Breast

Breast lump
↓
C/E → Reclining
→ Dial of clock

If malignant ← (+) ↓ | (-) ↓ | Ultrasound ↓

Hard
Irr. Surface
Attached to adj structure
Dimpling / puckering / tethering
L.N enlargement
Peau de orange
Recent asymmetric retraction
Single duct malignant

Mammogram

Mammogram

Young < 30 yr
Pregnant female
Lactating female
Previous H/o:
Breast surgery

BIKADS:

- Breast Imaging Reporting & Data System.
  - 0 - Inconclusive
  - 1 - -ve Mammogram
  - 2 - Benign
  - 3 - Probably Benign
  - 4 - Suspicious
  - 5 - Highly suspicious
  - 6 - Already previous malignancy

(1) On C/E → Beningh findings
↓
R/E → Bening finding
↓
FNAC

(2) On C/E - Suspicion of malignancy
↓
R/E → Suspicion of malignancy
↓
Trucut (Core needle biopsy)

(3) On C/E → -ve
↓
R/E → -ve
↓
Reassure F/u annually

(4) On C/E → -ve but
↓ high risk female
R/E
↓
MRI
↓
Reassure C/E 6 monthly

High Risk female:

- Family h/o malignancy
- H/o of Radiation exposure < 30 y
- BRCA mutation

Radiologist recommendation based on BIRADS score:

0 → Some other modality of imaging required.
1 → F/U annually
2 → F/U annually
3 → Every 6 months x 2 yr
4/5 → Tissue sampling

Triple assessment:

C/E
↓
R/E
↓
T/S — FNAC
\ True cut biopsy

Investigation of choice → Trucut Biopsy.
Gold standard → Excisional Biopsy

MRI → Inv. Of choice
→ Screening high risk - individual.
→ Most sensitive imaging modality
→ Breast implant or implant related complication
→ identify scar from recurrence.

PET Smear → Systemic spread of Co Breast
M/c site → Bone → lumbar vertebra
↓
Both osteoblast & osteoclast.

T_{is} - Insitu → DCIS
→ Paget's disease without invasive malignancy.

T_1 - < 2 cm
T_2 - 2 - 5 cm
T_3 - > 5 cm
T_{4a} - any size with chest wall involvement (doesn't include P. Major)
$_{4b}$ - any size with skin involvement, includes.
→ Peau 'd' orange.
→ Ulceration
→ Satellite Nodule
$_{4c}$ - 4a & 4b
$_{4d}$ - inflammatory Ca

N_0 - No node
N_1 - Ipsilateral mobile axillary LN
N_{2a} - Ipsilateral fixed axillary L.N
$_{2b}$ - Ipsilateral IM LN in absence of axillary LN
N_{3a} - Ipsilater infraclavicular L.N
$_{3b}$ - Ipsilateral IM + Axillary LN

$_{3c}$ – Ipsilateral Supraclavicular LN.

M_0 – N0 distant metastasis.

M_1 – Distant metastasis

Stage I – T_1 N_0 M_0
Stage II – <5cm with N
>2cm without LN
} Early Breast Cancer

Stage III a – remaining
III b – T_4
III c – N_3
} Locally advanced Breast cancer

Stag IV – any T any N & M_1 – Advanced Breast cancer

In case of Early Breast Cancer

- CBC
- LFT
- Chest X – Ray
- USG axila
  - LN → (FNA/Core biopsy)

In case of stage III / IV

Along with EBC test$_1$,

→ CT abdomen / Pelvis

→ Bone Scan

MANAGEMENT 43:30

- Surgery
- Chemotherapy
- Radiotherapy
- Target therapy

Chemotherapy:

Indication → LN +ve
Size > 1 cm
↓

A Adiramycin	C – Cyclophosphamide
C Cyclophosphamide	A – Adiromycin

T Taxene | F - 5-FU

Target therapy:

SERM → Tamoxifen / Raloxifene

Aromatase inhibitor

B/L oophrectomy / Gn RH analogue

If female is ER / PR +ve → Premenopausal
→ Tamoxifen
→ 20 mg OD x 10 yr
M/c complication
→ Hot flushes
→ Ca. endometrium in case of long term administration

If female ER/PR +ve → Postmenopausal
AI x 5 yr

Monoclonal antibodies:

Transtuzumab, Pertuzumab → acts on Her-2 / ner receptor. x 1 year.

Surgery:

Simple Mastectomy

Removal of breast with nipple and areola complex.

Raical Mastectomy

- Halsted's
- Removal of Breast with NAC
  +
  P. minor / major
  +
  Level 1 III LN.

Modified Radical Mastectomy:
(Patey's Masterectomy)

Removal of Breast with NAC
+
P. minor
+
Level 1 - III LN

Achinclauss:

Removal of Breast with NAC

+

P. Minor removal + Level 1 - II

M/c disabling complication of MRM:

Lymphedema (Swelling of arm. Dull aching pain)

↓ 10-15 yr Stewart Trevis

Lymphangiosarcoma

(Sudden ↑ in size

Reddish / Bluish Nodule)

↓

Do FNAC

↓

Amputation of needed

M/c nerve injury - intercostobrachial nerve

↓

Sensory loss over medial

Aspect of ipsilateral arm

BCT *1:01:00*

Wide excision of lump + Axillary dissection + RT

(Level I/II always III if enlarged)

C/I:

Pregnancy 3rd trimester exception

Persistently +ve margin

H/o Therapeutic Radiation exposure.

Multicentric disease

Active connective tissue disorder

Size > 5 cm

Genetic Predisposition

Axillary dissection

Do sentinel LN biopsy

↓

Indications - T_1, T_2, T_3 → N_0 M_0

C/I

- Locally adv. Br. Ca
- Palpable LN
- Axillary surgery

Dye used:

Tc^{99} Colloid Sulphur
+
Methylene / Isophane blue
Injected in NAC

M/c complication: Skin tattoing
↓
Intercostobrachial N. injury

MANAGEMENT BASED ON STAGING 1:08:50

1) EBC → BCT / MRM

IIIa → MRM Chemo - RT
+/- HT
+/- mab
→ Neo adjurant CT → BCT → chemo → RT
+/- HT
+/- mab

IIIb, IIIC → Neoadjuvant chemotherapy
↳ MRM → chemo→ RT
+ / - HT
+ / - Mab

Stage - IV → any T any N with M_1

Asymptomatic	Symptomatic
&	&
ER/PR +ve	ER / PR (-)
↓	↓
HT	Chemo
	CDK 4/6 inhibitor

Her - 2 / neut → Mab

If ulcerative and fungating → simple mastectomy

Prognostic factors:

Pathological stage
↓
Stage
↓
LN – status
↓
Size

Advance Ca:
→ ER / PR.
F/U CBE → 6 monthly
Mammogram → Annually
Tumor marker → CEA
CA 15.3
CA. 24.29

SCREENING OF CA. BREAST 1:17:26

CBC →25 yr → every 1-3 yr
↓
Till 40 yr then annually

Mammogram → 40 yr → annually

High risk individuals:
BRCA mutation
↓
Prophylactic B/L Mastectomy
+
Prophylactic B/L OO

Screening
CBE
25 yr → 6 month
MRI → 25 yr x annually
Mammogram – 30 yr x annually
M/c site → Upper outer Quadrant

M/c type → Invasive ductal carcinoma.

Risk factors:

- Age
- Family history
- ↑ endogenous estrogen exposure
- Early Menarche
- Obesity
- Multipartiy
- Late 1st fall term pregnancy.
- Alcohol
- Radiation

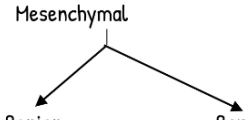
Protective factor:

- Lactation
- Multiparity
- Vit D.

Phylloide's tumor:

↓

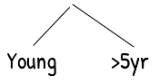
Mesenchymal



Benign

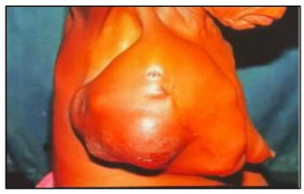
Borderline
Malignant
(Cystosarcoma phylloide)

M/c age → Bimodal



Young >5yr

O/E → Big size lump
→ Irregular / nodular surface
→ Well defined
→ Mobile



Management

Wide ercision c̄ 1cm margin
↓
RT
Most lump → prognostic → Grade
(No. of mitotic figures)

Fibroadenoma:
M/c age → < 3yr
M/c pre → lump
O/E: → Well defined
Highly mobile
Smooth surface
Mammogram → "Popcorn"
Treatment → Observation
If size > 2cm → excision

Mostitis

Lactational — Non lactational

Most imp → Milk stasis
Predisposing fac:
Cracked Nipple
M/c → Painful enlargement
Fever
O/E → Red
→ Tender
→ Venous engorgement
→ Fluctuation (Late sign)
→ Febrile.

Antibiotic / Antiinflammatory

- Breast support
- Breast emptying

USG → abcess → Aspiration

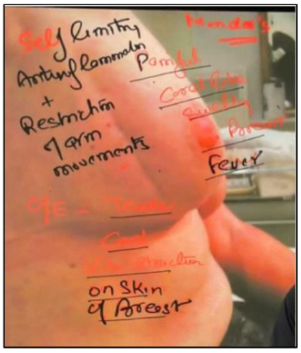
↓

If fails (multiple attempt)

Incision drainage

- Inflammatory Ca. mastitis

  Worst prognostic → stage III b .

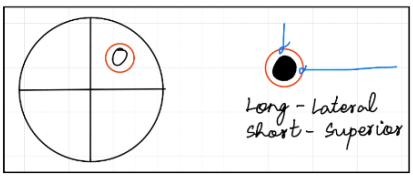


Recent Updates (Breast)

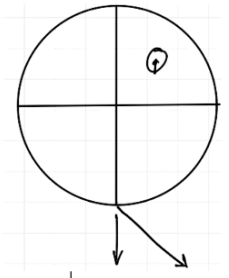
RISK FACTORS – CARCINOMA BREST 0:37

- ↑ Endogenous estrogen
  - Early menarche < 12 yr
  - Late menopause > 55 yr
  - Obesity - BMI > 30 (Postmenopausal)
  - Late 1st full term pregnancy > 35 yr
  - Family H/O → one 1st degree → Mother
    → Sister
    → Daughter
    RR = 2
    → Two 1st degree RR ≥ 3
  - Hormone Replacement therapy → > 10 yr

- Protective
  - Lactation > 12 months

- BCT MRM
  - Skin & NAC
    Complex sparing masterctomy
  - > 1 cm away from skin
    >2 cm away from NAC
  - MRM
    Wide excision + LN
  - BCT
    Wide excision + LN + RT → Breast of lump (Axillary dissection)
  - 

Cavity shaving: 1 cm margin distance from the +ve margin (reported by pathologist)



>20%

<20%
↓
Volume displacement
→ Level I oncoplasty

Flap Autologous fat
Volume replacement

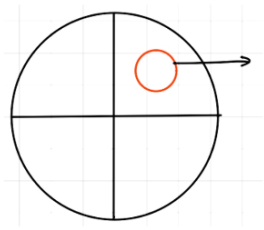
Level II oncoplasty → Autologous fat
→ Flap

- Volume replacement: → Skin / NAC MRM
- BCT Defect → Silicon implant / Flap
  Flap
  Reconstruction Delayed
  - Immediately 6-12 months

- Stage - III A → NACT → BCT → Chemo
  (or)
  → MRM → Chema → RT

  Stage - III B / III C → NACT → MRM → Chemo → RT

- NACT / NAST:
  RECIST → PET / USG / MRI
  Response evaluation of chemo in solid tumour
  - Chemo → 6/7 cycles → 3 wks apart
    2nd cycle - 3 wks
  - CR (Complete response) - Target lesion is not present
  - PR (Partial response) ≥ 30% ↓ max. Diameter of Lump
  - Stable disease (SD) - < 30% ↓ of lump
  - Progressive disease - ≥ 20% ↑ in max. diameter



Radiopaque
- Megaseed
- PVC
- Metal clip

- CR, PR } All the cycles 6/7 completed

BCT → 2 cm
MRM → RT

Margin around Radiopaque

-SD / PD
III A X
↓
MRM

SD / PD
IIIB / IIIC
↓
MRM

→ 2nd line chemo

SENTINEL LYMPH NODE BIOPSY (SLNB) *44:15*

- Fluorescent
  - Fluorescence → Blue light (480 nm)
  - Indocyanin → Infrared light (780 nm)
    green

PROGNOSIS – PATHOLOGICAL STAGE *46:26*

- Pathological stage (Prognostic)

Stage | ER/PR | Her - 2 / Neu | Ki-67 Index | Oncotype Dx | Response to Chemo

MOLECULAR CLASSIFICATION: → GENE TESTING *50:00*

	ER/PR	Her-2/Neu	Ki-67
Luminal A	(+)	(-)	Low
Luminal B	(+)	(-)	High
Her - 2 amplified	(-)	(+)	High
Triple Negative (Basal)	(-)	(-)	High (Usually)
Claudin Low	(-)	(-)	Claudin Low

- Based on Gene Array Analysis

- Noteengham Prognostic Index - Prognostic score:
  0.2 x S + LN + Grade)
  - Excellent < 2.4
  - Good 2.4 - 3.4
  - Moderate 3.4 - 5.4
  - Poor >5.4

GENETIC RISK EVALUATION *56:36*

Genetic Mutation testing
↓
(+)
↓
Genetic counselling
↓
Gene mutation analysis to family
↓
(+) - ↑ risk individual

- Red flag:
  1) Ca. Breast ≤ 50 yr
  2) Multicentric (or) B/L Ca
  3) TNBC cancer ≤ 60 yr
  4) Ca. Breast → One (or) more relative
     - Ca. Breast < 50 yr
     - Ca. Ovary
     - Prostate
     - Pancreas
     - Male Breast cancer
  5) Breast Ca. at any have two (or) more affected relatives
  6) Male Breast cancer

- Prophylactic B/L mastectomy
  +
  Prophylactic B/L oophorectomy
  } Intensive surveillance

- Intensive surveillance
  ↓
  25 yr CBE - 6 monthly
  MRI - 25 yr (or) 10 yr prior to age of Ca. in family
  ↓
  Annually
- Mammogram - 30 yr x Annually

- Follow - up Ca - Breast
  ↓
  - CBE - 3 monthly x 2 yr
    ↓
    6 monthly x 3 yr
    ↓
    Annually
- Mammogram - Annually

Trauma

Triage:

- Limited resources & demand is more
- Prioritize t/t on the basis of severity of injury

Mass casualty

Red → immediate life threatening inj

Yellow → May have life threatening inf. But not immediate enough

Green → Walking wounded

Black → Moribound Pulseless.

Primary → Secondary

↓

Elabrate head to toe.

"Swift exam"

To find what is skilling

& to take care of that

A → Airway c̄ restriction of esprue movement

B → Breathing

C → Circulating

D → Disability

E → Environment exposure

Severe safety

↓

Check response

↓

Call for help

↓

Talk

Not talking

- Tachypnea
- Use of accessory muscle respiration
- Snoring, Curgling / Hoarseness / Stridor
- Cyanosis

Chin lift / Jaw thrust (maintain airway):

O_2 muscle → (MILS → Manual in line stabilization)

↓

C - collar

→Definitive airway

Tracheostomy

Cricothyroidectomy

→ Apnea

→ GCS ≤ 8

SPO_2 < 851

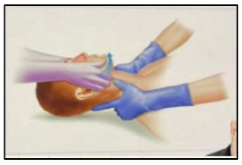
On oxygen

In crichothyroidectomy

Inline tube

Adefinitive airway

- Oropharyngeal
- Nasopharyngeol airway
- Laryngeal mask airway



A

↓

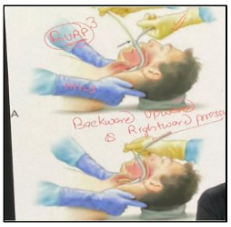
B → Tension pneumothorax & open Pneumothorax

→ Resp. depression

→ Hypotension, ↑ JVP

→ Tracheal shift

→ Hyper resonant Note



Paeds

Needle decompression in 2nd ICS in mid. Clavicular line.

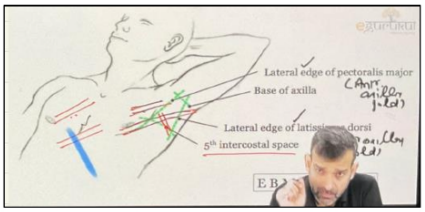
Adult

Needle decomp. 5th ICS ant to mid axillary line

Definitive

↓

Chest tube (Tube thoracostomy)
↓
5th I.C.S ant. To mid axillary line.
(Ale of Safety)



OPEN / SUCKING CHEST WOUND

24:06

- Evulsion of part of chest
  A
  B
  C - Circulation

	I Minimal	II Mild	III Moderate	IV Severe
	< 15%	15 - 30%	30 - 40%	>40%
	< 750 ml	750 - 1500 ml	1500 - 21	>2L
HR	< 100	100 - 120	120 - 140	>140
RR	< 20	20 - 30	30 - 40	>140
PP	N	↓	↓↓	↓↓↓
Hypo tension	X	X	✓	✓
Base deficit	0-2 meq/l	-2 - -6 meq/L	-6 to -10 meq/L	<-10 meq/L
Blood	x	May be	Yess	Massive

Objective:

- Control of Bleeding
- Replacement of lost blood
- Balanced hypotensive → Ressuction
- Controlled hypotensive
- Permissive hypotensive

IL → RL, NS → 1: 1: 1

PRBC / FFP / PRP

+ SBP ≤ 90
HR > 120
Within 3hr

↓

Inj Tranexamic acid.

- Two wide bore short length] Green - 18G
  ↓
- Antecubital
- Intraosseous cannulation
  ↓
- Prox 1/3rd of shin & tibia
- Fluid of choice → RL (crystalloid)
- Best replacement → Blood
- Preferred blood → Cross matched

  M/c → O

- Best guide for adequacy of resuscitation
  Urine output
  Goal → >0.5 ml / kg / hr adult
  >1ml / kg / hr paed

- Requirement of Fluid → PCWP
  ↓
  CVP.

- Disability → Focussed Neurological casuality
  E → Environmental exposure 39°C

- Adjuanct to primary survey
  - Pulse oximetry

- ABG
- ECG
- Rylei tube → Chest X Ray
- Two X rays → Pelvic X Ray

AP view Bedside

- Fuley's catheter
- E- FAST
- Log rolling → min 4 individual req
  Incase lower limb fract → 5 ind.

Damage control surgery

Pt. selection
- → pH < 7.2
- → Temp < 35°C
- → PT / APTT > 50%
- → S. Lactate > 5mmol / L

Phase - I → control of bleeding / inf. In a min possible time

Phase - II → ICU resuscitation

Phase - III → Definitive treatment

M/c → Wound infection

Head injury

GCS → Glassgow coma scale.

Glasgow Coma Scale

BEHAVIOR	RESPONSE	SCORE
Eye opening response	Spontaneously	4
	To speech	3
	To pain	2
	No response	1
	Non testable	NT
Best verbal response	Oriented to time, place and person	5
	Confused	4
	Inappropriate words	3
	Incomprehensible sounds	2
	No response	1
	Non - testable	NT

Best motor response	Obeys commands	6
	Moves to localized pain	5
	Flexion withdrawal from pain	4
	Abnormal flexion (decorticate)	3
	Abnormal extension (decerebrate)	2
	No response	1
	Non - testable	NT
Total scores	Best response Comatose cNent Totally unresponsive	

- Mild - 13-15
- Moderate - 9-12
- Severe - ≤ 8 (coma)
- M/c Head inj → contusion → SDH
- SDH → subdural hematoma
  → inj to bridging veins or dural sinus

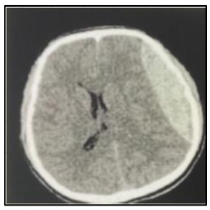
Acute
↓
0-3 d

Chronic
↓
>21 d. aft trauma
↓
Common in elderly
SDH > EDH
More common in boxer

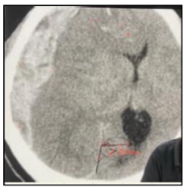
EDH

- Inj to middle meningeal Artery
- Lucid interval
  Period of Normalcy b/w two episodes of loss of consciousness.

IOC → NCCT → EDH → Biconvex / lenticular opacity



→SDH → crescent shaped



Diffuse Axonal injury:

- Worst head injury
- Shearing tear between Grey and white matter.

  NCCT – Normal

  10C – MRI

  Clinical presentation:
  - LOC / Altered sensorium
  - Headache
  - Seizure
  - ENT bleeding

O/E

Racoons eye / Black eye } Blackish discoloration around Orbit with subconj haematoma

Battle sign → Bluish discoloration around mastoid
→ Middle cranial fossa injury

Management:

Lowering ICP

Medical	Surgery
• 100% O_2 c initial	Craniotomy / Burr hole
• Hyperventilation	↓
• Elevation of head end	If mid line shift ≥ 5 mm
• Maintaining normal vol	Vol. of blood > 30 ml
• Hypothermia	ICP > 20 mmHg
• Neuromuscular blockade	
• BZD	
• BBT	

Most imp. Prognostic → GCS - P

GCS- PRS - → B/L Reactive to light 0
→ U/L Non - reactive 1
→ B/L Non - reactive 2

THORACIC TRAUMA 1:02:00

Flail chest:

Fracture of 2 or more consecutive ribs at more than one point in a line

Paradoxical respiration:

1st → Chest X-Ray

Gold std → CT Thorax with 3D resuscitation.

1st done → O_2 therapy + Pain control

Best way → Epidural analgesia
↓
Intercostal Nerve block

If → SPO_2 < 85 %
PaO_2 < 60 mmHg
↓

TOC → IPPV (Intermittent Positive Pressure ventilation)

C/I → Strapping of ribs.

Simple pneumothorax, Simple Hemothorax → Chest X ray
↓
Chest tube
5th I.C.S ant. to mid axillary

Massive Hemothorax:

- Resp. distress
- Hypotension
- JVP ↓
- Absent / ↓ B.S
- Dull note on Percussion
- Tracheal shift to opp. +/-

Abd:

Mc. Organ, blunt abd → spleen
↓
Liver

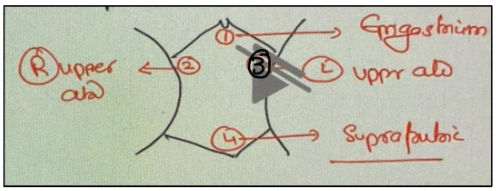
Penetrating abd

Stab → Liver
Liver
Gunshot → S.I

Blunt abd. Injury

Stable → Fast
- Fluid (+) → CT Scan
  - (+)
  - (-) → Repeat fast after 30 min
    - (+) → CT Scan
    - (-) → observe
- (-) → Repeat fast after 30 min
  - (+) → CT Scan
  - (-) → observe

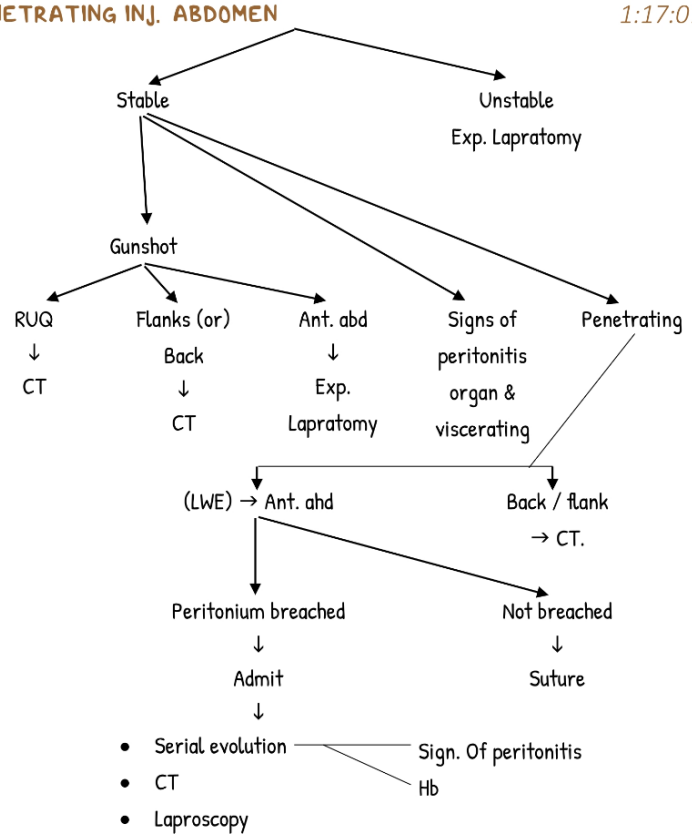
Unstable
- Signs of Peritonitis → Ex. Laparotomy
- None → Fast → Fluid (+)
  - (+) → Ex. Laparotomy
  - (-) → observe



Limitation → Not a good modality

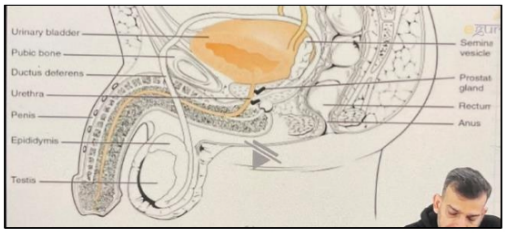
PENETRATING INJ. ABDOMEN

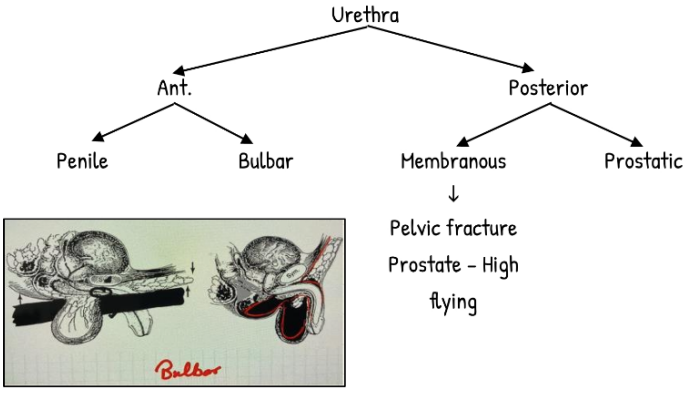
1:17:07



URETHRAL INJURY

1:25:28





↓

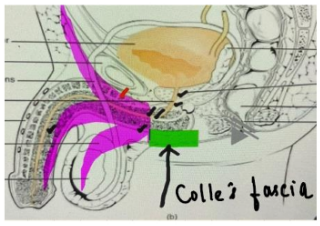
Pelvic fracture

Prostate - High flying

↓

Perineal ecchymosis

If bulbar part affected,



Butterfly

Profile of pt:

- Blood at meatus → Penile swelling
- Retention of urine → (also scrotal swelling)
- Suprapubic fillness → Ant. Abd wall

1st → Retrograde urethrogram

Partial tear / contusion

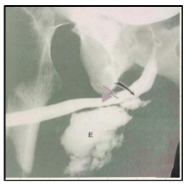
Next: → Suprapubic cystostomy

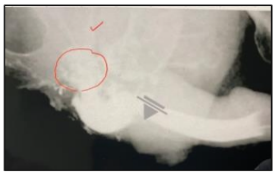
One gentle attempt of Foley's catheterization

Bladder distended

Open

Trocar





Mc → Seat Belt injury
→ Mesentry
↓
Proximal Jejunum
↓
Terminal ileum
↓
Abd. Aorta / Pancreas.

Mc → Blast injury
↓
Tympanic memb → Lung
↓
Colon ← Stomach
↓
SI → Solid

Mc. Cause of death: Pulmonary contusion

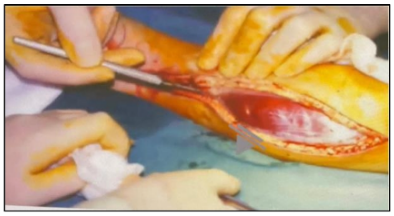
Compartment syndrome:

Mc cause → Open fracture
→ Closed fracture
→ Burns

→ Reperfusion injury
→ Extravasation of fluid
→ Severe pain

O/E: pain on passive stretch
Paraesthesia } Late
Paralysis

Restlessness → Last
Compartment pressure > 30mmHg.
↓
Immediate Fasciotomy
(Deep fascia)



Score

TRISS	MESS
• Patient's outcome • Parameters: → Age → RTS – → GCS, → SBP, → RR → ISS → Mech. of injury	Crush injury limb Amputation — Salvage Parameters: • Age • Shock • Duration of Ischemia • Mech. of Injury

Esophagus & Stomach

Constrictions:
From upper incisors,

- 15 cm → CPS (narrow opening)
- 22.5 cm
- 27.5 cm

Investigation:

- Barium swallow
  IOC → Esophageal diverticulum
  → Esophageal stricture
  → Esophageal rings & webs

- Most sensitive → Esophageal perforation
- Endoscopy →
  IOC → Dysphagia
  → Ca. esophagus
  → Upper G.I bleed
  → GERD / Barrett's
  Gold std → Esophageal perforation

- PEG
- POEM → achalasia
- For advanced Ca esophagus, staging
  PET - CT + EVS
- IOC for staging → Endoscopy
- Gold std for GERD → 24 hr. pH monitoring (De meester score)
  Most sensitive GERD → Impedence monitoring

GERD – DYSFUNCTION OF LES

9:03

Frequent TLESR

Hypotensive LES

Savery Miller Grading:
I → Punctate erosion
II → Linear erosion
III → Circumferential

IV → Stricture

M/c Complication of GERD:

Esophagitis
↓
Barreli
↓
Stricture.

Management

Initial → Life style modification
↓ PPs → 6-8 week.
If fails
↓
Surgery - Laproscopy LF

Mc. Intraoperative complication - pneumothorax

Mc. Complication → Gas Bloat syndrome

BE *12:30*

- Best: Lap. NF
- IOC: Annual surveillance + High PPJ.
- Multiple biopsy → 1-1.5 cm
- Chromoendoscopy - methylene blue
- Functional → Achlasia cardia

  Complication ↓

  Monometric finding:

  Failure of relaxation of LES

  Tone of LES ↑

  Aperistalsis

  Intraesophageal pressure is more

  X-ray → Absent fundal gas with airfluid level in mediastinum

  Mc. Complication → esophagitis
  ↓
  Diverticula

Management

1st line → CCBs
↓
Fails
↓
Pneumatic dilation
↓
Fails → poor risk → Botulinlom
Cond. Toxin inj.
↓
Surgery → lap. Modified Heller's myotomy

ESOPHAGEAL PERFORATION 20:00

Cause:

- Iatrogenic
- Borhoeue's

IOC → Contrast esophagogram
IOC in stable → CT scan
Contrast of choice → BS
1st contrast → Gastro griffin
Gold standard → Endo

Management:
1st line → NPO / IVF / IV Abd / IV antiinflm.

Non operative
↓
Stable
↓
1) Flexible endoscope
2) Confined to cervical esophagus
3) Confined to mediastinum

Operative
Rigid
Intra abd. Perf
Borhoeue's
↳ Left Post. Lateral lower esophagus.

Diverticulum
Upper → Zenker's
Middle → False pulsion
Lower

Zenker's diverticulum:

- Upper oblique fibres of inf. Constrictor muscle of pharynx
- B/w thyropharyngeus & Cricopharyngeus

Opening → Midline
Sac → (L) posteriolaterally
IOC → Barium swallow
Mc → Aspiration Pneumonitis

Ca. esophagus
M/c site → middle
M/c type → Squamous
M/c presentation → Dysphagia

Progressive	Intermittent
Carcinoma	ZD
Achlasia	GERD
Stricture	DES/NC
	Schalzkis ring
	&
	Webs → upper post cricoid region

- Rat tail with filling defect

Apple core deformity

Surgery → Radical esophagectomy
(Wide cecum, proximal local distension 5 cm
+
Regional LNectomy)

Chemo → ECF
- Epirubicin
- Cisplatin
- 5-FU

RT

Transhiatal
Oringes approch
Thorax is not opened

Transthoracic
- Iver lewis tanner
- Mc known

Thorax opened

- Mc. Cause of mortality → Anastomatic leak.
- Conduct of choice → stomach

↓

(R) GA
(R) GEA & (L) GEA

Most imp prognostic factor → Depth of Penetration

STOMACH

35:00

Acute → stress ulcers
↳ Head injuries (Cushing)
→ Burns → (curling)
Starts from fundus → body

Chronic:

Gastric < Duod
H. pylori
H. pylori
Common in 'O' blood group

M/c complication
Bleeding → Perforation → GOD
(post. ulc) (Ant. Ulcer)

M/c vessel involved in
Gastric ulcer - LGA
Duodenal ulcer - GDA

Peptic perforation → DU.
IOC → Pneumoperitoneum
X - Ray
Most sensitive → CT scan

Management

1st → NPO / IUF / iv Ab / i.v Antiinf.

↓

In DU

Endo. Lap with modified Graham's patch repair in long standing DU (or) H. Pylori t/t in past if stable, M.E. Lap with mod. Graham's patch repair + HSV.

If unstable, end, Lap. with mod. Graham's patch repair.

Hemetemesis:

PVD → Varices

Hemetemesis

Stable Unstable

A → recovery position

B

C → IVF + Blood + i.v PPI + Tranexemic acid

Stable

↓

Endoscopic ← Forest

Classif of

Bleeding of ulcer Glassgow

Prlatch food

↓

Required

↓

Endoscopic coagulation

+

Endoscopic Adrenaline

Successful

↓

PPI

Unstable

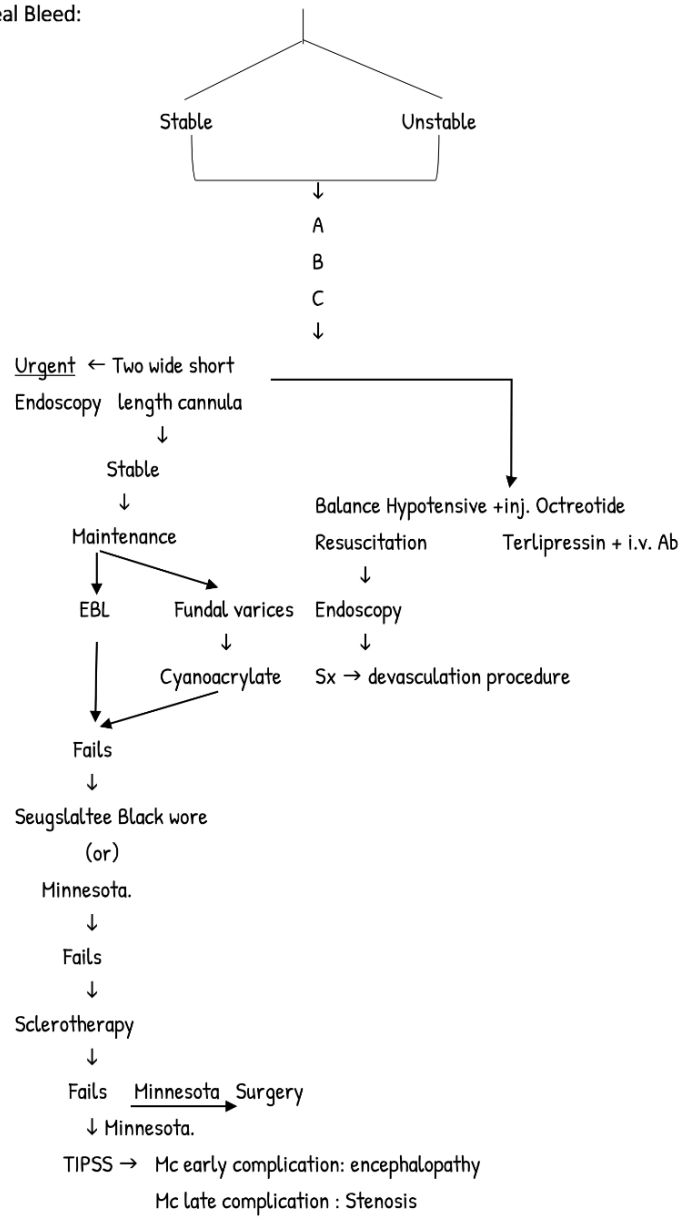
end. Lap. with oversewing of ulcer base

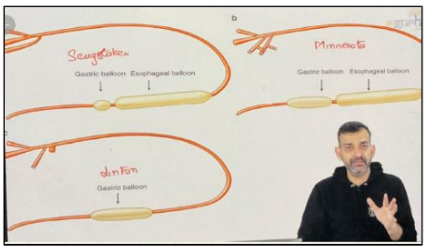
Fail

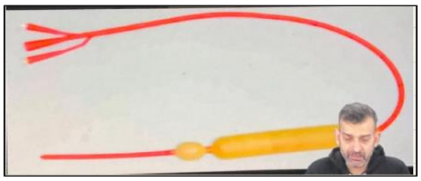
Rockall score Risk stratification.

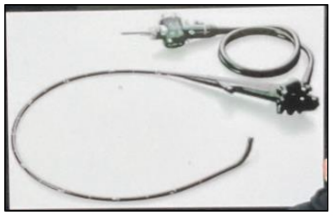
AIMS 65 score

Variceal Bleed:









IHPS

1:03:30

- AD
- Seen m 1st born child (male)
- 3rd - 4th week → initially

  ↓

  Projectile non-bilious vomiting

  ↓

  Non projectile
- Olive shaped epigastric lump
- Hypochloremic Hypokalemic metabolic alkalosis

- Long standing → Paradoxical aciduria.
- 1st line of management → Correct of acid disturbance
  ↓
  Sx → Ramsteelt & Pyloromyotomy

GIST

- Mesenchymal origin
- Stomach
- Intestinal cells of cajal
- Mc presentation → Bleeding, Mass, Asymptomatic
- IOC → CT
- Gold std → EUS
- Most specific marker → DOG - 1
  ↓
  CD - 117 → CD - 34

Symptomatic
Asymptomatic > 2 cm
→ wide excision

Adjuant therapy → PET - CT

Ca. Stomach:

Mc. → proximal stomach

Mc. Cause → Y. pylori

IOC → Endoscopy

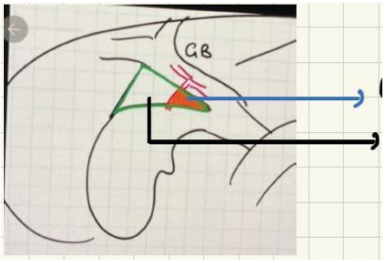
IOC surgery → PET - CT

Laproscopic staging

Sx Chemo RT

Wide excision + D_2 LNectomy

Gall Bladder



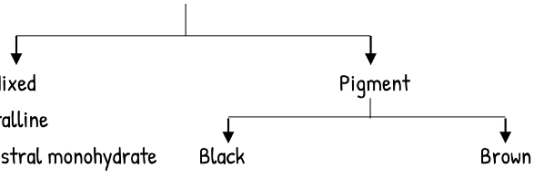
Calot's Δ
Δ of cholecystectomy (or) working
calotis Δ

INVESTIGATIONS 2:00

10C → cholethiasis
Acute & chronic cholecystitis
1st imaging
MRCP → IOC → Biliary leak
Biliary stricture
Choledochal cyst
HIDA → most sensitive → acute cholecystis
→ Biliary leak
→ Biliary stricture
EUS → Most sensitive → LE CBD stricture
→ Ca. GB
→ Ca. Pancreas
→ Periampullary Co.
→ Cholangio Co.

ERCP → Gold std. — CBD store
Choledochel cyst
→ Acute Pancreatitis
PTC → Gold std → Biliary stricture

CHOLELITHIASIS 6:55



- Crystalline
- Cholestral monohydrate

Insoluble bile Pigments with Ca. phosphate Ca. bicarbonate

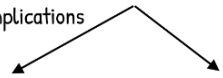
Ca. Palmitate
Ca. Eterate
Ca. Bilirubinate

M/c → Asymptomatic
↓
Prophylatic cholecystectomy
↓

Indications:

- Gall stone > 3cm
- Gall stone wit polyp
- Gall stone with long biliary channel
- Porcelain GB
- Gall stone in immune compromised
- Gall stone pancreatitis
- Hemolytic anemia
- Sickle cell anemia
- No imm. Access to health care facilities
- Incidental gall stone found during laproscopy

Mc → Acute cholecystitis
Complications



Calculous Acalculous

Presents with

- Pain in right Hypochondrium
- Murphy's sign
- Boas's sign
- M/c organism involved → E.Coli

Treatment:
1st → NAU / IUF / I.V Antibiotics / I.V Antinflare
↓ 48-72 hr.
Early laproscopic cholecystectomy

In chronic case:

Elective laproscopic cholecystectomy

If mucocele (or) pyocele, do as soon as possible

GB perforation

- M/C → Fundus
- Peritonitis
- 1st USG,
- IOC - CT
- Cholecystectomy

GSI:

- Obstruction of terminal ileum
- Rigler's Δle
  - → Ectopic Gs.
  - → Feature of bowel obstruction
  - → Pneumobilia
- 1st do X Ray abd
- IOC - CT

Management

Exp. Lap with relief of obe. Alone

Ext. lap with relief of obst & cholecystectomy

CBD:

Primary ↓ Pigment

Secondary ↓ Mixed

Presentation:

Asymptomatic (M/C)
Biliary colic
Jaundice

Endoscopic > Surgical

C/I:
- Stone > 1.5 cm
- Multiple stone
- Intrahepatic store
- Distant stricture
- Impacted stone at ampulla

Supraduodenal choledochotony with T-tube drainage
- Open (m/c)
- Lap
  - Trans Cystic
  - Trans Choledochost.

Transduodenal spinchtroplasty.
Choledochoduodenostomy.

Retained / Residual stone
Within 2 years of trt of CBD

CHOLANGITIS 28:43

- E. Coli
- Charcoat's Δ → Pain RHC
  Jaundice
  Fever

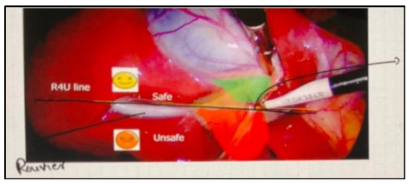
Reynauld's pentad → Charcoat Δle + Hypotention
+ Altered sensorium

Management:
1st done → Noo / IVF / i.v Ab
→ Biliary decompression

(Mnemonic) B - Safe → zone / orientation → B → Bile duct
RFU - Line
Time out strategy
Stopping rule.
Bail out strategy

S → Sulcus of Rouvier's
A → Hepatic Artery
F → Umblicul Fissore
E → Enteric → duodenum

RFU – Line:



Dose of Seq.
IV

Time out strategy:

Stopping rule:

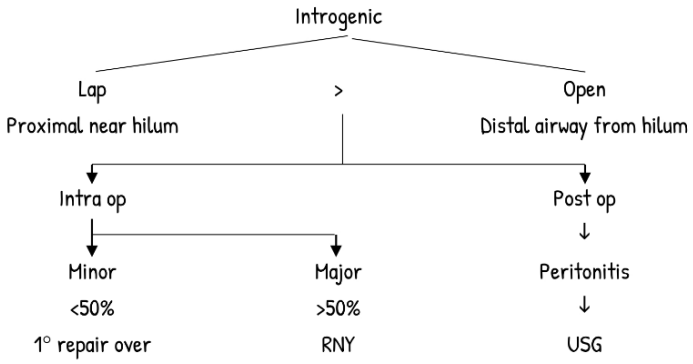
Stop dissection during

- Failure of timely progression of dissection
  - Severe adhesion
  - Severe acute luf
  - Mirrizi syndrome
  - Impacted stone at
  - Chronic
- Anatomical disorientation
- Difficulty in visualization of on field

Bail out strategy

- Convert the strategy to open
- Fundus first
- Subtotal cholecystectomy
- Cholecystostomy
- Abandon procedure.

CBD injury



T-tube HT ↓

Percutaneous drainage

↓

ERCP

Minor — Endoscopic stenting

Major — Wait 6 week RNY HJ / Immediate RNY HJ

CA GALL BLADDER: 50:42

M/c site → Fundus

Mc presentation → pain (R) upper abdomen

Mc type → adenomatous

1st done → USG

IOC → CT

Mc mode → local infiltration → Liver

↓

Lymphatic spread.

Staging

T_1 – Invastion of Lamina propris / muscularis

T_2 – Inv. Of perimuscular connective tissue

Staging:

Stage – I → $T_{1a} N_0 M_0$ → Simple cholecystectomy

→ $T_{1b} N_0 M_0$ → Radical cholecystectomy

Stage – II → GB with 2cm of liver with regional LN.

Seg. IV b & V with reg. LN

After cholecystectomy,

Stage – I → Follow up enough

Stage – II → Radical cholecystectomy

Choledochal cyst:
Todani's
Type I (m/c) → fusiform dilation of CBD/C110
Type II → Diverticulum from CBD
Type II → Intramural part of CBD in duodenum dilation
Type IV → Intra & extrahepatic biliary dilation
Type V → Intrahepatic bolus (carolis disease)

1st → USG
IOC → MRCP
Gold std → ERCP
Most sensitive → EUS

Treatment:
Encision

Complication:
Malignancy

Pancreas

- M/c congenital anomaly = Pancreatic divisum
- Present with recurrent attacks of pancreatitis
- Investi of choice (IOC): Secretin enhance MRCP

Annular Pancreas

- 2nd most common anomaly
- 2 pancreas on either side of Duodenum

Duodenal obstruction	Duodenal Atresia
• Non - bilious vomiting • Double bubble sign on xray	• Bilious vomiting • Double bubble sign on x-ray

↓

Upper GI contrast study

Upper GI contrast study

↓ if Duo atresia ruled out

MRCP done

- For both this condition, Duodenoduoneostomy

ACUTE PANCREATITIS 05:23

- M/c cause is gall stones
- 2nd cause is Alcohol

- Pain in epigastrium radiating to back

↓

Relieved on bending forward

- Vomiting present
- Features of peritonitis present

X ray

- "Colon cut off" sign
- Widening of c.loop of duodenum
- Gasless abd

- IOC: Serum biochemical tests = Serum Amylase / Lipase
  ↓
  Raised 3.4 times
- Most sensitive biochemical marker = S. lipase
- Within 24-48 hr, serum amylase is best

- For confirmation = CT scan (after 72 hrs done)
- Level of Amylase, Lipase not related to severity

Various scores

- Ranson
- Glassgow
- CRP index
- BISAP
- APACHE II
- Modified Marshall score
- Modified Atlanta score
- CT severity index

MODIFIED ATLANTA *12:10*

- SBP < 90mmHg
- PaO_2 < 60 mmHg
- $S_{creatinine}$ > 2mg/dL

- GI bleed > 500 mL / 24hr
- DIC = Platelet count ≤ 1 lakh
- Fibrinogen < 1gm/L
- Fibrin split products > 80 µg/dL
- S. Ca ≤ 7.5 mg/dL
- Necrosis
- Abscess
- Pseudocyst

Management

- Conservative management → Fluids
  ↓
  Ringer lactate

- Surgery
- For pain → Opioid
- Nutrition → Enteral
  Parentral = Preferred in initial stages as enteral route not available
  → In patient who can't take oral route = Ryle's tube is used
- Avoid prophylactic antibiotics (only if sepsis occurs)

INDICATIONS OF SURGERY *21:29*

- Gas bubbles in pancreatic necrosis
- CT guided FNA = also reveals organism

Relative indication

- >50% necrosis
- Pt is deteriorating
- Gall stone induced pancreatitis = If not improving with 24-48 hr, Endoscopic extraction of stones
- M/C cause of early death = Multi organ failure
  Late death = Sepsis
- In general, M/c cause is sepsis
  ↑
  E. Coli = m/c organism
- M/c complication = Peripancreatic fluid collection others
- Pseudocyst
- Pancreatic ascites
- Pancreatic abscess
- Fistula
- Pseudo aneurysm = M/c vessel = splenic artery

PSEUDOCYST *27:13*

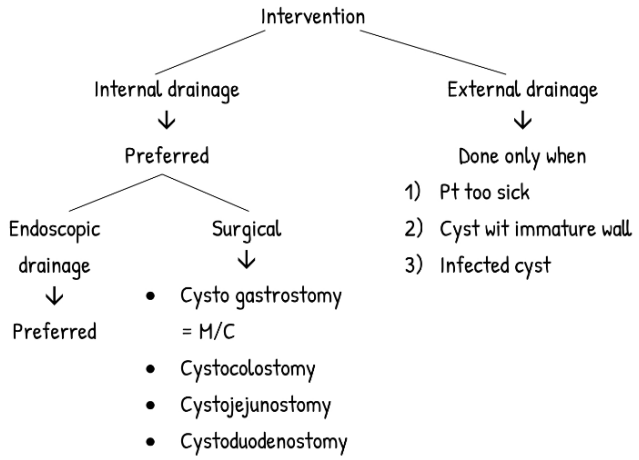
- Called as it does not have a epithelium
  ↓
  Only a fibrous layer
- M/c location = lesser sac
  ↓
  Behind post, wall of stomach and body of pancreas

- IOC = CT scan

- Spontaneous resolution is possible

Indications for intervention

- For more than 6 weeks
- > 6cm
- Causing complications = Infection = M/c
  Rupture
  Itemorrhage
  Obstruction



CHRONIC PANCREATITIS 32:43

- M/c cause = Alcohol
  TIGER - O Classification:
  T = Toxic metabolites
  I = Idiopathic
  G = Genetic
  A = Autoimmune
  R = Recurrent
  O = Obstructive

Chronic pancreatitis

Pain | Endocrine dys | Exocrine dys

→ DM

- Steatorrhea
- Malabsorption

These two appears when > 90% of pancreas is affected

IOC

- Endoscopic ultrasound
- MRCP = In early stage
- CT scan = In advanced stage

Gold standard = Endoscopic guided biopsy

↓ If not in choice

ERCP = Cambridge criteria

↓

EUS = Rosemmol Criteria

- Pain is m/c consideration for management, then DM, Malabsorption

Pain = step up

↓

Basic analgesic

↓

Non - opioid analgesic

↓

Opioid

↓

Celiac axis ganglion block

↓

Intractable pain

↓

Surgery = Indicated when it is dilated > 7 mm

- Distal part dilated = Distal pancreatectomy
- Proximal part dilated = Modified Puestow's

[Lat Pancreatico jejunostomy]

- Mass in head of pancreas + Any part dilated → Beger's procedure / Fay's / Burn's procedure
- M/c complication = Pseudocyst
- Also risk factor for cancer

CA PANCREAS 42:09

- M/c site = Head of pancreas
- M/c type = Invasive ductal Adenocarcinoma

Risk factors

- Smoking
- Chronic pancreatitis
- DM
- Cystic fibrosis
- High fatty diet
- Obesity
- Low phy activity
- Nitrosamines
- Cirrhosis
- Post cholecystectomy = ↑ risk of * Ca pancreas, * Colorectal Ca

Inherited Predisposition

- Hereditary pancreatitis
- Hereditary non-polyposis colorectal cancer syndrome (HNPCC)
- Familial atypical multiple mole melanoma syn
- Peutz Jegher's syn = Max risk
- Ataxia Telangiectasia
- Fanconi Anemia

- M/c presentation = progressive painless jaundice
- Due obstruction
- Pain
- Weight loss = Advanced stage
- Trousseau's syn = Migratory Thrombophlebitis

- Virchow's node
- Sister Mary Joseph nodule
- Blummer shell

- IOC = CT scan
- Most sensitive = Endoscopic Ultra sound (EUS)
- Gold standard = EUS biopsy → EUS (If biopsy not present)
- M/c gene mutation = P-16
  ↓
  K RAS = Earliest gene mut
  ↓
  P53
- Tumor marker = CA19 - 9
  DUPAN - 2
  MUC 1
  MUC 5AC
  CEA

- Chemotherapy — Gemcitabane
  Folfirinox
- Surgery = Whipple's procedure

Criteria for unresectability:

- Distant Metastasis
- LN beyond regional LN
- Malignant Ascites
- Artery involved = Celiac artery
  Hepatic artery
  SMA
- Extensive involvement of portal vein
- Jaundice = Preferred is Endoscopic stenting

Symp reduction + Chemotherapy

ENDOCRINE NEOPLASM (OR) PARA NEUROENDOCRINE TUMORS (PNET)

53:32

Functional pancreatic tumor

- Insulinoma
- Glucagonoma
- Gastrinoma
- Vipoma
- Somatostatinoma

Non – functional pancreatic tumor

↓

Most common

Insulinoma

- β cell involved = 85% Benign
- Body (or) tail (or) head Involved
- Hypoglycemic symp.

  ↓

  Episodic weakness
- Whipple's triad

- Signs & symp of Hypoglycemia
- Glucose < 50mg/dL
- Relief of symp. On glucose

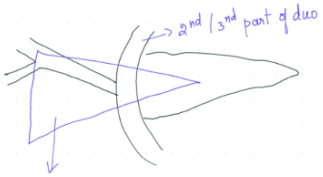
- IOC → Prolonged fasting insulin
- Gold stand for localization

  Intra operative Endoscopy → EUS → CT scan (1st scan done)

GASTRINOMA

58:33

- Zollinger Ellison syndrome
- G – cell Duo
  Pancreas



Psarro's triangle / Gastrinoma triangle

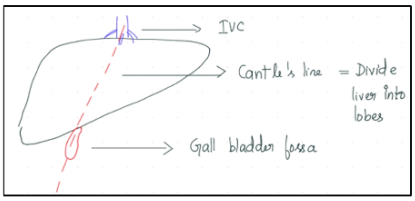
↓ = 2nd, 3rd part of due

Has G - cells = Body, Head of pancreas
= Junc. of cystic duct with

- Pain in abd
- Diarrhea
- IOC = Fasting serum gastrin level
  >1000 pg/mL = Diagnosis
  If b/w 150 - 1000 pg / mL = most sensitive
  ↓
  Secretin stimulation test
- Localization study = SRS
  Octeroscan
- 65% = Malignant
- Excision

- Sporadic = M/c
  Familial = MEN - 1 syndrome

LIVER 01:02:34



Cainaud's segments

- Liver anatomical divided into segment (8)
- Each segment has
  - Hepatic vein
  - Bile radicle
  - Portal vein (PV)
- Arranged Clockwise
- On the basis of PV division

ACUTE LIVER FAILURE 01:05:45

King's College Criteria
Paracetamol induced failure

- PH < 7.3 (irrespective of grade of encephalopathy)
  (or) PT > 10s + S. Creatinine > 300 µmol/L
  + Grade 3 or 4 encephalopathy

↓

Candidate for liver transplant

Non – Para Induced failure

Irrespective of encephalopathy,

PT > 100s (or) Any 3 of

- Age < 10 yr (or) > 40 yr
- Etiology = Non A (or)
  (or) Non B Halothane
  Idiosyncratic drug reaction
- More than 7 days
  Jaundice before encephalopathy
- PT > 50s
- Bilirubin > 300 µmoL / L

↓

Candidate for Liver transplant

CHRONIC LIVER FAILURE *1:11:21*

Transplant based on

Modified Child's criteria

- Bilirubin (Mmol/L)
- Albumin
- INR
- Ascites
- Encephalopathy

MELD criteria

- S. Creatinine
- S. Bilirubin
- INR

Modified child scores

	1	2	3
Bilirubin	<34 µmoL/L	34-50	>50
Albumin (gldL)	>35	25-35	<25
Ascites	None	Easily controllable	Poorly controllable
Encephalopathy	None	Grade I-II	III - IV
INR	<1.7	1.7-2.2	>2.2

Child A → 5-6 → Selective shunt (can avoid Transplant)
Child B → 7-9
Child C → 10-15 → Liver transplant

- If transplant available, child C should has priority
- If waiting period for transplant < 1 yr = TIPSS
  > 1 yr = Selective shunt
- For patient of Child B+ Chronic Liver failure = Transplant

LIVER ABSCESS *01:18:32*

- Pyogenic = Ascending infection (MC), Hematogenous
- Amoebic
- Both in right lobe
- Pyogenic is commonly multiple

Confirmation of pyogenic = Aspiration, culture amoebic abscess = Serology

- Treat: Percutaneous Aspiration + Antibiotic
  ↓
  Metronidazole = Double dose for 14 days

Indications of aspiration in amoebic abscess

- Impending rupture
- Size > 5cm
- Secondarily infected
- Failure of medicine
- If in left lobe

Investigation: USG => first option

Small Intestine and Appendix

Small Intestine:

Acute Intestinal obstruction

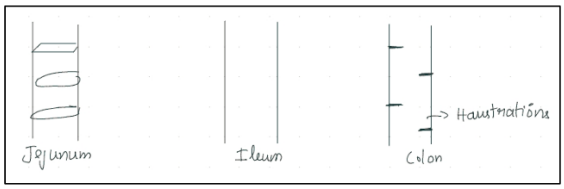
- Dynamic
  - Small (m/c) → → Adhesion
  - Large → → Neoplasm
- Adynamic

	Small	Large
• Pain = Colicky	= Central	Flank
• Vomiting	= Early	Late
• Distension	= Central	Flank
• Obstipation	= Early	late

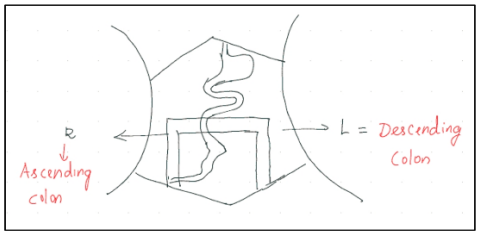
- On exam, Distension
- Bowel sounds ↑ in early stage
  ↓
  Absent on Late stage
- X-ray Abd
  - erect
    - Air fluid levels
    - Duration
  - Supine (Better X-ray) → Doagmpsos made
    - Early
    - Site

- IOC: CT scan
- Nil per orally
  Ryle's tube
  IV fluids
  IV Antibiotics

Jejunum = Concentric rings
Ileum = No internal features
Colon = Two parallel white lines with small lines inside



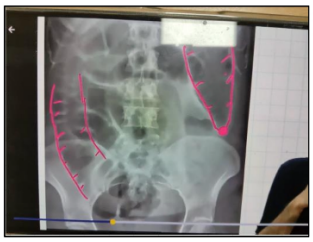
To read X-ray
↓
Identify 2 pillars — Ascending colon
Descending colon

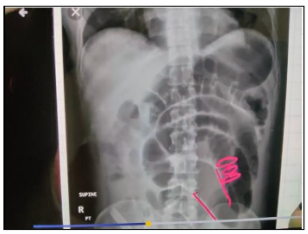


- If pillar seen on right, but not on left,
  ↓
  Obstruction in transverse part

- If you don't see a pillar on right side, but see concentric loops and parallel lines with no features
  ↓
  Ideal obstruction

- If featureless bowel not seen, not see a pillar on right side, but concentric ring loops at unequal distance
  ↓
  Jejunal obstruction





↓

Ileal obstruction

- In case of all dynamic obstruction
  ↓
  Immediate expulsion is needed,
  ↓
  Except post operative Adhesions

(Where you can have watchful expectancy for 72 hrs)

ADYNAMIC

16:00

- M/c cause = Paralytic ileus

Paralytic ileus

- M/c cause = post operative

Parts which recover after surgery in order → SI
↓
Stomach
↓
Proximal colon
↓
Distal colon = M/c site (or paralytic ileus)

- 2nd most common cause = Electrolyte imbulance
  ↓
  Hypokalemia

- Pain Abd = Dull aching
- Distension
- Bowel sound absent
- X - ray in supine = All bowel loops normally seen
  ↓
  Since there is no mech obstruction
- X - ray in erect = multiple air fluid levels seen
- Treatment of cause is imp

MECKEL'S DIVERTICULUM *20:32*

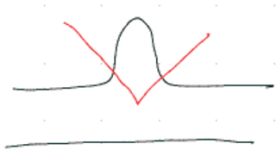
- M/c true diverticulum of GIT
- Always on antimesentric border of ileum

Rule of 2

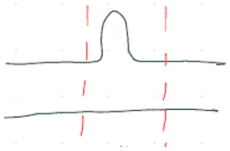
- 2% of population
- 2% people are symptomatic
- 2 feet from ileum
- 2 inches long
- 2 cm wide
- 2 times more common in males
- 2 types → Hetropic → Gastric mucosa of tissue
- Common in 2 yrs

- M/c presentation = Asymptomatic
- M/c complication in pediatric age group = bleeding in adults = obstruction

- IOC: Meckle's scan = Tc 99 Pertechnate
  (or)
  Tc^{99} RBC scan
- Diverticulectomy can be done
  ↓
  Not done in elderly and if this procedure adds to extra morbidity



↓
Wedge resection
↓
Preferred



↓
Sigmental resection
↓
Done if there is induration and it is gangrenous

INTUSSUSCEPTION

28:30

- Telescoping of one part of bowel into another

- M/c type in pediatric age group = Ileocolic
  M/c type in adult = colocolic

- Pain in abdomen = waxing and wanning kind of pain
- Redcurrent jelly stool

- Sausage shaped Lump in Right Hypochondrium + Empty Right iliac fossa → Sign of 'D' Dance

- IOC: USG = Target sign
  Pseudokidney sign
  Bull's Eye sign
  Eventhough Most sensitive is CT scan → But not in children

- IOC in child = USG
  Adult = CT scan

- Barium enema = If colon involved → Claw sign
  Coiled ring sign

- 1st line of management = Therapeutic hydrostatic

Enema
Air H_2O Ba enema

↓ Files
Surgery

MECONIUM ILEUS 33:06

- GI manifestation of cystic fibrosis
- Non - passage of meconium
- Vomiting
- Distension
- Abdomen = "Doughy" in feel

- X ray = "Soap bubble appearance"
- Air fluid levels = Characteristically absent
- 1st line management = Therapeutic hygroscopic enema
  ↓
  N- Acetyl cysteine is the enema
  ↓ Fails
  Bishop Koop's surgery

- In contrast enema = Microcolon seen

APPENDIX 36:37

- M/c cause of abd pain
- M/c surgical emergency
- M/c cause of peritonitis is peptic ulcer perforation
  ↓ followed by
  Appendicular perforation

- In pregnant female, M/c cause of peritonitis
  ↓
  Appendicular ulceration

Risk factors for appendicular perforation
- DM / Immunocompromised
- Previous Abd surgery
- Extremes of age
- Pregnant female
- Pelvic appendix

- M/c site of perforation = tip of appendix
- M/c presentation = Migratory pain
  ↓
  From umbilical shifts to right iliac fossa

- Anorexia = Most consistent
- Vomiting
- Fever
- Vomiting follows pain

- On exam, Tenderness in right iliac fossa
- Rebound tenderness
- Cope Psoas sign = retro caecal appendicitis
  ↓
  Limb Hed so psoas is relaxed

Hyper extension of
Hip → Pain in right iliac fossa
↑
Cope psoas test

- Rousing sign
  - Palpation of right iliac fossa leads to pain in left iliac fossa
  - Palpation in left fossa leads to pain in right iliac fossa

- Durphy's sign
  ↓
  Due to ↑ in abd pressure = Pain in right iliac fossa

- Aaron sign
  ↓
  Palpation on Mcburney point → pain in epigastrium

- Ten hons sign → Gentle traction on right spermatic Cord → pain in right iliac fossa

- Obturator sign = Flexion and Internal rotation of thigh → Pain in Hypogastrium
  - Diagnosis of Appendicitis
    = Alvardo score

	Score
M = Migratory pain	1
A = Anorexia	1
N = Nausea, Vomiting	1
T = Tenderness	2
R = Rebound tenderness	1
E = Elevated temp	1
L = Leucocytosis	2
S = Shift to pain	1

Score >7 = Acute appendicitis
<5 = Appendicitis ruled out
5 - 6 = Equivocal chance → In pregnant, children USG done
↓
CT scan done

Open appendicetomy — Laparascopic appendicetomy

Muscle splitting ↓ Incision

Muscle cutting ↓ Rutherford Morrison

Mc Arthur
Lanz
Rockey Davis

↓
There can be injury to ilio hypogastric nerve
↓
Right direct Inguinal hernia

- M/c complication of appendectomy early = Wound infection
  Late = Band obstruction
- Diagnosis based on score = Working diagnosis
- M/c tumor of appendix = Carcinoid tumor → Appendectomy

If this > 2 cm at base
Involved mesoappendix
} Right hemicolectomy

- M/c malignant tumor = Adenocarcinoma

Appendicular Lump

- Conservative regimen
  Oshner Sherron Regimen
  ↓
  Improves
  ↓
  Interval appendectomy aft 6 weeks [But now, not done]

Interval appendectomy

- Appendicolith
- Pediatric
- Recurrent attack

Colon and Anal Canal

Colon:

Hirschsprung / Congenital megacolon

- Failure of migration of neural crest cells
- M/c = Rectosigmoid

- Present with delayed passage of meconium (or) non passage
- Distension
- Vomiting

- Patient comes with chronic constipation = Distal rectum Exam = Finger not get soiled with fecal matter

- Screening = Anorectal manometry
- Diagnostic study = Barium enema
- Confirmation = Rectal Biopsy (1-5 - 2cm above dentate line)

↓

Absent ganglion cells
+
Hypertrophy of one nerve trunk
} Megacolon

- 1st stage = Colostomy
- 2nd stage = Definitive

↓

Pull through operation

Duhamel | Soave's | Modified Swenson

VOLVULUS

07:53

- M/c part of rotation = sigmoid

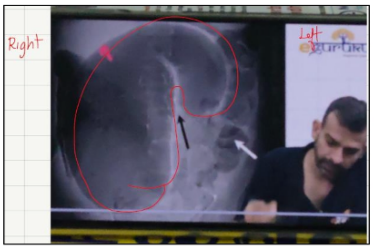
↓

As it has long and narrow mesentry

- Predisposing factor = Fecal loading (Chronic constipation)

- Clockwise

- Present with acute large bowel obstruction
- Xray abd done commonly = Inverted 'U' sign
  Bent inner tube sign
  Ace of spade
  Coffee bean sign
  Omega loop sign



- Fundus of coffee bean = towards right hypochondrium
  ↓
  Sigmoid volvulus
  = Toward left hypochondrium
  ↓
  Caecal volvulus

Management

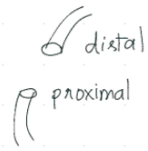
Peritonitis present

No peritonitis

- 1st line = Therapeutic
  Endoscopic decompression
  ↓ ↓
  Successful Fails
  ↓ ↓
  Elective sigmoid Resection — Sigmoid resection

Sigmoid resection

→



↓

Joined if

- Condition of bowel
- Condition of patient } favourable
- Condition of surgeon

- If unfavourable → Distal closed
  Proximal end got out
  ↓
  Hartmann's procedure

DIVERTICULOSIS

16:06

- Sigmoid colon = Most common
  ↓
  Has max. intraluminal pressure
  ↓
  If chronic constipation occurs → outpouching occurs

- M/c = Asymptomatic
- Bleeding
- Diverticulitis can occur
- Common cause of Hematochezia in elderly = Diverticulosis
  Pediatric = Polyp
  Adults = Hemorrhoids

- 20% of people can develop diverculitis

Diverticulitis

- Sigmoid common
- Features of left sided Appendicitis = Fever
  Anorexia
  Altered bowel

- IOC in diverticulosis = Barium enema = Saw tooth app
  In diverticulitis = CT,
  ↓ = Colonoscopy is contraindicated
  Conservative management

Intervention in Diverticulitis based on HINCHEY's criteria

Grade I = Small pericolic collection
II = Large walled off pelvic abscess
III = Generalized Purulent Peritonitis
IV = Gen. Feculent Peritonitis

- Grade I, II = Percutaneous drainage
  ↓
  Later elective sigmoid resection
- Grade III, IV = Emergency sigmoid resection
- DM, Immunocompressed (or) Immunosuppressed } High chance of diverticulitis

COLORECTAL CANCER 25:05

- M/c site = Rectosigmoid
  ↓
  Rectum > Sigmoid

1) Right sided colon
   ↓
- More common than left sided colon

2) Left sided colon

POLYPS IN COLON 26:56

- Hamartomatous (Juvenile)
- Hyperplastic = M/C
- Adenomatous

- If Juvenile polyps associated with Perutz Jegher, cowder syndrome, Juvenile Polyposis coli, Cronkite Kannady syndrome, banayan Ravalculsa syn
  ↓
  Have risk of malignancy

Adenomatous
Tubular — Tubulovillous — Villous →

Risk of malignancy increases with increase in villous

ADENOMA – CARCINOMA SEQUENCE *30:49*

Normal colon —APC→ Dysplastic abnormal cryptic foci → Adenoma
↓ KRAS
Cancer ←P53— Late adenoma ←DCC— Intermediate Adenoma

FAP = Familial Adenomatous Polyposis

- APC gene in long arm of 5q 21
- If there is mutation b/w 1250 and 1464 codon
  ↓
  FAP
  at
- Polyps → 20 yrs → Tubular
  ↓ aft 20 yrs
  Carcinoma develops (100%)
  } so after 40 yrs

Seq. of cancer
Colorectal Ca → Duod / Peridmpullary → Pancreatic
↓
Thyroid
↓
Medulloblastoma = CNS ← Gastric
Mesenchymal — Desmoid

- Mesenchymal + FAP = Gordner syndrome
- Brain tumor + FAP = Turcot's syndrome

- Any patient with ≥ 100 polyps → FAP suspect
  ↓
  Gene seq analysis
  ↓
  APC mut. Found
  ↓
  Prophylactic total proctocolectomy
  Ileo anal J – Pouch anastomosis

- Family also checked for APC mutation → Colonoscopy
  ↓
  From age 10–12 yr annually

HNPCC *37:37*

- Mut in mismatch repair gene MSH, MLH

1) Lynch I
- Colorectal Ca only

2) Lynch II
- Colorectal Ca
  ↓ Then
  Endometrial Ca
  ↓
  Gall bladder ← Upper urinary tract Ca
  ↓
  CNS (Glioblastoma multiformis) → Small bowel Ca

- Family member → Must do colonscopy (screening
  ↓
  From age 20 yr till 40 yr annually

Right sided > Left sided
- Anemia
- Malena
- Presents late = Prognosis Good
- Exophytic growth

- Obstruction
- Early presentation

- IOC for cancer = Colonoscopy

For staging of cancer,

Early = EUS

Advanced = CT scan

- In general IOC = PET-CT

RECTAL CANCER *42:46*

- IOC for depth of penetration of rectal cancer → EUS

For depth of penetration
+
Perirectal Lymph node (or)
Lat involvement to pelvis
} Endorectal coil MRI

- M/c site for distant metastasis = Liver

Note:

M/c site for metastasis of GI malignancy = Liver

Exception is Choriocarcinoma,
Anal Ca
} Progresses to lung

STAGING OF COLON CANCER *44:37*

T_1 = Tumor invades submucosa

T_2 = Invades muscularis propria

T_3 = Invades through muscularis into pericolorecta tissue

T_{4a} = Invades Visceral peritoneum

T_{4b} = Invades adj organ (or) structure

N_0 = No node

N_1 = 1-3 regional nodes

N_{1a} = one regional node

N_{1b} = 2 (or) 3 nodes

N_{1c} = No regional node, tumor deposits in

- Subserosa
- Mesentry
- Pericolic (or) Perirectal mesorectal tissue

N_{2a} = ≥ 4-6

N_{2b} = ≥7

M_0 = No distant metastasis

M_{1a} = One site (or) organ with peritoneal

M_{1b} = ≥2 sites or organ without peritoneal metastasis

M_{1c} = Peritoneal surface alone (or) other site (or) organ.

Duke / Ast ler staging

Stage 1A = $T_1N_0M_0$

Stage 1B = $T_2N_0M_0$

Stage 2a = $T_3N_0M_0$

Stage 2b = $T_4{}^aN_0M_0$

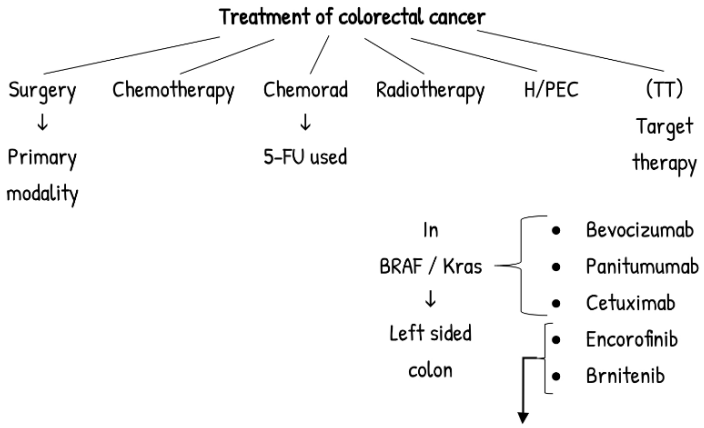
Stage 2c = $T_4{}^bN_0M_0$

Stage 3 = whatever in between stage 2c and 4

Stage 4 = any T, any N, M_1

- In surgery = Wide excision + Lymph node excision

	↓	↓
Colon malig	5 cm margins On either site	Apical LN
Rectum malig	5 cm proximal Margin 1 cm distal margin	Apical LN



In BRAF
- Immunotherapy

↓

For MMR, MSI positive
- Nivulumab + Ipilimumab
- pembrolizumab

Chemotherapy
- Folfox - 5FU / leucovorin / oxaliplatin
- Capex - Capacitabone / oxaliplatin
- Folfiri - 5FU / Leucovorin + Irinotecan
- Folfirinox - Folfiri + Oxaliplatin

Surgery = Wide margins + Lymph node resection

COLONIC CA MANAGEMENT 59:00

Stage - I → Surgery

II → Surgery → Chemo if → Folfox
- Young
- Poor risk histology
- +ve margins
- Inadequate control

III → Surgery → Chemo / Chemoradiation
+/- MMR / MSI → preferred

(or)

Neoadjchemo → Surgery → chemo / chemorad,

IV → Surgery (Debulky)
+
Metastatectomy = When single meta, to liver
When there are multiple metastasis to one lobe

↓

Chemotherapy
+ / - MMR / MSI
+ / - KRAS BRAF positive
Targeted therapy

→ If surgery not possible

- In stage III, IV = chemo = Folliri

RECTAL CANCER 01:06:35

Stage I → Surgery
→ $T_1N_0M_0$ → TAE / TEMS

Stage II → Neoadj chemoradiation → Tumor may vanishes → wait and watch policy
Neoadj chemo → not vanishes → Radical excision
↓
MMR (+) targeted
MSI therapy

Stage III → Neoadjunct chemorad → Radical excision → +/- chemo
→ MME (+) Target
→ MSI therapy

Stage IV → Systemic chemotherapy → Debulking surgery + Metastatectomy
↓
Chemo
+/- MMR / MSI } TT
+/- BRAF / kras / Her - 2 } TT

↓
Unresectable → Chemo → No surgery → TT may be added

Surgery

- Sphincter saving → Ant Resection (AR) / Low Ant Resection (LAR) / Ultra low Ant Resection (ULAR)

- APR = Abdomino - perineal resection → Patient defecate through permanent colostomy

- If growth is ≥ 5cm from anal verge → Sphinter Saving Surgery

< 5 cm → APR done

- Min. no. of lymph nodes to be resected = 12

- Tumor marker = CEA
  - Prognostic
  - Marker for recurrence

ANAL CANAL 01:14:31

Hemorrhoids – Classified as,

↳ 1° ⟷ 2° [1° > 2°]

↳ Ext ⟷ Int = based on presence of

↓ ↓ mass

Mass below Mas above

Dentate line dentate line

Above dentate

- Epi = Columnar
- Blood to portal sys
- Sympathetic plexus
- Always painful

Below dentate

- Epi = Squamous
- Blood to systemic vein
- Sensory nerves

- Primary piles = 3 / 7 / 11 o'clock position
  Secondary piles = Rest All position

- M/c presentation = bleeding per rectum
- "Splash in pan" = Bleeding
- Per rectal examination = Digital rectal exam
  +
  Proctoscopy

Degree of piles

1° → Bleeding, No prolapse

2° → Bleeding with prolapse (Spontaneously)

3° → Manual reposition needed

4° → Irreducible

1° = conservative = High fibre, Fluids,
Bulk - forming laxatives

Failed 1°/2° = Banding → Sclerotherapy etc
Failed 2° / 3° / 4° = Hemorrhoidectomy
And interno externo
Piles ↓
Preferred is open hemorrhoidectomy
(Milligan Morgan procedure)

FISTULA IN ANO 01:20:43

- M/c type = Low intersphincteric type
- M/c presentation = Perianal discharge
- Most sensitive (or) Gold - standard IOC = MR - fistulogram

Low type → Fistulotomy / Fistulectomy

ANAL CANCER 01:22:22

- M/c site = post anal canal
- M/c type = squamous cell ca

Risk factors

- HPV - 16, 18, 31, 33
- Smoking
- HIV
- Anal intercourse
- H/o vulval / cervical Ca
- Immunosuppression aft organ transplant

- Bleeding = M/c
- Pain
- Anal mass

- IOC = biopsy
  IOC = Staging = PET - CT

- M/c site of distant Metastasis = Lung
- M/c mode of metastasis = Lymphatic
  ↓
  Inguinal Lymph node (M/C)
- Treatment Chemoradiation (or) Nigo
  Chemo Radiation
  → 5FU / Mitomycin → IMRT
  (or)
  (isplatin
  ↓
  Residual disease → Surgery (APR)

- Most imp prognostic fac = staging

Kidney and Urinary Bladder

Kidney

Investigations

- Urine examination → Hematuria
  - Due to surgery → Isomorphic RBC
  - Glomerular → Dysmorphic RBC

- If surgical cause → CT scan / IVU / USG
- IOC for painless hematuria = Cystoscopy
- For renal stones → 1st urine exam / x ray KUB
  - In pregnant
  - Female, pediatric → USG
- IOC for compressive evaluation of obstructive uropathy → CT - urography
- Most sensitive for functional status → MAG - 3 → DTPA Scan
- For structural status = DMSA

POLYCYSTIC KIDNEY DISEASE (PCKD) 05:14

- AR → Gene defect in chromosome no. 6 → Symmetrical enlargement of kidneys → Congenital hepatic fibrosis
- AD (more common) → Defect in chromosome 4,16 → Asymmetric enlargement of kidney → Cyst in Liver, Arachnoid memb
  - Seminal vesicle
  - Ovary
  - Pancreas
  - Spleen

- Associated with Berry's aneurysm, colonic diverticula, mitral valve prolapse
- Cyst from entire nephron
- In 3rd – 5th decade

- Cyst mainly from collecting duct
- In perinatal group
  → M/c presentation HTN
  Symptom Pain

- IOC = CT scan
- Treat strict control of HTN
  Definitive Renal transplant

  Palliative: Rousing's operation

- M/C cause of death in AD = Cardiopulmonary Conditions

RENAL STONES *10:24*

Ca oxalate Dihydrate stones
- Small speculated stones
- Mulberry stones
- Enveloped tetrahedral Crystals

Ca. oxalate monohydrate stones
- Very hard
- Multifaceted
- Hour glass shaped crystals

PHOSPHATE STONES *12:07*

- Due to alkaline urea splitting organism = Proteus
- Ca. phosphate apatite = Amorphous crystals
- Ca hydroxy phosphate apatite / Brushite stones = Needle shaped
- Ammonium magnesium phosphate stones = struvite stones
  ↓
  Coffee Lid (or) Rectangular shape)
- White colon
- Smooth surface
- Tend to fill collecting system
- Struvite stones = Staghorn shaped calculus

URIC ACID STONES

14:24

- Forms when low urinary volume
- Radiolucent
- Amorphous shards (or) plates

Cystine stones

- Hardest stones
- Change colour when exposed to air
- B/L, small
- Faintly radiopaque
- Hexagonal shaped crystals

Hard stones

1st Cystine stones
↓
Brushite stones
↓
Monohydrate stones

Ammonium acid urate stones

- Endemic stones
- In persons with laxative abuse

Other stones

- Indinavir stones
- Triamterene stones
- Matrix stones

Indinavir and Matrix stones → Stones which need contrast enhancement

- M/c presentation = Renal colic
  ↓
  Due to stretching of renal capsule

- Ureteric stones pain due to — Stretching of capsule
  Hyper peristalsis

Management

If stone ≤ 5 mm

Not causing obst
Not impacted
Not causing infection
Not solitary, anomalous

→ Spontaneous expulsion
↓
Tamsulosin given

- To remove stone

ESWL PCNL

Indications

- < 2 cm in upper and middle calyx
- < 1 cm in lower calyx
- < 1 cm in upper ureter
- < 1 cm in upper ureter

- If patient have contraindication for ESWL
  ↓
  DO PCNL

Contraindic (Absolute)

- Pregnancy
- Uncontrolled bleeding disorder
- Uncorrected distal obstruction
- Uncorrected UTI

Contra indication (Relative)

- Morbid obesity
- Orthopaedic deformity
- Aortic aneurysm
- Calyceal diverticula
- Cysteine / Brushite / Monohydrate stone

- M/C complication = Hematuria
- Stagnant Calculus → PCNL → ESWL

RENAL CELL CARCINOMA 23:40

- Hypernephroma
- Grawitz tumor
- Internist tumor
- Radiological tumor
- Most imp risk factor = smoking (also for lung, Bladder, pancreatic)
- Polycystic kidney disease not a risk factor
- M/c type clear = PCT
  ↓
  Chromophilic = PCT

↓

Chromophobic = Intercalated cells of collecting duct

Clear type

- VHL gene
- Deletion of 3p
- Loss of 8p, 9p, 14q
- Gain of 5q

Chromophilic type

- Papillary type
- Trisomy of 7, 17
- Loss of Y

Chromophobe

- Loss of 1, 2, 6, 10, 13, 17, 21
- Brit Hogg Dube syndrome

- Asymptomatic → painless
  Gross hematuria
- Left sided non reducible varicocele
- IOC: CT scan
- Most Imp. Renal cyst
- Any renal mass which has enhancement > 15 Housefield unit
  ↓
  Renal cell Ca

- M/c site for mets = Lung = Canon ball lesions
  In bone = Palsatile metastasis

- Paraneoplastic syndrome associated with Renal Ca

Most common → Least common

↑sed ESR
↓
HT
↓
Anemia
↓
Cachexia / wt loss
↓
Pyrexia
↓
Abnormal LFT (Stauffer syndrome)
↓
Hypercalcemia
Polycythemia
Neuromyopathy
Amyloidosis

- Surgery
- Systemic Immuno therapy in the form of IL - 2
  IFN- ∝
- Also sunitinib, sorafinib, Temsirolimus
  Tyrosine kinase inhibitor
  ↓
  M - Toe

Radical Nephrectomy

- Kidney with gerota's foscia
  LN
  Proximal V_3 ureter
  Adrenal gland — If upper pole involved / Directly invading / Adrenal gland

- Approach for Renal Ca surgery = Transperitoneal
  ↓
  Renal artery is ligated first

- Most imp prognostic factor = Pathologic stage
  - Stage
  - Grade → Furhamann's

WILM'S TUMOR 34:26

- Nephroblastoma
- M/c cause of Abd Lump → Hydronephros → Multicystic dysplastic Kidney → Neuroblastoma → Wilm's tumor
- Symptomatic mass
- Microscopic hematuria
- Fever
- IOC CT
- M/C site of metastasis Lung
- Surgery, chemotherapy, Radiotherapy
- RT → Within 10 days of surgery
- Staging system = SIOP system → Post chemotherapy staging system
- Most imp prognostic factor = Histology

URINARY BLADDER 37:06

Cystometric study (or) Urodynamic study

- IOC in incontinence, Neurogenic bladder
  - Urodynamic study
    - Intravesical pressure — Filling, Voiding
    - Flow rate
    - Post voidal residual urine

BLADDER CANCER

39:31

- M/c type = Transitional cell
- M/c site = Post sup part of trigone of bladder
- 2nd common malignancy = Squamous
- Least common = Adenocarcinoma
  - Patent urachus
  - Extrophy bladder

- Squamous cell Ca = due to chronic irritation of bladder wall
- Most imp factor = smoking
  ↓
  Dyes
- M/c characteristic = Painless terminal hematuria
- IOC Cystoscopy → TURBT (Biopsy)
- For muscle invasion = MRI done
- For staging of bladder cancer
  - CT Scan
  - MRI

- M/c spread = Local infiltration
  ↓ Then
  Lymphatic
- M/c site for distant mets = Lung

- Urinary markers of bladder cancer
  - NMP - 22 = M/c used
  - BTA
  - FDP
  - Hyaluronic acid

Management

Systemic	Intravesical
↓	↓
Radical cystectomy	TURBT
+/-	+/-
Systemic chemo	Intravesical (BCG / Chemo)

Indications

1) Muscle invasion
2) LN enlarged
3) Multiple high grade recurrent tumor
4) High grade T_1 with concomitant in situ lesion T_{is}
   T_1 = Lamino propria invasion
5) Bladder crippled

DO TURBT
↓
Intravesical BCG

- Most imp prognostic factor = Depth of penetration
  ↓
  Grade
- When single Ta / Non recurrent tumor → TURBT
  Conduit of choice after radical cystectomy
  ↓
  Ileal conduit (complication = Ureteroileal stricture)

- Earlier uretero sigmoidostomy used
  ↓
  Not nowadays as it causes hyperchloremic acidosis

Prostrate

- BPA = From transitional zone
- Ca prostrate = from peripheral zone

BPH

Voiding type symptoms
- Hesitancy
- Poor flow
- Straining
- Intermittent stream
- Sensation of poor emptying

Storage type symptoms
- Urgency
- Nocturia
- Urge incontinence
- Nocturnal incontinence
- Frequency

- M/c = Median lobe
- IPSS score

1) Feeling of incomplete bladder emptying
2) Frequency
3) Intermittency
4) Urgency
5) Weak stream
6) Straining
7) Nocturia
8) Quality of life

- Mild = 0-7
  Moderate = 8-19
  Severe = 20-35

Indications of surgery
1) Acute retention
2) Chronic retention with backflow changes
3) Complications due to bladder outflow obstruction
   - Recurrent cystitis
   - Stone
   - Diverticula
4) Hematuria
5) FR < 10 mL / s
   PVRU > 100mL

- Surgery = TURP — Monopolar = commonly done
  Bipolar = preferred
  ↓
  Irrigation during = saline

  Irrigation fluid of choice — during TURP - Glycine
  After TURP - Saline

Complication of TURP

- M/C early complication = Bleeding
  Late = Retrograde ejaculation
- Bladder neck stenosis
  ↓
  → M/C cause of delayed bladder outflow obstruction
  → Stricture = M/c site = just proximal to Ext. meatus

Indication of open surgery

- Frayer's prostatectomy = through suprapubic

Indications

- Wt of prostate >75 g
- Urinary bladder diverticula with BPH
- Large bladder stone with BPH
- Orthropedic deformity
- Urethral stricture
- Previous hypospadias repair

- TULIP — Holmiun laser
  KTP laser = No need to stop blood thinner

- Mild BPH = Surgery
  Moderate = Medical therapy → Tameulosin + Dutasteride
  Severe = Surgery

TURP
↓
Patient can develop dilutional hyponatremia
(or)

TOR synrome
(or)
In 1% population ← H_2O intoxication

CA PROSTRATE

16:53

- M/c site = Peripheral zone = Post lobe
- M/c type = Adenocarcinoma

RF

- Age
- Family history — BR. CA - 2 = M/c
  - ATM
  - CHEK.2
  - BRCA-1
  - RAD51D
- Infection
- Vit D
- Androgen exposure
- Smoking
- Obesity

Marker

- PSA
- PMSA
- Acid phosphatase
- Alkaline phosphatase

Urinary marker

- PCA - 3 mRNA

  PSA = Prostate specific antigen

  ↑ in
  - BPH
  - Ca prostate
  - Prostatitis (infection)
  - Prostate massage
  - UTI
  - Alt sexual act

PSA velocity is > 0.35ng / mL / year = should do biopsy

- ↓ Free PSA → more risk of cancer
- PSA > 3ng/mL = Biopsy

  ↑

  IOC = TRUS guided biopsy

  ↓

  12 core biopsy
- IOC: For staging MRI
- Mode of transmission = Lymphatic

  Blood → Bone → vertebrae

  Osteoblastic Osteolytic

Management

MT ↓ Complete androgen blockade ↓ Medical castration → Antiandrogen — Cyprotenome acetate; Flutamide / Niclutamide / Biclutamide

Radical prostatectomy

RT ↓ IMRT

Immuno therapy

Chemo therapy ↓ Taxene Paclatoxol

Inhibition of LHRH (or) LH

- DES
- Leuprolide
- Goserilin
- Abarelix
- Cetrorelix

Inhibition of androgen synthesis

- Amino glutathemide
- Ketoconazole
- Abiratenone

Immunotherapy

- Siplucel - T
- Autologous PAP loaded dendritic cell vaccine
- GVAX
- Allogenic recombinant whole cell vaccine
- Prost - Vac - VF recombinant pox virus PSA vaccine
- CTLA - 4 inhibition = Ipilimumab

Immunotherapy + Chemo → Castration resistant cancer prostate

- Most imp prognostic factor = Grade
  ↓
  Gleason grade 1-5

  Gleason score 2-10

Grade grouping system

Group I (Gleason score ≤6) → only individual discrete well formed glands

Group II (Gleason score 3+4 = 7) → Well formed glands with lesser amount of poorly formed / fused / Cribriform glands

Group III (Gleason score 4+3 = 7) = Poorly formed / Fused / Cribriform glands with less comp.

Group IV (Gleason score 8) = only poorly formed / fused glands

(or)

- Predominantly well formed glands with lesser comp. lacking glands
- Predominantly lacking glands with a lesser component of well formed glands

Group V (Gleason 9-10) → Lack gland formation (or with necrosis) with (or) without partly formed / fused glands.

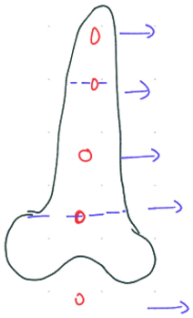
Urethra, Penis and Testis

Urethra anomaly

- M/c congenital anomaly of lower urinary tract is Hypospadias

Hypospadias:

- Urethral opening on the ventral side of penis
- Ventral chordae also present
- Dorsal hood = corpora cavernosum forms a cap



Glandular = M/c

Coronal = on coronal sulcus

Penile

Penoscrotal

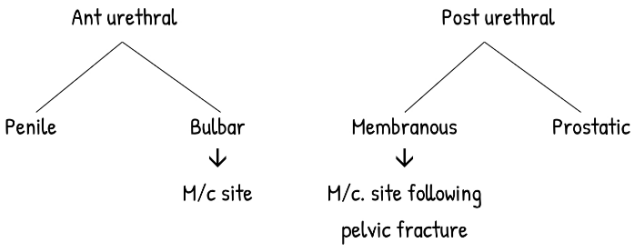
Perineal = Least common → Determination of sex is problem

- Chordee correction
  ↓
  Substitution urethroplasty
  ↓
  Meatoplasty
  ↓
  Scrotoplasty

- Surgery better if done b/w 6-18 month
  Better is 6-10 month

STRICTURE URETHRA 06:02

- M/c common cause = Idiopathic → Then trauma



- M/c presentation = Weak calibre urinary stream
- Bladder outflow obs
- M/c infection = urethritis
  ↑
  E.Coli (M/c)

- IOC: Retrograde urethrogram — for Ant, High freq USG also
  Anterograde — for post, MRI also.

- Treat:
- < 1.5 cm stricture = Int optical urethrotomy
  - Laser knife
  - Cold knife
  - ↓
  - A 12 o clock position
- 1.5 - 3cm → ETE Urethroplasty
- >3cm → substitution urethroplasty
  - Buccal mucosa
  - Prepucial skin

PENILE CA

12:28

- M/c site = Glans penis → Prepuce
- M/c type = Squamous

Types
- Verrucous = Least aggressive
- Basaloid = Highly aggressive, ass. With HPV
- Sarcomatoid = Least common

Risk factors:

- Poor hygiene
- HPV (16, 18, 31, 33)
  ↓
  M/C
- Multiple sexual partner
- Smoking
- Trauma
- UV radiation
- Lichen sclerosis

Protective factors

- Circumcision = if done at pediatric age group

- Painless penile lesion = M/c
- Inguinal LN mass
- Wt loss
- Weakness
- Urinary retention in fistula

- IOC = Biopsy
- IOC for staging = CT scsan
  ↓
  PET - CT

- M/c mode = Lymphatic mode to inguinal LN
- Distant metastasis site = Lung

- Wide excision
- Lymphadenectomy — LN enlarged → B/L incison

- Mohr's micrographic Excision = Instead of wide excision
  ↓
  1 mm excision done till negative margin is reached

- M/c prognostic factor = Pathological stage
  ↓
  Independent factor = LN status

- M/c cause of death = Bleeding from femoral artery

TESTICULAR CONDITION

22:13

Cryptorchism

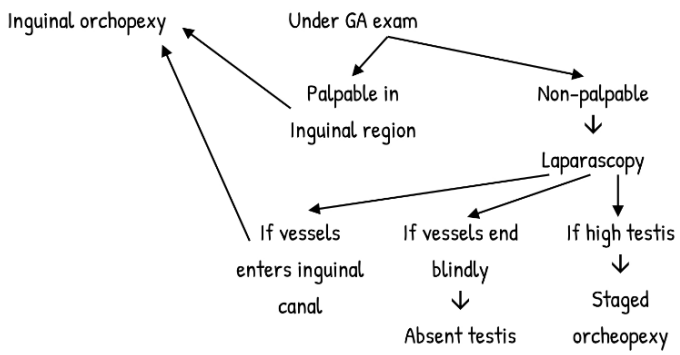
- Undescended testis
- Most Imp factor = Low Birth weight
  = Geneti
  = Maternal obesity
  = Mat. Alcohol / smoking
  = Def in pituitary function

- M/c type = intracanalicular
- Present with absent testis

On exam → Hemiscrotum
↓
That side testis poorly developed

- Complications:
  - ↓ Fertility
  - Torslon
  - Trauma
  - Tumor → M/c = seminoma

If newborn with undescended testis
↓
Clinical exam
↓
Testis Non - Palpable
↓
Wait for 6 months (as descent can occur)
↓
C/E
↙ ↘
Palpable inguinal canal → Testis non-palpable
↓ ↓



ECTOPIC TESTIS

31:46

- Testis descend through a normal path of descent
  ↓
  Then get placed aft it comes out of sup. Inguinal ring
  ↓
  Can go to
  ↓
- Superficial Inguinal pouch (Denis brown pouch) → M/c
- Perineum
- Root of penis
- Opp scrotum
- Femoral triangle

- IOC = USG
  Then MRI

- Not RF (or malignancy

TORSION TESTIS

34:06

Intravaginal
↓
If it occurs inside Tunica vaginalis (TV)
↓
M/C

Extravaginal
↓
Outside TV

- Most imp predisposing factor = High investment of tunica
- Right testis = clockwise
- Left testis = Anticlockwise
- In young males, children = common

Predisposing factor

- Cold temp
- Sudden muscle spasm
- Rapid growth at puberty
- Cryptorchism

- M/c problem = Sudden onset of severe pain in testis (or) lower abdomen
- Nausea, Vomiting
- On exam = Horizontal lie of testis

- Tenderness
- Absent cremastric reflex
- Short spermatic cord
- Scrotal edema

- Most imp Diff. Diagnosis = Epididymoorchitis
- Can be differentiated by Prehn's sign

↓

On elevation of testis, pain gets relieved = Prehn sign (+)

↓

Epididymorchitis

Prehn's sign (-) = Torsion

- IOC = Doppler

CARCINOMA TESTIS

42:46

- Males = 15-24 yrs

Germ cell tumor → M/c = seminoma

Non germ cell tumor

Choriocarcinoma
Teratoma
Yolk sac tumor
Embryonic cell Ca
} Non seminomous germ cell cancer

- M/c malignancy in adults = Seminoma
  in prepubertal age = Yolk sac
  in elderly = Lymphoma (DLBL)

- Tumor marker = AFP = Not raised in seminoma, Choriocarcinoma
  β - HCG
  LDH
  PLAP → Seminoma = highly staining (+) for PLAP

- Painless testicular mass
- Abd lump
- M/c mode = Lymphatic
- Primary landing zone of R testis = Inter aorta caval
  Lymph node inf to renal vessels
  ↓
  Para caval (or) Para aortic nodes
- From left testis = Para aortic LN
  ↓
  Inter aorta caval LN
- Most imp Diff Diagnosis = Hydrocoele
- Both these condition as Painless scrotal mass
  ↓
  Clinical exam
  ↓
  → Fluctuation test (-)
  → Transillumination test (-)
  ↓
  USG scrotum done
  ↓
  Solid mass
  ↓
  High inguinal orchidectomy

Seminoma → CT abd, pelvis, chest X-ray

Non-seminoma → CT abd, pelvis, thorax

Staging of testis malignancy

T_1 = Limited to testis without Lymphovascular invasion (LVI)

T_2 = Limited to testis with Lymphovascular invastion (LVI)

(or)

Invades epididymis, hilar soft tissue, penetrates visceral mesothelial layer covering ext layer of tunica albugenia with or without LVI

T_3 = Invades spermatic cord with (or) without LVI

T_4 = Invades scrotum

N_0 = No node

N_1 = Metastasis with LN mass $\leq$ 2 cm (or) Multiple LN, none > 2cm

N_2 = Met. With LN mass > 2cm but < 5cm

(or)

Multiple LN, any one mass > 2cm but $\leq$ 5cm

N_3 = Met with > 5cm LN mass

M_0 = No metastasis

M_{1a} = Non - retroperitoneal node (or) Pulmonary mets

M_{1b} = Non - pulmonary visceral mets

S-Stage < AFP, β - HCG, LDH > → After high inguinal orchidectomy

Stage 1A = $T_1N_0M_0$

Stage 1B = $T_2/T_3/T_4\ N_0\ M_0$

II A = any T N_1 M_0

II B = any T N_2 M_0

II C = any T N_3, M_0

III = any T M_1

- Most imp prognostic factor = Histology

SEMINOMA

57:41

- Stage IA / IB
  - Active surveillance = preferred
  - Single agent chemo
  - Radiotherapy
- Stage IIB =
  - Radiotherapy = preferred
  - BEP
    - Bleomycin
    - Etopside
    - Cisplatin
- Stage II B (II C) III = Chemo

NSGCT

- Stage I
  - Active surveillance
  - Nerve sparing retroperitoneal Lymph node dissection
  - Chemo = Prefferred
- Stage II, III = BEP

Arterial Disorders

Chronic Limb ischemia

- Due to atherosclerosis

Risk factors

- Age
- Smoking
- DM
- Dyslipidemia
- Hyper homocystinemia
- ↑ CRP

Fontane's Classification

Stage I = Asymptomatic
Stage IIa = Mild claudication
IIb = Mod to severe claudication
III = Ischemic rest pain
IV = Ulceration (or) Gangrene

Rutherford Classificaiton

Grade

0 - Asymptomatic
1 Mild claudication
2 Moderate claudication
3 Severe claudication
4 Ischemic rest pain
5 Minor tissue loss
6 Major tissue loss

- M/c presentation = Intermittent claudication (or) rest pain
- Pain in B/L Buttock / Thigh / Calf = Block at Aortailiac level
- U/L Buttock / Thigh / Calf = Block at Illiac muscle level
- Thigh / calf = At Femoral level
- Calf and sole of foot = at popliteal vessel level / At femoral vessel level

- Asses ABPI
  - 0.9 – 1.3 = Normal
  - <0.9 = Suggestive arterial obstruction [Claudication]
  - <0.5 = Rest pain
  - < 0.3 = Imminent necrosis (or) gangrene

- ABPI > 1.3, but with symptoms of Limb ischemia
  - ↓
  - Falsely elevated ABPI
  - ↓
  - In End stage renal disease
  - (or)
  - DM
  - ↓ Then do
  - Repeat after exercise
  - ↓
  - ABPI decrease > 20% → Limb Ischemia
  - ↓ If ABPI = 0.9
  - IOC: Duplex scan → Normal = Triphasic flow
    - Single point stenosis = Biphasic
    - Multiple point stenosis = Monophasic
  - If planning intervention ↓
  - Gold = Angiogram
  - Standard

Indications of intervention

- Critical limb ischemia = when it leads to
  - Rest pain
  - Breakdown of skin = ulceration
- Aortailiac disease
- Severe symptoms affecting day to day life
- Failure of medical therapy
- Non compliant
  - Surgery
    - ↓
    - Bypass
  - Angioplasty

If this indications not present
↓
Medicine + Exercise
↓
Aspirin
Pentoxyphylline (Rheostatic = ↓ viscosity)
Ciliastazole (PDE III inhibitor)
↓
- Inhibits platelet aggregation
- Vasodilation
- ↓ LDL

Surgery (By pass)
- Below inguinal ligament = Autologous vein = GSV (reversed
- Above inguinal ligament = Synthetic graft (Dacron = preferred)

ACUTE LIMB ISCHEMIA *16:40*

- Acute limb ischemia = M/c cause = emboli from atrial fibrillation
- Pain
- Pallor
- Paresthesias
- Paralysis
- Poikilothermia
- Pulselessness

- IOC: Duplex scan
- Early stage = Embolectomy — Open / Fogarty's
- But immediately start IV heparin

BUERGER'S DISEASE / TAO *19:27*

- Pan arteritis involving small, medium sized vessels
  - Nerve
  - Vein
- Smoking = risk factor
- LL > UL
- Males > Females

- Intermittent claudication
- Rest pain
- Superficial migratory thrombophlebitis
- Raynaud's disease

DIAGNOSIS OF EXCLUSION = OLIN'S CRITERIA 20:50

- Age = 20 - 45 yr
- H/o (or) recent exposure to tobacco
- Exclusion of proximal source of emboli
- Exclusion of DM, Hypercoagulable status, Collagen vascular disorder
- Consistent angiography = (or) e screw's collaterals
- Distal extremity involvement

Confirmation → Biopsy (Gold standard) → Microabscess with Skip areas

- Most sensitive = DSA
- Stop smoking

- M/c cause of death = MI

ANEURYSMS 25:21

- M/c cause = Atherosclerosis
- M/c vessel = Infra renal part of aorta
- M/c site of splanchic aneurysm = splenic artery
- M/c site of peripheral aneurysm = Popliteal artery
- M/c site of mycotic aneurysm = Femoral artery
  - ↳ In bacterial endocarditis = Aorta
- M/c site of pseudo aneurysm = Femoral artery
- Asymptomatic
- M/c complication = Rupture

- Popliteal artery aneurysm = Thrombosis, embolism is complication
- IOC: CT scan

AORTA ANEURYSM

28:57

Asymptomatic abd aortic aneurysm

↓

Size in males > 5.5 cm
Size in females 4.5-5cm
(or)
↑ in size of 1cm / yr
} Intervention needed

Ascending aorta — 5.5 cm
Rate of ↑ in size > 0.5 cm/yr

Descending aorta — 6cm
Increase in size > 1cm / yr

- Open repair
- Endovascular
  Stenting
  ↓
  Endovascular aneurysmal repair
  ↓
  Complication = Endo leak

- M/c site rupture → left posterolateral retroperitoneum
- Mortally > 50% in patients with rupture

Venous Disorders

- Telangiectasia (or) Thread vein
  (or) spider vein → Vein < 1 mm

- Reticular vein → 1 - 2.9 mm
- Varicose vein → > 3mm

Varicose Vein

- > 3 mm
- 1° (More common)
  2°
- Superficial

Venous system ≈ Deep venous system

Perforators

↑

Venous pump (or)
Muscular calf pump
(GSV)

- 1° — Great saphenous vein involvement (More common)
  Short saphenous vein (SSV)
- In 1° = Main valve
  Perforator (or)
  Both valve, perforation
  } Involved

↓

Dilated vein

↓

Venous HTN

↓

Edema over ankle

↓

Colour change = Lipodermatosclerosis

↓

Inflammation, Fibrosis = ulcer

CEAP classification

C_0 = No sign of varicose

C_1 = Telangiectasia (or) Reticular vein

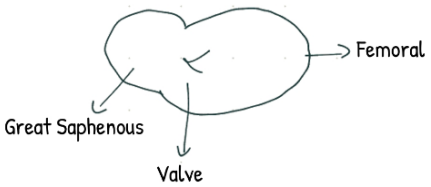
C_2 = Varicose

C_3 = Edema
C_{4a} = Pigmentation (or) Eczema
C_{4b} = Lipo dermatosclerosis
(or)
Atrophia blanching
C_5 = Healed venous ulcer
C_6 = Active venous ulcer

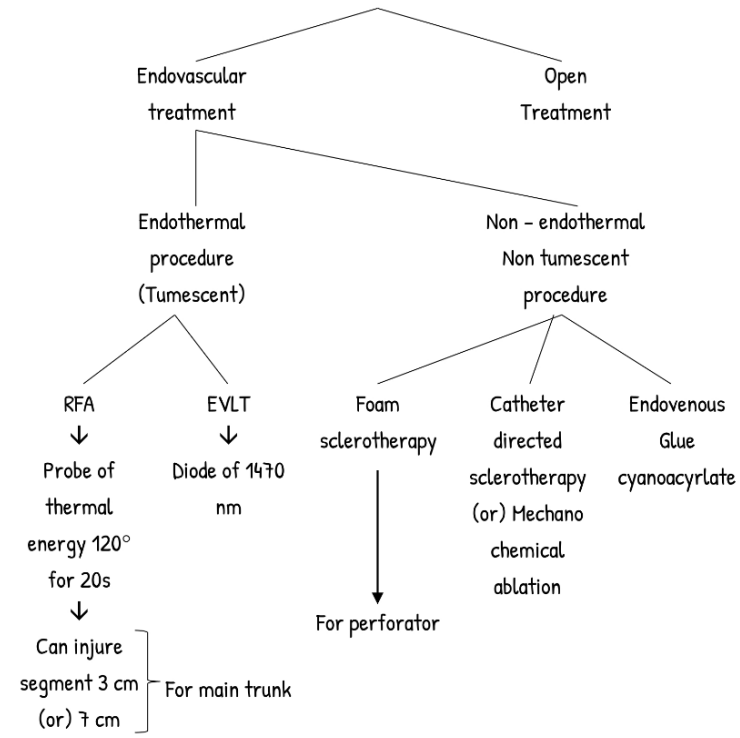
S - Symptomatic A - Asymptomatic
E_c = Congenital
E_p = Primary
E_s = Secondary
E_N = No venous case identified
A_s = Superficial veins
A_d = Deep veins
A_p = Perforators
A_n = No venous cause identified
P_r = Reflux
P_o = Obstruction
P_{ro} = Reflux, Obstruction
P_n = No venous pathology identified

- IOC = Doppler US (Probe = 7.5 - 13 MHz
  Site
  Size
  Perforators
  Deep vein obstruction +/-
  Diff b/w Acute / Chronic thrombus

- Mickey mouse sign =

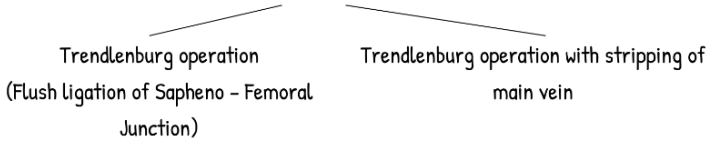


Management



- For foam = Air + Sclerosant (S)
  - A)
  - Na Tetradenyl sulphate
  - Tessari technique
  - A:S = 3:1
  - 4:1
  - Oscillate syringe for 10-20 times to make foam

Open operation



GSV = Saphenous nerve
SSV = Sural nerve
May be injured

- Compression dressing
  ↓
  Unno - boot

Class I = Pressure of 14 - 17 mm Hg
II = 18-24 mmHg (commonly used)
III = 25-35 mmHg

DEEP VEIN THROMBOSIS *28:26*

- M/c vein = Calf vein
- M/c vein leading to pulm. Embolism = Iliac Vein
  ↓
  Femoral vein

- Virchow's triad
  1) Abnormal surface (Endothelial damage)
  2) Abnormal flow (Turbulence (or) states
  3) Abnormal blood (Thrombophilia

- Risk factors
  1) Age
  2) Obesity
  3) Varicose vein
  4) Immortality
  5) Pregnancy
  6) Puerpurium
  7) Trauma — Pelvic, Lower Limb
  8) Surgery — Pelvic, Lower Limb, Hip
  9) Malignancy
  10) HF
  11) MI
  12) Infection
  13) IBD

14) Estrogen therapy
15) Previous DVT
16) Thrombophilia — Congenital
Def of antithrombin III protein C, S
17) Antiphospholipid antibody
(or)
Lupus anticoagulant
18) Factor V Leiden gene defect
19) Dys fibrogenemia
20) Nephrotic syndrome
21) Polycythemia
22) Paraproteinemia
23) Behcet's syn
24) Homocystinuria
25) PNH

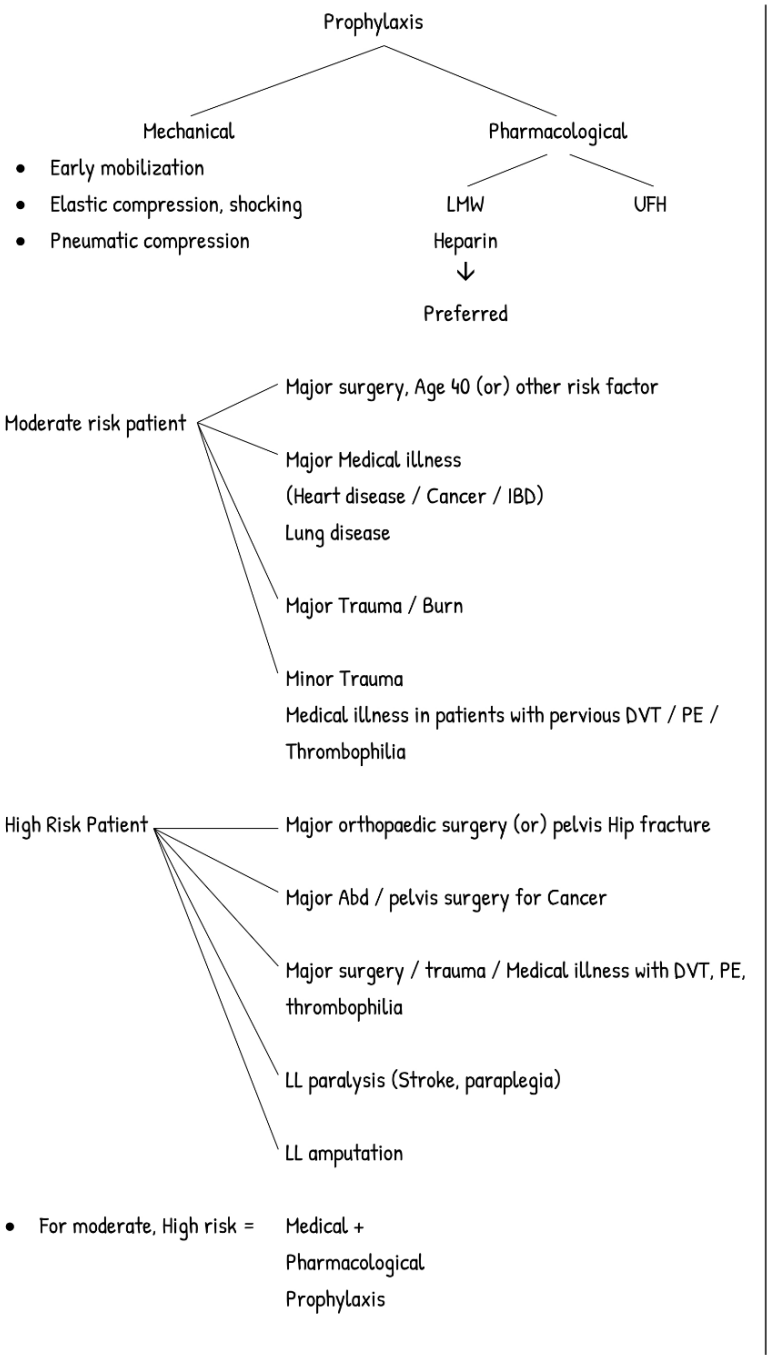
- IOC: Doppler
- Modified well criteria for predicting DVT

- LL trauma (or) surgery (or) Immobilization in plaster cast = 1
- Bed ridden > 3 day (or) Surgery in last 4 week = 1
- Tenderness along the line of femoral / popliteal veins = 1
- Entire limb swelling = 1
- Calf > 3cm longer than other side, 10cm below tibial tuberosity = 1
- Pitting edema = 1
- Dilated superficial collateral veins = 1
- Previous DVT = 1
- Malignancy (including t/t 6 months ago) = 1
- IV drug abuser = 3
- Alternative diagnosis is more likely than DVT = -2

0-2 = Low prob (5%)
1-2 = Moderate (17%)
>2 = High

Venous Disorders

Topic Notes: 7



- For moderate, High risk = Medical + Pharmacological Prophylaxis

- Treat: LMWH
  ↓
  Warfarin

Hernia

M/c → Inguinal hernia (both in Female & Male)
↓
Incisional hernia

Ventral Hernia:

- Umbilical
- Epigastric
- Lumbar
- Traumatic
- Incisional

} ↑ intra abd. Pressure.

1st investigation → USG
IOC → MRI
Gold standard → laproscopy
Most sensitive → Herneography

Note:
Right > left
Male > Female
Indirect > Direct.

MPO

- Funnel shaped orifice lined entirely by Fascin. Muscularis
  Medially → Rectus muscle & sheath
  Laterally → Iliopsoas
  Superior → Internal oblique & TA.
  Inferior → Cooper's ligament

NYTIUS CLASSIFICATION 9:30

Type - I - Indirect inguinal
Type - II
Type - IIIa - Direct
Type - IIIb - Indirect inguinal c̄ elongation of or so much sothat I.E.A shift medial & there is enlargement of post wall
- Combined < Direct / Indirect

Type - III C → Femoral
Type IV → Recurrent.

EUROPEAN HERNIA SOCIETY *12:00*

Size: (1) ≤ finger (2) - 1-2 finger (3) → ≥ 3 finger

Medial } to IEA → M
Lateral } L

Femoral → F

Ex: PL (1) → Primary Lateral Hernia
Size → (1)

Reducible hernia → cough impulse

- Obstruction
- Strangulation
  ↓
  Earliest symptom → coliky pain → severe cont. pain
  Sign → Tenderness

Congenital Hernia:
Patent processus vaginalis

- Accq. Hernia
- Congenital hydrocele → consider as hernia

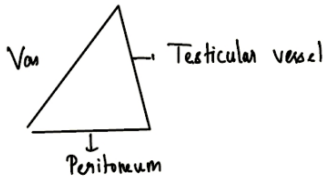
Treatment:
Herniotomy (except direct & sliding hernia)
Hernioraphy } → Wall strengthening procedure.
Hernioploty } → Methods:

	Morcy
	Bassin's
	Sholdice.
Ant. Approach repair	Post. Approach repair
Hernioraphy	Shoppe's
Lichenstein	Lap — TEP / TAPP

- TEP
  Avoid creation of pneumoperitoneum

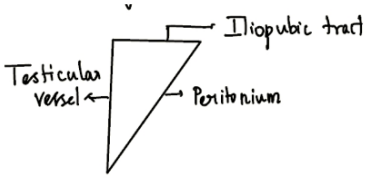
- TAPP
  Create pneumo peritonium.

Laproscopy repair:
Triangle of Doom: (Medial)



Content:
Evt - iliac vessel
Deep circumflex iliac ven
Genital torsion of GFN

Lateral: Triangle of pain



Content:
Genitofemoral N.
Lat. Cutaneous N. of thigh → m/c nerve injury.
Int. cutaneous branch of ant. Femoral nerve
M/c vessel injured → inf. Epigastric artery

Circle of death / Corona Mortis:
Injury to aberrant nerve of obturator vessel → Vein (M/c)
→ Artery

Repair of choice:
Lichenstein Tension free hernloplasty.
Recurrent or Bilateral → Laproscopic
Ant. Approach initially → recurrence → post. Approach

Incase of TAPP laproscopy, check both sides.

Anasthesia → local anaesthetic + short GA
Lap → GA
Mesh

Light	Heavy weight
Largepore	Small pore
1 - 1.5 mm	Big size

Max. risk of strangulation:

- Femoral

Least risk → Direct hernia

INCISIONAL HERNIA *37:00*

Risk factors:

- Obesity
- DM
- SSI
- Advancing age
- Malnutrition
- Ascites
- Corticosteroid
- Pregnancy
- Jaundice
- Malignancy
- In app suture length
  (jerkin's rule 4:1)
- Collagen defect

Loss of domain:

- Size (or) vol. of defect > 25% of vol.of abd cavity

- Asymptomatic & size of defect not increasing → waterful waiting → Abd binder
- Size < 2cm → primary repair
- Multiple defect (or) size > 2cm → prosthetic repair
  ↓
  Retrorectus mesh repair
- Lap IPOM → composite
  ↓
  Two layer
  Outer layer → Prolane
  Inner layer → Oxidized cellulose
- Mesh should go beyond 5 cm of hernia

Epigastric Hernia → Fatty hernia of alba
Tinea alba → Defect always sin midline
→ Always above umbilicus
→ Pain @ epigastric
→ Swelling
→ Multiple defects
→ Common in muscular individual
→ M/c cause of recurrence.

Hydrocele:

Primary	Secondary
M/c → Painless scrotal mass	• Infection
O/E → Non reducible	• Torsion
→ No cough impulse	• Trauma
→ Fluctuation +	• Tumor
→ Can get above swelling	
→ Transillumination	

If small hydroule → lord & plication
If large → Jaboulay's procedure

General Surgery – Part 1

- Ebb phase
- Flow phase
- Anabolic phase

Ebb. Phase:

- Last upto 24-48 hr → ↑ Catecholamines
- ↓ BMR → ↑ cortisol
- ↓ Co → ↑ Aldosterone
- Hypothermia
- Hypovolemia
- Lactic acidosis

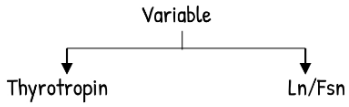
Flow phase:

- 3-10 d
- Mobilization of body energy source
- Tissue edema
- Leucocytosis
- ↑ O_2 consumption → ↑ Insulin
- Gluconeogenesis → ↑ Glucagon
- ↑ Catecholamines → IL - 1 / IL-6 / TNF - $\propto$
- ↑ Cortisol → ↑ C-reactive protein
  → ↑ Albumin
  → Energy expenditure → ↑ (above the resting)

Anabolic phase

- Lost 10-60 day
- Replace last body tissue

↑	↓
Catecholamine	Thyroxine
Gn	Triiodothyroxine
Vasopressin	Testosterone
Cortisol	
Aldosterone	
Glucagon	
Corticotropins	



ERAS:

- Enhanced recovery after surgery
- 1st utilized in colorectal Ca.

Components:

- Pre-op. carbohydrate loading
- Stop solid food - 6 hr before surgery
- Liquid - 2 hr before surgery
- Avoid pre-op. dehydration
- No Nasogastric tube
- Short incision
- Short acting anaesthetic drug
- Pain control
- Avoidance of opioid analgesic
- Periop. temp. maint.
- Prevention of Post op. Nausea & Vomiting
- Early intro oral diet
- Early removal oral diet
- Early removal of catheter
- Avoid mechanical bowel preparation

WOUND

16:23

Phase of inflammation 0 - 3d
Phase of proliferation 3d - 3 week
Phase of maturation 3 week - 2 yr
1st 24 hr → Neutrophil
24 - 48 hr → Macrophage
3 d (72 hr) → Fibroblast

Collagen:

Initially Type III collagen ↑
↓
In phase of maturation → Type - I
Max tensile → 70-80% by 3 month

Classification of wound closure

- Primary intention healing - 48 hr
- Secondary intention healing
- Delayed primary (or) 3° healing

Golden period → 6 hr
Decisive period → 4 hr

FACTORS INFLUENCING WOUND HEALING 26:00

Site of wound
Structure involved
Mechanism → Incised
→ Crush / avulsion
Contamination → Bacteria
→ Foreign

Less of tissue

- Local factors
  - Previous radiation
  - Tension
  - Pressure
  - Arterial or venous insufficiency.

- Systemic factor
  - Malnutrition
  - Trace element (def Za / Fe)
  - DM
  - Immunosuppression
  - Smoking
  - Jaundice
  - Uremia
  - Advancing age
  - Obesity

Rank & Wakefield classification

Hypertrophic scar	**Keloid**
Hyper proliferation of collagen	Disorganized growth of collagen
Usually follows trauma	Spontaneous
Male = Female	Female > Male
No racial	Black ?
No genetic	Genetic
Rise above the wound but size confined to wound margin	Ugly duckling appearance
Flexor surfaces	Extensor surf
3 weeks	3 month
Management: Pressure dressing ↓ Intralesional steroids ↓ Fails ↓ Re - excision & repair	Intralesional steroid ↓ fails Wide excision with adjunct therapy. ↓ RT Pressure ILS.

Langer's line
Line of arrangement of collagen

Krassl's line:
Resting skin tension

General Surgery - Part 2

Surgical site infection

- c̄ 30 d of surgery
- c̄ 1 yr of implant
- M/c org: staph. Aureus

Types:

Type - I	Clean	Wound exposed to only microorg, under controlled environment.
Type - II	Clean contaminated	Wound is exposed to not only skin but also GI / Resp / UT org in controlled environment.
Type - III	Contaminated	Wound exposed to any org. in uncontrolled environment
Type - IV	Dirty	Gross spillage already existing in uncontrolled.

CLASSIFICATION OF WOUND INFECTION 9:50

Grade 0 - Normal healing
Grade 1 - (N) with mild Erythema
Grade 2 - Erythema c̄ other signs of inflammation
Grade 3 - clear or serohaem discharge
Grade 4 - Pus
4a → at one point
4b → Along wound > 2 cm
Grade 5 - Deep or severe wound inf. c̄ or without tissue breakdown
- Hematoma requiring aspiration

Mnemonic

A	Additional treatment
S	Serous discharge
E	Erythema
P	Purulent exudate
S	Separation of deep tissue
I	Isolation of bacteria
S	Stay in hospital

Antibiotic for wound infect → 10 score
Debridement of wound → 5 score
No add. Treatment → 0 score

Management:
Grade I & Ii → Anti inflammatory
Grade III, IV, V → Immediately open suture
↓
Take swab
(Culture and sensitivity)
↓
Systemically start Broad spectrum Ab.
↓
Dressing of wound

Surgical site infections:
Risk factors:

- Obesity
- Undernutrition
- DM
- Uremia
- Jaundice
- Cancer
- Chemotherapy
- Radiotherapy
- Steroids
- Systemic shock
- Local ischemia

→ Patient factors

- Contaminated med
- Inadequate disinfection
- Inadq. Skin antiseptic

→ Environmental factors

- Emergency procedure
- Hypothermia
- Inadeq. Ab. Prophylaxis
- Poor oxygenation
- Prolonged Pre - op. hospitalisation
- Poor surgical technique
- Presence of foreign body

→ Treatment factors

Prevention

- Laminar flow
- At least 15 air changes / hr
- Ultraclean air in ortho, cardiac, Neuro operating room

Adequate skin antisepsis:

- Chlorhexidine sol. In alcohol base
- One application, centrifugally
- Nipple to ext. genitalia

PPE:

Order	Order & removal
Gown	• Gloves
↓	↓
Mask	• Goggles
↓	↓
Goggles	• Gown
↓	↓
Gloves	• Mask

Nutritional

14 days before surgery

Cessation of smoking → 1 month

Type - I → No prophylactic Ab
II → Prophylactic Ab
III & IV → Prophylactic & Therapeutic Ab.

Best time:

At the time of induction of anaesthesia
↓
30 min before incision
↓
1hr.

Duration of surgery → 2 x half life

Cefazolin → 2 hr

Vancomycin → 2 hr before surgery

General Surgery - Part 3

Score to Predict high risk patient:

ASA scoring:

Grade I -	Healthy	0.3%
Grade II -	Mild systemic disease with o functional limitation	0.7%
Grade III -	Severe systemic disease with definitive functional impairment	3.5%
Grade IV -	Severe systemic disease with constant threat to life.	18.3%
Grade V -	Morbident patient unlikely to survice 24 hr with or without	93.3%
E -	Emergency.	

MET (Metabolic equivalent of Task)

In adult at rest,

O_2 consumption → 3.5 ml / kg / min

1 MET → Eating and dressing

4 MET → Climbing 2 fight of stairs.

6 MET → short run

>10 MET → able to participate in sternous work

<4 MET → High risk pt.

Cardio – pulmonary exercise Test: (CPET)

O_2 consumption

CO_2 produciton

High risk ← Anaerobic threshold > 11

Peak O_2 consumption < 15 ml / kg / min

Revised Cardiac Risk Index:

- H/o IHD (1)
- H/o compensated or prior Heart failure (1)
- H/o cerebrovascular disease (1)
- Renal insufficiency (1)
- High risk surgery (1)

Score 0 → 0.4 %

1 → 0.9 %

2 → 7 %
3 → 11 %

KERNOFSKY PERFORMANCE 10:40

100 – Normal no complains, normal activity,
No evidence of disease
90 – Abb to carry on normal activity.
Minor signs or symptoms
80 – Normal activity with effort
Some signs or symp. of disease
70 – Cares for self unable to carry on normal activity or to do active work.
60 – Requires occasional assistance
But able to care for his personal assistance
50 – Requires considerable assistance & Frequent medial care.
40 – Disabled requires special care & assistance
30 – Severely disabled, hospital admission is indicated although not imminent.
20 – Very sick, hospital admission is necessary.
10 – Moribound,
Fatal processes
0 – Dead.

DAY CARE SURGERY 16:00

Admitted & discharge within 12 hr

Selection criteria:

- Physiological age not chronological age
- Patient ASA – ½
- BMI < 40 for surface procedure
  < 38 for deep surgery
- HTN patient with regular medicine & BP < 180/110
- DM with strict control, Hb_1AC < 8.5%
- Social criteria → Responsible adult available 1st 24 hr.
- Surgery → operative < 2 hr
  Ability to eat and drink,
  With reasonable time scale
- Easy access to emergency.

Examples:

- Excision of Anal lesion
- Haemorhoidectomy
- 1° & recurrent ingunal & femoral Hernia
- Lap. Cholecystectomy
- Lap. Fundopilication
- Pilonidal sinus surgery
- Excision of Breast lesion
- Laser prostectomy
- Carpel tunnel relax. Procedure
- Duptyren's fasciotomy
- Therapeutic orthroscopy of knee / shoulder
- Varicose vein procedure.

SEPSIS GUIDELINES *23:29*

- SIRS
  ↓
  Sepsis → Severe sepsis → Septic shock

SIRS

Temp < 36°C or >38°C

TLC < 4000 or >12,000

HR > 90

RR > 20/min or PaCo2 < 32

Sepsis:

>2 SIRS with documented blood infection.

Severe sepsis:

Sepsis with one or more organ dysfunction

SBP < 90

MAP < 70

S. Lactate > 2 mmol/L.

Septic shock:

- Sepsis induced hypotension which is persisting despite adequate fluid resuscitation
- Requires vasopressor

APACHE – II SCORE

Parameters:

- PaO_2 → RR → GCs
- Temp → $S.K^+$
- MAP → Creatinine
- pH → Hematocrit
- HR → WBC

SOFA score

Parameters:

- PaO_2
- GCs
- S. Bilirubin
- MAP
- Platelet count
- Creatinine

Q – SOFA Score:

SBP $\leq$ 100 (1)

RR $\geq$ 22 (1)

GCs $\leq$ 14 (1)

Score $\geq$ 2 → High Risk
→ long stay in ICU

Sepsis – 3 Guidelines:

- SIRS removed
- Sepsis: Life threatening organ dysfunc. Caused by dysregulated response to infection

- 6 hr. sepsis bundle:
  - Strategies
  - Timely
  - To obviate progression to sepsis

- Within 6 hr

Give three	Take three
↓	↓
IVF challenge	S. Lactate
I.V antibiotic	Blood culture
O_2 monitor	Blood count

Algorithm:

Within 3 hr
→ Blood lactate
↓
Obtain blood culture before starting Ab
↓
Start I.V broad spectrum Ab
↓
IVF challenge - Crystalloid 30ml/kg
↓
Start vasopressor
↓
Measure CVP
↓
Measure SPO_2
↓
Remeasure S. lactate.

Goals:

CVP - 8-12 mmHg

MAP - ≥ 65 mmHg

S. Lactate - (N)

Mixed O_2 - 70 - 65%

Urine output → >0.5ml/kg/hr.

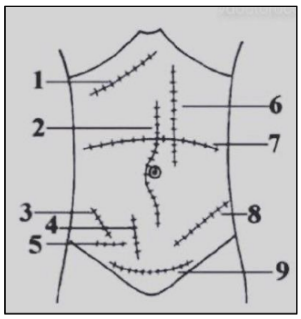
When to start Blood transfusion.

- Hb < 6gm/dl (even asymptomatic)

Haemoglobin level (g/dL)	Indications
<6	Probably will benefit from transfusion
6-8	Transfusion unlikely to be of benefit in the absence of bleeding or impending surgery
>8	No indication for transfusion in the absence of other risk factors

Basic Surgerical Skills

Choice of incision



1. Kocher incision
2. Midline incision
3. Mc Burney incision
4. Battle incision
5. Lanz incision
6. Para median incision
7. Transverse incision
8. Rutherford Morrison incision
9. Pfannenstiel incision

In Laproscopy,

Gas used → CO_2 10-12 mmHg

Due to this,

↑	↓
SVR	↓ LVE
MAP	RBF
HR	Splenic Blood flow
ICP	Portal blood flow
CBF	Pulmonary compliance

Hemodynamic change.

Bradykardia
↓
Tachyehardia
↓
AF

Creation

- Open
  - Hassan's trocar
- Closed
  - (Blind)
  - (Vere's needle)

Burns

Classification

1° degree burn → superficial –
- → Painful
- → No Blisters
- → Capillary filling (+)
- → Heals without scar (5–7 d)

2° – Partial thickness

Superficial partial ↓
- Blister (Hrn)
- Painful
- Cap. Filling (+)
- Sensation intact
- Very painful
- Very oozy
- Moist
- Red

Group A

Deep → Scar

Blister (+) (Thick)
- Dark red base
- Cap. Filling → Sluggish
- Some anaesthesia
- Less oozy
- Moist (Slight)
- Some mottling

Blister (–)
- Difficulty in diff sharp & blunt pressure.
- Sensation ↓
- Dry
- Mottling
- Blackish red ↓ Deep dermal.

Mid – dermal

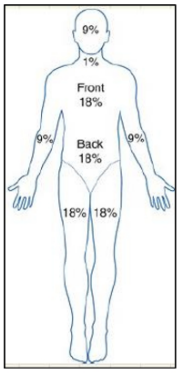
Full thickness

3°
Subcutaneous ↓ Subcutaneous

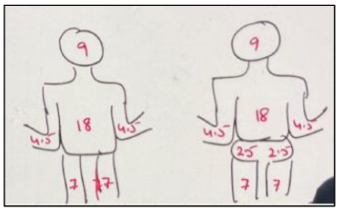
4°
Muscle ↓ Rhabdomyolysin ↓ ATN

Best way to know degree of burn → Biopsy
Most → C/E
% BSA
Adult → Rule of 9.

Adult body Part	% of total BSA
Arm	9%
Head	9%
Neck	1%
Leg	18%
Anterior trunk	18%
Posterior trunk	18%



Lund & Broader:



If age doesn't mentioned

If age mentioned:

	0-1	1-4	4-9	9-14	15	
Head	19	17	13	11	9	7
Neck	2	2	2	2	2	2

"Rule of Palm"

Scald → Superficial burn

Fat burn → deep

Flame burn → mixed

Electric → Full thickness

Chemical → Alkali - deep dermal or full.

Acid → Weak → superficial

Acid → Strong → Deep dermal.

Management:

A
B
C

Circulation

Circulatory shock present
Parkland → 4ml / kg / % BSA
1st half → 1st 8 hr
2nd half → 16 hr.

Acc. To ABA:	Fluid
Adult → 2ml / kg / %BSA	RL
In Paed → 3 ml / kg / % BSA	RL + 5% Dextrose
In electric → 4 ml / kg / % BSA	
1st half → 1st 8 hr	
2nd half → 16 hr	

- Wide bore short length cannula to be used
- Adequacy of resuscitation is best assessed by
  - >0.5 ml / kg / hr
  - >1 ml / kg / hr
  - >1 ml / kg / hr
  - >1.5 ml / kg / hr
- In 12 hrs, (in severe burn)
  - FFP
  - Albumin administered
- Edema main cause of inflammation
- Fluids
  ↓
  Pain relief
  ↓
  Nutrition
- Fluid should be started, if % BSA involved is > 15% in adults and >10% in paeds.

- Infection

  Mc. Org → staph. Areus, pseudomonas

  No prophylactic systemic Antibiotic

When to start systemic antibiotics:

If $>10^5$ Norg. / g.

Sign of sepsis.

M/c cause of death

Immediate → hypoxia

Early → Hypovolemia

Late → Sepsis

Management:

1° → exposure

2° → Superficial → Petroleum Jelly soaked dressing

2° → Deep → Topical Ala

Silver sulphasolazene + Cerium nitrate	Silver nitreate (0.5%)	Mefanamic 5%
	Occlusive drug	Acidosis
Improve CMI	Black pigmentation	Painful
Promote eschar	Meth hemoglobinuria	Penetrate eschar

Early excision & grafting:

Tangential

3-5 days after burns

< 40% BSA

C/I. presence of strep. β hemocysticus

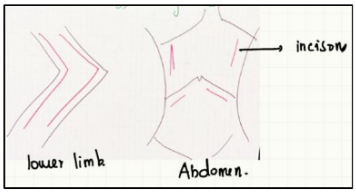
Compartment syndrome

If pressure > 30 mmHg

Indication of Escharatomy

- Pain or passive movement
- Cold extremities
- Distal ischemia

- Cyanosis



Burns → Curling - 30 - 35%
↳ Fundus
↓
Body
↓
Duodenum

Indications of referral:
>10% BSA in <10yr or >50%
>20% at any age
>5% full thickness
Burn involving face / Palm / Soles / Joints / Peritoneum

Chemical Burn
Inhalational burn
Burn c̄ trauma
Burn with co-morbidities

Assessment:
Modified Baux score:

- Age
- Inhalational injury
- % BSA

Zone of injury:
Zone I → Zone of coagulation
Irreversible damage
Max injured zone

Zone II → Zone of stasis
Inj. Or necrosed tissue
Properly managed → reversed

Zone III → Zone of vasodilation

Surgery:

Graft — Flap

Tissue transferred
Without its blood supply

Split thickness
Epidermis + part of dermis
↓
Thin → 0.008 - 0.012 inch
Intermediate → 0.012 - 0.018 inch
Thick → 0.018 - 0.024 inch
(Podge H)

Full thickness
Epidermis + dermis
- Cosmetic use
- In donor, healing c̄ primary intension.

↑ dermal content:
- ↑ primary contraction, ↓ 2° contraction
- ↑ durable
- ↑ Time taken for adoption.
- Functional use
- Donor area heals because of left out skin appendages
- No hair
- No sweat

Graft survival:
1st 48 hr → plasma inhibition
↓
4-5 d → inosculation → vessel start aligning
5-7d → Graft arterial & venous flow.

M/c cause of Graft rejection → shearing force.

Flaps:

- Mathes & Nahai's classification
- Mc flap → TRAM → Deep Epigastric artery
- Ideal → perforation flap

TRAM flap. Complication:

M/c early → Flap necrosis

M/c date → Incisional hernia

PMMC Flap → Thoraco acromian vessel

DPFC Flap → Perf. Br. Of int. mammary artery.

Melolabial flaps:

- Abbe's
- Abbe's estlander
- Kerapanzoe
- Limberg

} Facial flaps (around lips)

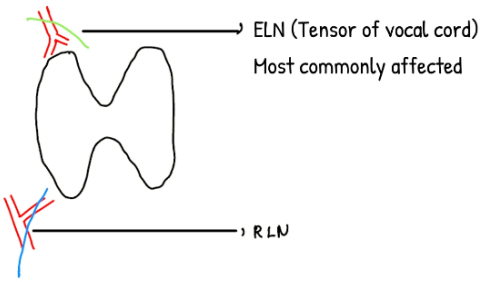
Ant / Posterolateral thigh → Post. Branch of profanda femoris

Apron flap → Platysmal flap

Ant / post lateral forearm flap → Post. Br. Of profunds brachi

Endocrine Surgery

Thyroid:



Cernes classification

Type 1 > 1 cm
2a < 1 cm
2b

V/L injury to RLN → Compensation, Position → Weak or Horse voice

B/L injury to RLN → Stridor.

Inf. Thyroid artery should never be ligated.

Reason:

- Main blood supply to Thyroid
- Damage to RLN

Investigation:

- Non invasive
  - USG
  - CT
  - PET
  - Thyroid scan
- Invasive
  - FNAC
    - Core needle
    - Incisional
      - Not used in thyroid
      - Only in lymphoma, anaplastic carcinoma
  - Biopsy
    - Excisional

FNAC:

- FNNAC preferred
- 23-25 G needle used
- Thy 1 - Non - diagnostic
- Thy 1c - Non - diagnostic cystic
- Thy 2 - Non - neoplastic
- Thy 3 - Follicular
- Thy 4 - Suspicious of Malignancy
- Thy 5 - Malignancy

USG:

Can't find Retrosternal extent of thyroid

Most specific finding → microcalcification

2nd most specific finding → Taller than wider

Most sensitive → solid

TIRADS

15:30

Composition

Cystic	0
Spongioform	0
Mixed	1
Solid	2

Echogenicity

Anechoic	0
Hyper Anechoic	1
Hypo Anechoic	2
Very hypo Anechoic	3

Shape:

Wider than taller	0
Taller than wider	3

Margin

Smooth	0
Ill defined	0
Lobulated / irregular	2

Extrathyroid extension	3

Echogenic foci

No foci	0
Large comet tail artefact	0
Macrocalcification	1
Peripheral rim calcification	2
Punctate echogenic foci	3

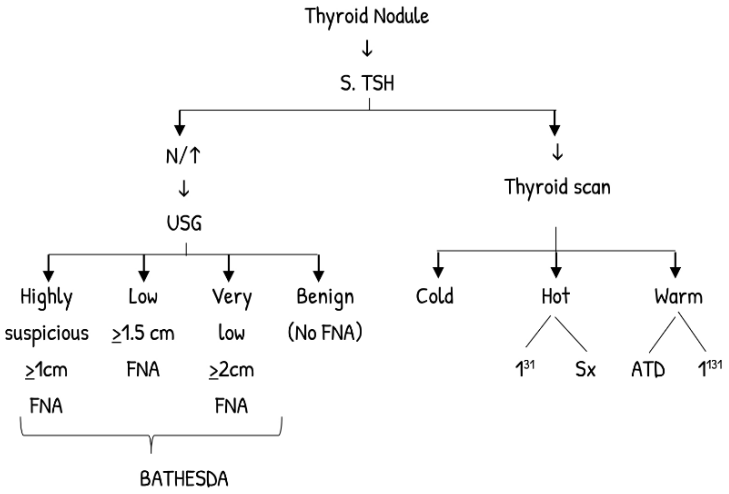
TR - 1	0	Benign	No FNA
TR - 2	2	Not suspicious	No FNA
TR - 2	3	Mild suspicious	Follow up
TR - 4	4-6	Moderate suspicious	≥ 1 cm → F/U ≥ 1.5 cm → FNA
TR - 5	≥ 7	Highly suspicious	> 0.5 cm → F/U > 1 cm → FNA

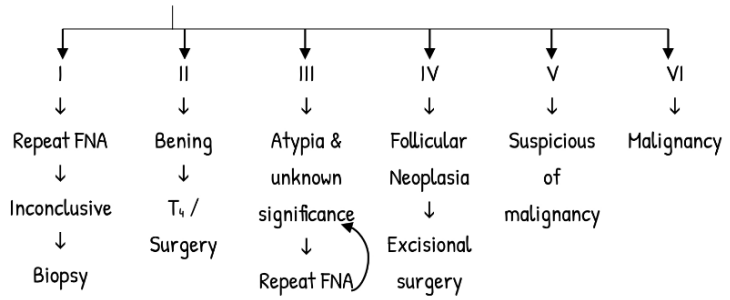
Thyroid Scan:

Tc^{99}

Toxicity → Nodularity

To locate ectopic Hyroid.

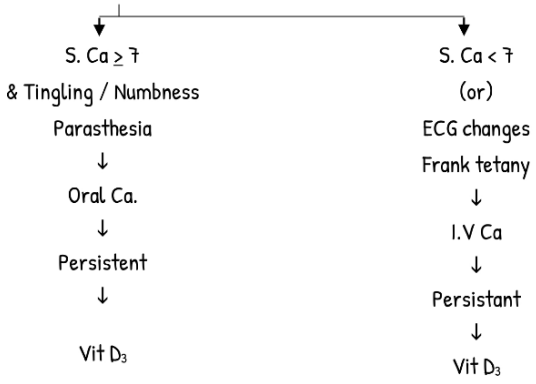




IOC Thyroid nodule → FNA
GOLD → Thyroid nodule → Biopsy
IOC → diff. benign / Malignant → FNA
Gold → diff. benign → Biopsy

Mc. Early complication of Thyroidectomy → RD → Hematoma

- Hypocalcemia → 3-5 d
- Parathyroid ischemia



Thyrotoxic crisis:
DOC prep → Carbamazole
→ Evening before surgery
PPL → Early Morning → at least 7 days before surgery.
(Lugol's Iodine)

Thyrotoxic crisis:

1st drug → PPL

Next → PTU
KI
Digoxin
Diuretics.

CARCINOMA THYROID 34:35

- Mc Thyroid Ca → PTC → FTC
- Worst prognosis → Anaplastic → MTC
- WDTC → PTC
  - FTC
  - Follicular variety of PTC
  - Hurthle
- Tumor marker → S. Thyroglobulin
- Para thyroid careinoma → Female > male
- Radiation
- Therapeutic I^{131}
- PTC → Orphan Amine eye.
  - Papillary injection cytoblast
  - Psammoma's bodies

- Mc → Lymphatic spread
- Through blood → Lung

FTC:

- 2nd unifocal
- Iodine deficiency
- Multinodular

Risk factor:

- Elderly
- Female
- Multinodular.

Scores:

A → Age ← A — M
G → Grade — M → Metastasis — A
E Extent ← E — C → Completion of Sx
I → Invasion
S Size ← S — S

Most. Imp. Age

MTC

- Sporadic
- Familial
  - Men 2 a
    - MTC
    - Pheochromo
    - Hyperparathyroidism
    - → Marfanoid feature
    - → Submucosal Neuroma (Exon 16)
    - Exon 10 – Codon
      - → 609
      - → 611
      - → 618
      - → 620
    - Exon 11 – codon 634
  - Men 2b

Mc. Mode of spread → Lymphatic
Blood → Liver → Bone
Osteoblastic secondaries

Treatment:

- Total thyroidectomy c̄ CND
- If LN enlarge or B/L → TT c̄ B/L CND
- If lateral enlarge → TT c̄ ipsilateral
  MRND c̄ CND

Drugs:

Target therapy
Vandelimib → EGF
Carbozenitinib → Multikinase
Labetozumab → Anti CEA mab
Sorafinib

Tumor marker → Calcitonin
Most specific → CEA
Histo → Amyloid stroma

Anaplastic → Worst
Elderly female
Mc mode → local inflammation
Blood → Lung.

Management: Tracheostomy

Biomarker
Ret - MTC / PTC
Met - PTC
TRK - 1 - PTC
TSH - R - hyperpenchmix adenoma

GSP - Follicular adenoma
RAS - PTC / FTC
PAX.8 } FA/FTC
PPARr-1 }
B - Ruf → PTC, Tall cell, Anaplastic
CTNNB-1 → Anaplastic
P-53 → PTC / FTC / Anaplastic
P-16 → PTC / FTC / Anaplastic
PTEN → FTC / FA

PARATHYROID 53:30

Mc. Cause → primary HPT
Parathyroid Adenoma → one

Parathyroid Hyperplasia → Fow

Parathyroid Ca → one gland.

Mc. Presentation → Asymptomatic hypercalcemia

Stones / Bone / Groons / Psychic overdose.

↑ S.Ca, ↑ PTH

USG

↓

(localized) TC^{99} scan

↓

(Most Sensitive) 4D multiplanes CT

↓

FNAC

Management:

Fluid + Bisphospharatos

Indication of Sx

1) Symptomatic
2) Asymptomatic
   - → S. Ca > 1mg / dt Above upper limit
   - → 24 hr. urinary > 400 mg Ca
   - → BMD at any < - 2.5 Given point
   - → ↓ Creatine clearance > 30%
   - → Renal stone
   - → Age < 50

Surgery:

- Single glanz → excise
- Miami's criteria
- PTH into (N) range of less than half of max. pre-op. PHT at 10 min
- PTH → 3 ½

  ½ gland → implant in non-dominant arm

Oral Cavity

Radical Neck Dissection

- Level I – V LN
- IJV
- SAN
- SCM

MRND →
- I → SAN
- II → SAN + IJV
- III → SAN + IJV + SCM

} Preserved

Selective Neck Dissection:

- Suproomohyoid → I – III
- Lateral → II – IV
- Posterolateral → II – V
- Central → VI

} Removed

M/c site of Malignancy → Tongue

Type → SCC

Staging:

- T_1 Tumor ≤ 2 cm
  DOJ ≤ 5 mm

- T_2 Tumor ≤ 2 cm
  DOI ≥ 5 mm & ≤ 10 mm
  (or)
  Tumor > 2 cm but ≤ 4 cm & ≤ 10 mm DOI

- T_3 Tumor > 4 cm or Any tumor > 10 mm DOI
- T_4 Moderate adr. Or very adv. Local disease

T_4 a
- → Lip
  - → Cortical bone
  - → Inf alveolar N
  - → Floor of mouth or
  - → Skin of face.
- → Oral cavity → invades adj structure
  → cortical bone of mandible or maxilla

→ Max. sinus
→ Skin of face

T4b → Very adv. Local invades,
→ Masticator space
→ Pterygoid plate
→ Skull base
→ Encase ICA.

- N_0 → N_0 regional LN
- N_1 → Single Ipsilateral LN I 3 cm c̄ ENE
- N_2 → Single ipsilateral
  2a LN > 3cm but I 6cm in greatest dimension.
  2b Multiple ipsilateral LN none > 6cm & ENE (-) (or)
  2c B/L or C/L LN none > 6cm & ENE (-)
- N_3 → LN > 6cm & ENE (-)
  3a↑ (or)
  3b → Any node & Clinical ovart ENE (+)

Most imp. Risk factor:

- Tobacco + Alcohol
- Panmasala
- HPV
- Fanconi's anemia
- Premalignant lesions
  - Erythroplakia
  - C. Hyperplastic candidiasis
  - Leukoplakia

- Medium → Oral submucosal fibrosis
  → Syphillic Glossitis.

- Mc mode of spread → lymphatic
- IOC → Incisional biopsy
- IOC staging → CT
- IOC distant metastasis → PET

SALIVARY GLANDS

15:00

Mc Benign → Pleomorphic adenoma (Parotid gland)
Mc malignant → Mucoepidermoid
Submandibular → Adenocystic (Perineural)
Parotid → Warthin's tumor
(Adenolymphoma)

In submandibular gland surgery
Structures at risk:

- Lingual Nerve (M/c)
- Hypoglossal Nerve
- Marginal Mandibular Nerve
- Ant. Facial vein
- Facial artery.

In case of parotid surgery,

- Greater Auricular N
- Facial Nerve

Pointer:

- Tragal pointer (Conley's pointer)
  (Inf. portion of cartilagenal conal 1 cm deep : inf. to tip of ext Cart. Canal)
- Upper border of post. Belly of digastric
- Squamo tympanic fissure
- Styloid process
- Mastoid process

Superficial parotidectomy → supr. Lobe
Conservative total Parotidectomy → Sup. & deep lobe presenting fascial N.
Radical parotidectomy → Wide excision of gland +
Masseter muscle
Sacrifice facial Nerve
With LNectomy

Transplant & Metabolic Surgery

Allograft → b/w same species
Isograft → Monozygotic identical twins
Xeno → Diff. species
Orthotropic → Same

Heterotropic:
Rejection

- ABO incompatibility
- MHC gene
- Minor histocompatibility

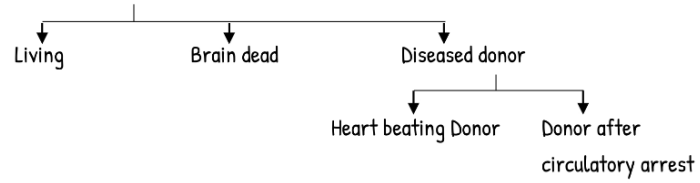
Mosty imp. For transplant → HLA DR
↓
A
↓
B

Hyperacute rejection → preformed AI
Preventable

Acute rejection → Immune response — Mono - Nuclear
Treatable — Cell infiltration

Chronic → Myointimal prolifation

Donor:



(Maastricht Criteria)

DONATION AFTER CIRCULATORY DEATH 6:59

1 → Dead on arrival at Hospital
2 → Resuscitation attempted without success
3 → Awaiting cardiac arrest after withdrawal of cardiac arrest

4 → Cardiac arrest while brain dead
5 → Cardiac arrest and unsuccessful resuscitation

1, 2, 5 → uncontrolled
3, 4 → controlled DCD.
Solution → Uni of Wis consin
Temp → 4°C
Major carbohydrate → Lactothionate
Major electrolyte → K^+

Cold Ischemic time

	Optimum	Safe
Kidney	< 18 hr	36 hr
Liver	< 12 hr	18 hr
Pancreas	< 10 hr	18 hr
S.I	< 4	6 hr
Heart	< 3	6 hr
Lung	< 3	6 hr

Liver → HLA matching not required.
Renal → Heterotropic transplant.
(L) Kidney commonly used.

Living donor:
R.A → I.SV
R.V → I.I.V

Brain dead
R.A → E.I.A
R.V → E.I.V

Ureter → Bladder
↓
Submucosal Tunnel
(Lich Gregoir's Technique)

Me early → Delayed func.
Complication

Mc Late Complication → Chronic rejection

For liver Transplant

- Modified child pugh criteria
- MELD
  INR
  S. Creatinine
  S. Bilirubin

Order of removal:

- CBD
  ↓
- HA
  ↓
- Supra ⅁ infra hepatic IVC
  ↓
- Portal vein

Order of implantation:

- Supra & infra hepatic IVC
  ↓
- Portal vein
  ↓
- HA
  ↓
- CBD
  ↓
- ETE

Primary sclerosing
Biliary Atresia } RNY HJ
Short stump CBD

Auxillary Liver transplant:

- Drug induced
- Poisoning
- Metabolic disorders

Complication:

- Mc Bacterial – TB
- Mc Viral – CMV
- Mc fungal – Pneumocystitis
- Mc malignancy – Skin (SCC, lymphoma)

METABOLIC SURGERY 23:27

Morbid obesity → BMI ≥ 35 c̄ co – morbidities
BMI ≥ 40 c̄ or c̄ out
Co – morbidities

Candidate:

1) Supralentorial component
2) Documented failure of all forms of wt. reduction procedures
3) BMI ≥ 40
4) BMI ≥ 35 c̄ onset of type II DM in past 10 yr
5) 30 – 34.9 c̄ onset type DM c̄ in 10 yr
6) Life long medicine supplement

Procedures:

1) Predominantly Restrictive
   - Sleeve Gastrectomy
   - Vehical Band Gastroplasty
   - Gastric Banding
   - Intragastric ballon implantation

2) Predominant malabsorption:
   - BPD (max. weight reduction)
   - Duodenal switch
   - Jejunoileal Bypass.

3) Mixed
   - RNY GB

Obesity surgery – MRS:

- Age ≥ 45 yr
- BMI ≥ 50

- Male
- HTN
- ↑ OVT | PE risk

Mc cause of morbidity:

- Pulmonary embolism

Asses:
LFT
Ferritin level
Folate level
Vit - D
Ca.
PTH
→ 3, 6, 12 monthly ↓ Annually

Vit B_{12} → 6, 12 monthly → Annually
Zn / Cv → Annually
Vit A / E / K, Se → if have concern.

Skin and Subcutaneous Tissue

Skin tumor:
Mc ➜ BCC ➜ SCC

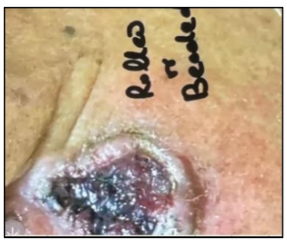
BCC:
Rodent ulcer / Tear cancer
Locally invasive ➜ rarely metastatis

Risk factors:

- UV Radiation
- Arsenic
- Aromatic Hydrocarbon
- Caal tar
- Ionizing Radiation
- Genetic

Mc in 40-80 y
Male > Female
Mc site ➜ Nose ➜ Inner Canthus of eye

IOC: Wedge biopsy



TOC: Wide excision
Margin ➜ 2 mm - 15 mm
Moh's micrographic excision
➜ High Risk histology
➜ Near vital structure
➜ Recurrent

SCC – everted:

Marjolin ulcer ←

Risk factors:

- UV
- Arsenic
- Tar
- Aromatic hydrocarbon
- HPV (5, 16)
- Chronic scar / Non - healing ulcer
- Venous ulcer
- Burn scar

Prognostic factor:

Depth of penetration

Size > 2 cm

Grade → Broader's classification

Site → Lip
→ Ear
→ High recurrence

Surgery:

Wide excision → < 2cm - 4 mm

MALIGNANT MELANOMA *8:37*

MC site: skin

Prexisting Nevus — Denov.

Risk factors:

- Sun exposure
- Family h/o
- >30 sun acquired Naevi
- H/o > 5 significant sun burn before 16 yr of age
- Fair. Red haired
- Immunosuppression

Criteria:

A ➜ Asymmetry
B ➜ Border irregularity
C ➜ Color variation
D ➜ Diameter > 6mm
E ➜ Evolution ➜ Change in size
➜ Change in shape / colour
➜ New lesion developing.

Seven point check list:

Major

- Change in size
- Change in shape
- Change in color

Minor

- Diameter ≥ 7 mm
- Inflammatory signs
- Crusting / bleeding in Naevi
- Sensory change in naevi.

- MC ➜ Superficial spreading
  ➜ Develops in pre existing naevi
  ➜ Slow growth

- Mc type ➜ denovo
  More common in Male ➜ Male
- Short clinical onset
- Lack Horizontal growth phase
- Well demarcated
- Mc in Head, Neck, Trunk.

LENTIGO MALIGNANT MELANOMA *16:00*

- Least malignant
- Female > Male
- Least metastatic potential
- Slow growing
- M/c in elderly Female
- Horizontal growth pattern seen
- M/c in Face, Neck, Hands.

Acral len hginous melanoma:

- Feet / Palm / soles
- Least common
- Black skin individuals
- Present as Fat irregular macule
- IOC → Excision → 2-3 min
- Presslow thickness staging
- Clark's staging

Management

Insitu → Wide excision (5mm)

< 1mm → 1cm

Depth

Deeper → 2 cm

LN → if LN enlarged → LNectomy
If LN not enlarged LN dissection
But thickness > 1 mm

Most imp. Prognostic: depth of penetration,
Lymph node involvement

Stage -	I	< 0.75m deep
	II	0.76 - 1.5 mm
	III	1.5 - 2.25 mm
	IV	2.26 mm - 3 mm
	V	≥ 3 mm

TT:

Debrafinib / Vernuarafinib

Trametinib (MAPK)