇒ Epidermal

3° + 4° ⇒ Dermo epidermal burn

5° + 6° ⇒ Deep burn.

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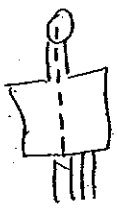
Medicolegal Autopsy

Medico-legal ← Autopsy → Clinical / Academic / pathological

Autopsy →
- (25%) Negative → Inexperience of doctor → No findings → ⊖ Result, ⊖ COD
- obscure → minimal findings → no correlate c/ cause of death, only physical examination → ⊕ HPE, ⊕ Viscera, ⊕ Biochemical evalu.
- Virtopsy → virtual autopsy → Imaging Technique → Non/min invasive
- psychological → suicide → Assessment of mental state before death → suicidal cases
- by pathologist, Consent must

Skin Incisions at autopsy

- I-shaped → Routine → Symphysis menti to rt pubis
- Y-shaped → Mouth moustache to suprasternal to pubic symphysis → - Asphyxia, - Neck injury
- Modified Y-shaped → Both acromion, Below Breast, Xiphisternum, pubic symphysis → Cosmetic in females
- X-shaped → Suspected torture → wrist to knee front & back
- Coronal → Head → mastoid to mastoid



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Body cavity to be opened first

- **Routine cases** → choice of dissector
- **Head injury** → Head opened first
  - Cyanide → Bitter smell
  - Narayan reddy Book
  - Asphyxia
  - Head injury
  - poisoning → To appreciate smell of poison. If we open other cavities this smell will mix.
  - ⊗ specific
  - Skull opened first
- **Air embolism** → Chest
- **Neck injury** → Head-Thorax & abdomen
  - Bloodless dissection of Neck → Last-Neck
- **Fetal autopsy** → Abdomen → Level of diaphragm (Infanticide) → To determine live birth (or) still birth

ethanol - fruity
cannabis - Burntrope
Nitrobenzene - shoe polish
H_2S - Rotten eggs
As - Garlic
Op - Gallic / kerosene

Techniques of autopsy — For Internal organs

- **Letulle's** → en masse removal → eg- entire intestine as single mass → Medical college
- **Ghon's** ~~In Block~~ → Block by Block → eg- genito urinary
- **Virchow's** → organ by organ → MC
- **Rokitansky's** → In situ dissection → everything cut dissected left inside the body → Infected HIV / Hberg Fetopsy

Chloral Hydrate / paraldehyde → Acrid pears like smell
Conium (Hemlock) → Carrot smell

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Spinal cord

Routine cases → Not opened

It opened → posterior approach → Best

It opened → Anterior approach → Common

Heart → As per direction of flow of blood (Inflow–outflow technique)

↓

first – R-atrium

At autopsy stomach is opened along greater curvature from cardiac to pyloric end.

Embalming

Body → Typical Embalming fluid → formalin (40%) → main constituent

closed cavity → Formalin, methanol, phenol → preservatives, germicide

Ethanol is not used for embalming.

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Necrophilia

Embalming

Without death certificate → 201 IPC → Disappearance of evidence

Without consent → 297 IPC → Indignity to Human Corpse

Poisioning

In All poisioning → Routine viscera 1 to 7 organ

Fat, Vitreous humour → Alcohol, chloroform

CNS, spinal cord - CSF, Cardiac, Lung

1. Stomach + call its contents
2. Intestine (prox - 30 cm) → preserved
3. Blood → 30 ml - Ideal, min - 10 ml
4. Liver 1½ kg → Blood
5. Kidney ½ each → Urine
6. Urine → max should preserved
7. Spleen

Fat → Abdominal fat → Pesticides

Fat → mesenteric → Volatile Anaesthetics (or) Inhalational

preserved organs — Stomach, Intestine, Liver, Kidney, Spleen

Cavities — Blood, Urine

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Digoxin — Heart

Strychine — Spinal cord

Alcohol — CSF | vitreous | Blood | urine

Inhalation anesthetic agent

2gm — Lung — in nylon bag; Mesenteric fat — agents affinity to fat

Im injection — Anaphylaxis — site of injection

Drugs that excrete through gall bladder + Bile — morphine, Barbiturate

Cocaine — Nasal swabs

preservatives used

- Chemical analysis
  - Rectified spirit (costly)
    - 90% alcohol
      - Not used in Alcohol → NaF
      - Acetic acid
      - phenol
      - Paraldehyde
  - Supersaturated NaCl
- Histo-pathology
  - 95% alcohol
  - 10% formalin

Best

NaF → 100mg/10ml of blood

Commonly used.

Preservatives used (chemical analysis)

① Blood / vitreous
- NaF
  - 10mg/ml
  - enzyme inhibitor (enolase)
  - prevent glycolysis
- Blood from femoral vein

② Urine
- Thymol, PMN – phenyl mercuric nitrite
- NaF
- Toulene – Best
- only NaF in
  - A – Alcohol
  - C – Cocaine
  - C – Cyanide
  - C – CO

③ Blood – DNA
- EDTA | Heparin

Tissues in 80% glycerol
- for DNA
  - TSD < 1wk
    - ① Blood >
    - ② plucked hair >
    - ③ Spleen
  - TSD ≥ 1wk
    - Blood
    - Hair
    - Brain > muscle

④ Blood culture
- Sodium polyanethole sulphonate (SPS)
- Blood from at heart

⑤ Enzyme
- Liquid N_2 in Thermal Flask

⑥ muscle for DNA
- Dimethyl sulphoxide (DMSO)

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⑦ Virus → 80% glycerol, 50% for Negri bodies

⑧ Gastric lavage → Alcohol

9) Lung for inhaled poison → kept in nylon bag, No preservative → in alcohol, HCN, CO poisoning

Long 8)

Bitten fruit found at crime scene. preservative is

Bite marks ← saliva

① Na metabisulphite — Best → Campdens solution

③ Formalin

② Formol Acetic Acid (FAA)

Exhumation (Disinterment)

For exhumation it can be ordered by

Executive magistrate → usually

Judicial magistrate

Exhumation usually done in early morning

No time limit

The amount of soil to be collected at the time of exhumation is about - each sample - 500gms

Total 6 sample ← mandatory

- above, 2 lateral side
- below, Head and toe end
- + a sample → from soil away from body

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Prinsloo - Gerdes artefact → Beneath ecophagies
in neck Compression

Best test for blood

- Screening → phenolphthalein, Kastle meyes test
- Confirmatory → Spectroscopic examn
- Grouping in old stains → Acid dilution, Absorption elution, Latte's cruit method
- Age of the stain → Immuno electrophoresis
- washed blood → Luminol spray

Human
- Non Secretors → 20%
- secretors → 80% → Secrete ABO antige in all bodyfluid except C.S.F

Blue white color in UV rays seen in semen

Sperms → motile in vagina usually 6 hrs, rarely upto 12 hrs

DNA fingerprinting
- done on Nucleaur pattern - Nbt C RBC
- Identical twins have same pattern

DNA testing Best tissue sample is ① muscle previously ② spleen

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Thanatology :- study of death

44 IPC – ☆ Injury

45 – Life

46 – Death definition

51 – Oath :- Soleman affirmation

Concept of death –

Harward criteria, philadelphia protocol → Flat EEG mandatory → Brain death

minnesota criteria, U.K code → Flat EEG Not mandatory → Brainstem death

India follows – U.K code
↳ Brainstem death sufficient to declare person is dead.

Transplantation of Human organs act 1994
↓↓
Brainstem death

Persistent vegetative state
↓
PVS
↓
Cortical death
↓
EEG – No lines

Brain stem death
↓
EEG (N)
only on ventilator

Brain death
↓
PVS + Brainstem death

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Confirmation of brainstem death for organ transplantation – THOA 1994

- Treating doctor
- RMO / managing director of hospital
- Neurologist / Neurosurgeon
- Independent specialist

↓

Burden of proof

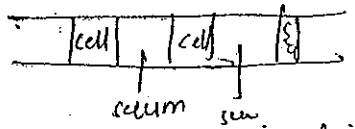
Urinary bladder not used for organ transplantation

Rail road phenomenon / Trucking

Cornea – hazy, 2 hrs after death

↑ K⁺ in vitreous humor

Eye →



Kevorkian sign — ↑ Trapping of blood in Retinal blood vessels

→ Taches Noir
↓
N pterygium

- After death if eyes open then deposition of foreign body on cellular debris
- 3–4 hrs after death

→ PM Cooling – Algor mortis →
thanatometer → chemical thermometer
↓ 25 cm – length
↓ 0 – 50°C

Recently – thermocouple – Digital reading

Ideal place to record – ① Rectum* (Not in sode)
② Int. surface of liver
③ Intraaural temp [TM]
④ Intranasal (cribriform plate)

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25/6. 7am Rft-31

1hr-10.5 ↓ 37-6°

T remain ↑ aft 24hr.

Sigmoid curve of cooling

No fall of T for first 30-60 min ? - 6°

↑ pm Calcicity

↓

① N-T ↑ 1st 2hrs

II

by 1-2°c

30-60 min → Heat stroke - strychnine - septicemia.

Rate of Cooling = 0.5°c - 1.5°c / hr

summer winter

$$\text{TSD} = \frac{\text{Normal body T} - \text{Rectal T}}{1.5^\circ F \text{ or } 0.8^\circ C \text{ (Avg fall of T / Hr)}} \star$$

TSD — Time since death

PM lividity / Hypostasis / pm staining / vibices / Liver mortis / suggilation / darkening of death

Dependant part ↓ depends on ① posture at the time of death

② Time since death.

Areas of contact — No staining — Areas of contact flattening

1st seen in the Neck

<6hrs / <4hrs Hypostasis shifts if we change posture of body

0-½ hr → No stain

½-2 hrs → patches appear

2-4 hrs → Patches coalesce

4hrs-6hrs → well developed

6-12 hrs → Fixes

③ Cause of death

Blanch test (+) → pm lividity Not fixed

If altered posit lividity not changed

lividity in agonal period may seen in case of — cholera — terminal stages CCF

pm lividity Not seen in case of ① Hb < 5gm% Anemia severe

② Bodies in running water

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Rigor mortis | — You have to feel it not by seeing
Cadaveric rigidity

Muscle stiffens and shortens

⇓

Depletion of ATP

⇓

starts when ATP becomes 85% of normal

↓

Reaches peak when ATP reaches 15% of normal

↓

Both voluntary (later) and involuntary (1st effected) muscles

↓

1st involuntary muscle → First occurs in heart (1 hr)

↓

Externally first occurs in upper eyelid (1st voluntary muscle)

Rigor mortis starts when muscle ATP reduced by 15% / 85%

- peaks

At time of death
100% ATP = Relax
↓ 1° flaccidity
↓
85% ATP — RM start
RM ↓
15% ATP — RM max, max sbl
↓
Decomposition
Autolytic enzymes
↓
Break bonds — !
↓ 2° flacc

→ No RM in fetus < 7m

Nysten's law

Shapiro's proximodistal progression
↓ Head to toe
Face
Neck
chest
UL
abdomen
LL

~~Shapiro's~~ proximo distal regression
↓ Head to toe
Face
Neck
chest
UL
abd
LL

Rule of 12
↓
12 hrs - to establish (whole body)
12 hrs - persist (max)
12 hrs - passes off

Death → 1-2 hrs starts → 12 hrs fully developed (whole body) ↓ 12 hr max ↓ 12 hr

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Sommer's movements — CS

‖ absolute diffract muscle → Supravital period

Change in position of limbs — Electric stimulus → (+)

dlt rigor mortis

RM

Cell death

(−)

Groups of Always Antemortem phenomenon → Cataleptic rigidity / cadaveric spasm / Instantaneous rigor

↓

only Group of voluntary muscle stiffens

— Instantaneous contraction → No 1° Hcl/di

No relaxation in this group

Conditions simulating Rigormortis (DD)

① Heat stiffening (>65°C) → pugilistic attitude (OR) Boxers attitude

Burns Antemortem postmort

Coagulation & proteins of muscle

↓

Flexors > Extensors (strongest)

② Cold stiffening <0

③ Cadaveric spasm

↓

Conditions required

Sudden death | Emotional tension | muscular activity (drowning)

④ Gas stiffening

↓

putrefactio

pm stainns

(N) – Bluish purple

Co – cherry red

CN – Bright / Brick Red

Lactates → Blue ← Aniline nitrite / chlorate – Reddish brown / chocolate brown

H_2S – Bluish green

Opium – Black color

Hypothermia – Pink

Am Hypotans

CCF

Cholera

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Putrefaction → Color, Gas, Liquefaction (5-10 days)

↓

cl. welchii – chief agent

- Lecithinase → Breaks cell wall → Hemolysis
  - Fatty alt death → loosening of hair/nail
  - easy peeling/stripping of skin
  - vesicles – air
- ↑ H_2S (Combustible gas) → +Hb, Hb
  - +Hb → Sulphmeth Hb → Greenish discoloration of inferior surface of liver (and internal sign)
  - Hb → Sulph Hb → marbling
- Gases collect in parenchyma of liver → Honey comb appearance (also in Heat hematoma)
  - Gas into dermo epidermal junct DEJ in skin
  - Foamy liver ← cl. welchii putrefaction

1st external sign

↓

Green discoloration in rt iliac fossa d/t sulfa Hb

↓

18 hrs after death

1st internal sign ← Lecithinase

↓

Reddish brown discoloration of intima of aorta.

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1st organ to putrefy – Larynx & trachea

last organ – Bone

Order of putrefaction

① Larynx & Trachea ⇒ G – GIT, P – pancreas, S – Spleen > L – Liver, L – Lungs > Brain > Heart > kidney, bladder > Prostate, Non gravid uterus > skin, muscle, tendon > Bone

Pink teeth → Seepage of Hb into the dentinal tissue

↓

1-2 wks after death

↓

More often in Hg immersion

↓

Not related to cause of death

Marbling — prominent in 36-48 hrs

staining of superficial network of venous system.

↓ ~~sulfa~~ Hb

Casper's dictum - Time taken for same amount of putrefaction to occur in

↓

Air, water, soil — slower

faster

1 : 2 : 8

COFEIN birth = postmortem delivery d/t putrefaction

postmortem luminescence - [growing of body after death]

photobacterium fischeri (MC) → Bacteria → main agent

Armillaria mellea → Luminescent fungi

Gas → ↑ Body — Abd. distension

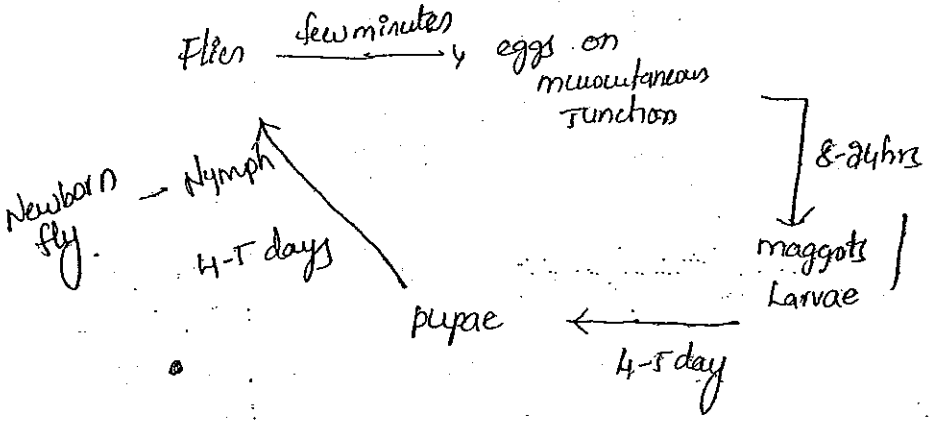
↳ Blood tinged fluid — Nostril, Oral cavity → pm purge

Putrefaction - Inhibited → burned depth > 2 mt

↳ Opt T. 25-38°c

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Entamology



pupae seen on dead body after - 5-6 days

Modification of putrefaction

fat / wax

Adipocere / saponification (Cerave wax) — Not seen in fetus < 7 month; facial features are well preserved

↓

Rancid | sweetish odour → Ammoniacal odour

↓

moisture + warm T + Glycerin → saponification

Cool air → Saponification faster

Time - 3 month for adipocere

India → min - 3 days reported

Body fat —(C. welchii / lecithinase)→ Higher fatty acids

↓

main constituent palmitic acid

stearic acid, hydroxy stearic acid, oleic acid

Adipocere starts early in fatty structure

⊖ putrefaction: Carbolic acid, AS, Antimony, Zn

Mummification → General facial features are preserved

↓

Odourless

↓

1) Chr. AS
2) Antimony poisoning
} Favours mummi

~~Humid~~
No moisture
High T
free flow of air

Time - 1 yr for mummification

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Suspended Animation → vital signs like dead person.

Electrocution > Drowning

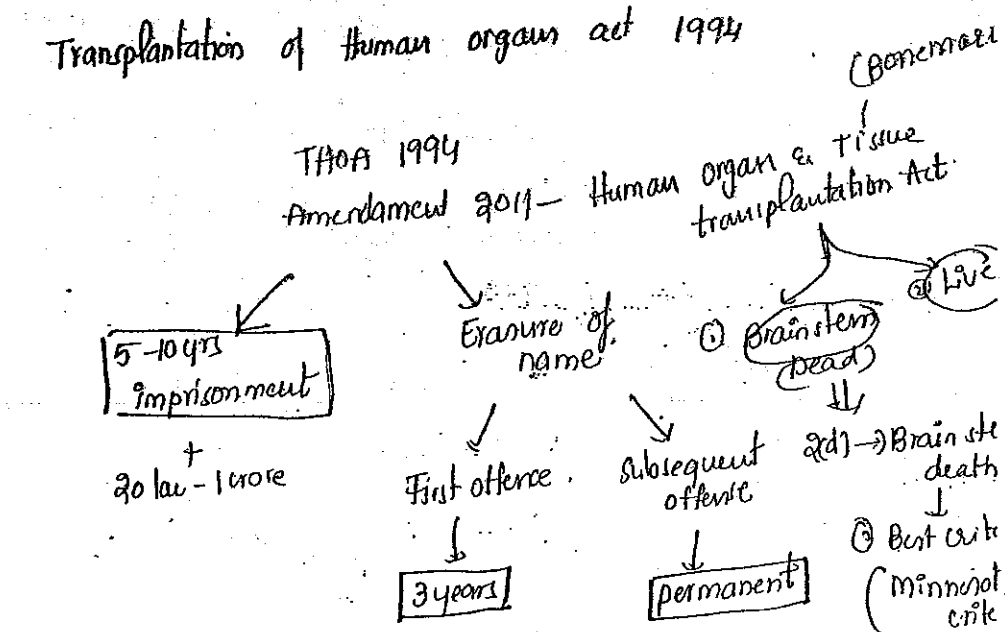
Adipocere mummification

1) Cause of Death (COD) – (Injuries preserved)
2) Time since Death
3) Identification of these bodies ⊕⊕
   ↓
   – Facial features preserved in early stages
     distorted greatly in later stages
   –

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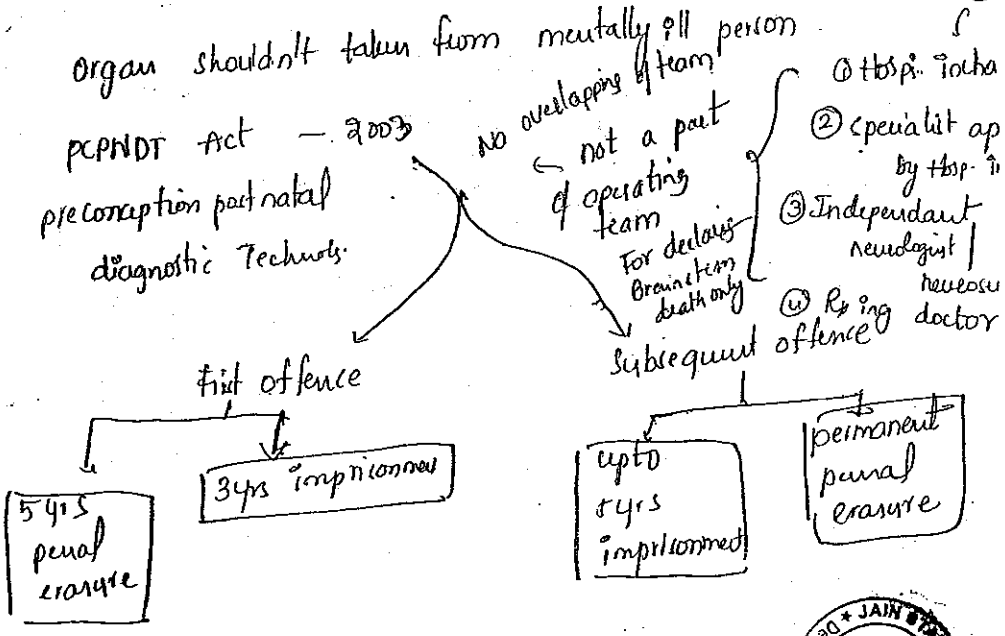
Law

Transplantation of human organs act 1994



Consent to donate organ – 18 yrs – Transplantation of human organ act 1994 (4)

Organ shouldn't taken from mentally ill person



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Dowry & min – 7 yrs
Rape

penalty awarded according to dowry prohibition Act-198
– Rs-15,000 and 5 yrs & he has to return amount of dowry

NDPS Act 1985 →

→ R/ & Rehabilitation for drug users & punishment for drug peddlers

→ punishment for drug peddler > drug users

→ ~~positive~~ Negligent act → not aware of disease.

see 269 IPC ⇒ spreading infectious disease dangerous to life

money

① Next of kin

Grand parents

parents

Real brother & sister (not counted)

spouse

children → Grandchildren

270 IPC ⇒ malignant act — spreading infectious disease dangerous to life

↓

Aware of disease

→ As per birth & death registration act birth & death registered with in 21 days

→ If child born to Indian couple outside India, birth registration must be done ~~c~~ in 60 days of arrival time of India.

→ 299 IPC — Culpable Homicide (C.H) (punishable)

↓

killing of one human beings by act of other human through media

Person has to die

→ 300 IPC — murder + C.H not amounting to murder

probability of death is 100% in murder

Person has to die

If not happen

Death not happen

302 IP — punishment for murder

304 IPC — punishment for C.H not amounting to murder

307 — Attempt to murder

308 — Attempt to commit culpable Homicide

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324 → voluntarily causing hurt by dangerous weapons

326 → voluntarily causing grievous hurt by dangerous weapons

334 — voluntarily causing ~~grievous~~ hurt by on provocation
1m|300

335 — " " grievous

84 — Criminal responsibility of mentally ill person (Mc Naughtem's Rule)

Kleptomaniac → Impulse to steal.
He is able to understand what he does (I) x offense
↳ He is criminally responsible for his act.
unsoundness of mind
(3) unde
consequ of his ac

Run Amok → Impulse to kill

In India there is no scope for diminished (or) partial responsibility only
— All or None phenomenon

(acute confusional state)
Delirium → Not punishable
to poisons → Automatism
Hypnotism → liable for punishment
he knows
if it is done only under consent
He can't do hypnotize unless he is habituated to that act

Somnolalmanism → subsequent offense liable to punishment
walking in sleep
1st offense — Not liable

Run amok — not liable

Steep walking — Not responsible

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Sec. 85 — Alchol intoxication — Act done ↓ Involuntary intox

person drinks involuntarily and do offense

then he is not punishable

person who made him to drink — punishable

Sec. 86 IPC → person drinks voluntarily + offense — punishable

↓

Act done ↓ voluntarily intoxication

psychiatric manifestation d/t alchol — Not punishable

(Delirium tremens)

↓ ↓

Before delirium tremens — sec — (84) 85, 86

if he do any offen...

↳ Responsible + punishable.

(II) sec 197 IPC → Issuing false certificate ≤ 7yr

198 → Using false certificate ≤ 7 yr

sec 201 → Causing disappearance of evidence. 2yr ± fin

↳ Tembalming & out death certificate

↳ Formalin
methanol
phenol | Glycerine

against law

Delhi ~~Anatomy~~ Academy act

↳ Body is unclaimed after 48 hrs

228 (A) → punishment for disclosing the identity of Rape victim → 2yr.

299 → Culpable Homicide.

Suicide

Abetment (provoking) 306 IPC — Attempted 309 IPC — alive death is not happening

↳ 1 yr

Not required to report

If person died in suicide then you have to report

[39 Cr.P.C → public to give information of certain offences

↓

302 | 304 IPC.]

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Fm → med in law

manner of death

Natural — Unnatural

Unnatural: Accidental — Homicide — Suic...

Commorientes

↳ younger survives better than elder

Father
elder younger

All die then wife of youngers inherit property.

med Jurisprudence
↳ law in medicine

medical ethics
↓
Moral principles
↓
self imposed
code of conduct

Dr | pt | Govt/state

MCI | SMC

↓↓

Code of medical ethics

↓↓

Warning Notices

↓↓

medical etiquettes → (as regards to only fello... doct...

Conventional law of courtesy (manner)

↓

Breach of etiquettes
(not following)

↓

Not punishable

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⇓

6A's

1. ① Adultery → Infidelity
2. ② Association (Covering) → ↑ unqualified individuals
3. ③ Advertisement → not more than twice (Reinstating & Relocation time.)
   by any method
   No fees on board.
   Name - qualified Adress that's it
4. ④ Alcohol
5. ⑤ Addiction
6. ⑥ Unlawful abortion
   ↓
   Not following MTP
7. ⑦ Issuing false certificate
8. ⑧ Dichotomy | Fee splitting
9. ⑨ Professional secrecy

except
(Privileged communication)
↓ Concerned authority.

Crime → police
AIDS → sexual partner.
Self interest →

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⇓

If violate warning notice
then serious professional misconduct |
Infamous Conduct |
Ethical negligence

⇓

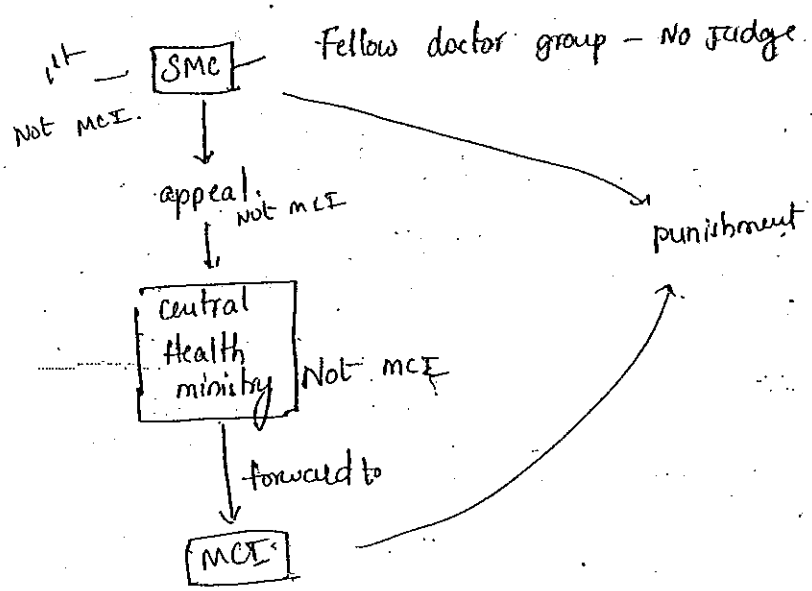
Punishment

① Warning

② penal erasure | professional death sentence.

Temporary — permanent

medical council
↓
can't give fine Imprison
By Court of law



Indian medical Council Act (1956)
(IMCA)

↓

Schedules → MCI

↓

Recognition of qualification

- **Sch I.** — Indian universities
- **Sch II** — Foreign universities
- **III**
  - Part I → Indian universities Not covered in Sch I
  - part II → ~~Doctors~~ Foreign Universities Not covered in sch II

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Legal procedures

1) Indian penal code (IPC) 1860
   └ def | punishment of crime

2) Criminal procedure code (Cr.P.C) 1973
   └ procedures followed after crime

3) Indian evidence act (IEA) 1872
   └ def | Relevancy | Recording & weightage of evidence

Oral evidence >> Document evidence

Audio ↓ also evidence

4) criminal law (Amendament) act ~~2013~~ 2013
   ↓ modification

Birth/Death in Hospital → should be informed to authority in 21 days

Natural death → No inquiry issue death certificate

Unnatural death or foul play → only after Post-mortem inquiry & we issue death certificate

↓

This inquiry to unnatural death is Inquest cr.P.C.

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India

(1) police — S.174 cr.P.C. → Commonest → Head constable (lowest Rank that conduct inquest)

(2) magistrate — S.176 cr.P.C. →
① Death in custody prison
② Police firing
③
④ Rape in custody
⑤ Dowry death ⑥ Exhumation

(3) coroners — 1871 started — Last 1999 mumbai — Death in mental Hospital, Juvenile Homes

(4) medical examiners inquest → Best in India

Rape in Custody — 2005
— S. 176(1A) Cr.P.C.

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Exhumation

Digging out from grave

Morning

(No) time limit

(No) disinfectant should be use.

preserve about 500gm of earth in contact c body. From 6 diffent sites

eg- Face
Front
Back
UL, LL

TABS → soil ↓ As ↑

↓

eg- If As ↑ in body then it may (1) diffuse from soil into body.

Postmortem Imbibition

(2) or

Power of Courts

Euthanasia

↓

mercy killing

1st country that legalised euthanasia — Netherlands

Basis Article 21 Indian Constitution ↓ Rt to life

↑

India ← Active ↓ Mc — Inserting drug — Mc ↓ Phenobarbitone

Passive (Ion of TPN support)

↓

Bombay Highcourt Maharashtra

↓

SC — Legalised passive euthanasia

Aruna shaunbaug case (2011)

Rape-victim-Natural death-dies in 2015

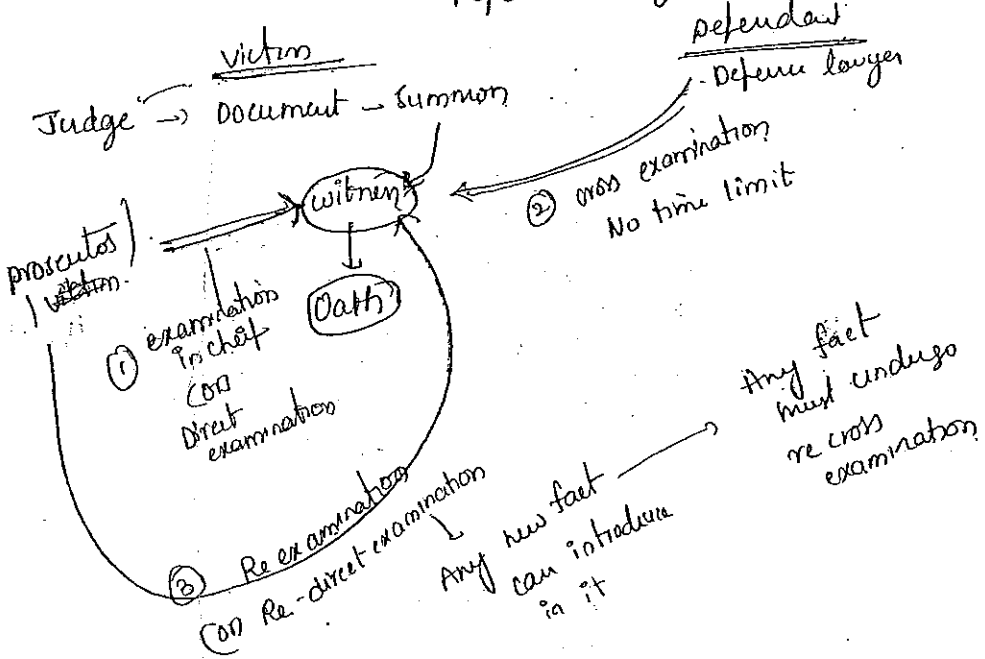
Euthanasia

- Voluntary → c pt will
- Non voluntary → Comp pt
- Involuntary → against pt will.

♀ Victim

Complainant | plaintiff → who complaint in the court → prosecutor

♂ Accused | Defendant → against who the victim complain → Defence lawyer



If accused gives witness then examination in chief by defendant
Cross examination by prosecutor

malignant act → Infectious disease
c intention
q transmission
q disease
270 IPC → 2yr + fine

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Offences

Cognizable

S. 2(c) Cr. P.C.

arrested court warrant

eg- murder / Rape / theft

Robbery / (grievous Hurt) /

Ragging / stalking.

attempted suicide

still punishable. But Before 12/17 ~~Section 309~~ it's not punishable

Non Cognizable

2(L) Cr. P.C.

Requires Warrant before arresting

eg- Hurt

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Offences

376(B) - Bailable (stalking 1st offence) → By police → ₹ in ½ in 24 hrs

Nonbailable (stalking 2nd offence) → By court → 376 C, D, E

difference in gravity of intention (mens rea) made

Murder - definitely want to kill

Culpable Homicide

Common in both situation

① Death

② Intention to kill

Indian Lunacy act 1912 → Replaced by mental Health act 1987 → Replaced by mental Health care act 2017 (MHCA)

Mental Health Care Act 2017 ..

→ Decriminalise attempted suicide

↓

[you shouldn't punish
you should treat
· It is not IPC]

→ Restrictions on ECT

↓

① To use ECT ④ pretreat individual
& anesthetics & muscle relaxants

② ECT Not done in a child

If u want → In child → permission from medical Review board

→ stresses on pt autonomy

(desires)

↳ Advance directives — written by cured mental illhealth pt's based on his desires for future illness

↓ Rechecked by medical review board

[can prevent discharge of pt]

① District Judge
② Representative of Dist - collectors
③ RMP medical practitioners ① psychiatrist ② RMP
④ 2-NGO's

→ punishment for Dr

↳ works at uncertified place → 25,000/-

↳ violates this act

6 m ± 10,0 for 1st offe

2yr ± 1-2 la for 2nd offense

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MTP act 1971

Amended in 2002

H
E
S
T

< 12 wk – ① doctor

12 – 20 wk – 2 doctors

> 20 wks – No termination
‖
Terminated if Fruit is
Therapeutic ground
↓
mother life endangers

criminal abortion (312-316 IPC)

312 – Abortion ⊖ consent } Death
313 – Abortion ⊖ consent ↓
314 IPC

315 – Infanticide

316 – Causing death of Quick unborn child (Quickening has started)
while trying to kill mother (mother survives)
‖
Amounts to Culpable Homicide

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Ecbolics — Emmenogogues

↑ ut. contraction — estrogen

ergot

MC complin following cr. abortion — Hage

MC Immediate cause of death in " = shock

MC Cause of Death " — sepsis

cervix

nulliparous (circular) — multi slit like

(·) (—)

317 IPC → Abandoning a child < 12yr.

318 → Concealment of Birth

—o—

Consumer protection Act — 1986

District Forum ⇒ State Commission ⇒ National Commission → Supreme Court of India

3 members — 3 — 5

Ex district Judge — Ex-Highcourt Judge — Ex-Supreme Court Judge

Compensation ↳ < 20 lakh — 20 lac - 1cr — > 1 crore

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Juvenile | child | minor < 18yr

↓ < 18yr

⇓

Juvenile Justice Act (2000) → Amended in 2015

↓

JCL – Juvenile in conflict with law

↓

Juvenile Justice board

① 1st class Judicial magistrate – max power for punishment – 3yrs

② 2 memb – NGO

└ 1 memb – Necessarily ♀

⇓

Juvenile never send to prison

send to Reformatory | Bostal

till he attains (21 yr) age

max. punishment – 3yrs

↓ < 18yr ← Juvenile

↓ < 18yr ← under pocso Act

↓

protection of child against sexual offence Act 2012

2015 (Juve-J. A)

⇓

Age of Juvenile depends upon crime commited by Juvenile

Age	max-3yr	crime
< 18 yr	← 17y	① Petty
< 18yr	← 17y	② Serious
< 16yr	← 17y ←	③ Heinous

↓

Adults

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Human

Antidote

physical / mechanical
- ① Bulky food
- ② Demulcents — In Acid poisoning
- ③ Activated charcoal
  - MOA - Adsorption

chemical
- KMnO4
- Phosphates
- morphine

physiological
- Counter at receptor level
- Op poisoning - Atropine
- Dhatura - physostigmine, Neostigmine
- Chelating agents

Universal antidote ⟹ 2 : 1 : 1 = Activ charcoal : MgO : Tan a

① Activated charcoal ← on paring steam ← Destructive distillation of wood

↓ surface area for adsorption ↑

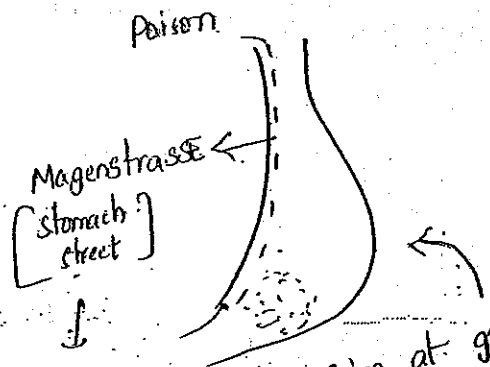
Used → Barbiturates | phenothiazines | Antiepileptics

CI → Corrosives | Alkali | Heavy metals (except Fe, Hg)

② MgO - Neutralises acid

③ Tannic acid - ppt alkaloids

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To see the lesser curvature incision at greater curvature :

Hallucinogens

1) LSD (Acid)
   - ① Synesthesia – mixing of sensation (flowers appear tasty)
   - ② Taking a trip – symptoms experienced on taking LSD (may be good / bad)
   - ③ Flash back – ~~c~~aut consuming LSD in late, the symptoms appear.

2) ~~Hg~~ Angel dust / PCP / phencyclidin

3) Japanese Detergent suicide – H_2S

Date Rape drugs / predator drugs

Alcohol – mc
presumption Barbituat
zolpidum / Alprax
Rophynol Flunitrazepam
GHB
ketamine
Chloral Hydrate — knock out drops
mickey finn

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Narcotic drugs psycho tropic substance Act 1985 (NDPS)

① Narcotic drugs
② psycho tropic substances

Nicotine (V)

① Only Embezzlement of opium — offence

② Prefers — Rehabilitation of drug abusers

Golden Δ → UP | MP | Rajastan.
↳ opium is cultivated

Drug trafficking
- Body Packer | BAG
  ↳ Transport drug
- pusher → Distributes the drug
- stuffer → Consumes → Fear of being caught
  ↓
  Con. for dying instead of caught

Cardiac poisons

Aconite
Tingling sensation
Hippus — pulsating pupil.
FD — 1gm root

Nerium odorum (white oleander)
A/p → Nerin

Cerebra Thevetia (Yellow oleander)
A/p → Thevetin

Cyanide
⊖ cytochrome oxidase ↓ CO, H_2S
⊖ CA enzyme — cyt a_2

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Aluminium phosphide

↓

Tablet form → Celphos | Alphos

↓

1tab = 56% Al phosphid
44% Ammonium carbonate

1tab = 3g

↳ 1g = phosphine gas ⟹ Fatal dose

MOA = Cyt-C inhibited

Hypomagnesemia

Rx — ↓ mg — $MgSO_4$

postmortum
- Subendocardial Hages (+)
  - ↓
  - Flame shape Hages
  - AS
- esophageal stricture (bcoz it is corrosive)

Test - Silver nitrate test

↳ Black Colour

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Ethylalchol

Rectified spirit — 90% alchol

Absolut alchol 99.9% "

stages

Excitement

Blood Alchol Concentration < 150mg%

① Reaction time ↑
↳ BAC < 50mg

② Alchol gaze Nystagmus
BAC < 80mg%

Incoordination

150-300mg%

↓

RTA

Coma

>300mg

Mc Evan's sign (+)

>400 ⇓ Fatal

③ Under the influence.
< 100 mg%

Widmark's formula

$$a = p \cdot r \cdot c$$

a — Amount of alcohol in drink
p — Body wt
r — Constant
c — Concentration of alcohol in blood

Blood : Urine = 1 : 1.33

it follows zero order kinetics — 15 mg/100 ml/hr
@ 15 mg%/hr

6 pm ⟶ 9 pm
100 mg%
← 3 hr
?
100 + 45
145
3 × 15 = 45 mg

Legal limit of Blood alcohol while driving ≤ 30 mg%
↓
45 - 60 mL

~~Age~~ ≥ 25 yr
Fine for Drink & Drive → 10,000/-
+ licence suspended for 3 months

Best test for alcohol — Gas chromatography

510 IPC — creating public nuisance under intoxication
↓
24 hrs / Rs 10/-

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Death
↓ min
egg
↓ 8–24 hrs
maggots
↓ 3–6 day
pupae
↓ 3–6 day
flies

MC fly effect dead body in India — Diptera
↳ Blowfly
↳ musca domestica

Calculation of Burnt area

1) Lund + Browder chart
   ↳ <15 yr children
2) Wallace's rule of '9'
   1% genitals
3) palmer's rule — patchy burns
   palm of Burnt individual = 1% total body surface area

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Hypothermia
① Burns
② Scalds → moist Heat (water) 60°C
③ chemical burn — Not get singeing
   " " Loss of Redness (Pulor) seen in Flame burn
   " " Blisters

singeing ✓

Wet Trickling of acid — H_2SO_4 — Black
~~Stabbing~~ Splashing of acid — HNO_3 - Yellow
— HCl — white | Brown

Am Injury (~~Thermal~~) PM

- Vital Reaction: Swelling, Redness
- Sign of healing

[Yellow bruising — Am Injury
Healed]

(4) Electrution

—o—

Sexual dysfunction

Stains — (1) Blood stain

(2) Blood group — Acid dilution Test — ~~stabrophoresis~~

(3) Age — Immuno electrophoresis Test

(2) seminal stain

UV light - Blue | white florescence

Chemical test — (a) Florence — (a) Rhombic crystals of choline periodide

(b) Barbero — Rhombic crystals of spermine picrate

(c) Acid phosph

(3) Confirmatory → Microscopy

(4) IInd, CDH Isoenzyme assay

(5) P30 | PSA

(6) PHS-5

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Dead born child

① Rigor mortis
- fetus < 4 month → still birth
- Live birth

		Still birth	Live birth
①	position of diaphragm	3-4 rib	6-7 rib
②	Fodere's test / static test wt of lung	30-40 g	60-70 g (dlt blood)
③	plocquet's test wt of lung / wt of body	1:70	1:35
④	Boreslau's 2nd life test (air in stomach)	⊖	⊕
⑤	Wreden's test (air in middle ear)	⊖	⊕
⑥	Hydrostatic floatation test / Raygat test	⊖	⊕

⑥ Hydrostatic floatation test / Raygat test
- Lung - Control ⇒ If lung floats
- Test
  - Residual air → ⊖ (If don't go for test) → ⊕
  - specific gravity of lung → ↑ → ↓

⑦ Virag

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Vaginatus vagnalis → vagi.
↓ cry of child

(X) Live birth
baby comp parts not come outside vagina

Vaginatus uterinus
↓ cry of child ↓ uterus

Birth not occur

—o—

Torture

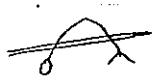
MC ←

Beating — Soles – Falanga
Ears – Telefono

Dry submarine – plastic bag on face

Picana – Electric torture

plauton – prolonged standing

Jack knife —  Hands & feet tie together & Body lie on Rod.

↳ positional asphyxia

—o—

Declarations

- Oslo – Therapeutic abortion
- Sydney – Brain death
- Helniski ← Human experiments
- Geneva → Hippocratic oath
  - At to Ltd
  - Article-7
    - Try to convince individual
    - (X) Forceful feeding (allow pt die)
- Malta → Role of doctor in hunger strike
- Lisbon → pt's right
- Tokyo → Torture & medicine
- Istanbul Declaration → Organ trafficking
- Istanbul protocol → Documentation of torture in a victim

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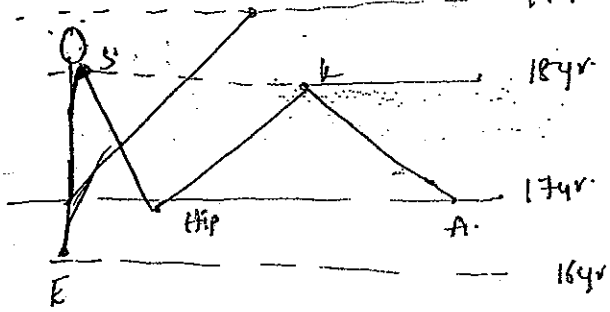
Law > Ethics

Ossification

X-ray — ♀ ♂

U → 17-18y

W/R → 18-19y



↓ decrease one yr

THE END

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