SURGERY

Nerve Injuries

-Breast surgery axilla clearance-

-Thyroid surgery-

-Parotid surgery- a) Deviation of angle-

b) Anesthesia at angle-

c) Frey-

-Submandibular surgery-

-Hernia surgery-

a) Loss of sensation over lateral thigh

b) Loss of sensation over suprapubic region

c) Loss of sensation over root of penis

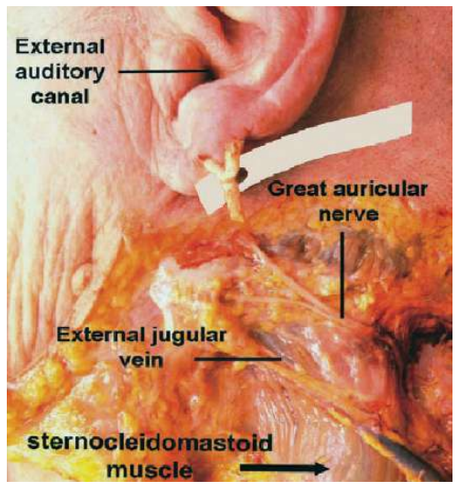
d) Loss of Cremasteric reflex

-Thymectomy

-Rectal Ca Surgeries (IMA ligation)

-Pelvic dissection

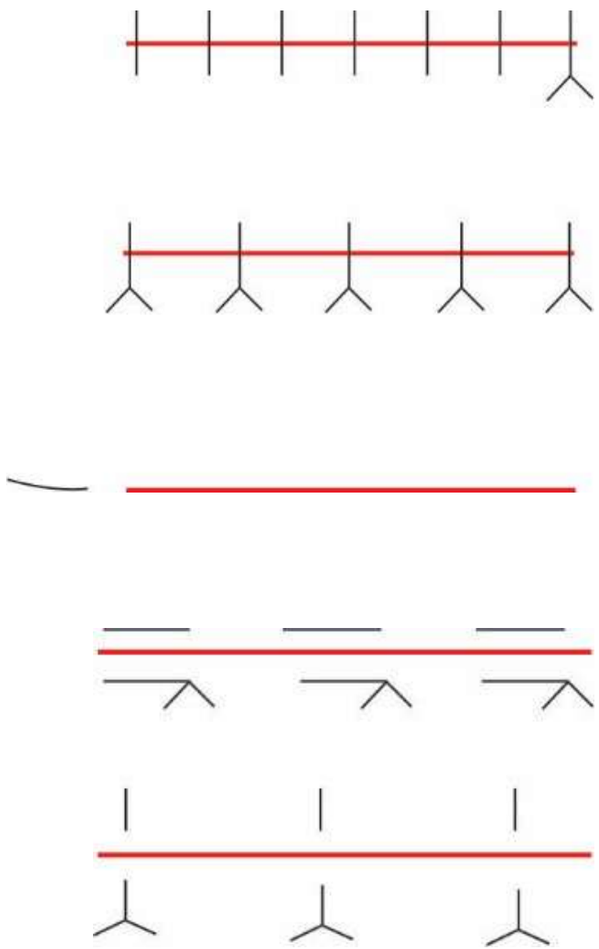
T2	Apex of axilla
T4	Nipples
T6	Xiphoid process
T10	Umbilicus
T12	Inguinal ligament

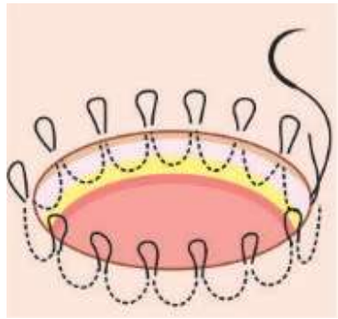


Sutures

- **Absorbable**
  - Mechanism:
    - Synthetic
      - Monocryl: Polygycaparone
      - PDS: Polydiaxonone
      - Vicryl: Polygalactin
      - Dexon: Polyglycolic acid
    - Natural
      - CATGUT
- **Non - Absorbable**
  - Synthetic
    - Nylon-Polyamide/ Ethilon
    - Prolene – Polypropylene
    - Novafil - Polybutester
    - Polyester- Ethibond
  - Natural
    - SILK

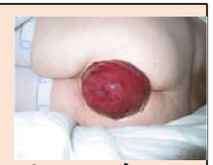
Suturing Techniques

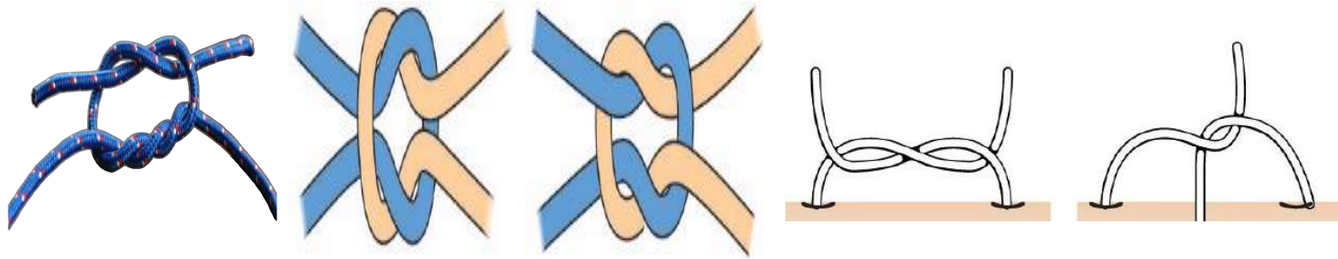




RECTAL PROLAPSE
Perineal-
Thiersche cerclage
Altemier's procedure (rectosigmoidectomy)
Delorme procedure (Plication)

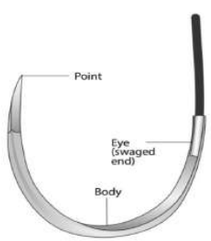
Abdominal-
Ripstein rectopexy
Wells



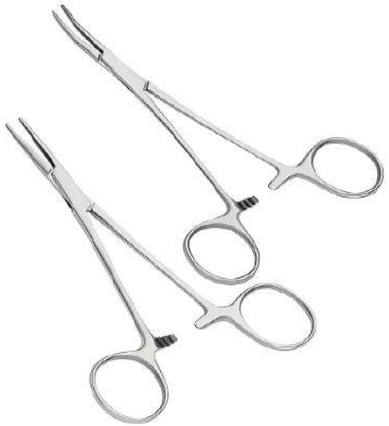


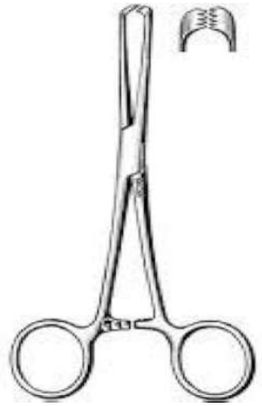
JENKIN'S RULE:
Length Of Suture Should Be __ Times The Length Of Wound
Angle Of Entry Of Suture Needle, IM injection:
Verees Needle Angle, SC Injection:
ID injection:

Instruments Needed For Suturing

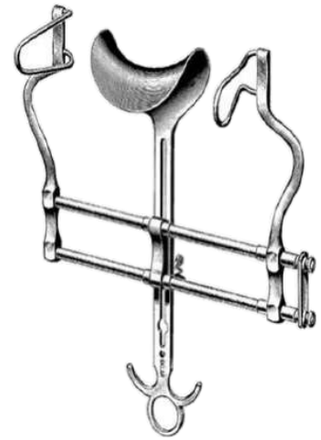


‘World of Forceps’



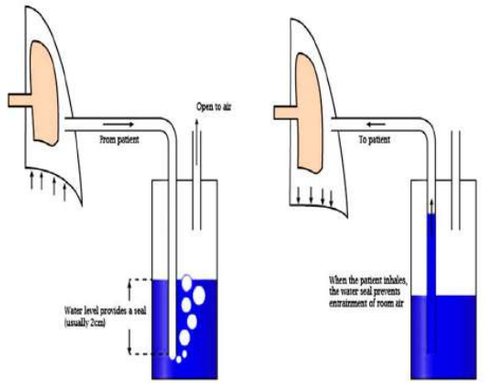


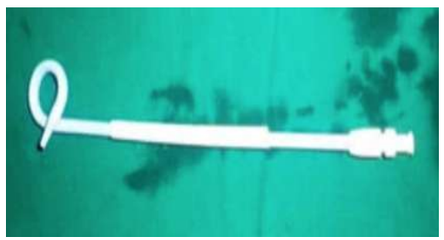
Retractors

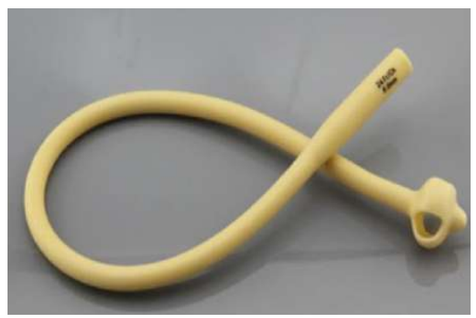


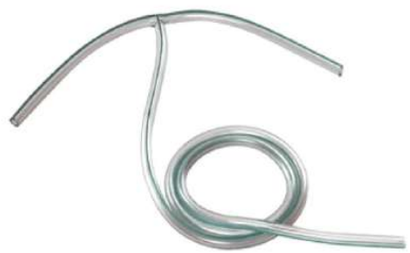
Bags & Drains

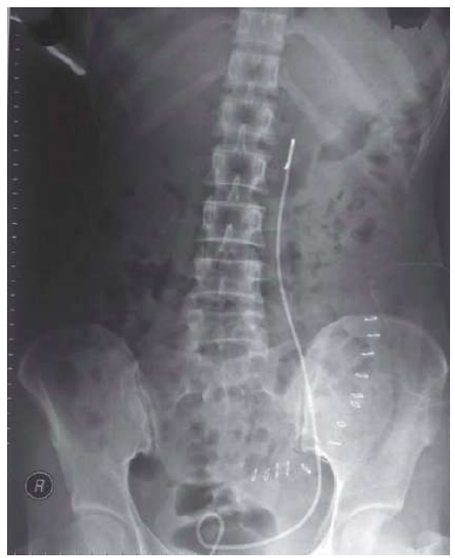

ATPL
ATPL


From patient
Open to air
Water level provides a seal (usually 2cm)
To patient
When the patient inhales, the water seal prevents entrainment of room air

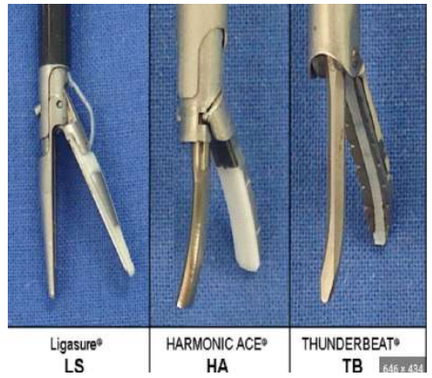








Hemostatic Devices



Surgical Safety Checklist

Before induction of anesthesia	Before skin incision	Before patient leaves operating room
Sign In	**Time Out**	**Sign Out**
PATIENT HAS CONFIRMED IDENTITY SITE PROCEDURE CONSENT-Written	❑ CONFIRM ALL TEAM MEMBERS HAVE INTRODUCED THEMSELVES BY NAME AND ROLE	Nurse verbally confirms with the team: ❑ The name of the procedure recorded ❑ That instrument, sponge and needle counts are correct How the specimen is labelled (including patient name) ❑ Any equipment issue
SITE MARKED	❑ Surgeon, anesthesia professional and nurse verbally confirm • Patient • Site • Procedure	
ANAESTHESIA SAFETY CHECK COMPLETED	Anticipated Critical Events	
PULSE OXIMETER ON PATIENT AND FUNCTIONING	Has antibiotic prophylaxis been given within the last 60 minutes?	❑ Surgeon, anesthesia professional and nurse review the key concerns for recovery and management of this patient
• DOES PATIENT HAVE A KNOWN ALLERGY? • DIFFICULT AIRWAY? • RISK OF >500ML BLOOD LOSS?	Essential imaging displayed	

OT ZONES

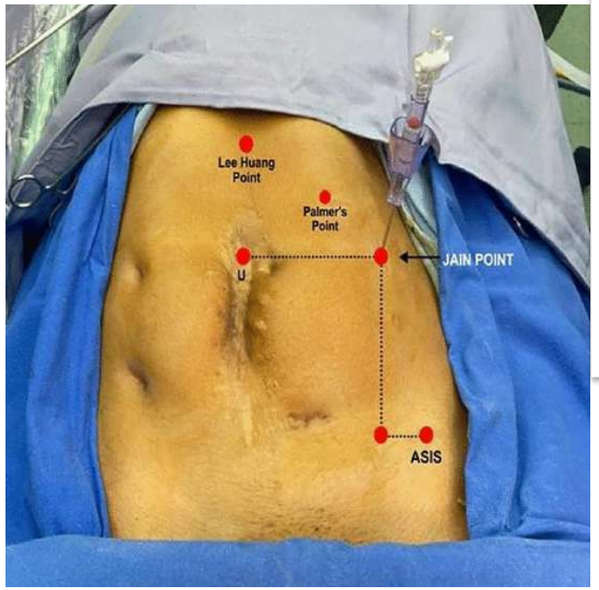
Zone 1:
-Protective reception, waiting, trolley bay, change rooms

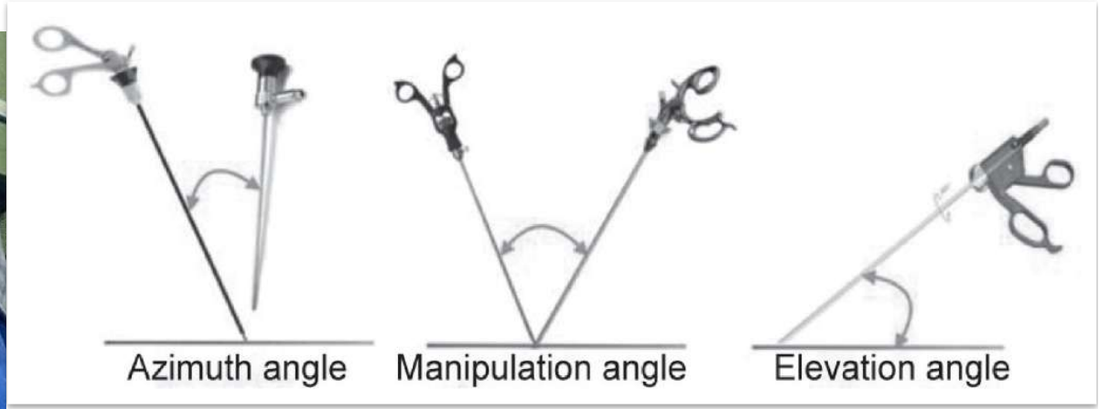
Zone 2:
-clean area –preoperative, recovery, plaster room, staff lounges, stores

Zone 3:
-Sterile area-Operating room, Anesthesia toom

Zone 4:
-Disposal area –dirty utility, disposal corridor

Minimally Invasive Surgery (Laparoscopy)

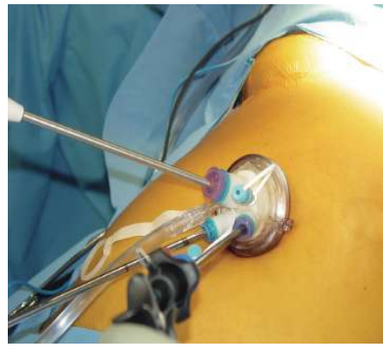




Open Technique – Hasson Technique

Confirmation of intraperitoneal position:

Gas:
Ideal Pressure:
Ideal volume:
J-reflex:



Better precision, tremor reduction
Loss of tactile feedback
DOF in Lap Sx:
Robotic Sx

ERAS Protocol

Phase	Key Components
Pre-op	No prolonged fasting (solids: 6hr, clear liquid: 2hrs) Carbohydrate loading No bowel prep
Intra-op	Minimal access Maintenance fluids Normothermia PONV prophylaxis (2 classes of drugs) Long acting LA (bupivacaine) or epidural analgesia
Post-op	Early feeding within 24hrs Early ambulation Discontinue iv fluids Multimodal analgesia (opioid-sparing) Early catheter removal

Types of Surgeries

-Gross purulence or existing infection?
-Perforated viscera> 4 hours old?
-Traumatic wound open >4 hours?
-Penetrating injury >4 hours old?

Class IV-Dirty /Infected
e.g. Surgical management of abscess, Repair of perforated bowel, Gangrene

-Acute, non-purulent inflammation?
-Unplanned entrance into GI/GU/ respiratory tracts?
-Major break in sterile technique?

Class III- Contaminated
e.g. Non-sterile debris in field, cholecystectomy with bile spillage or acute inflammation, Open cardiac massage

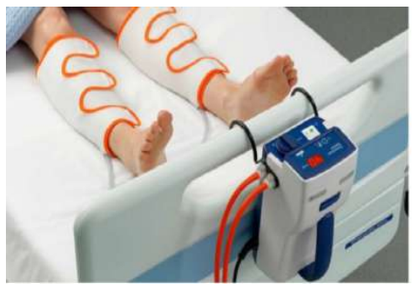
Controlled/international entry into the GI,GU, or respiratory tracts?

Class II- Clean-Contaminated
e.g. Hysterectomy, lobectomy, laryngectomy, small bowel resection, TURP, LSCS

Class I- Clean
e.g. mastectomy, hernia repair, thyroidectomy, TKR, THR, CABG

Post-Op Fever

Timing	Etiology	Prevention	Mnemonic
Anytime	Drug reactions, malignant hyperthermia	-	Wonder drugs
POD 1-3	MCC ON D1-	Incentive spirometry Early mobilization Antibiotics	Wind
POD 3-4	MCC OVERALL- UTI	Shot-term foley use	Water
POD 4-5	Deep venous thrombosis	Early mobilization, Sequential compression socks, LMWH	Walking
POD 7+	Surgical site infection	Dressing changes, preoperative antibiotics	Wound



Surgical Site Infections (SSI)

SSI definition-

BURST ABDOMEN
Day:
Pathognomic sign:
Mx:

Intra-abdominal abscess
MC site: Supine- Overall/ Ambulatory-
IOC
TOC

Grade I – Normal healing with mild bruising or erythema

Grade II – Erythema plus other signs of inflammation

Grade III – Clear or haemoserous discharge

Grade IV – Pus

Grade V – Deep or severe wound infection with or without tissue breakdown; hematoma requiring aspiration

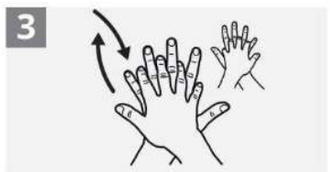
Criterion
A Additional Treatment
S Serous discharge
E Erythema
P Purulent exudates
S Separation of deep tissues
I Isolation of bacteria
S Stay in hospital prolonged over 14 days

Hand Hygiene

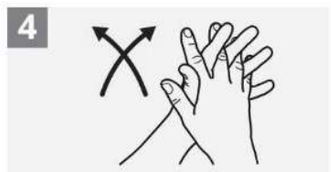
Wet hands with water;

Apply enough soap to cover all hand surfaces;

Rub hands palm to palm;



Right palm over left dorsum with interlaced fingers and vice versa;



Palm to palm with fingers interlaced;

Backs of fingers to opposing palms with fingers interlocked;

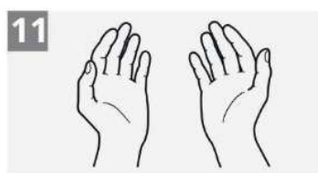
Rotational rubbing of left thumb clasped in right palm and vice versa;

Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;

Rinse hands with water;

Dry hands thoroughly with a single use towel;

Use towel to turn off faucet;



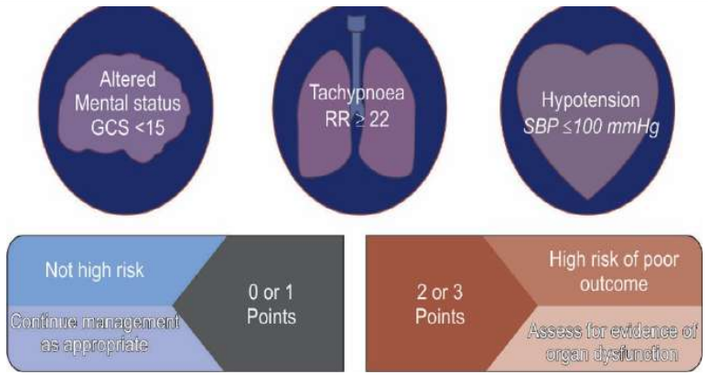
Your hands are now safe.

Sepsis

SIRS –2 or more +:
Core Temperature <36°C or > 38°C
HR >90bpm
RR >20/min or P_{co2} <32 mmHg
White blood cell count >12,000 /μL, <4000/μL, 10% bands
OLD:
SIRS:
Sepsis:
Severe sepsis:
Septic shock:

NEW:
Sepsis
Septic shock:

SURVIVING SEPSIS TARGETS:
CVP:
MAP:
Mv02:
UO:



Shock

	CO	SVR	CVP
Cardiogenic			
Hypovolemic			
Obstructive			
Distributive			
Neurogenic			

Minimum Monitoring	Additional Modalities
ECG	Central venous pressure (CVP)
Pulse oximetry	Invasive blood pressure
Blood pressure (non-invasive)	Cardiac output monitoring
Urine output	Base deficit & serum lactate

SHOCK + WARM EXTREMITIES + MV02 >70%:
Shock index-
Modified shock index-
ROPE:

-Best clinical indicator of adequacy of resuscitation:
-Best indicator to estimate fluid required for resuscitation:
-Best lab parameter to monitor tissue perfusion:
-Best marker of systemic perfusion:

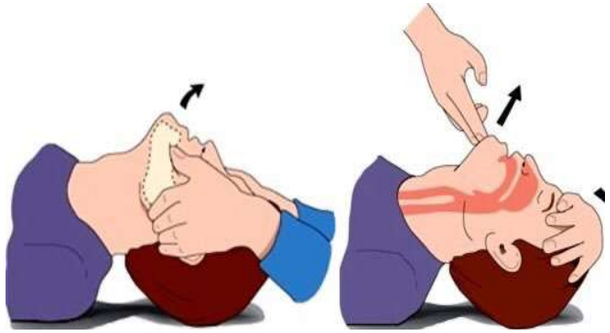
FLOW PHASE- Response to trauma/ stress
Acute:
↑ Cortisol, ↑ Catecholamines, ↑ Glucagon, ↑ Growth hormone, ↑ ACTH
↑ IL-1, IL-6, IL-8, TNF-α
Chronic:
↓ Insulin, ↓ IGF-1, ↓ Testosterone, ↓ T3

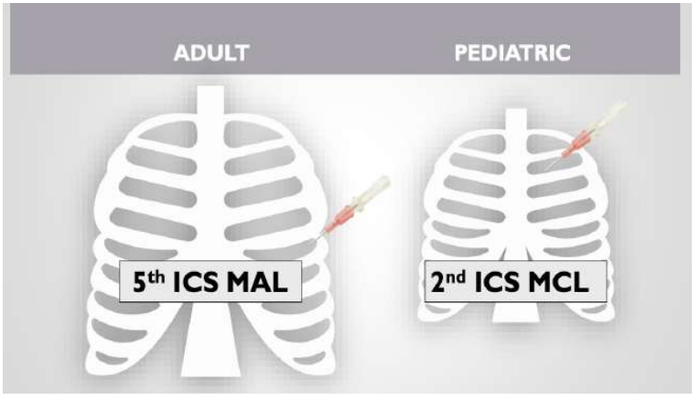
Introduction to Trauma

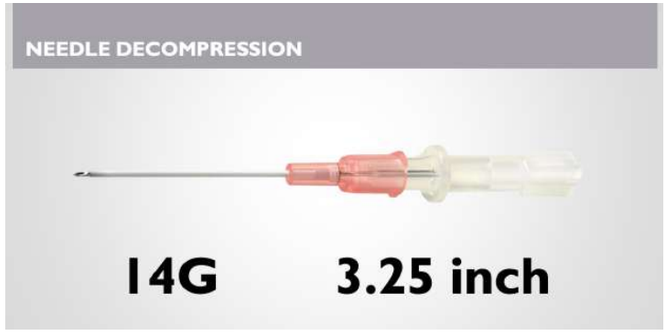
TRIAGE	Examples
Immediate: immediately life-threatening injuries	Severe facial trauma, tension pneumothorax, profuse external bleeding, haemothorax, flail chest, major intra-abdominal bleed, extradural haematomas
Delayed/ Urgent: injuries requiring treatment within 6 hours	Compound fractures, degloving injuries, ruptured abdominal viscus, pelvic fractures, spinal injuries
Minimal/ Non-urgent: walking wounded	Simple fractures, sprains, minor lacerations
Dead: Unsalvageable	Severe brain damage, very extensive burns, major disruption/loss of chest or abdominal wall structures

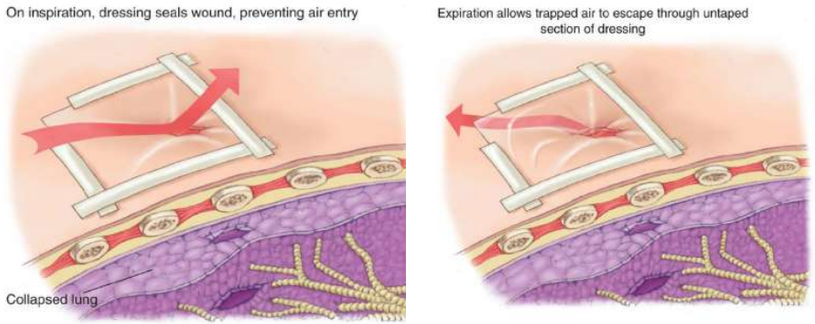
Primary survey	Identify what is killing the patient ADJUNCTS: ECG/ Pulse Ox/ NG /Foley/ Blood Ix
Resuscitation	Treat what is killing the patient
Secondary survey	Identify other possible injuries AMPLE
Definitive care	Make a management plan

PRIMARY SURVEY:
A
B
C
D
E
Field:




ADULT
PEDIATRIC
5th ICS MAL
2nd ICS MCL


NEEDLE DECOMPRESSION
14G
3.25 inch

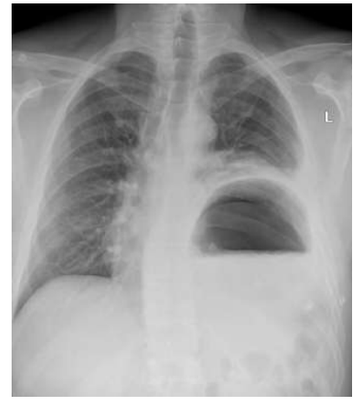

On inspiration, dressing seals wound, preventing air entry
Expiration allows trapped air to escape through untaped section of dressing
Collapsed lung

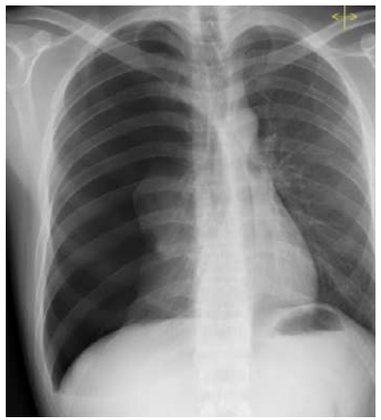
Q. A 25-year-old man was stabbed in the chest during a street fight. Blood pressure is 90/58 mm Hg, pulse is 124/min, and respirations are 30/min. The patient is in severe respiratory distress. Breath sounds are present on the left and absent on the right. Heart sounds are normal. The neck veins are distended. The patient becomes obtunded during examination. Which of the following is the best next step in management?

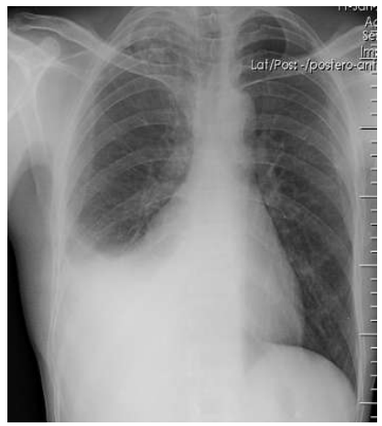
A. Cricothyroidotomy
B. Needle thoracostomy
C. Endotracheal intubation
D. Rapid volume resuscitation

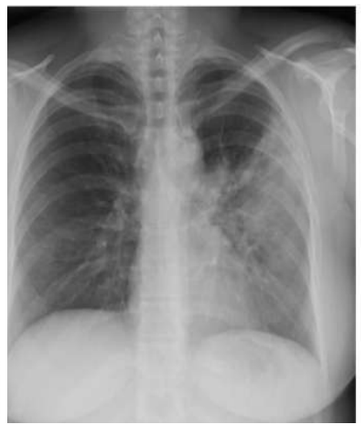
Chest Trauma

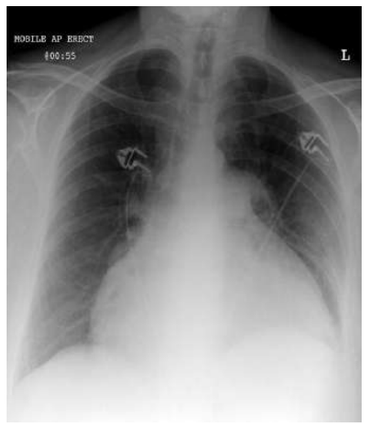
	TENSION PTX	MASSIVE HEMOTHORAX	CONSOLIDATION / CONTUSION	CARDIAC TAMPONADE
TYPE OF SHOCK				
JVD				
TRACHEAL SHIFT				
BREATH SOUNDS VOCAL FREMITUS				
PERCUSSION				
Management		>1.5l in one hr >200cc/hr in 2-4hrs		

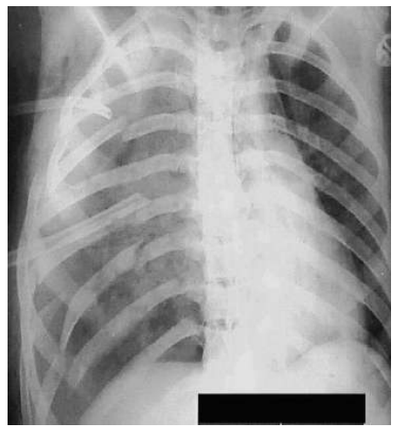










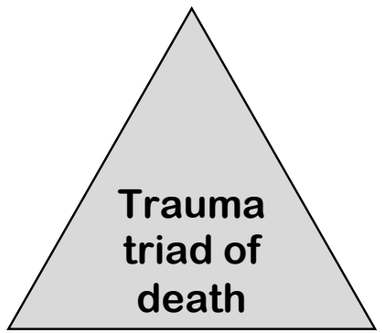


Hypovolemic Shock

Parameter	Class I	Class II (Mild)	Class III (Moderate)	Class IV (Severe)
Blood loss	<15%	15-30%	31-40%	>40%
Heart rate	↔	↑	↑	↑↑
Blood pressure	↔	↔	↓	↓
Pulse pressure	↔	↓	↓	↓
Respiratory rate	↔	↔	↑	↑
Urine output	↔	↔	↓	↓↓
Glasgow coma scale score	↔	↔	↓	↓
Base deficit*	0 to -2mEq/L	-2 to -6mEq/L	-6 to -10 m Eq/L	-10mEq/L or less
Need for blood products	Monitor	Possible	Yes	Massive Transfusion

Mx of hypovolemic patients in shock (ATLS):
Min Cannula- Fluid type- Fluid volume-
Damage control resuscitation
Crash-2 trial:

Damage Control Surgery



Stage I

- Primary Emergency Surgery
- Hemostasis Drainage of septic contamination
- Pringle/ Pressure/ Plug/ Pack
- Temporary abdominal closure
- (Bogota Bag, skin closure, Negative Pressure Abdominal Closure Covers)

Stage II

- Resuscitation and ICU care: 24-48 hours

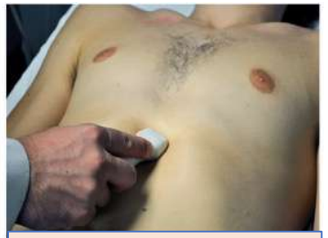
Stage III

- Definitive Surgery
- Full gastrointestinal repair
- (Resection, Anastomosis, abdominal closure – temporary or permanent)

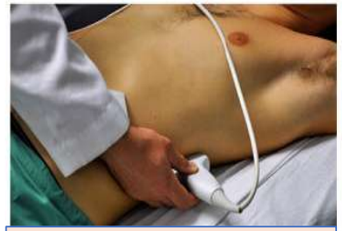
Stage IV

- Abdominal Closure
- Patients on whom abdominal closure was not performed during definitive surgery

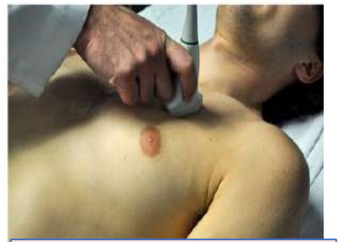
Abdominal Trauma



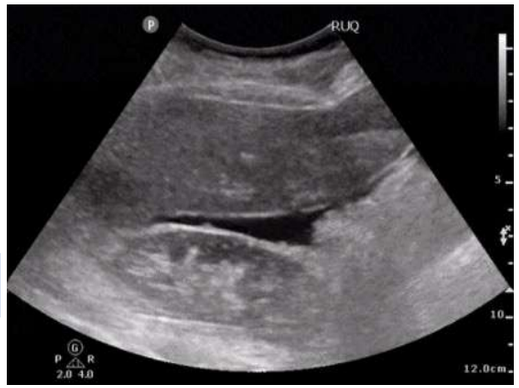
Subxiphoid

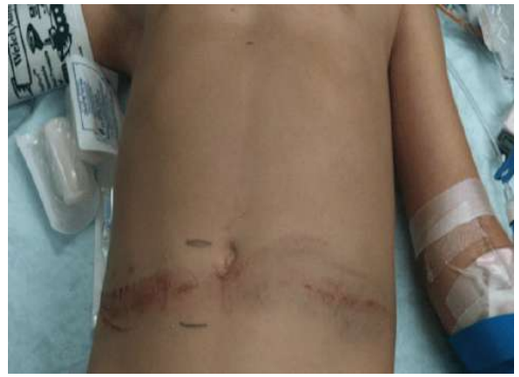


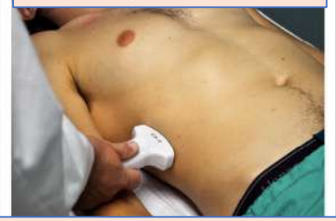
SR pouch



Pneumothorax

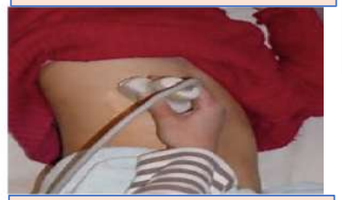






HR/ Morrison pouch

Pelvis



Hemothorax

-MC organ injured in BTA:
-MC organ injured in PTA:
-MC organ injured in GSW:

-Kehr sign

-Balance sign

eFAST:

Sensitivity:

LIMITATIONS:

Positive DPL
• 100,000 red cells/μL • >500 white cells/μL • 175 units amylase/dL • Bacteria on Gram stain • Bile • Food particles

Abdominal Trauma

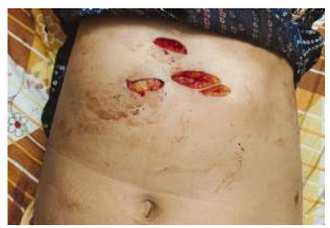
BLUNT TRAUMA

Unstable

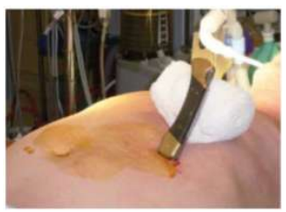
Stable

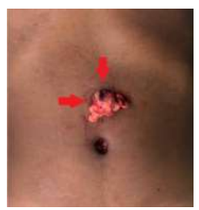
PENETRATING TRAUMA

-Unstable
-Gunshot
-Peritoneal breach
-Impaled object
-Bleeding via orifice
-Evisceration

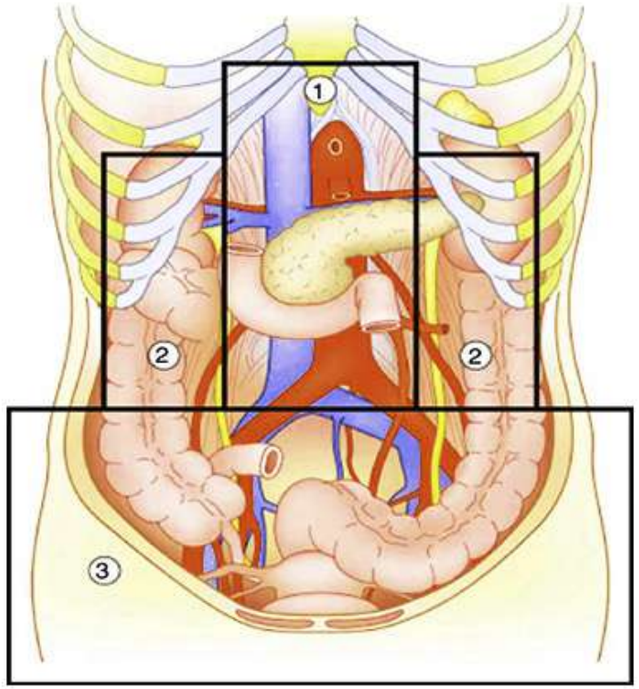


Stable





Retro-Peritoneal Trauma

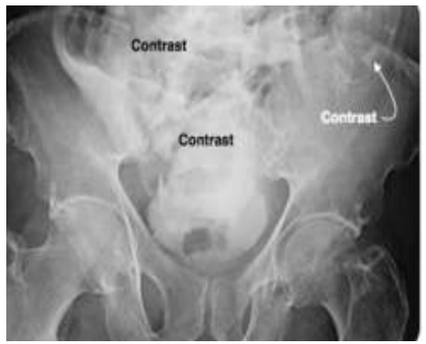


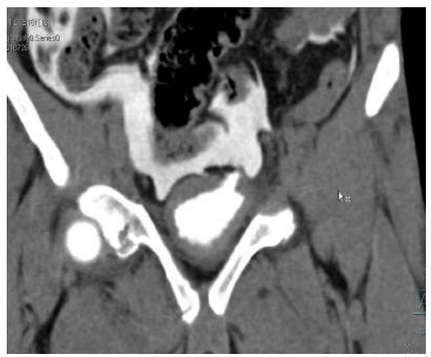
Zones	Contents	Management
Zone I	Central vascular structures such as aorta and IVC	Exploration Left medial visceral rotation: Mattox Right medial visceral: Kocher's/ Cattle Brasch
Zone II	Kidneys and adrenal glands	Observation
Zone III	Retroperitoneum associated with pelvic vasculature	External pelvic compression and fixation
Zone IV	Retro hepatic IVC and hematoma behind portal vein	Observation

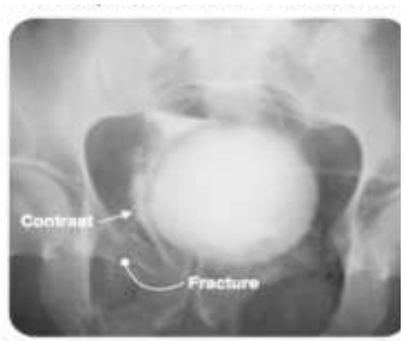
Abdominal compartment IOC:
Anuria:

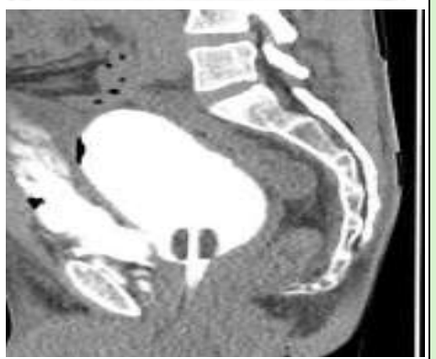
Genito-Urinary Trauma

-IOC for renal trauma in stable:
-IOC for renal trauma in unstable:
-IOC for bladder injury:
-IOC for urethral injury:









- Grade I: Subcapsular hematoma or contusion
- Grade II
  - Superficial laceration ≤1 cm depth not involving the collecting system
  - Perirenal hematoma confined within the fascia

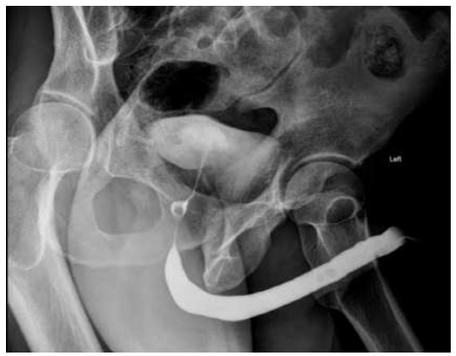
- Grade III
  - Laceration >1 cm not involving the collecting system
  - Vascular injury or active bleeding confined within the perirenal fascia

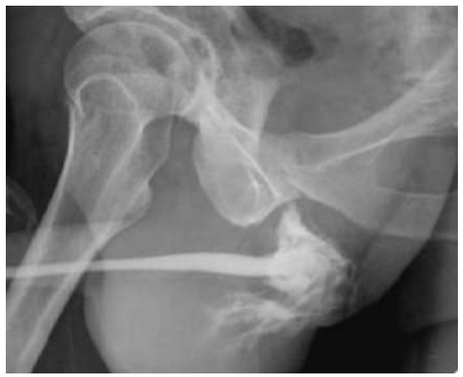
- Grade IV
  - <u>Laceration involving the collecting system with urinary extravasation</u>

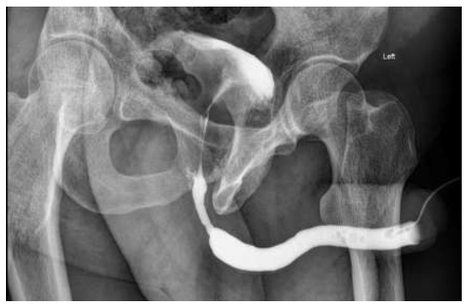
  - Vascular injury to segmental renal artery or vein
  - Segmental infractions without associated active bleeding
  - Active bleeding extending beyond the perirenal fascia

  - Grade V
  - Shattered kidney
  - Avulsion of renal hilum or laceration of the main renal artery or vein: Devascularised kidney with active bleeding

Urethral Trauma

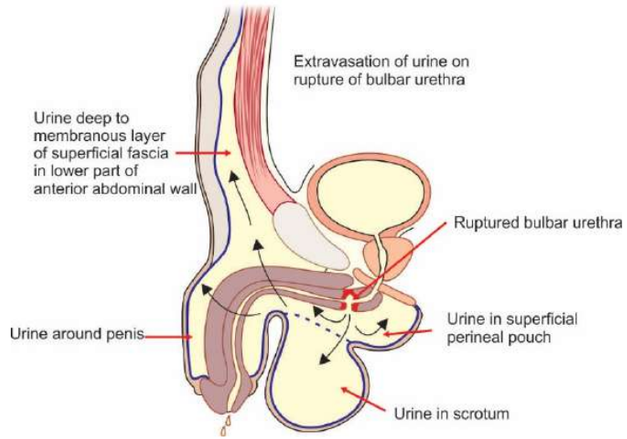






C/F:

IOC:

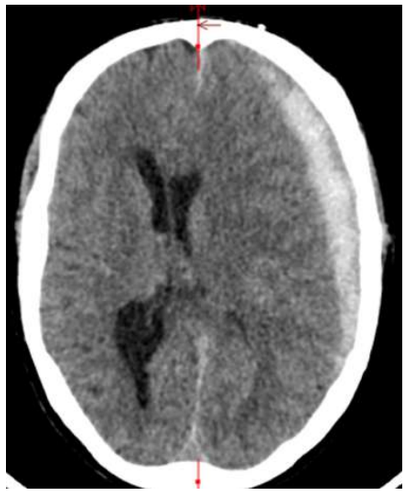


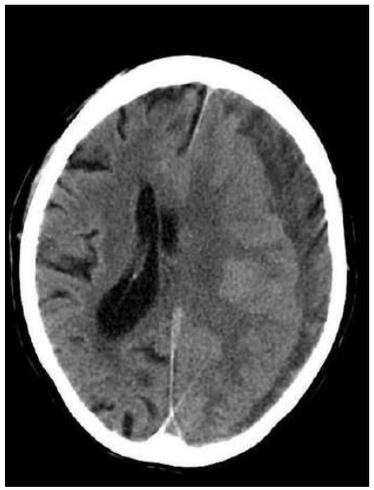
Q. A 14 year old boy presents to the ED after a straddle injury and rupture of bulbar urethra. Extravasated urine can be seen in:

a) Scrotum
b) Thigh
c) Ischiorectal fossa
d) Deep perineal space

Head Trauma

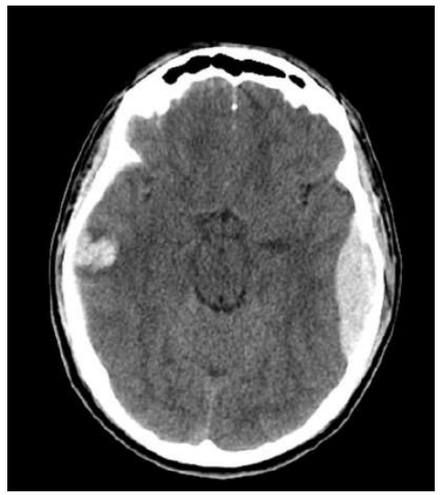
Alcoholic-fall

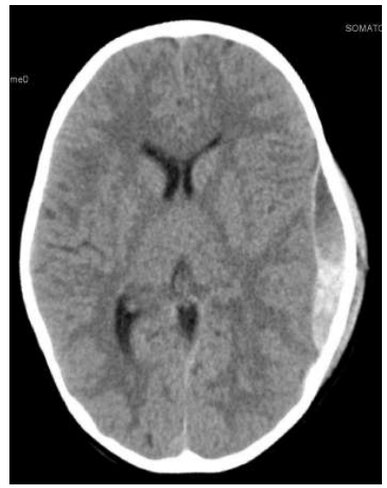




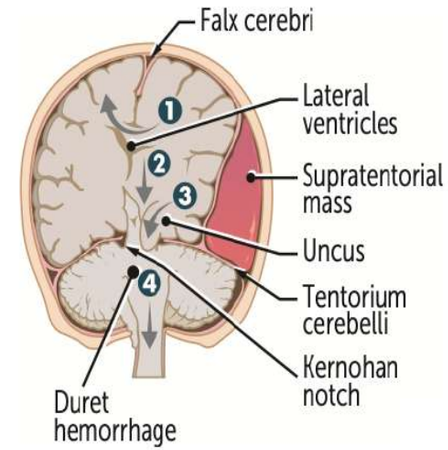
- Bridging veins
- Trivial trauma
- Sutures:
- Midline

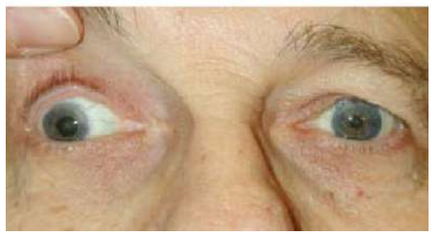
H/o RTA





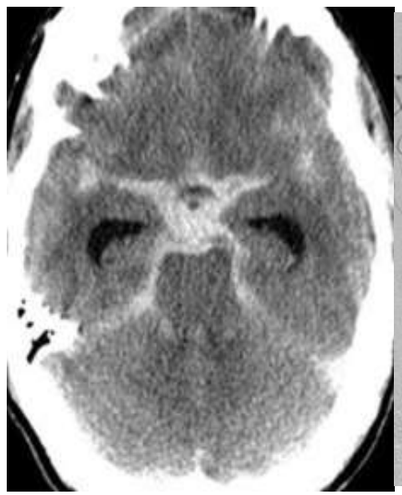
- Artery
- RTA
- Sutures:
- Midline

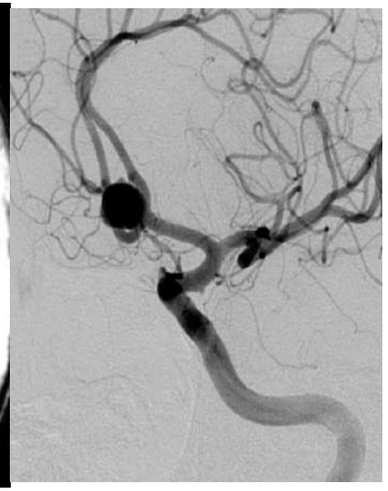




Head Trauma

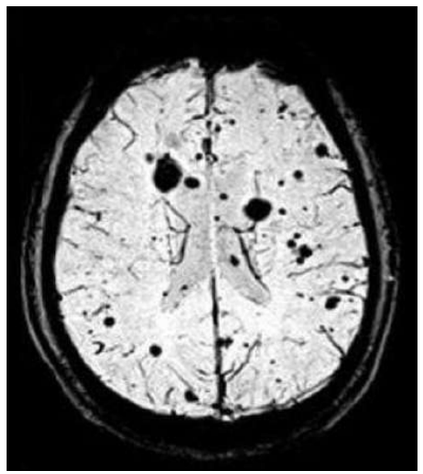
H/o RTA





- Trauma> Aneurysm
- MC site:
- IOC:
- Gold standard:
- Treatment:
- Clipping if:
- Preventing vasospasm-
- 3H:

H/o RTA, GCS-9
NCCT normal/ petechiae



- IOC:
- Adam's staging:

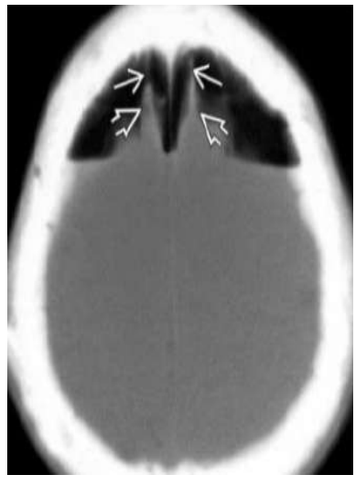
1-

2-

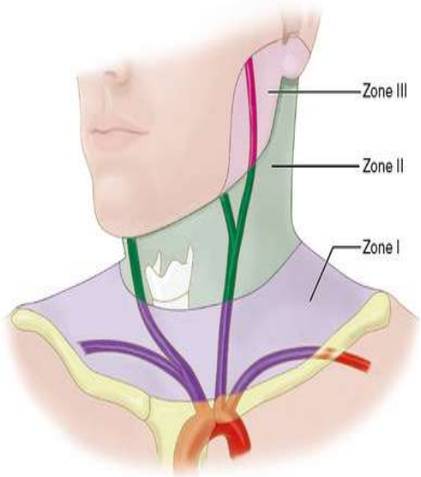
3-

- H/P:
- Mx:

PNS #, Open #



PLATYSMA BREACH



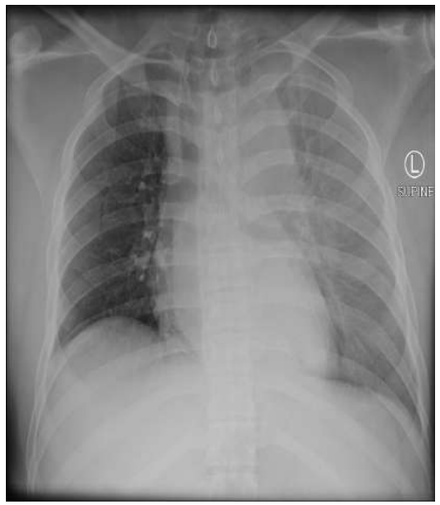
- Expanding or pulsatile hematoma
- Active bleeding
- Shock
- Airway compromise
- Massive subcutaneous emphysema
- Neurologic deficit
- ZONE 2

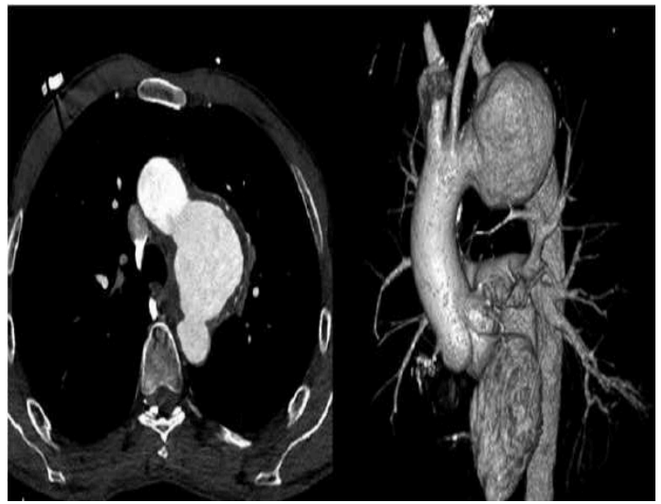
Indications of NCCT Head & C-Spine

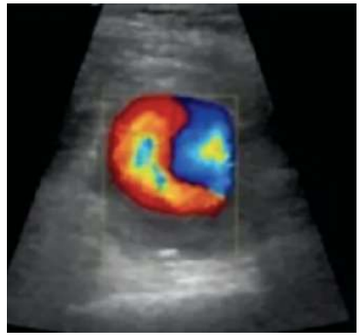
CT Within 1 Hour	CT Within 8 Hours
GCS <13 at any point	Age >65
GCS <15 at 2 hours	Coagulopathy (aspirin, warfarin, rivaroxaban)
Focal neurological deficit	Dangerous mechanism (fall from height, RTA)
Suspected open, depressed, or basal skull fracture	Retrograde amnesia >30 min
>1 episode of vomiting	
Post-traumatic seizure	

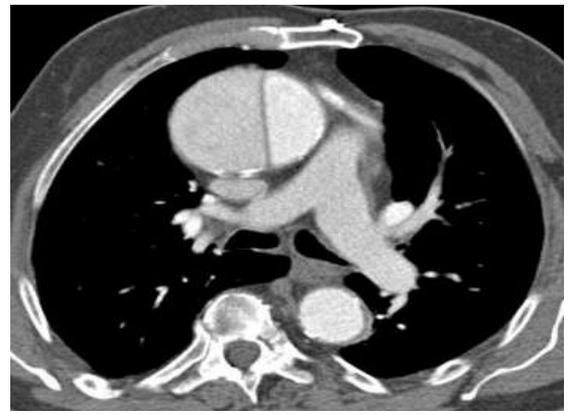
Cervical spine imaging is **NOT required** if the patient has:
No midline cervical tenderness
No focal neurological deficit
Normal level of alertness (GCS 15)
No intoxication (alcohol / drugs)
No painful distracting injury

Vascular Injury



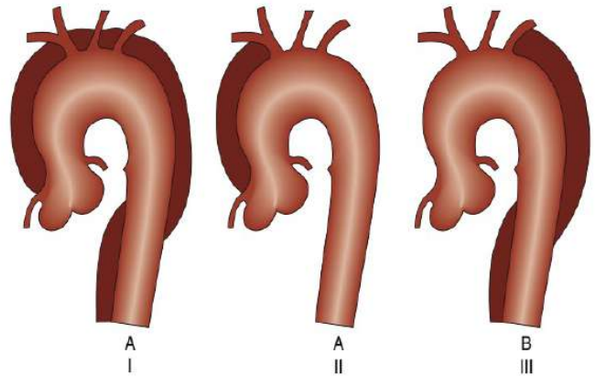




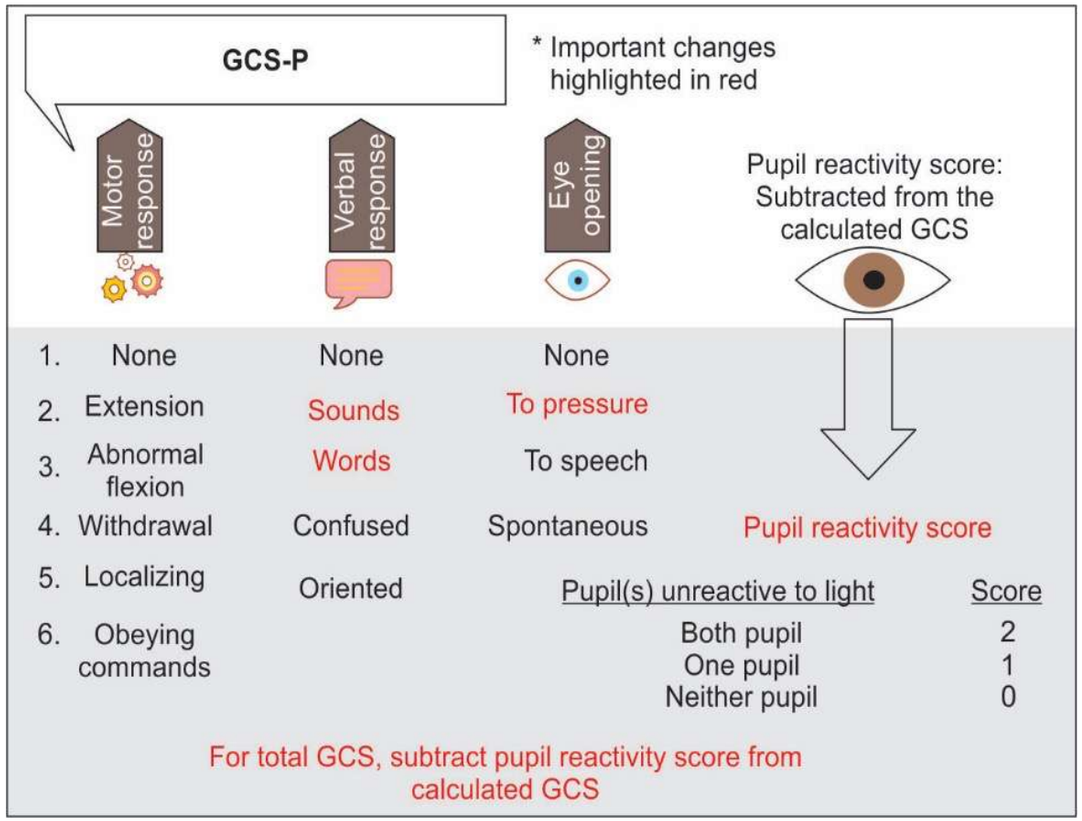


AORTIC INJURY
-MC site:
-IOC:
-Initial Mx:
HR <80, MAP:70mm Hg
-Definitive Mx:

MC vessel-
MC extracranial/ MC Mycotic-
MC peripheral-
IOC:
Management:
Indication:



Trauma Scores



Mangled Extremity Severity Score (MESS)			
Type	**Characteristic**	**Injury**	**Points**
1	Low energy	Stab wound, simple closed fx, small-caliber GSW	1
2	Medium energy	Open/multilevel fx, dislocation, moderate crush	2
3	High energy	shotgun, high-velocity GSW	3
4	Massive crush	Logging, railroad, oil rig accidents	4
Shock Group			
1	Normotensive Transiently	BP stable	0
2	Hypotensive	BP unstable in field but responsive to fluid	1
3	Prolonged hypotension	SBP <90mmHg in field and responsive to IV fluids	2
		In OR	
Ischemia Group			
1	None	Pulsatile, no signs of ischemia	1
2	Mild	Diminished pulses without signs of ischemia	2
3	Moderate	No Doppler able pulse, sluggish cap refill, Paresthesia, diminished motor activity	3
4	Advanced	Pulseless, cool, paralyzed, numb without cap refill	4
Age Group			
1	<30y/0		0
2	>30 < 50		1

Burns

Depth	Histology	Appearance	Sensation	Healing
Fist-degree	Epidermis only	Erythema; blanches with pressure	Intact; mild to moderate pain	3-6 days without scarring KEEP OPEN
Second degree Superficial	Epidermis and superficial dermis; skin appendages intact	Erythema, Blisters, moist, blanches with pressure	Intact; severe pain	1-3 weeks without scarring DRESSING: Paraffin dressing
Second degree Deep	Epidermis and most dermis; most skin appendages destroyed	White, dry, waxy, reduced blanching to pressure	Decreased; less painful	＞3 weeks, Scarring and contractures Hydrocolloid/ Collagen dressing EXCISION AND GRAFTING
Third – degree	Epidermis and all of dermis; destruction of all skin appendages SUBCUTANEOUS FAT	White, charred, dry and leathery; does not blanch	Anesthetic; not painful	Does not heal; severe scarring and contractures ESCHAROTOMY EXCISION AND GRAFTING

Burns around face, blisters in mouth, Hoarseness of voice, Stridor, Singeing of facial/nasal hair

Burns Management

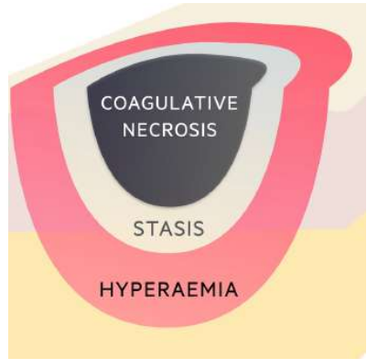
MCC of death in burns:
-Immediate:
-Early:
-Late/ Overall:
-Organism:

IV Fluids
Fluid of choice in adults-
Fluid of choice in children-
Time:

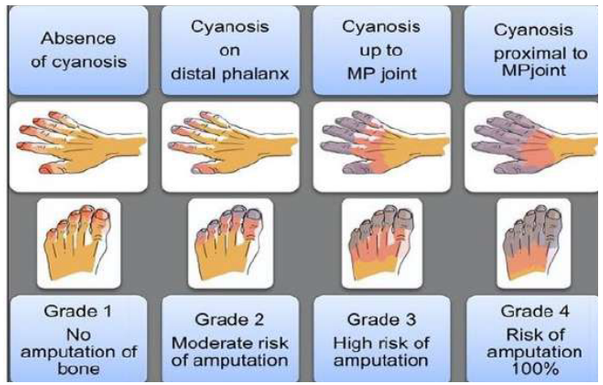
Latest ATLS:
Adults:
<14yr:
Electrical injury:
PARKLAND:

Rule of 9

Cooling burn- NOT ICE
Effective upto:
Ideal temp:
Don't burst blisters



Silver sulfadiazine:
Silver nitrate:
Mafenide acetate
Cerium nitrate



FROSTBITE COOLING:

Calculate for Burn Surface Area (BSA) for a patient with burn involving the anterior torso, upper right arm and circumferential right thigh:

a) 45%

b) 27%

c) 36%

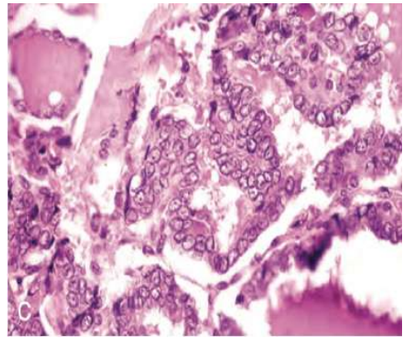
d) 31.5%

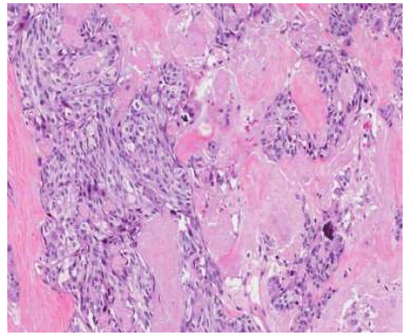
Thyroid Cancers

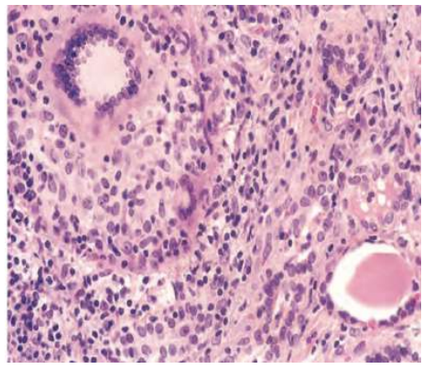
-MC associated with RT, TGC,Hashimoto:
-Most common, Best prognosis, Lymphatic mets:
-BRAF mutation, (t 10;17):

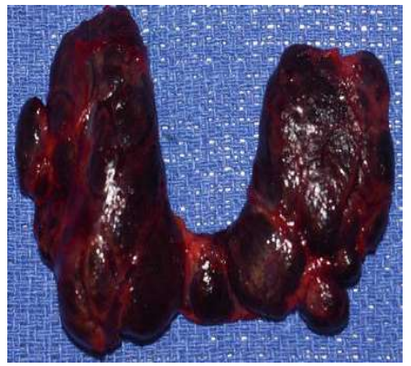
-MC in I deficient areas, MNG, Hematogenous mets:
-RAS GOF, PAX8-PPARG(t 2;3):

-MC in MEN2 (RET point mutation):
-Calcitonin, CEA, Dense bodies:
-Central LN dissection/ No role of Radio-iodine:
-Worst prognosis:
-Stony-hard thyroid:
-GNAS mutation:
-Wolf chaikoff:
-Jod Basedow:
-Anti-TPO, Struma lymphomatosis:
-Painful thyroiditis following URTI:
-Silent:

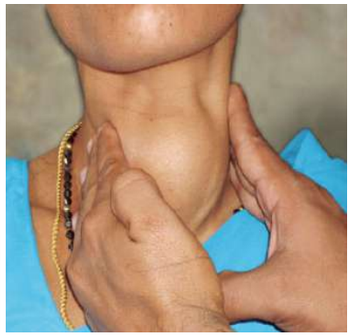
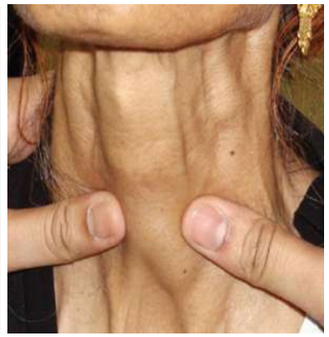
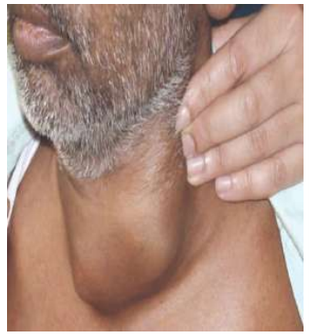
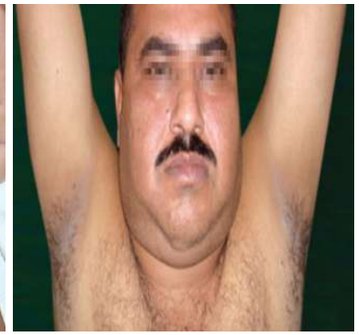
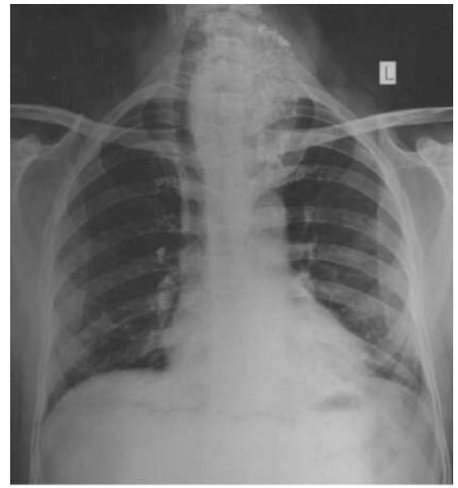


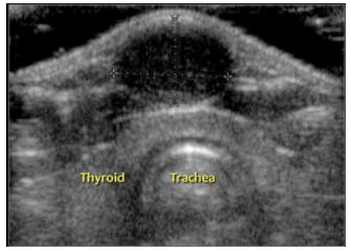






Thyroid Clinical Examination

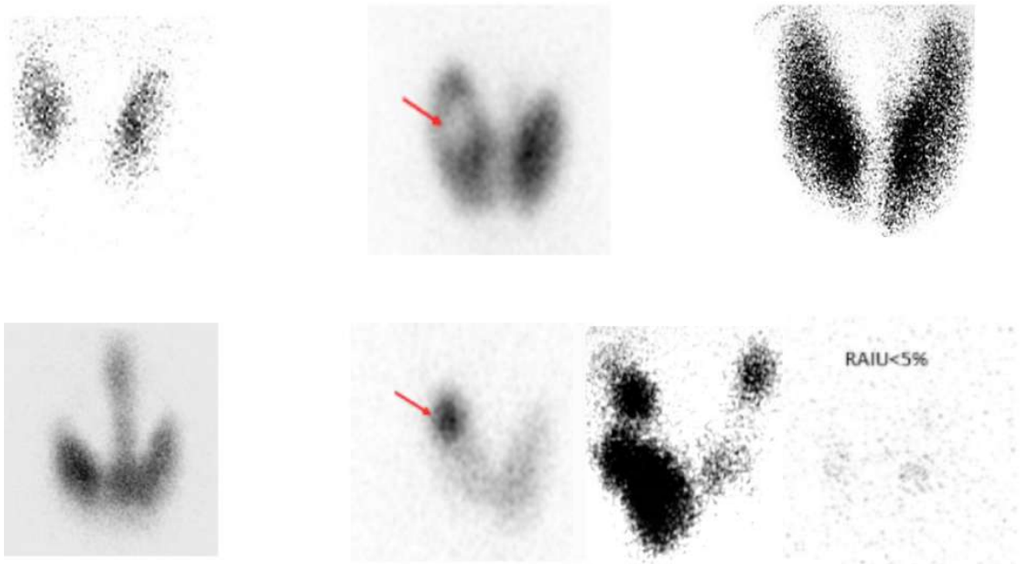









MC location:
Management:

Approach to Solitary Thyroid Nodule (STN)

TSH LOW



TSH HIGH

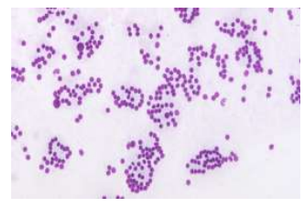
RADIOLOGICAL IOC:

TIRADS:
Composition-Solid
Echogenicity -Hypoechoic
Shape-Taller than wider
Margin-Irregular
Echogenic foci-Punctate

IOC:
Bethesda grading 2023
Can't distinguish:
Next step:

Diagnostic category
I. Nondiagnostic
II. Benign
III. AUS
IV. FN
V. SFM
VI. Malignant

Adequacy: ≥ 6 groups of well visualized follicular cells (≥ 10 per cluster)



Thyroid Surgery

Max RLN injury at:

Baehr's triangle:
CCA-ITA-RLN
Triangle of concern:
Berry ligament-RLN-Trachea

Upward extension prevented by:

Downward extension into mediastinum is prevented by:

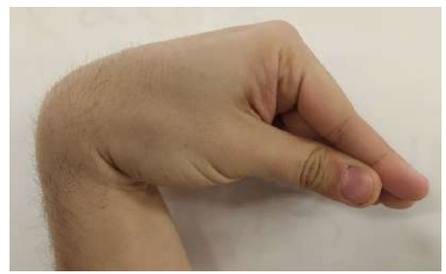
Thyroid moves during deglutition:

-Hemithyroidectomy:

-Subtotal:

-Near total/ Hartley-Dunhill:

Parameter	Low Risk	High Risk
Age	< 45 years	> 45 years
Size	< 4 cm	> 4 cm
Extra-thyroid extension	No	Yes
Metastasis (distal)	No	Yes
High grade	No	Yes



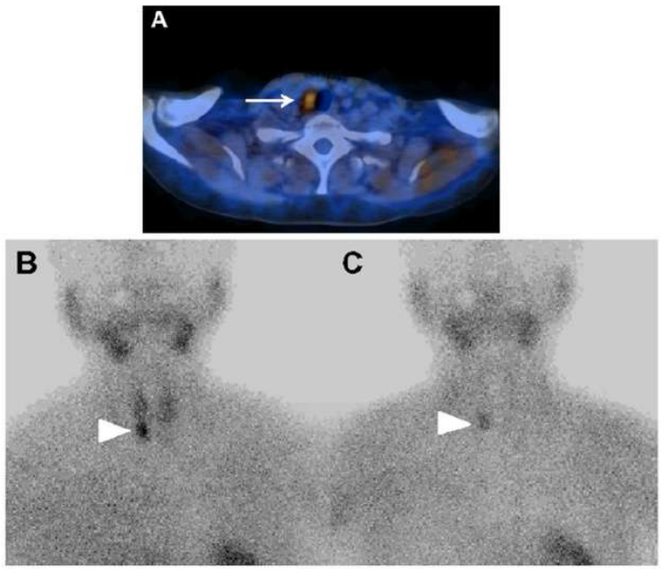
- >4cm
- Multifocal B/L
- Extra-thyroidal
- Familial
- RT

MACIS:

COMPLICATIONS
MCC-
C/F time-

Inability to extubate-
MCC of intra-op thyroid storm:

Parathyroid Surgery



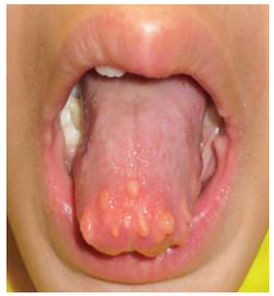
- MIAMI CRITERIA: >50% decline in 10minutes
- MCC of hypercalcemia in hospitalized patient:
- PTH hyperplasia:
- Implanted in:
- Accidental removal of PTH during thyroid Sx

Indication for Surgery in asymptomatic primary HPT
• Calcium 1.0 mg/dL above normal • Osteoporosis on DEXA or Vertebral fracture • Creatinine clearance < 60 mL/min • < 50 years

MEN syndromes

	Inheritance	Gene	Manifestations
MEN 1 = Wermer			
MEN2a= Sipple			
MEN2b=3			
MEN 4			
MEN 5			

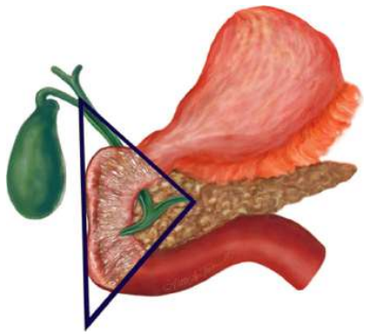
Prophylactic thyroidectomy:



MC Pancreatic NET:

MC NET in MEN1:

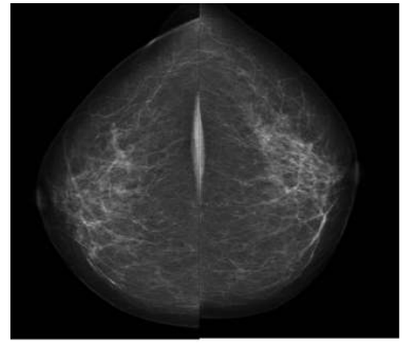
IOC :

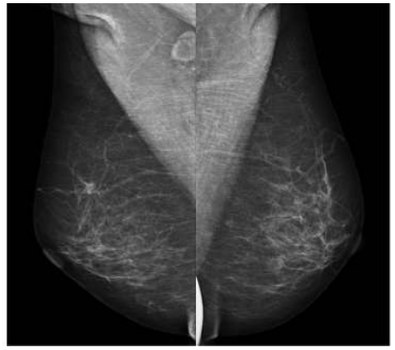


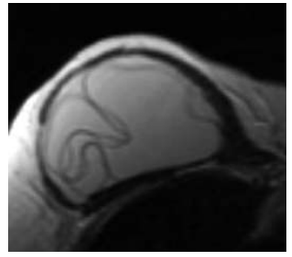
Breast Cancer

Screening Mammography:
High-risk/ BRCA +/ RT:
Diagnosis of lump in young / lactating female:

Ca breast quadrant:
MC gene mutation in sporadic/TNBC:
MC gene in familial breast ca/ aggressive/ Ovarian ca:
Ca breast in men/ Prostate ca/ Pancreatic ca:
IOC for breast implants:
IOC for Post-op scar VS recurrence:
Most sensitive for DCIS:
Most sensitive for microcalcifications:
Mitotic rate, tubule, nuclear atypia :
Grade, Age, Margin, Size:
LN, Grade, Size :
Nulliparity, Early menarche, Late menopause
OCP?
Smoking R/F:
Mondor's disease, Duct ectasia, Ca breast, Zuska disease







- Breast cancer diagnosed ≤ 50 years
- TNBC diagnosed ≤ 60 years
- BRCA1/2 gene mutation in a blood relative
- Breast cancer with one or more relative with:

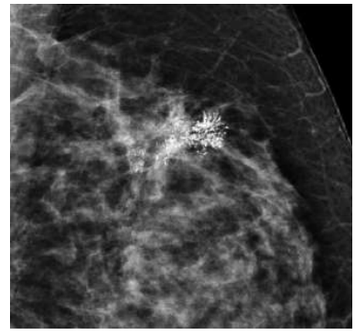
Breast cancer diagnosed ≤ 50 years / BRCA associated cancers

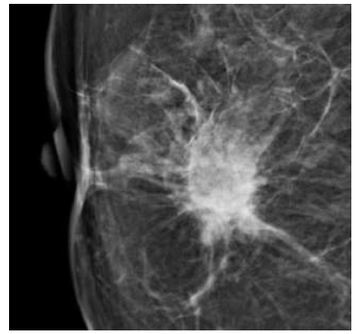
- Breast cancer with two or more affected relatives
- Male breast cancer
- Suspected Li-Fraumeni/ Cowden/ E-cadherin/ Peutz Jeghers syndrome

BIRADS

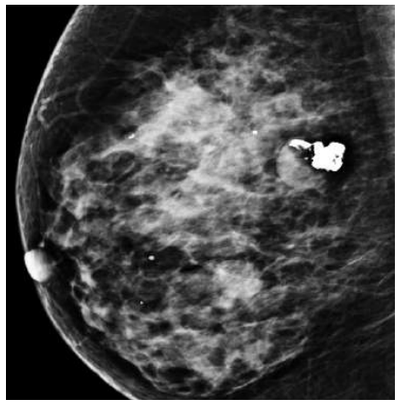
Triple assessment:
BIRADS:
Modalities:

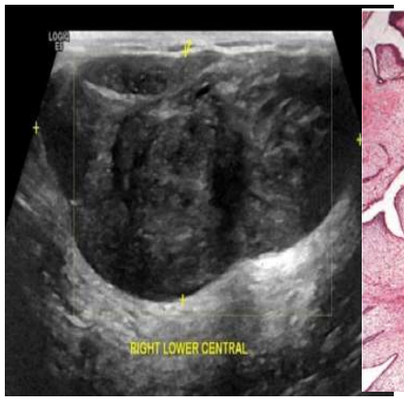
BIRADS	Category	% risk	Further Mx
0	Incomplete assessment	N/A	
1	Normal	0	
2	Benign	0	
3	Probably benign	0-2%	
4	Suspicious for malignancy	2-95%	
5	Highly suggestive of malignancy	>95%	
6	Known biopsy proven malignancy	N/A	

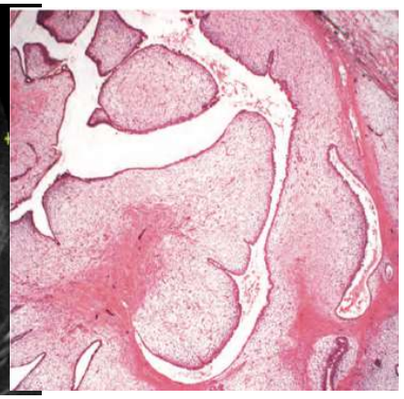


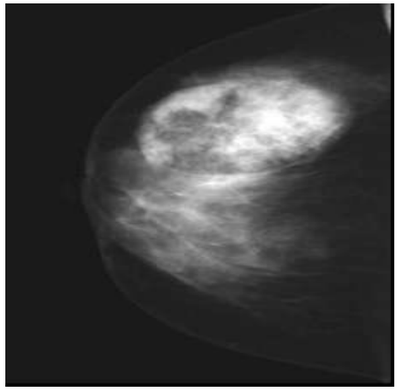


Intralobular stroma -MED12 mutation-FA, Phylloides, Fibroid
HIFU:
VAB:

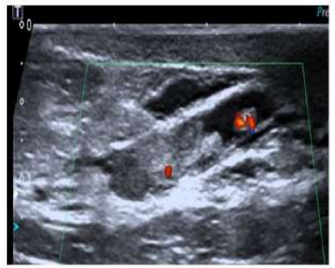
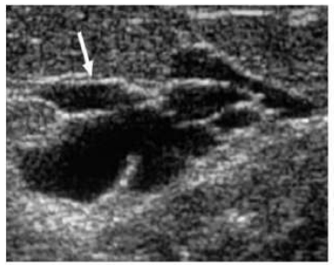






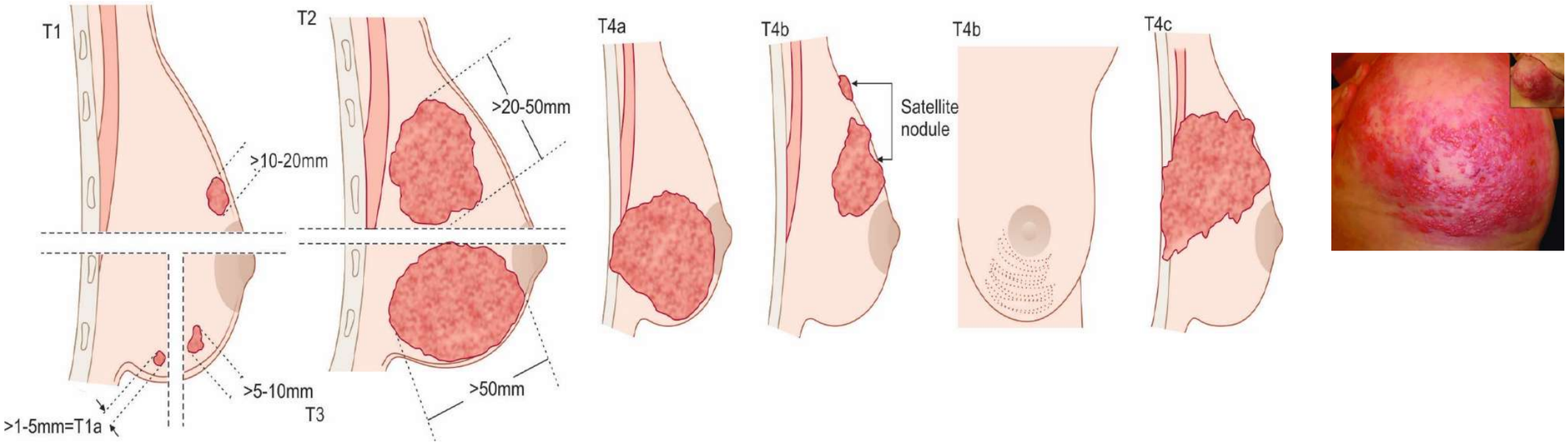


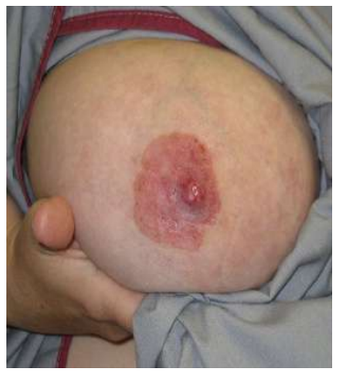
Approach to nipple discharge:

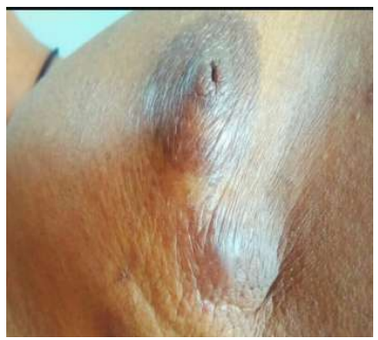
Unilateral Bloody Multiple ducts	U/l or B/l Bloody Single duct	U/l or B/l Green Single duct
		

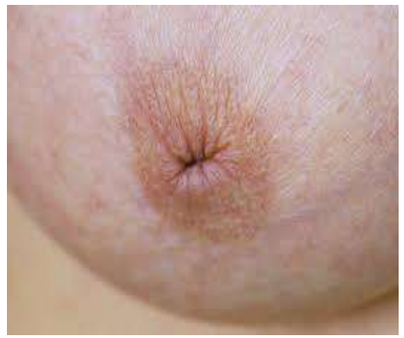
Granulomatous mastitis

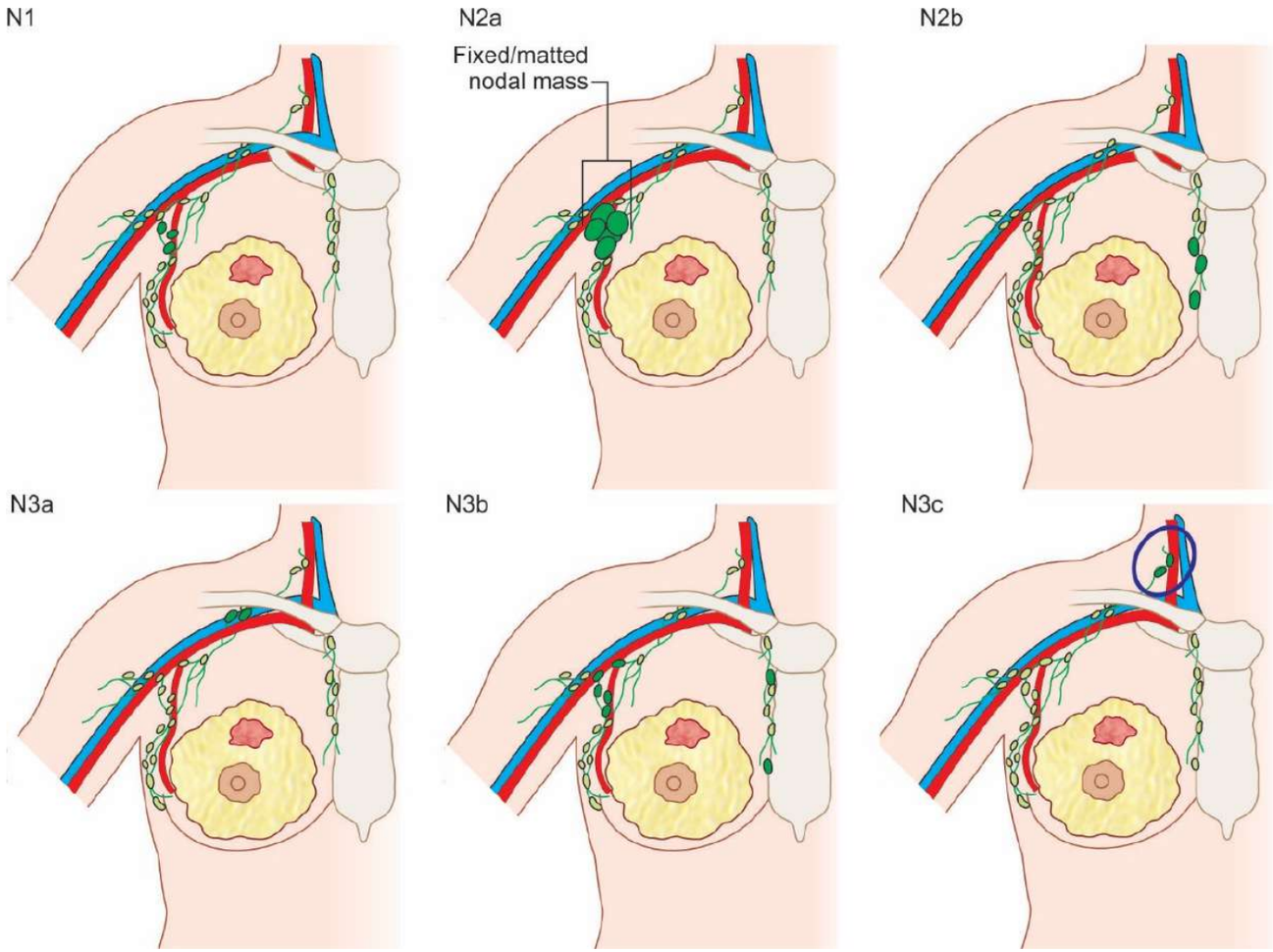
Staging of Ca-Breast









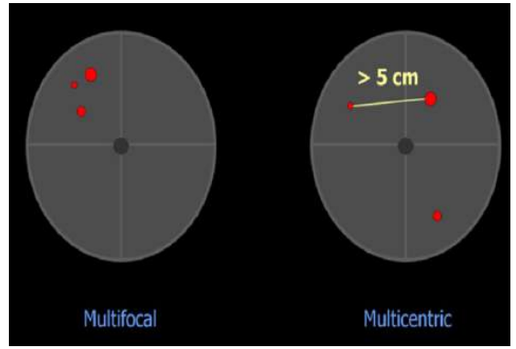


AXILLARY LN
LEVEL I:
A P L
LEVEL II:

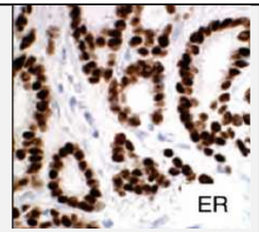
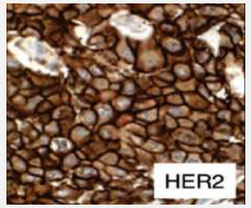
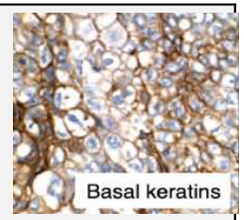
LEVEL III:

MC DISTANT METS:

PREFIXES:
c-
p-
r-
y-
m-
a-



Molecular Classification of Ca-Breast

Luminal (ER+, PR+) Allred score 		HER2 + 	TNBC (ER-, HER2-) CK5/6 + EGFR + 
Ki67:Low HER2 -	Ki67: High HER 2 -/ +	Ki67: High	Ki67: High

Hormonal treatment: ER/PR+ 1st line
Premenopausal:
Postmenopausal:
Advanced/metastatic HR+, HER2- breast cancer:
- Cyclin-dependent kinase 4/6 inhibitors
- Palbociclib (CDK4/6 inhibitor) + Letrozole/ Fulvestrant
- Everolimus (mTOR-)
- Buparlisib (PI3k-)
- Ipatasertib (AKT-)

Her2neu +:

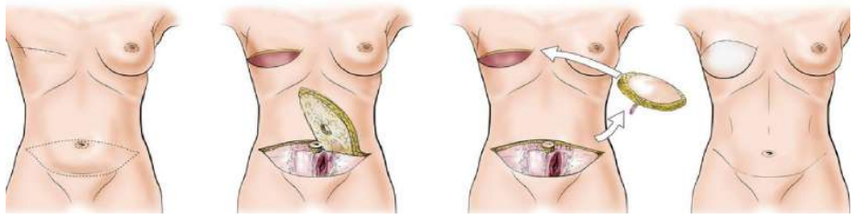
Ca-Breast Management

Early (ST I/II) :
LABC (ST III) : T3N1 or T4 or N2/N3

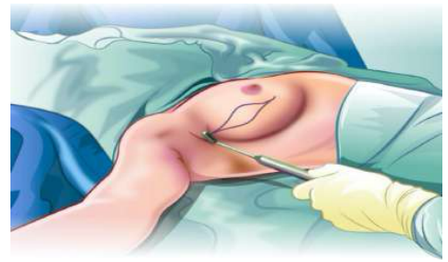
Halstead: Radical Mastectomy
Breast + NAC + Level 1-3 LN + P. major + minor
MRM
Preserve: Axillary vein, Bell's nerve, Cephalic vein, Dorsal thoracodorsal N
MC complication:

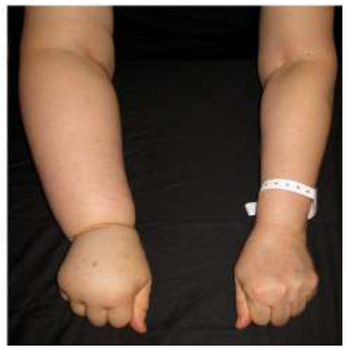
Auchinclaus | Scanlon | Patey

FLAPS: DIEP:
TRAP:
LD:



BCS CI:
1. Pregnancy
2. Prior RT to CW
3. Collagen vascular diseases
4. Multicentric > Multifocal
5. Lobular ca
6. LABC



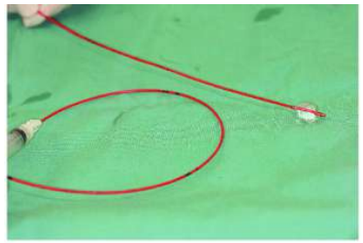


MOLECULAR TESTS:
Role of chemo in T1/T2 N0 LUMINAL A
Oncotype Dx:
Mammaprint:
Endopredict:
PAM 50:
CAN assist:

Pregnancy associated ca breast

Peripheral Artery Disease

ACUTE:
Source-
MC-
Pain / Pulselessness / Pallor / Paralysis/ Paresthesia/ Poikilothermia
Mx:



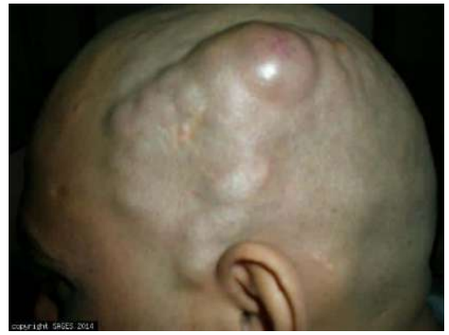
Grade	Pain
I	Pain relieved on continued walking
II	Walks in pain
III	Compelled to take rest
IV	Pain at rest

Nicoladoni–branham sign

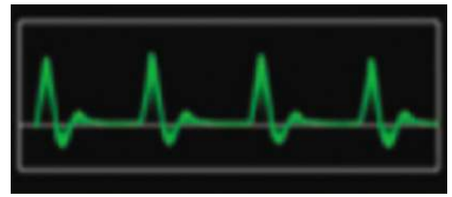
CHRONIC

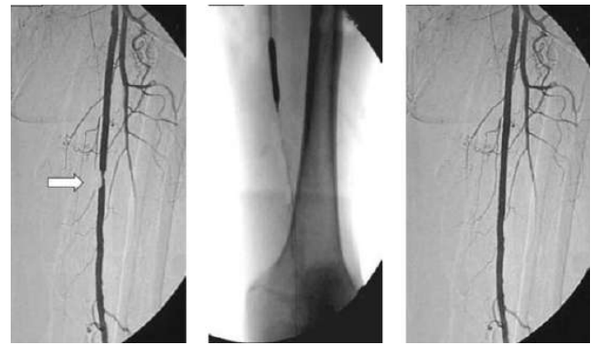
C/F:
Aorto-iliac-
SYNDROME:
Iliac-
Femoral-
Popliteal-

Initial Ix-
IOC-
Gold standard-



ABI	INTERPRETATION
>1.4	Next:
0.9-1.3	
0.5-0.9	
0.3-0.5	
<0.3	

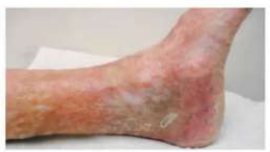


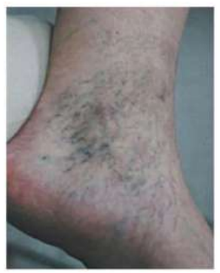


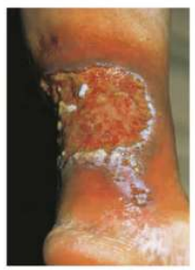
Venous Diseases & Lymphatic Diseases

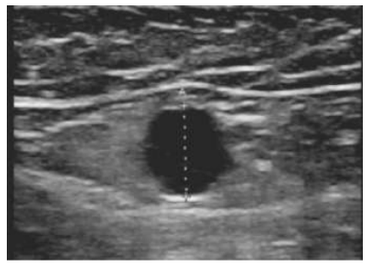
VARICOSE VEINS/ DVT IOC:
Tredelenburg / Morrissey/ Schwartz:
Fegan
Pratt/ Perthes

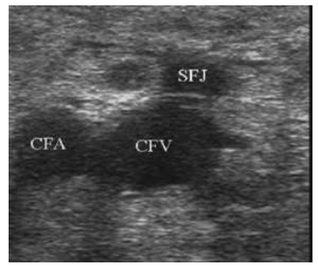
CEAP:
Rx: SFJ incompetence: EVLA > RFA
Peforator:
Hunterian
Dodd **Boyd**
Cockett
May Kusterr
Nerve injury: GSV-
SSV









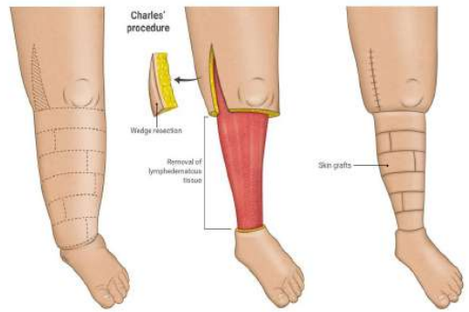


C_1	Telangiectasias or reticular veins
C_2	Varicose veins
C_{2r}	Recurrent varicose veins
C_3	Edema
C_4	Changes in skin and subcutaneous tissue
C_{4a}	Pigmentation or eczema
C_{4b}	Lipodermatosclerosis or atrophie blanche
C_{4c}	Corona phlebectatica
C_5	Healed
C_6	Active venous ulcer
C_{6r}	Recurrent active venous ulcer

I Pitting edema,
Subsides with elevation

II Non pitting edema
Not relieved with elevation

III Irreversible skin changes,
Fibrosis, papillae



Milroy disease:

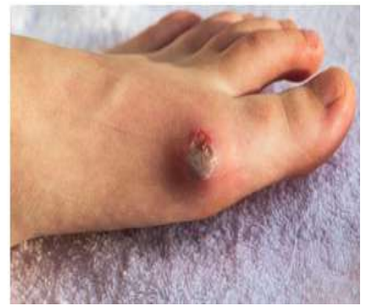
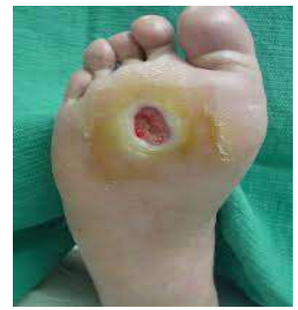
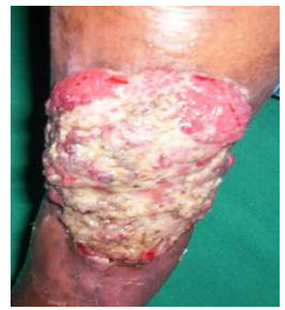
Approach to Ulcers

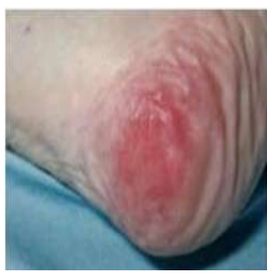
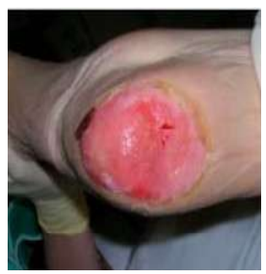
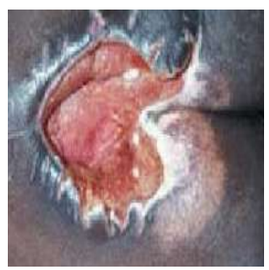
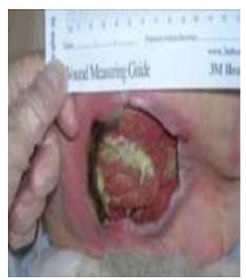
APPROACH TO ULCERS:

- Tip of toes, lateral malleolus, thin and shiny skin
- Gaiters area-medial malleolus, sloping edge

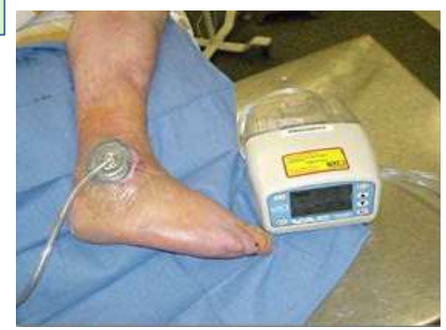
Bisgaard regimen

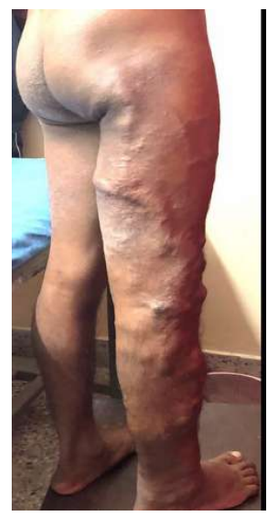
- Ischium > GT > Sacrum > heel, Pressure >30mm
- Plantar aspect of foot, loss of sensation
- Post-burn scar/ inflammation

Grade 1: Non-blanchable erythema of intact skin
Grade 2: Partial thickness skin loss
Grade 3: Full thickness skin loss
Grade 4: Damage to muscle, bone

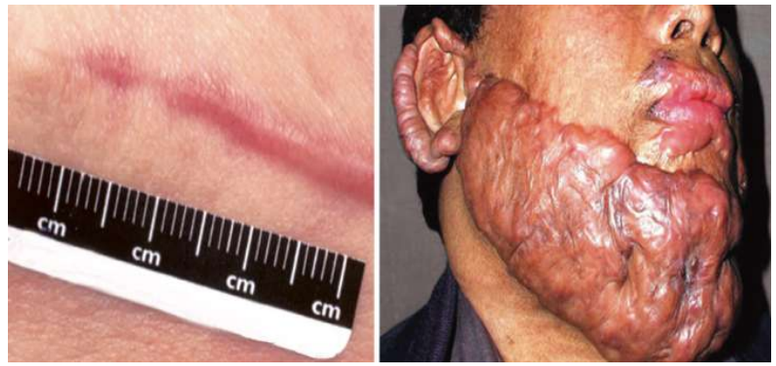




Wound Healing & Skin Grafts

WOUND HEALING
10%-
80%-
100%-
Collagen-

WOUND HEALING intention
Primary-
Secondary-
Tertiary-

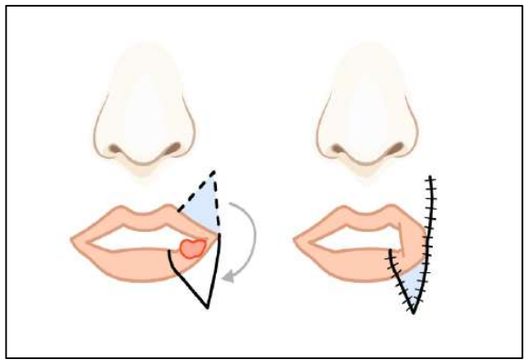


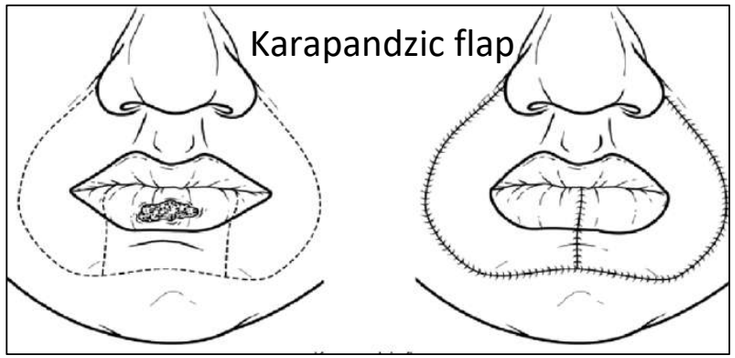
	SPLIT/ THIERSCH	FULL / WOLFE
Part:		
Site:		
Contracture:		
Cosmesis:		

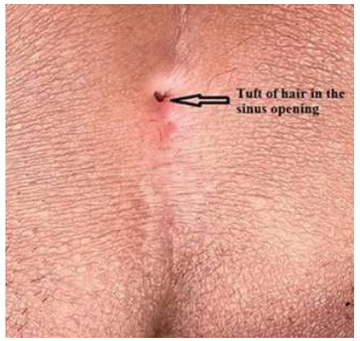
Graft "take"
0-48hrs:
48-72hrs:
>72hrs:
CI of graft:

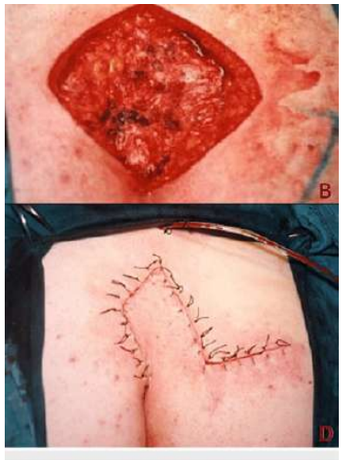
CLEFT LIP ALONE: 5 MONTHS (MC: MILLARD)
CLEFT PALATE ALONE: SOFT AT 6MON, HARD AT 15-18MON (MC: Wardill-Kilner repair)
BOTH: CL + SOFT AT 5MON, HP AT 15-18MON
Rule of 10:

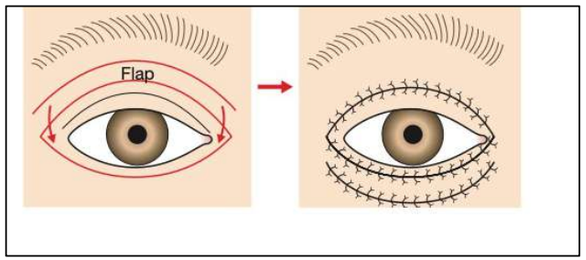
Skin Flaps

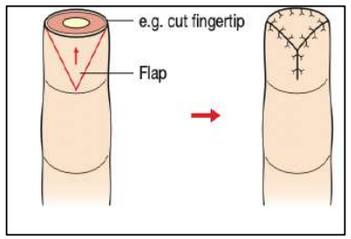


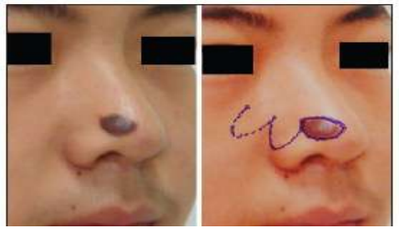






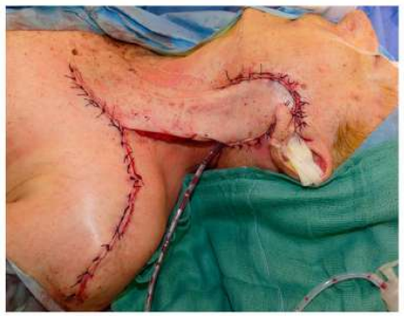


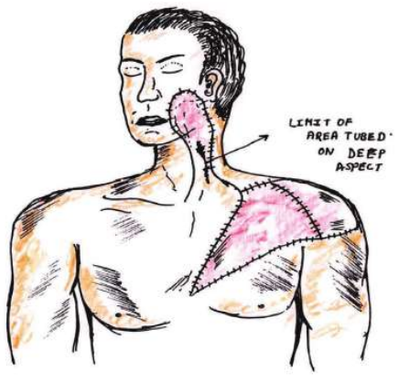


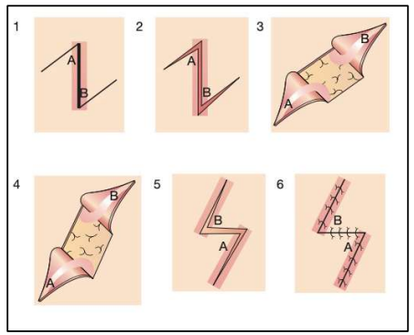


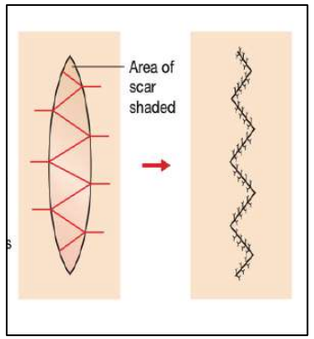
Bascom / Karydakis / Limberg

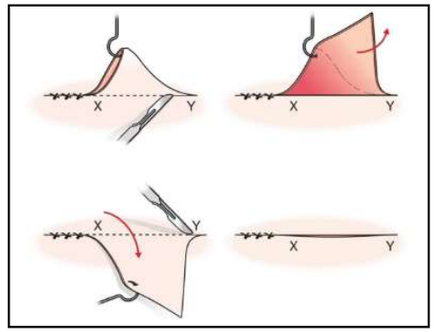
Rhomboid > transposition flaps



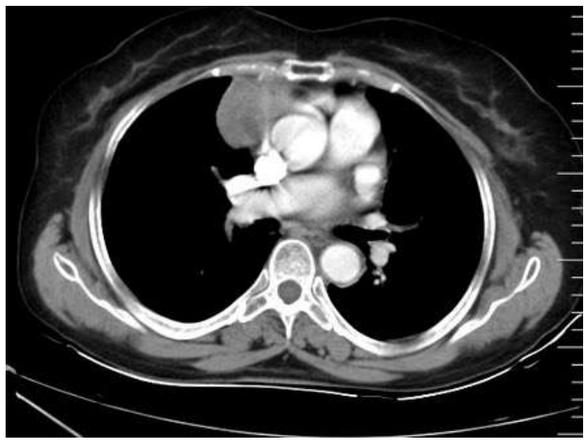


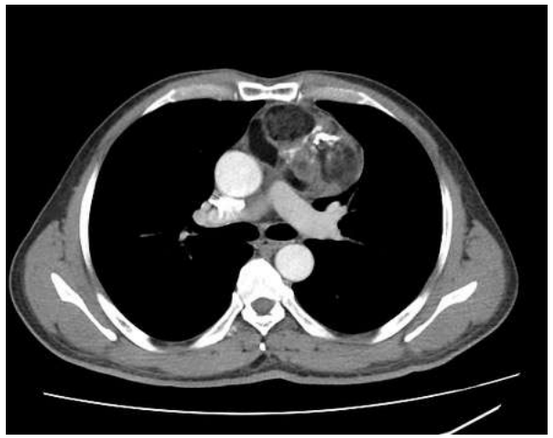


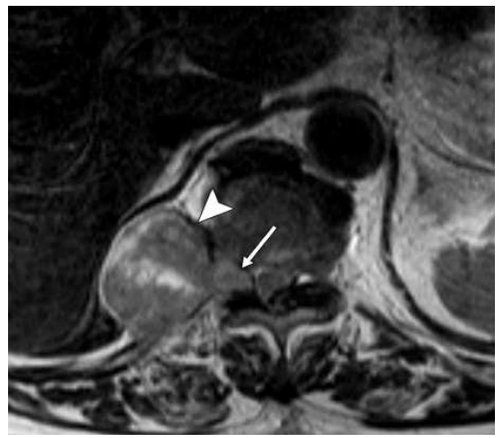




Mediastinal Masses



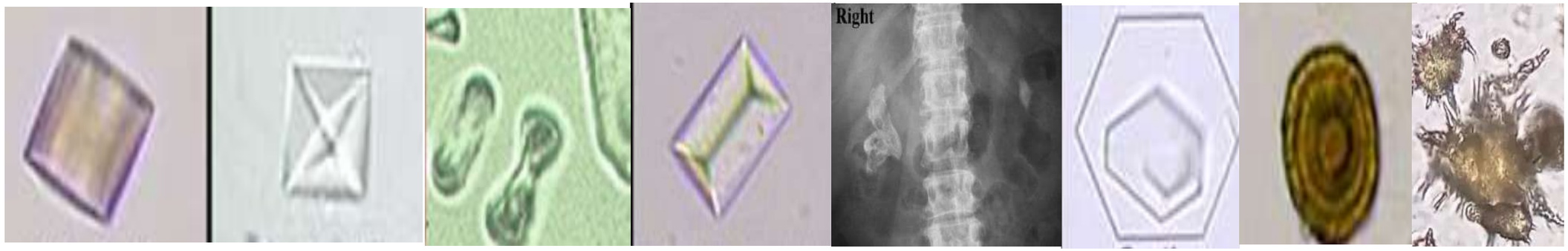




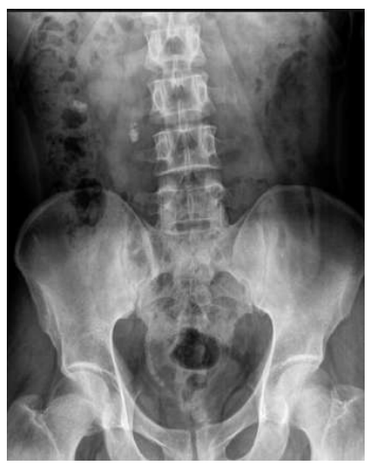
Thoracoscore
Age (years)
Gender (male)
ASA
Performance status
Dyspnoea score
Priority of surgery
Procedure class
Diagnosis group

**Not complication of surgery*

Urolithiasis

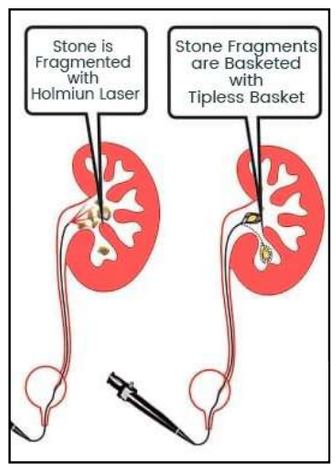


Initial Investigation:
IOC:
Radiolucent calculi:
Struvite / Uric acid /
Xanthine / Orotic acid/
Indinavir



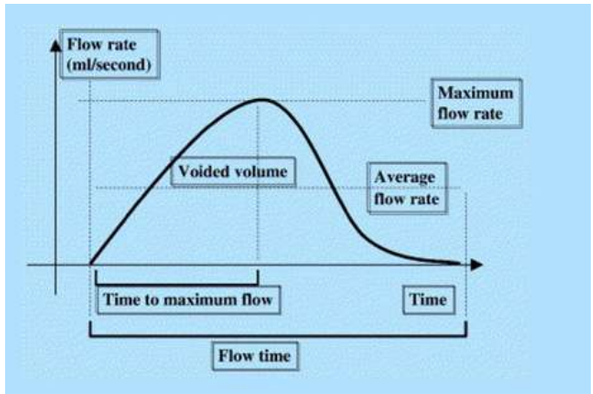
<2cm soft stones
CI: Pregnancy, infection, obstruction, bleeding diathesis, pacemaker, obese, children

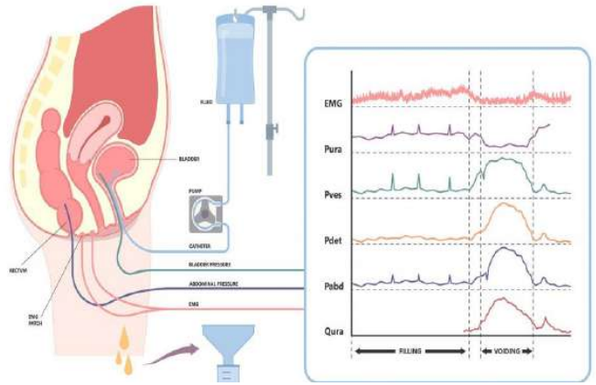
>2cm
Infection
Obstruction
Cystine / COM/ brushite



<2cm lower pole

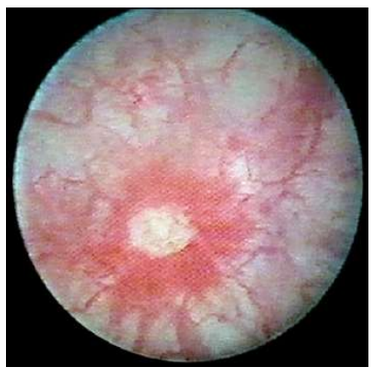
UB Pathologies

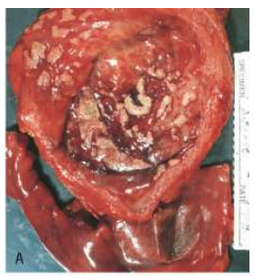


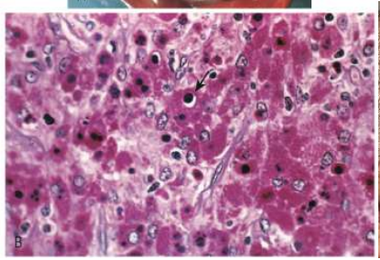


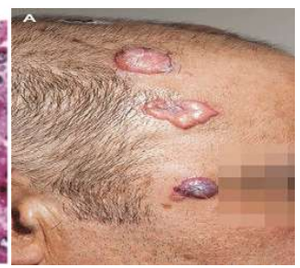
CA UB
Painless hematuria
Smoking, Dye, Benzidine
Cyclophosphamide :
Stones, Schistosomiasis:
Ectopia vesicae, Urachal remnant:
NMP22:
IOC:
Radiological IOC:

Whitaker test:









Ta/T1-Till submucosa

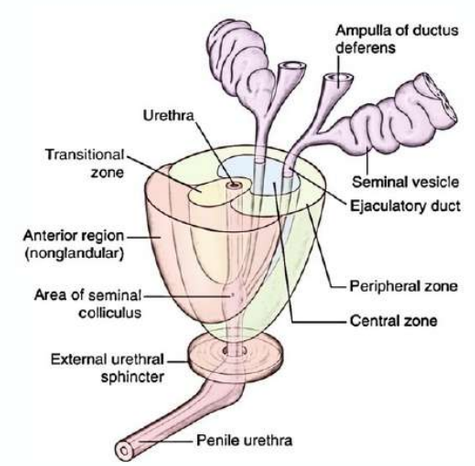
T2-Superficial muscle

T3/T4-Deep muscle/adjacent

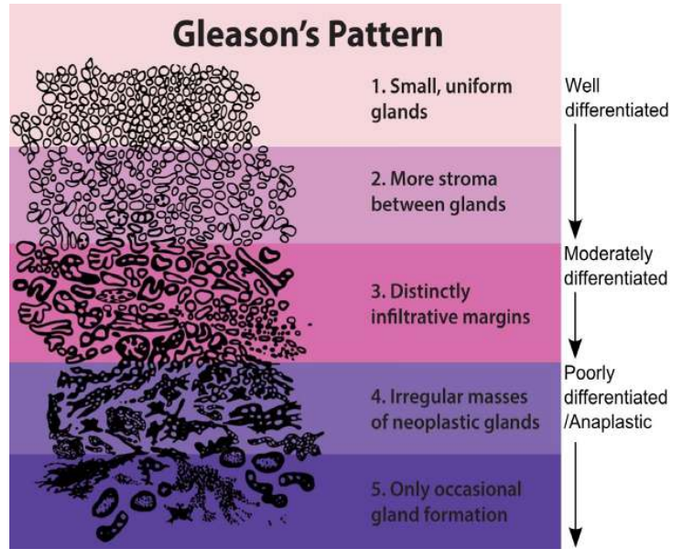
Urinary diversion:

Prostate

TZ:
PZ:



CA PROSTATE
Initial: PSA > 10 + TRUS
IOC :
PMSA PET
GOLD STANDARD-
No. of cores-
TURP
DISTAL LIMIT-
MC complication-
TURP syndrome-
Badenoch arteries-



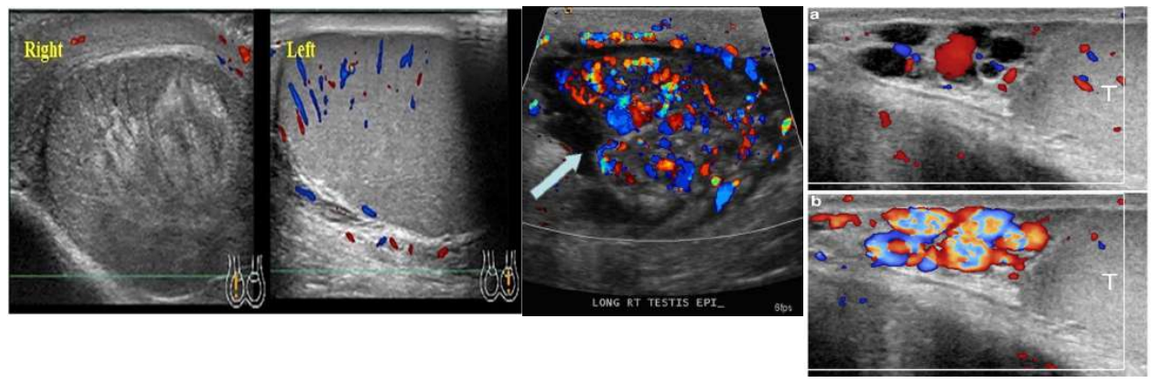
T1/ T2: Confined to prostate
<10yr survival, PSA<10,Gleason <6:
>10yr survival:

T3/T4: Capsular invasion / Adjacent organ invasion
Androgen ablation +/- RT : Palladium / Gold/ Cs
GnRH agonist continuous: Goserelin/Leuprolide
Flutamide
Orchidectomy

Risk Group*	Grade Group	Gleason Score
Low/Very Low	Grade Group 1	Gleason Score ≤ 6
Intermediate (Favorable/Unfavorable)	Grade Group 2	Gleason Score 7 (3 + 4)
	Grade Group 3	Gleason Score 7 (4 + 3)
High/Very High	Grade Group 4	Gleason Score 8
	Grade Group 5	Gleason Score 9-10

Testes

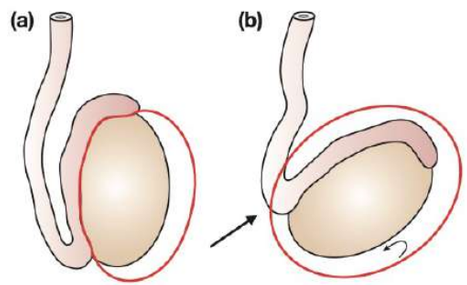
Painless testicular mass
MC OVERALL- MC in children-
MC in elderly-
Initial-
Biopsy/FNAC?
IOC for T staging-
Chevassu's maneuver-
IOC for RP LN-

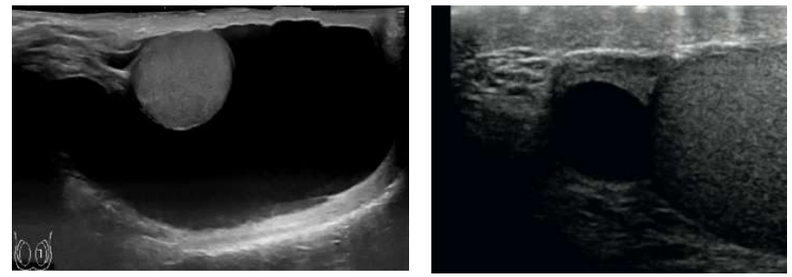


Undescended testes
MC site:
Secondary sexual characters?
Fertility?
R/o tumors?
IOC:
Time to operate:
B/L non-palpable testes:

U/L non-palpable:

Blind ending vessels:

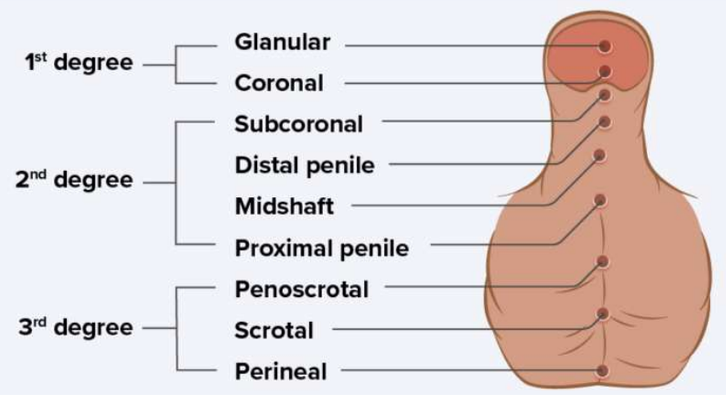




Deming sign
Angel sign

Lord's plication
Jaboulay excision/eversion

Penis



- Do NOT circumcise
- Age: 6–18 months (preferred)

Orthoplasty-Urethroplasty-Glanuloplasty-Meatoplasty-Skin cover

CA PENIS

HPV

Phimosis

BXO

Not Peyronie's

Bowen's disease (shaft)

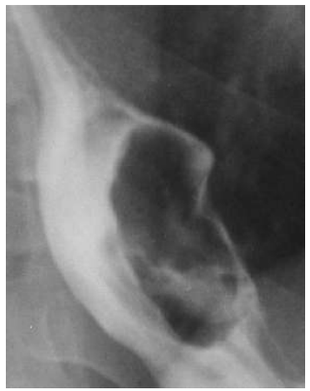
Erythroplasia of Queyrat (glans)

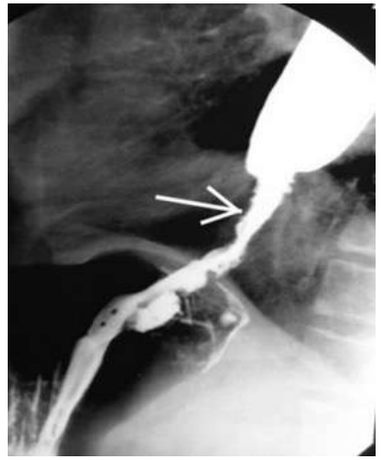
Jackson staging

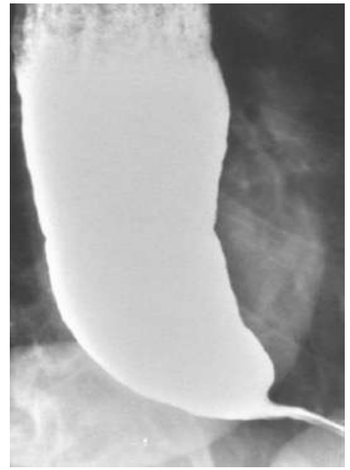
- Moh's micrographic surgery
- Distally placed → Partial penectomy (if residual stump ≥ 2 cm)
- Proximally placed → Total amputation + Perineal urethrostomy
- FNAC/ SLNB for inguinal LN

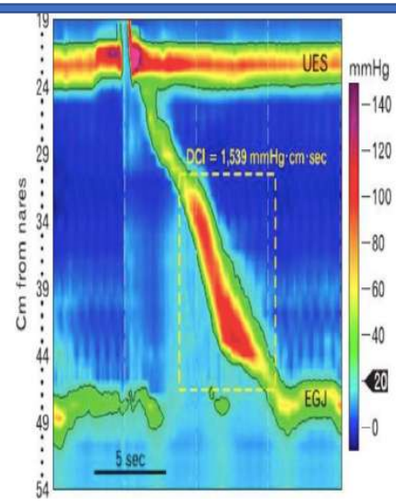
Esophagus

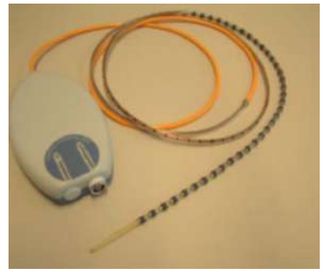
15cm
25cm
40cm











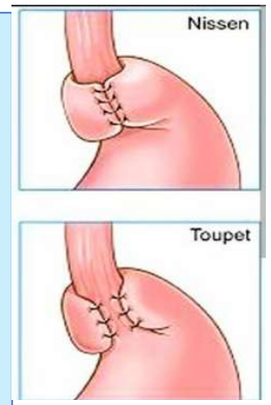
Sign:
Dysphagia:
IOC:
IOC for-T/N staging:
M staging:
Esophagectomy Conduit:
10cm proximal, 5cm distal
-McKeown
-Ivor Lewis
-Orringer

Sign:
Dysphagia:
Eckardt scale Hurst phenomenon
Algrove syndrome (3A):
IOC:
Classification:
IRP >15mm + No peristalsis

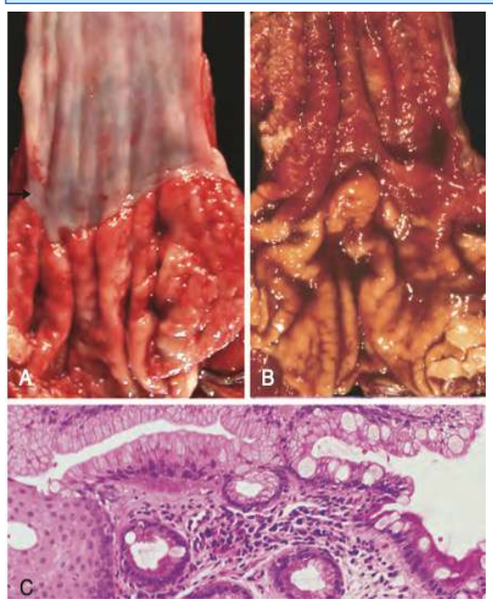
- 100% failed peristalsis
- Pan-esophageal pressurization
- Spasm
- DCI> 8000
- Distal latency <4s
- Management:

GERD & PUD

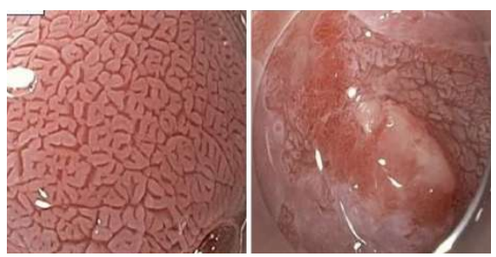
<2cm intra-abdo length R/F
IOC for GERD:
DeMeester's score
Management:
360° Nissen:
270° anterior Thal / Besley (transthoracic)
270° posterior Toupet
180–200° anterior Dor
LINX reflux Mx

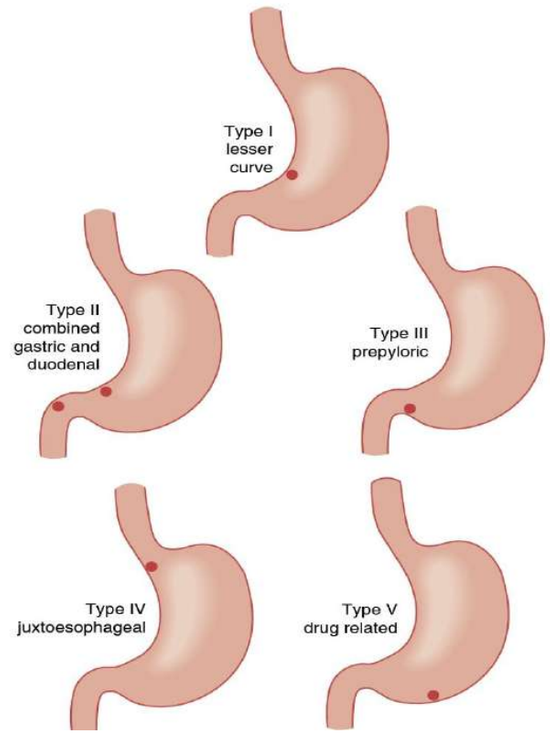


PEPTIC ULCER DISEASE
Duodenal ulcer > gastric ulcer
Ant DU:
Mx:
Post DU:
JOHNSON classification of GU:

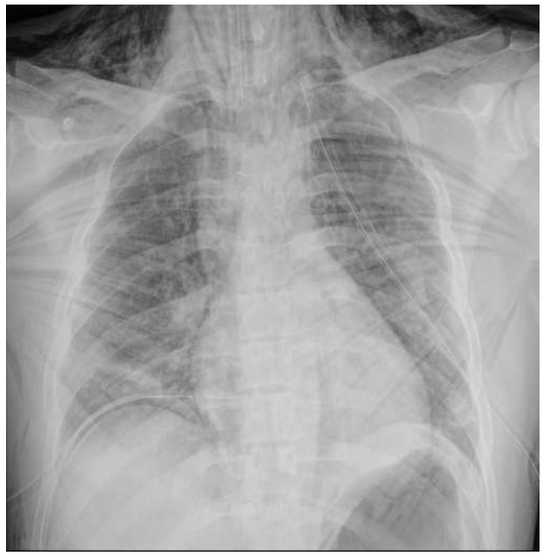


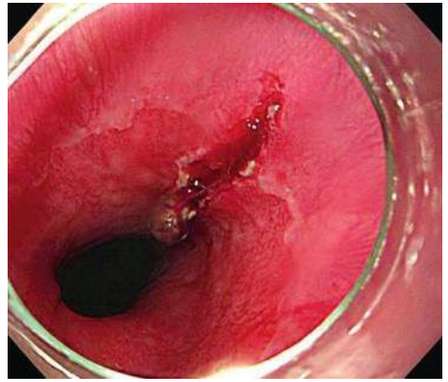
Seattle protocol: 4 quadrant at 2cm intervals
Prague staging
Vienna classification
No neoplasia
Low grade
High-grade

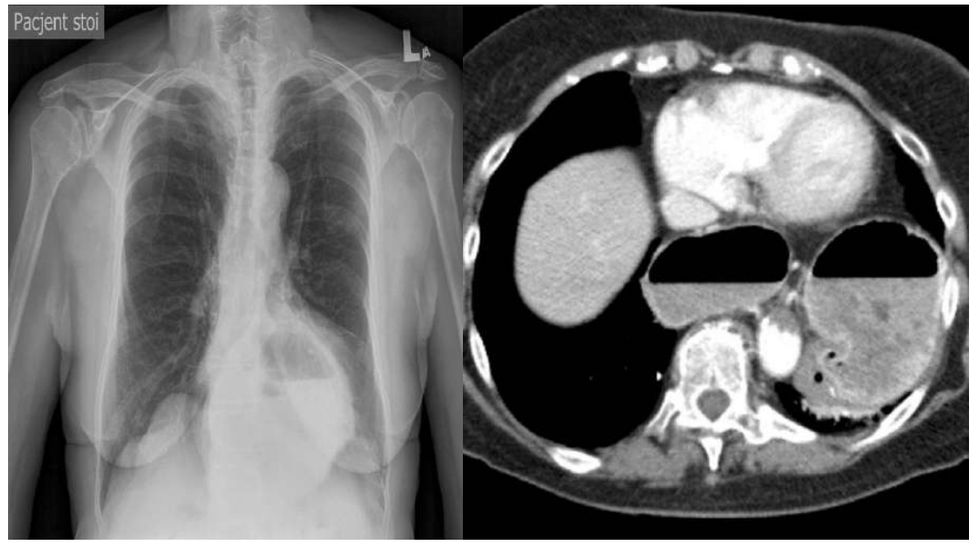




Other Esophageal Pathologies







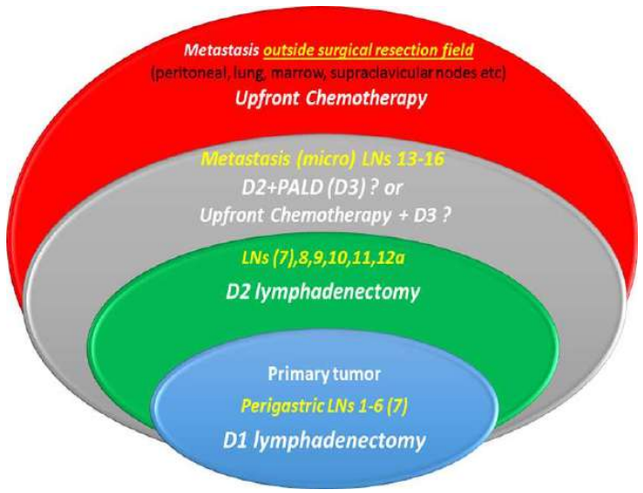
MCC of esophageal rupture:
Boerhave syndrome:

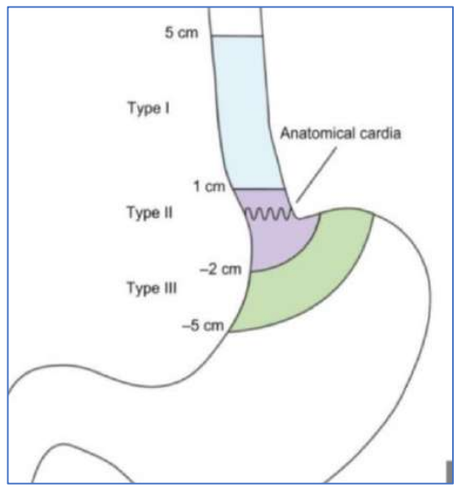
Mackler's Triad:

IOC:

Stomach Cancer

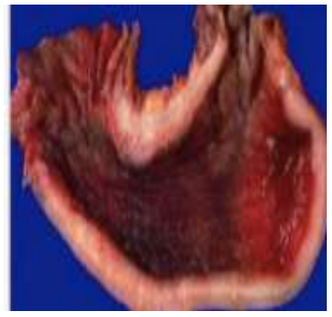
Japanese classification:
Borman classification:
Irish LN:
Virchow / Troiser sign:
Sister Mary Joseph:
Blummer shelf:
Krukenberg mets:
DAWSON criteria:



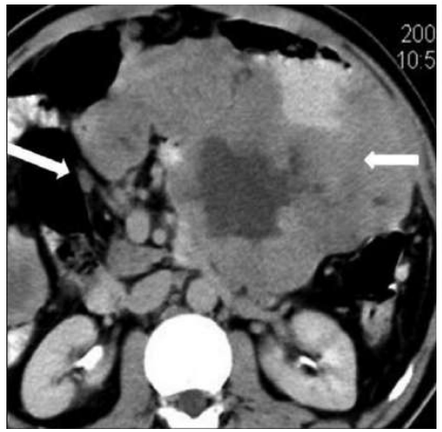


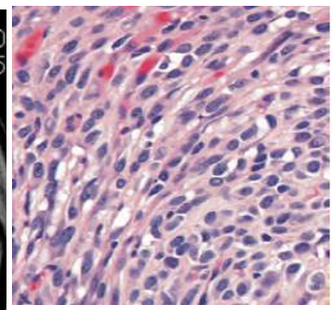
LAUREN classification:

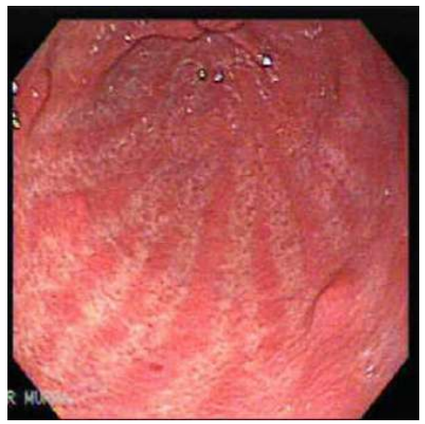
Diffuse Type	Intestinal Type
Blood group A Younger individuals	H. pylori, diet, Metaplasia, atrophy
Signet ring cells Linitis plastica	Glandular/tubular structures
CDH1 (E-cadherin) mutation	APC-MSI
Lymphatic spread	Hematogeneous spread

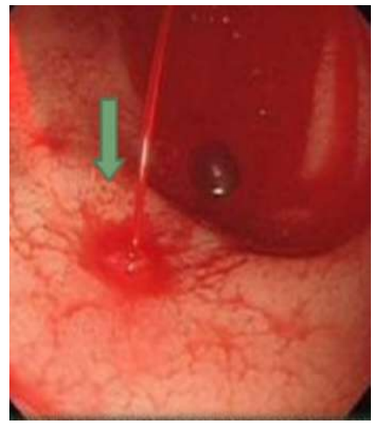


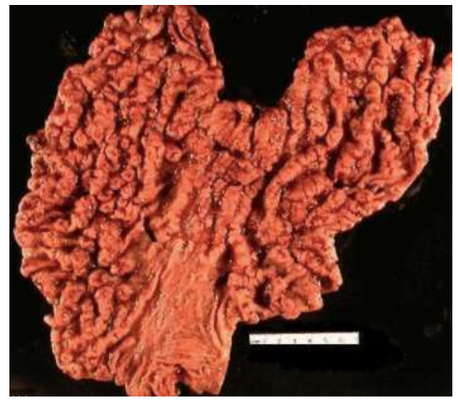
Other Stomach Lesions









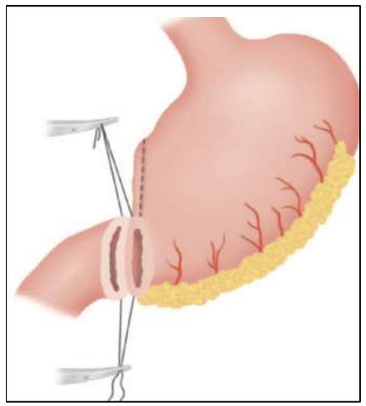


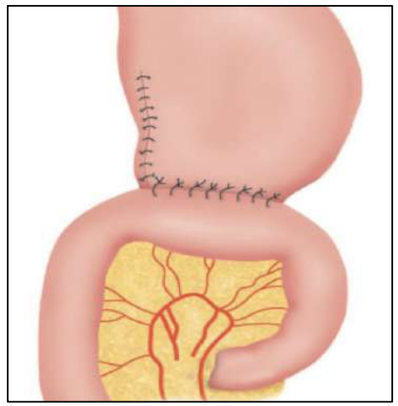
Diagnosis:
IOC:
LN:
Endoscopic Biopsy:
Markers:

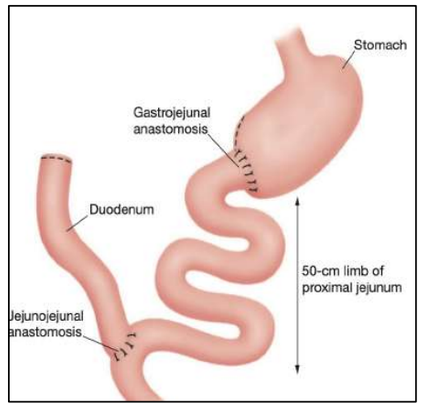
Carney triad:

Fletcher grading-Size, mitotic index
Rx:

Gastric Resections



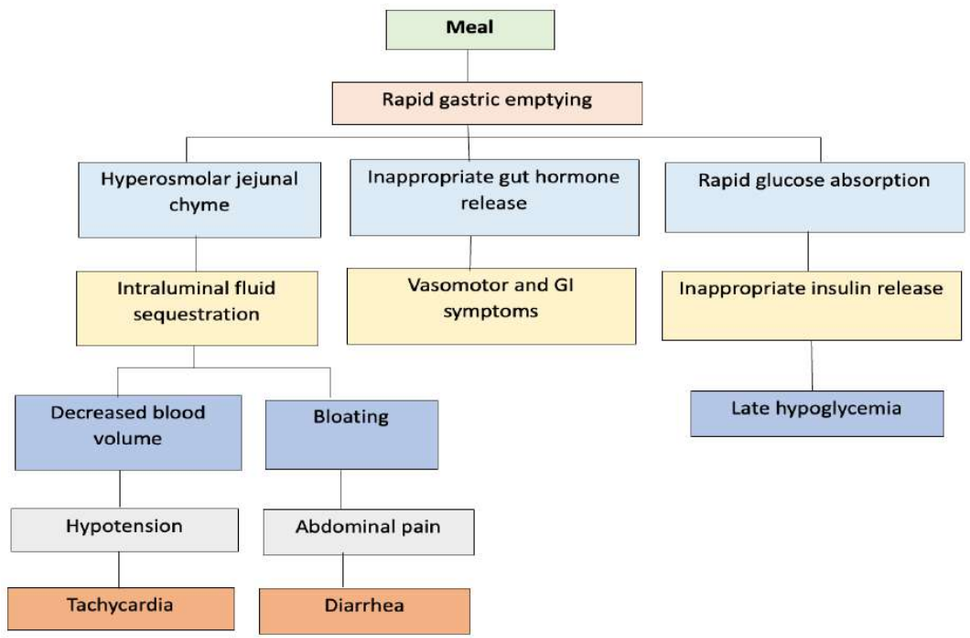




Internal hernia

- **Petersen's hernia** (Antecolic reconstruction): Bowel loop herniates behind Roux limb
- **Stemmer hernia** (Retrocolic reconstruction) : Bowel loops herniate through the transverse mesocolon

Acronym	NOTES PROCEDURES
POSE	Primary Obesity Surgery Endoluminal
ROSE	Restorative Obesity Surgery Endoluminal
ESG	Endoscopic Sleeve Gastroplasty
TOGA	Transoral Gastroplasty

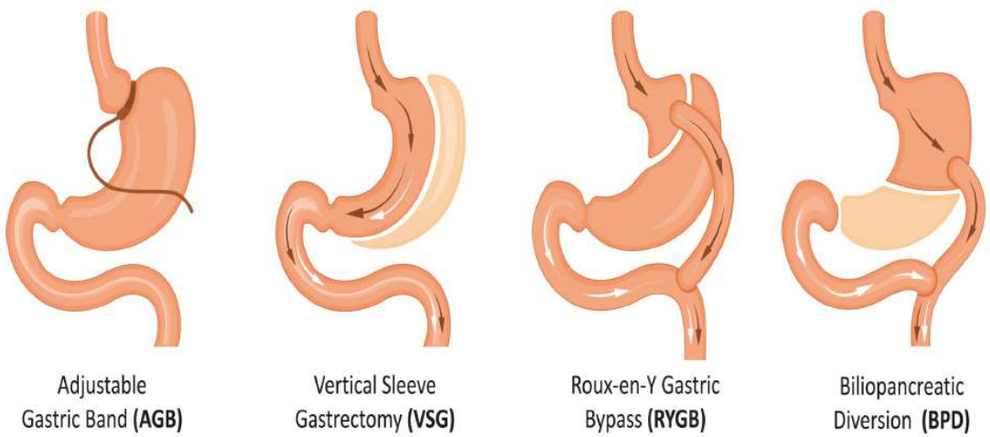


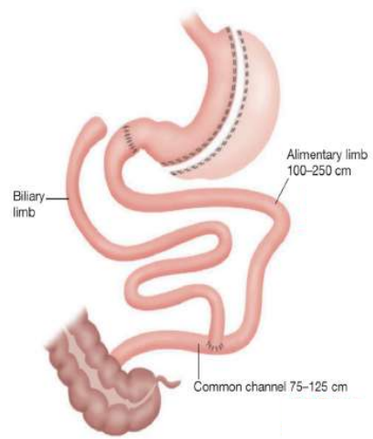
Bariatric Surgery (Metabolic Surgery)

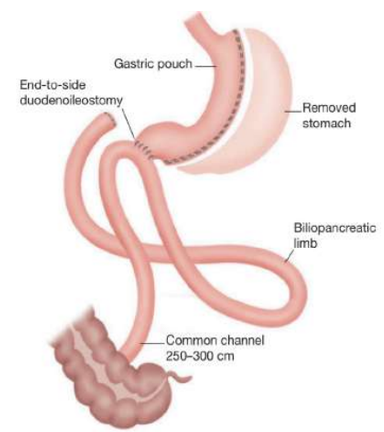
Indication of Bariatric surgery: MCC of death:

Obesity Sx Risk mortality score
Arterial hypertension
Age > 45 years
Male gender
Body Mass Index (BMI) ≥ 50 kg/m²
Risk factors for PTE

Classification	Procedures
Restrictive	• Vertical band gastroplasty • Adjustable band gastroplasty • Sleeve gastrectomy
Malabsorptive and restrictive (ideal balanced)	• Roux-en-Y gastric bypass
Mainly malabsorptive and mildly restrictive	• Biliopancreatic diversion • Duodenal switch (DS–BPD) • SADI-S (Single anastomosis duodenal–ileal sleeve gastrectomy)

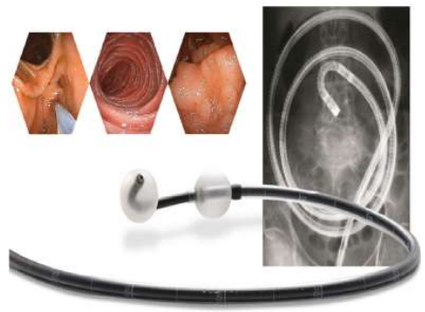


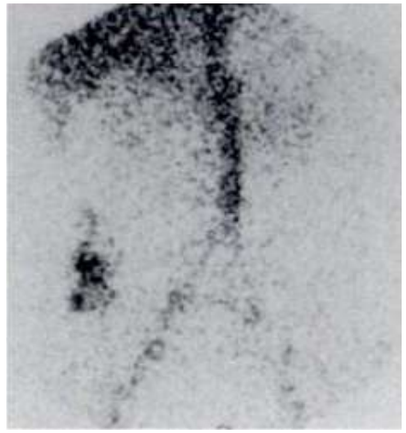




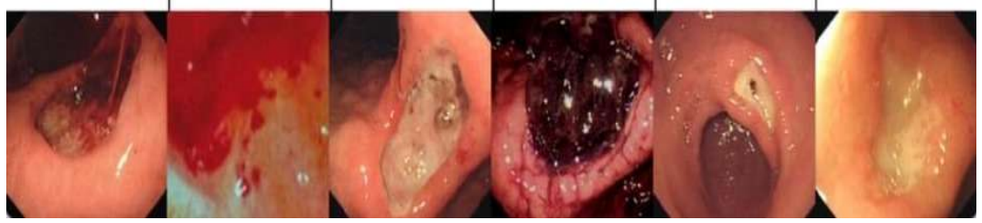
GI Bleed

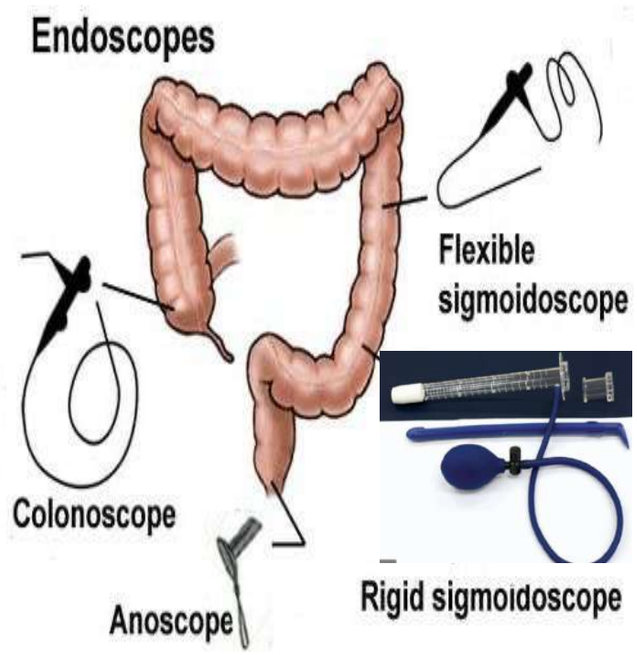
MCC of UGIB-
MCC of LGIB-
Hemetemesis-
Malena-
Hematochezia-
Occult-
Obscure-
Rockall score prognostic-Comorbidity/ Age/ Shock / Endoscopy diagnosis



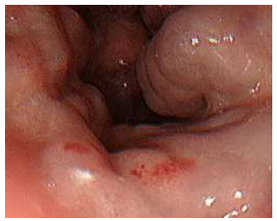


Ia	Ib	IIa	IIb	IIc	III
Spurting bleed	Oozing bleed	Non-bleeding visible vessel	Adherent clot	Flat spot in ulcer crater	Clean base ulcer





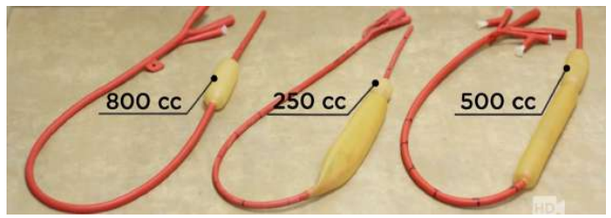
Approach to Variceal Bleed

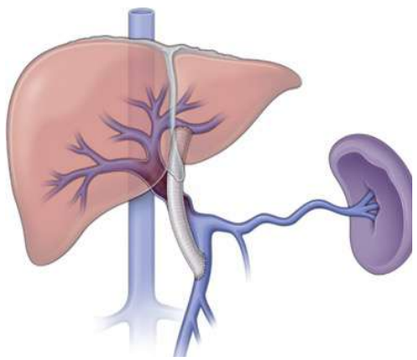


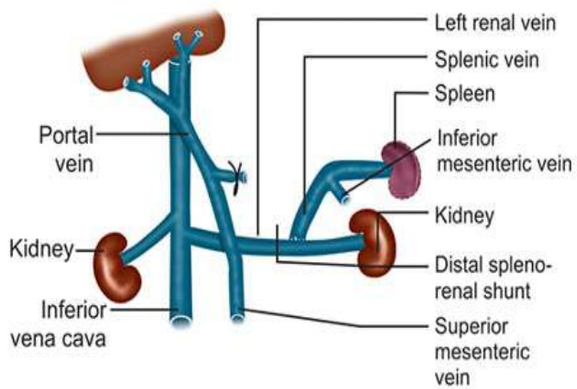
DOC-
MC-
Not used-

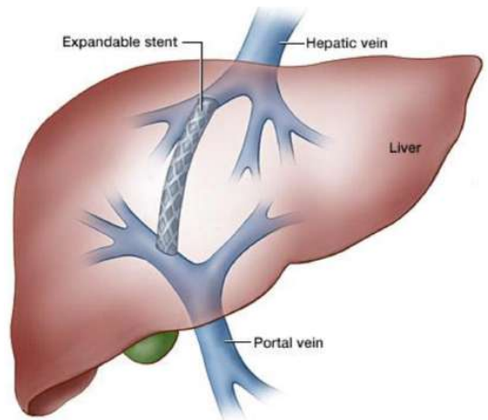
No bleed

Re-bleed



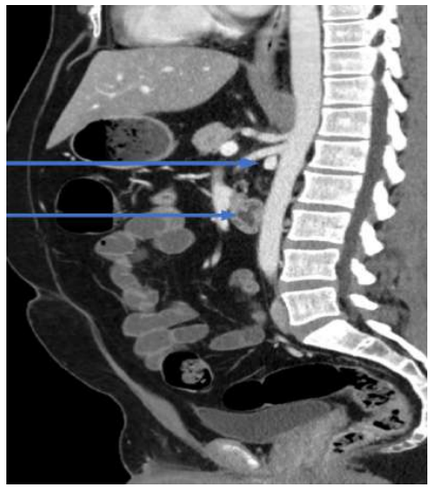


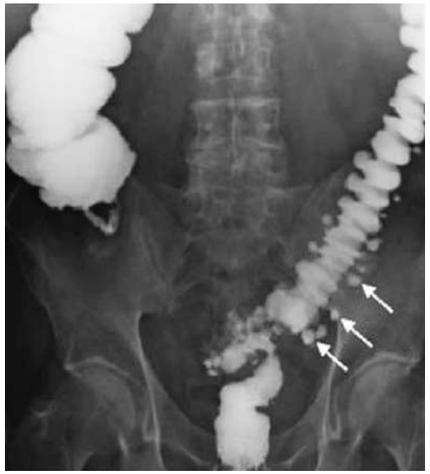




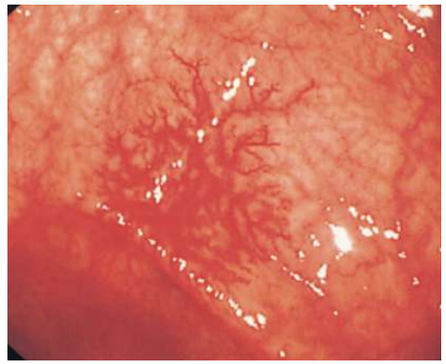
MC early complication-
MC late complication-

Intestinal Pathologies





Short bowel syndrome:
MCC CHILD-
MCC ADULT-
Mx:
Teduglutide
Bianchi, Step, Kimura procedure



Tillaux sign:

Rx:

Hinchey Classification	
1a	Pericolonic Phlegmon and inflammation
1b	Pericolonic abscess ＜4cm
2	Pelvic or inter-loop abscess or abscess ＞4cm
3	Purulent peritonitis
4	Feculent peritonitis

Miscellaneous

S – Sepsis elimination and skin protection
N –Parenteral nutrition trial
A – Anatomical assessment
P – Definitive planned surgery

Max risk of malnourishment:
FB/ Radiation/ Infection/ Epithelisation/ Neoplasia /Distal obstruction
>500ml/ day: Bad prognosis

Intra-op LN removed
GB C R eST

Mesenteric ischemia
Chronic ischemia:

Acute ischemia:

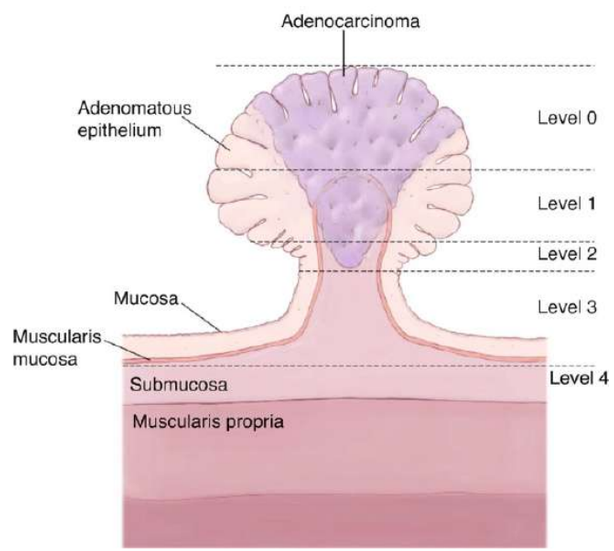
Watershed areas:

The MUST tool

(i) BMI (kg/M2)
0 = ＞20.0
1 = 18.5-2.0
2 =＜18.5

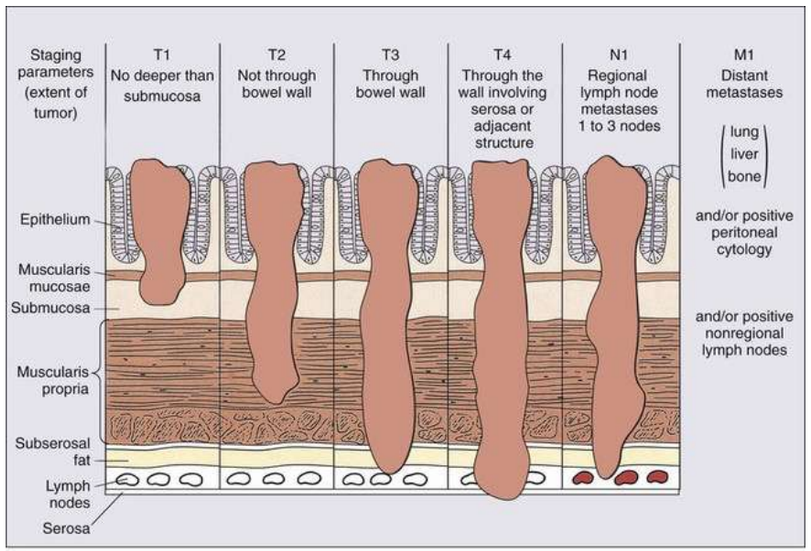
(ii) Weight loss in 3-6 months
0 = ＜5%
1 = 5-10%
2 = ＞10%

(iii) Acute disease effect:
little nutrition intake for ＞5 days



Ca-Colon Staging

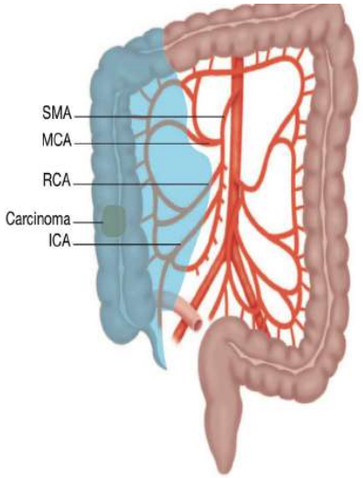
Dukes' Stage	Extent of Tumors
A	Limited to submucosa
B1	Into muscularis propria
B2	Through serosa; no nodal metastases
C1	1–4 regional nodes
C2	>4 regional nodes
D	Distant metastases

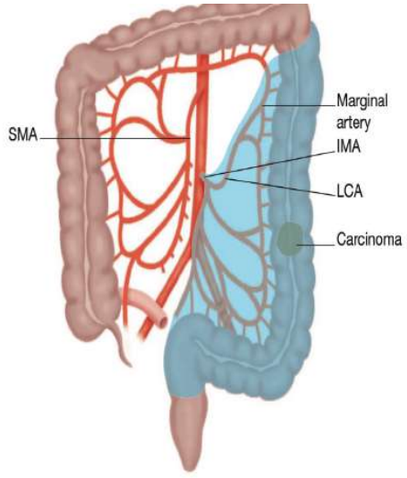


AJCC Stage	TNM Stage	Definition
I	T1; N0; M0	T1: tumour invades submucosa
I	T2; N0; M0	T2: tumour invades muscularis propria
IIa	T3; N0; M0	T3: tumour invades through muscularis propria into subserosa or non-peritonealised pericolic tissues
IIb	T4; N0; M0	T4: tumour directly invades other organs/structures and/or perforates visceral peritoneum
IIIa	T1 or T2; N1; M0	T1/2; N1: metastases to 1–3 regional lymph nodes
IIIb	T3 or T4; N1; M0	T3/4; N1: metastases to 1–3 regional lymph nodes
IIIc	Any T; N2; M0	N2: metastases to ≥4 regional lymph nodes
IV	Any T; Any N; M1	M1: distant metastases

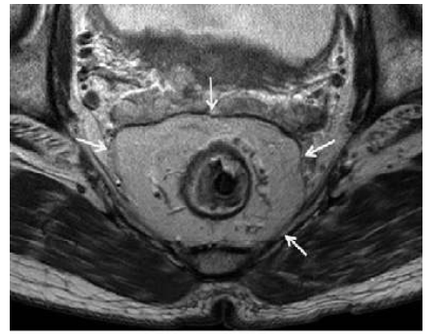
Screening for Ca colon:
Colonoscopy
Sigmoidoscopy
FOBT

Intestinal Pathologies





Ileostomy	Colostomy
More irritant to skin	Less skin irritation
High output 600–1200 ml/day	200–600 ml/day
High Na^+, K^+, HCO_3^- loss Dehydration MC	Minimal
Less odorous	More odorous
Retraction more common	Prolapse, Parastomal hernia more common
Pouting	Flush with skin

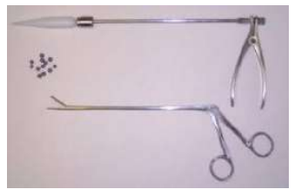


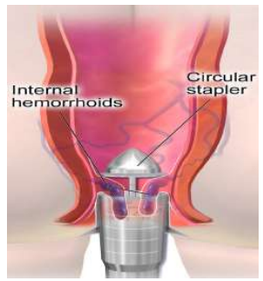
IOC for ca rectum:
Proximal 5cm
Distal 2cm
TOC:
Within 2cm of anorectal ring:

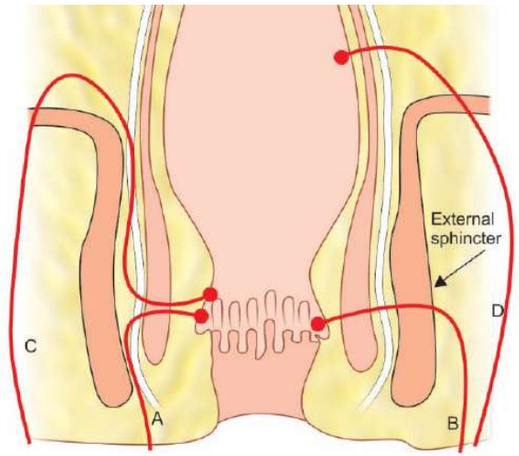
Ca anal canal:

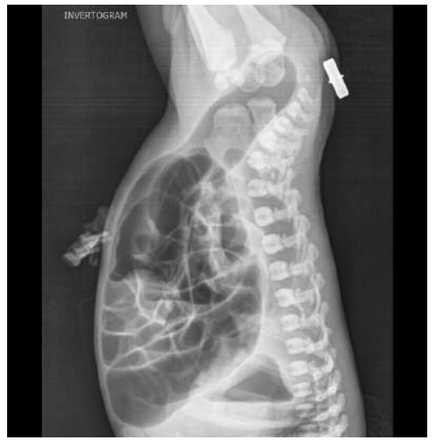
Anal Canal

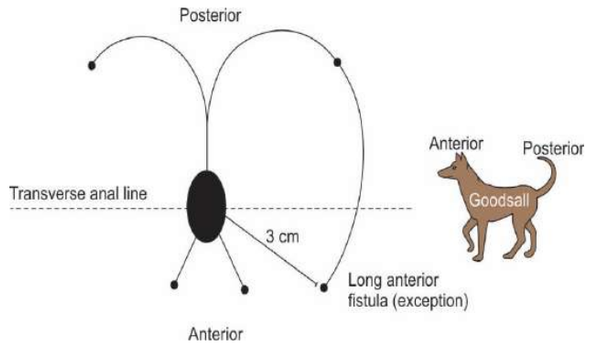
Grade	Description
1st	Hemorrhoids do not protrude but may bleed.
2nd	Hemorrhoids protrude with defecation but reduce spontaneously.
3rd	Hemorrhoids protrude but cannot reduce spontaneously; however, they can be reduced manually.
4th	Hemorrhoids are permanently prolapsed.



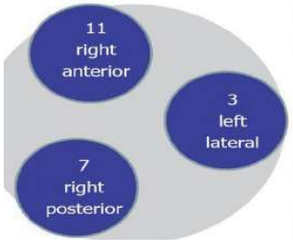


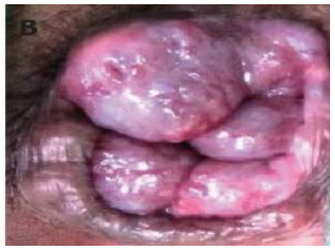


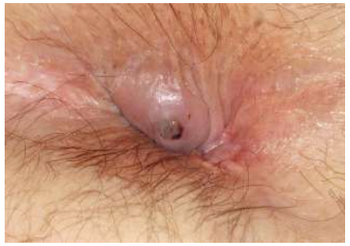




Open: Milligan morgan hemorrhoidectomy
Closed: Ferguson

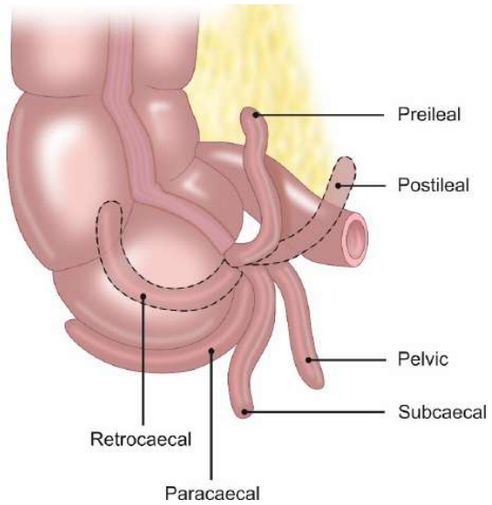




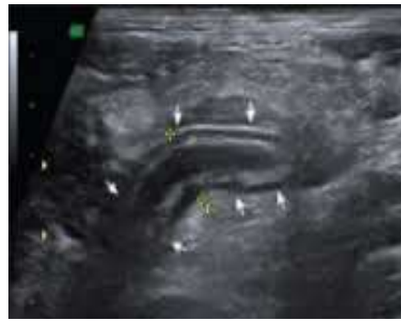


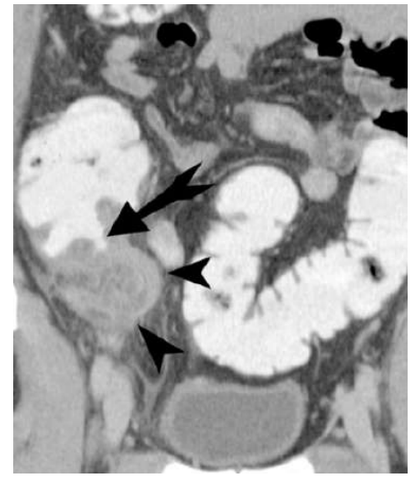
IOC:
TOC-
HIGH FISTULA-

Appendix



Feature	Score
Migration of pain	1
Anorexia	1
Nausea	1
Tenderness in RIF	2
Rebound pain	1
Elevated temperature	1
Leukocytosis	2
Shift of WBC to left	1
Total	10





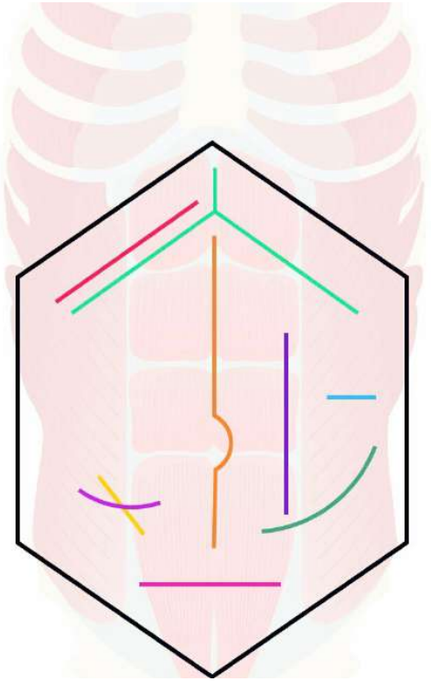
Initial Ix-
IOC-
IOC in pregnancy-

McBurney's point tenderness
Psoas / Cope sign
Rovsing sign
Ten Horn sign
Blumberg's sign

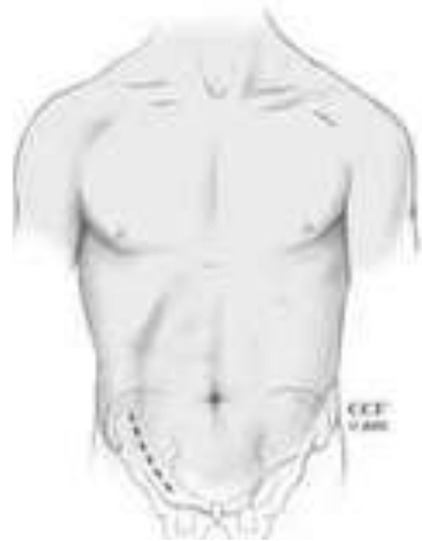
Appendiceal lump-

Appendiceal Carcinoid:
<2cm:
>2cm:

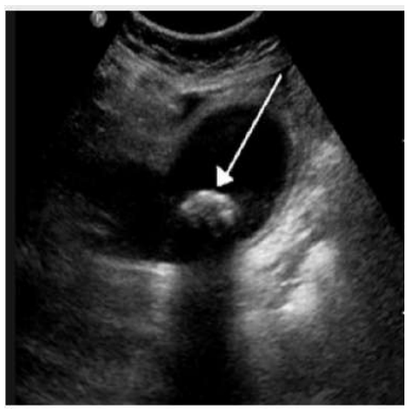
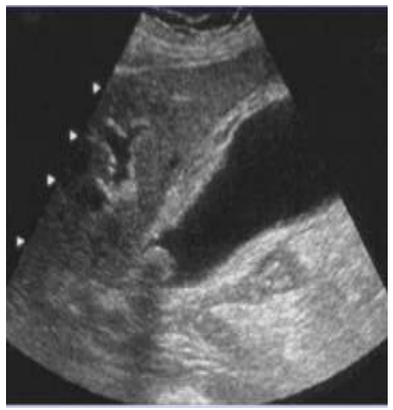
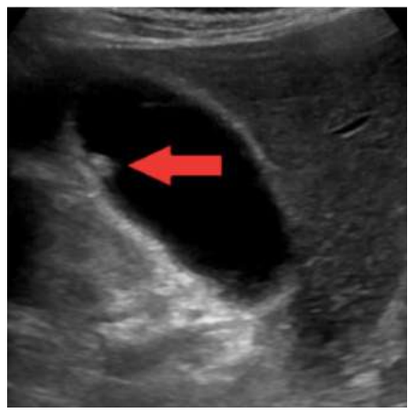
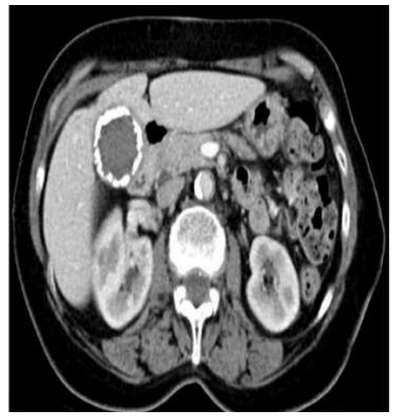
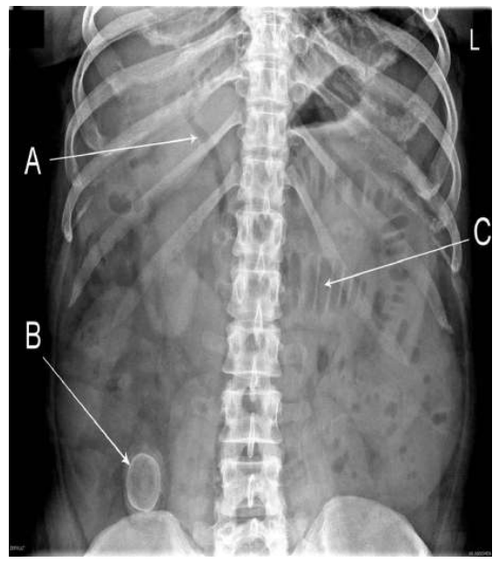
Incisions & Named Surgeries



- **KOCHER** (OPEN CHOLECYSTECTOMY)
- **'MERCEDES BENZ'** (LIVER TRANSPLANT)
- **MIDLINE LAPAROTOMY** (INTRA-ABDOMINAL ACCESS)
- **PARAMEDIAN** (INTRA-ABDOMINAL ACCESS)
- **TRANSVERSE** (STOMA CLOSURE/FORMATION)
- **RUTHERFORD-MORRISON** (KIDNEY TRANSPLANT - R/L)
- **GRIDIRON** (OPEN APPENDIECTOMY)
- **LANZ** (OPEN APPENDIECTOMY)
- **PFANNENSTIEL** (GYNAECOLOGICAL, OBSTETRIC)



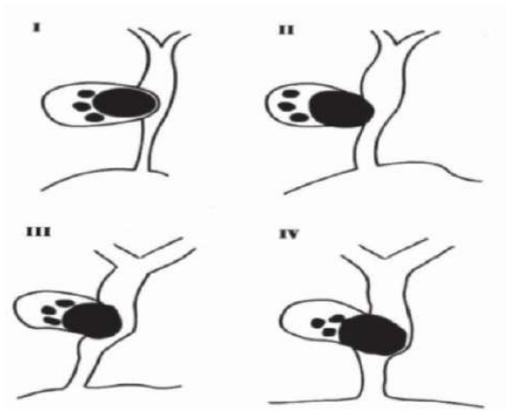
Gall Bladder

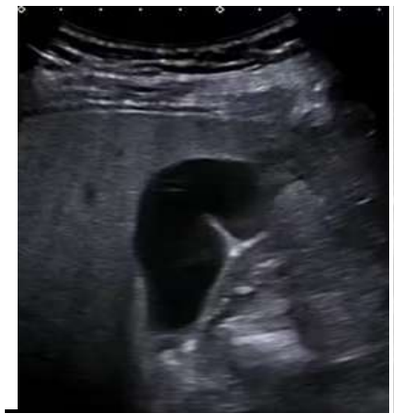






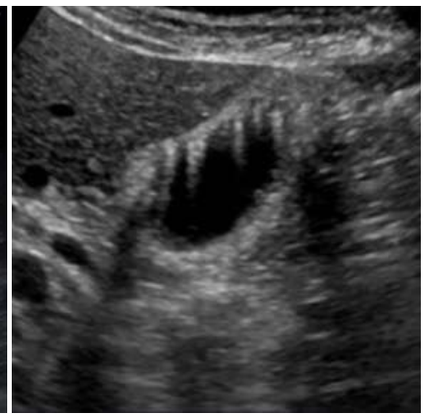
TOKYO CLASSIFICATION
Mild: Mild gallbladder inflammation
Moderate: one or more of the following: • Elevated WBC >18,000/mm³ • Palpable, tender mass in the right upper quadrant • Duration of symptoms >72 hours • Marked local inflammation
Severe- Evidence of MODS

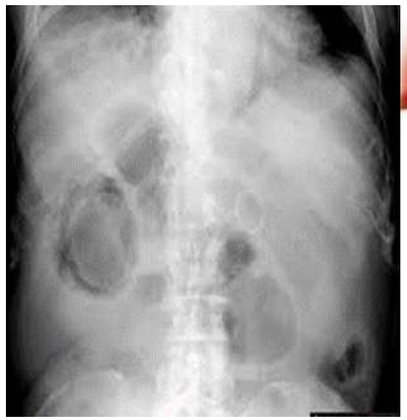
R/F for ca GB – smoking?
Non muscle infiltrating:
Muscle infiltrating ca GB:

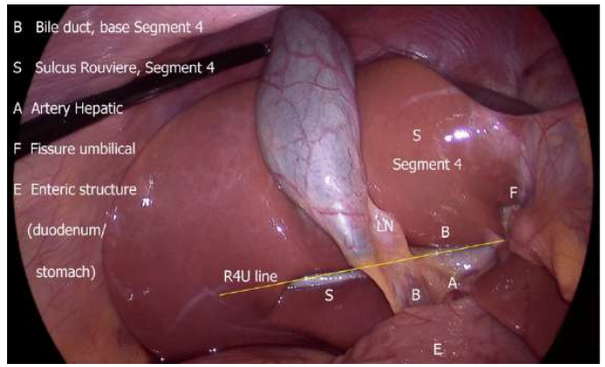
Other GB Pathologies





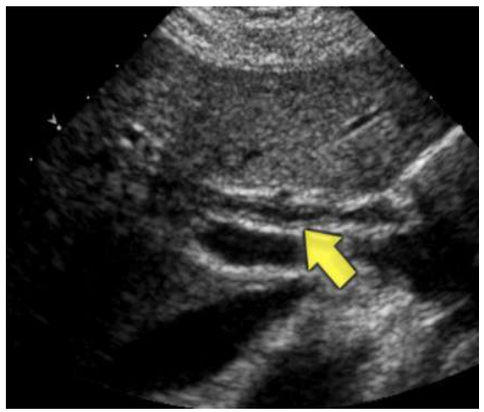
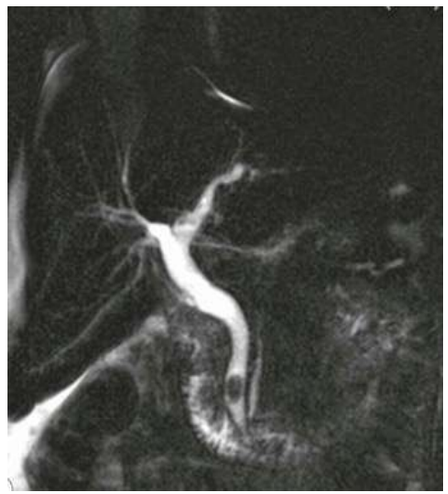
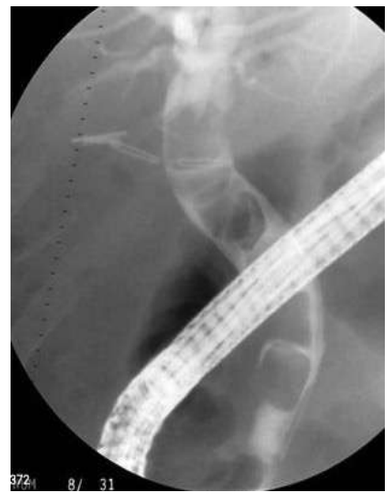
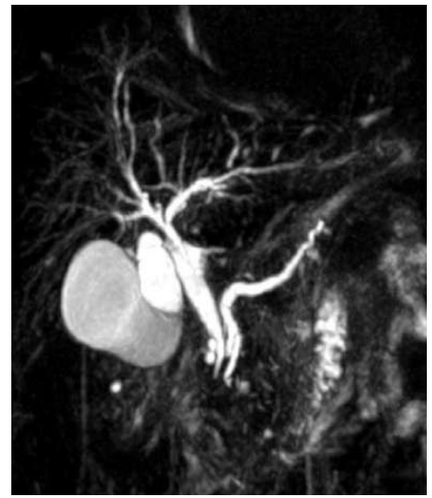






Approach to Obstructive Jaundice

Clay-colored stools, dark urine, pruritus with elevated conjugated bilirubin and ALP

In a jaundiced patient, a palpable, non-tender gallbladder suggests:
Charcot's triad:
Reynold's pentad:

Q. A 56yrs old male with obstructive jaundice reveals dilated CBD and intrahepatic biliary radicles on USG. No stone was identified. CT confirmed the findings. Which of the following investigation would be most useful to localize the cause?

A. Endoscopic USG

B. ERCP

C. MRI

D. PET scan

Q. A 48-year-old lady presents with right upper quadrant abdominal pain. USG reveal multiple GB calculi but no wall thickening, CBD diameter 12mm, gamma glutamyl transferase 5times increased, alkaline phosphatase was high also 400IU. Other parameters are normal. What is the next step ?

A. MRCP

B. ERCP

C. Semi-urgent cholecystectomy

D. EUS

Q. 40 year old female presents with jaundice and pain abdomen. LFT reveals raised bilirubin and GGT. USG reveals scleroatrophic GB with dilated CDB with impacted calculi. What is the next step of management?

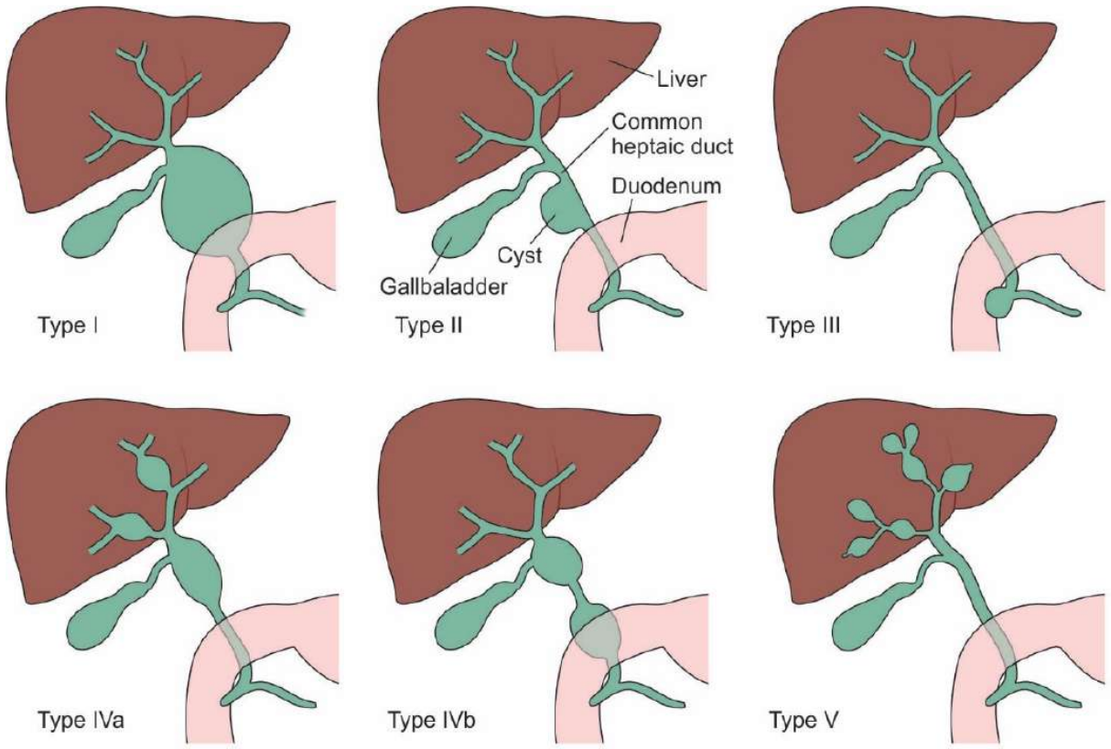
A. Cholecystectomy

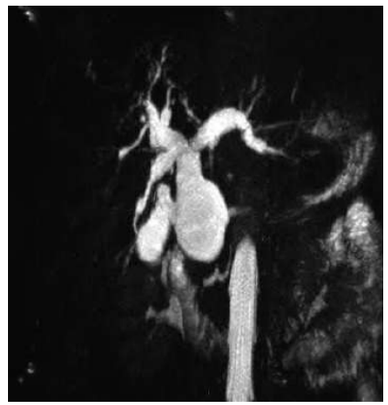
B. ERCP

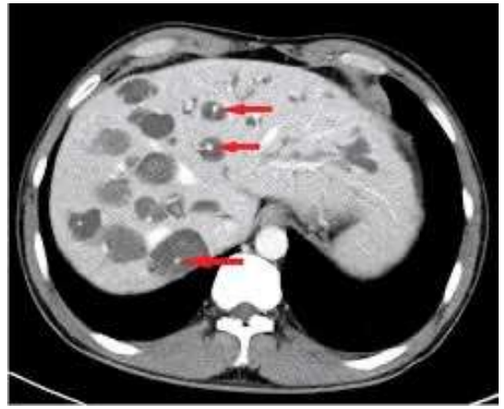
C. PET scan

D. MRCP

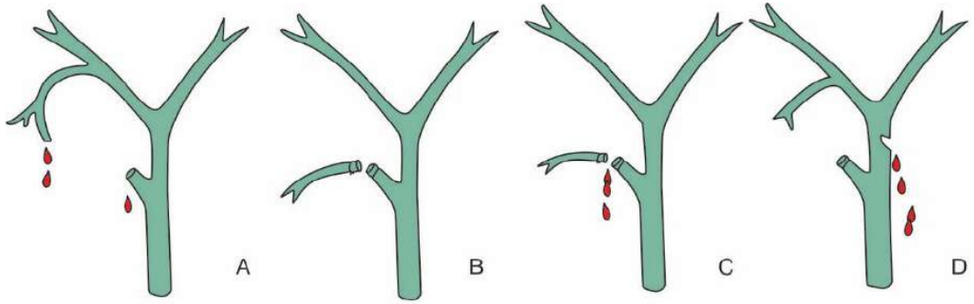
Choledochal Cysts- Todani Classification

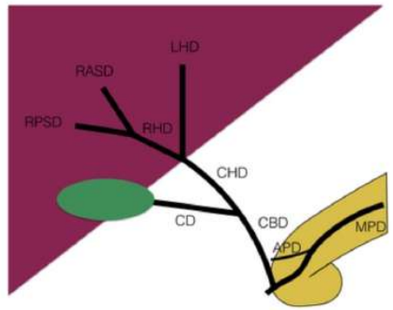


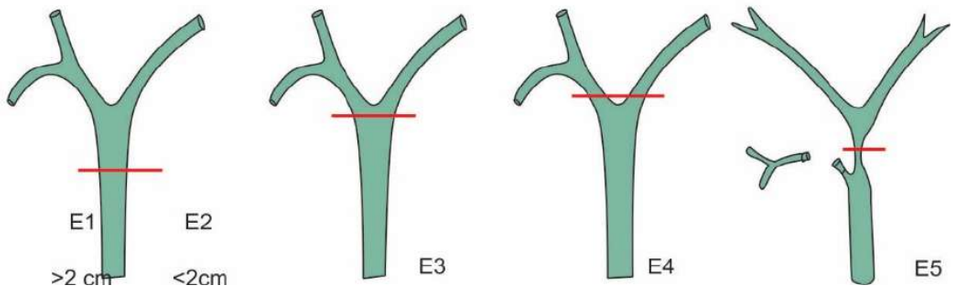




Bile Duct Injuries- Strasberg Classification

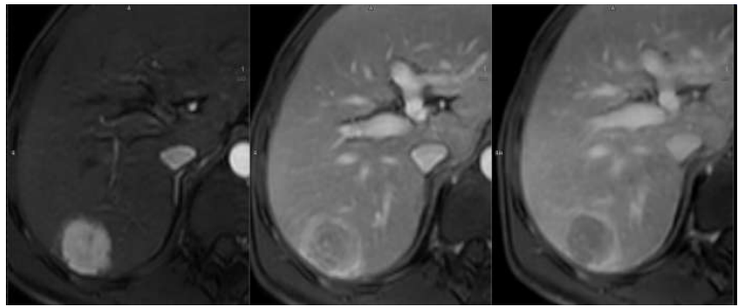


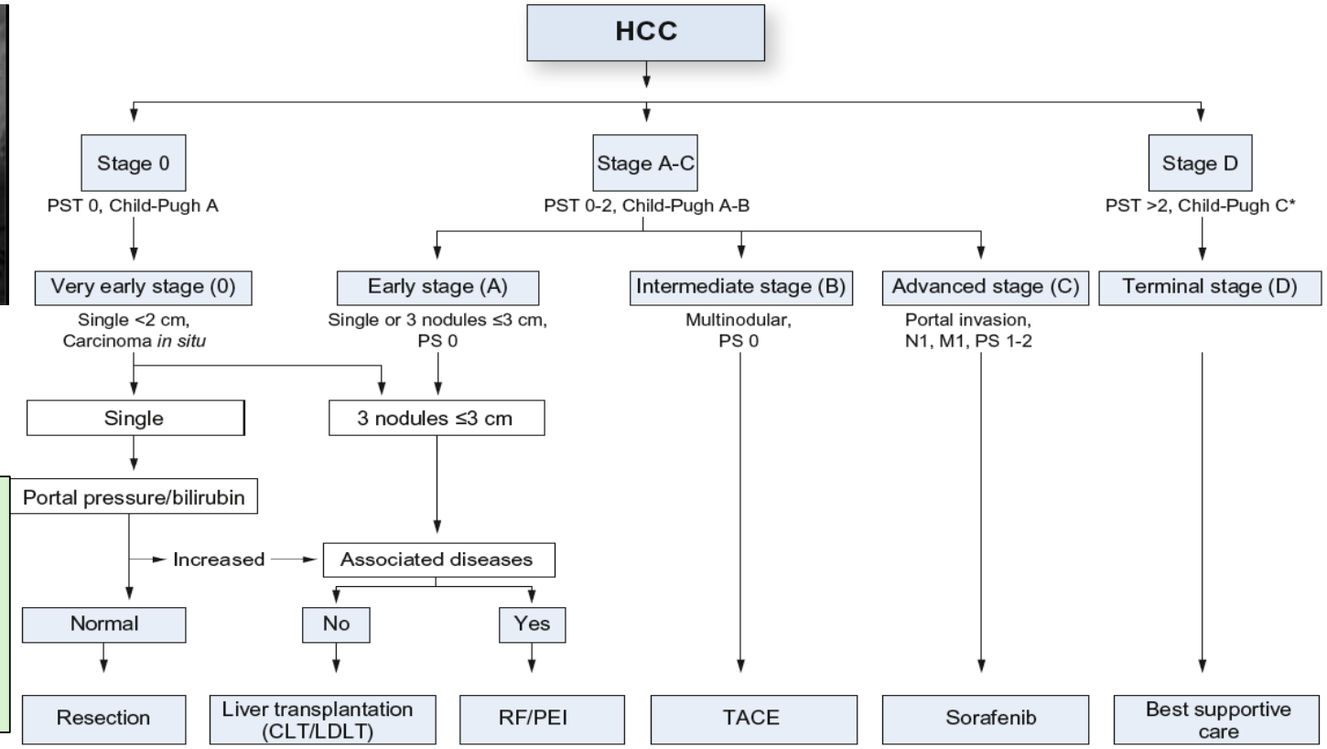




- **Stewart-Way:**
- **Hannover:**
- **Bismuth–Corlette Classification:**

Hepato-Cellular Ca

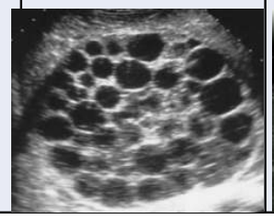
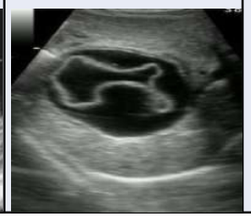
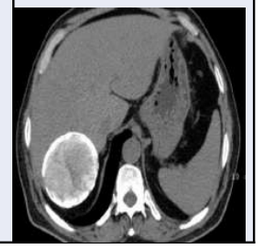


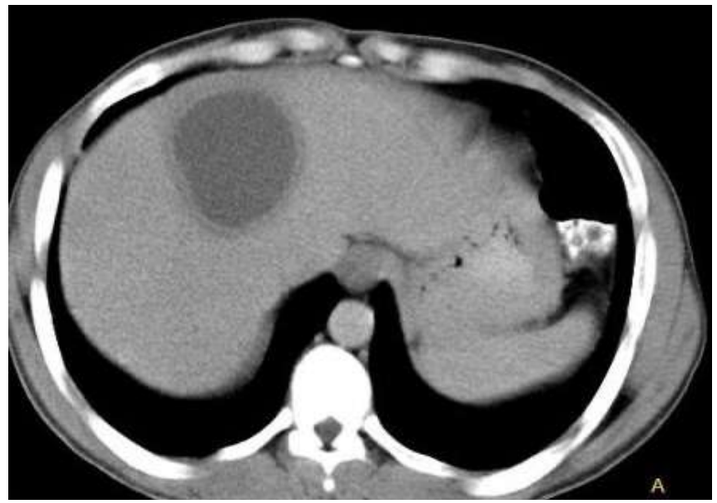


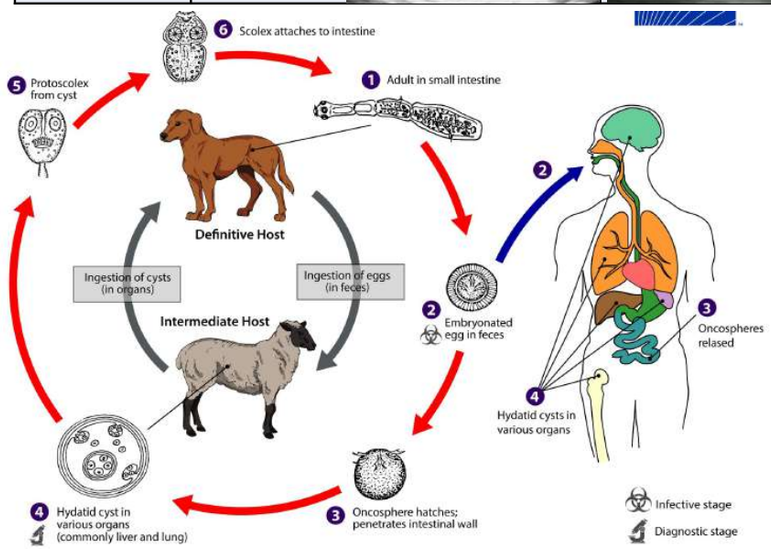
AFP, PIVKA II, GPC3, OPN
Neurotensin
Central scar + Calcification
Central scar + Hot spot on sulfur colloid:

Milan Criteria: Single tumor ≤ 5 cm, or 2–3 tumors <3 cm
UCSF Criteria: Single tumor ≤ 6.5 cm, or 2–3 lesions, <4.5 cm

Liver Infections

GHARBI	1	3	2	4	5
WHO	CE1	CE2	CE3	CE4	CE5
					





Liver Scores

Model For End Stage Liver Disease (MELD)
Creatinine (mg/dL)
Bilirubin (mg/dL)
INR
Revised:

Pediatric End-Stage Liver Disease (PELD)
-Total bilirubin
-Albumin
-Age (< 1 Y)
-Growth failure
-INR

	1	2	3
Encephalopathy	None	Mild to moderate (grade 1 or 2)	Severe (grade 3 or 4)
Ascites	None	Mild to moderate (diuretic responsive)	Severe (diuretic refractory)
Bilirubin (mg/dL)	<2	2-3	>3
Albumin (g/dL)	>3.5	2.8 – 3.5	<2.8
PT INR	<4 <1.7	4-6 1.7-2.3	>6 >2.3

Class A= 5 to 6 points (least severe liver disease)
Class B = 7 to 9 points (moderately severe liver diseases)
Class C = 10 to 15 points (most severe liver disease)

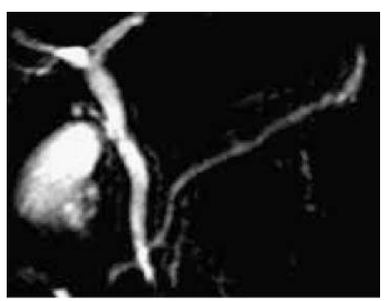
Acetaminophen-induced ALF	Non-acetaminophen-induced ALF
Arterial pH <7.30	Prothrombin time >100 sec (INR >6.5)
Or all of the following • Prothrombin time >100 sec (INR >6.5) • Serum creatinine > 3.4 mg/dL • Grade 3 or 4 hepatic encephalopathy	Or any 3 of the following: • Non-A, non-B viral hepatitis, drug-induced or indeterminate etiology of ALF • Time from jaundice: encephalopathy >7 days • Age <10 years or >40yrs • Serum bilirubin >17.4 mg/dL

NAZER index:
Bilirubin AST PT/INR

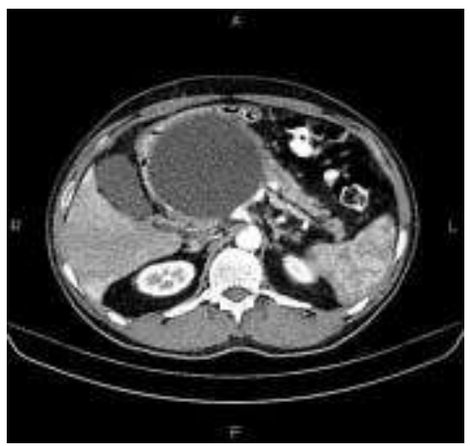
Pancreas

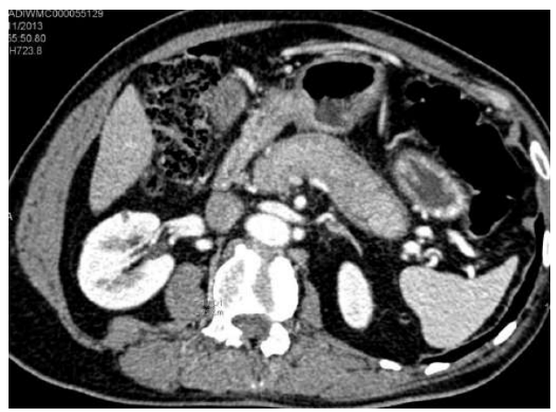
Acute pancreatitis
Diagnosis:
Initial Ix:
IOC:

BISAP Score	
BUN	• BUN > 25 mg/dL (8.9 mmol/L)
Impaired mental status	• Glasgow coma score < 15
SIRS	• Evidence of SIRS
Age	• Age > 60 years old
Pleural effusion	• Pleural effusion



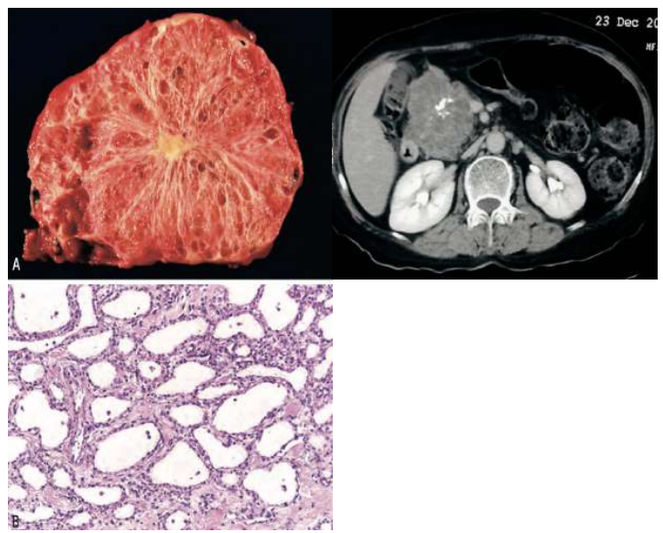
Revised Atlanta classification
Interstitial Oedematous Pancreatitis
< 4 weeks: Acute Peripancreatic Fluid Collection (APFC)
> 4 weeks: Pseudocyst
Necrotising Pancreatitis
< 4 weeks: Acute Necrotic Collection (ANC)
> 4 weeks: Walled-Off Necrosis (WON)

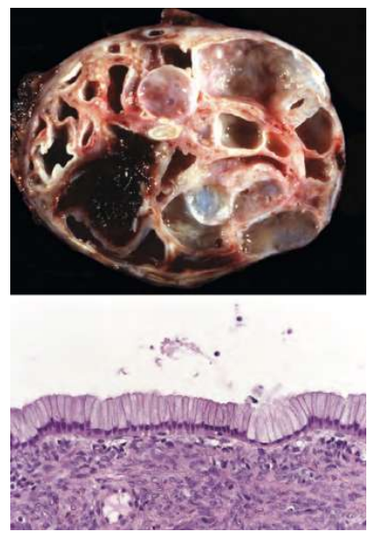


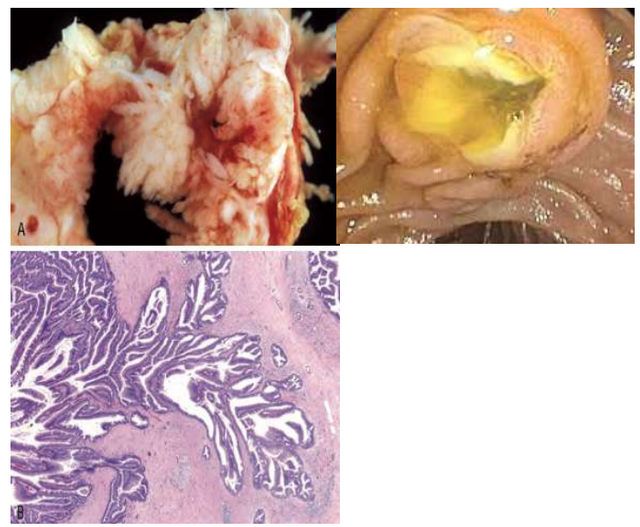


Pancreatic Cystic Neoplasms

Features	Serous CA	MCN	IPMN
Age	Grand mother	Mother	Grand father
Pathology	Benign	30% malignant	65% malignant
Epithelium	Glycogen-rich cuboidal	Columnar mucin-producing with ovarian stroma	Columnar mucin-producing
Aspirate	Low CEA Low amylase	High CEA Low amylase	High CEA High amylase



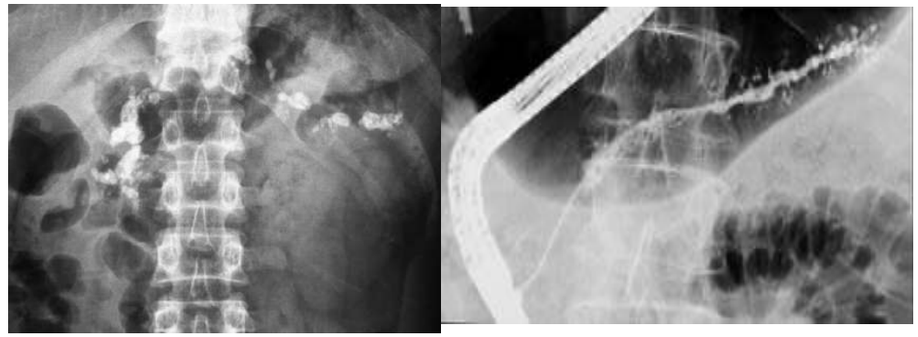


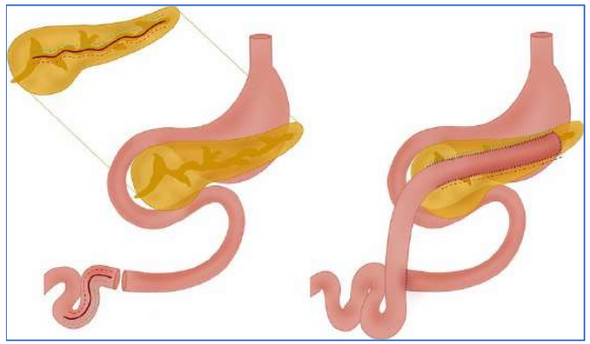


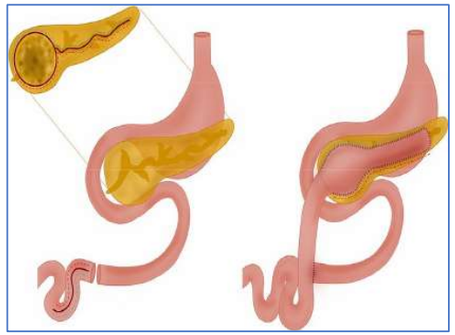
Chronic Pancreatitis

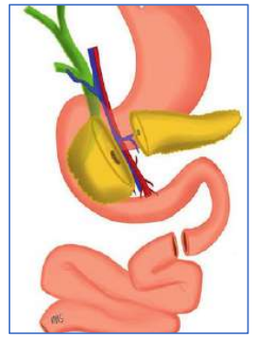
TIGARO CLASSIFICATION

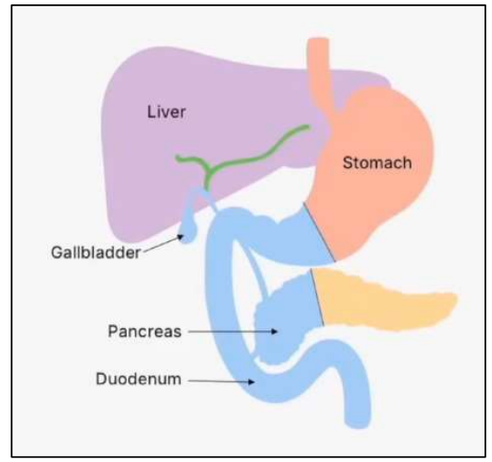
IOC:
GOLD STANDARD:
Indications for Surgery
- Intractable pain despite medical + endoscopic therapy
- Dilated pancreatic duct (>5mm) with obstructive stones/strictures





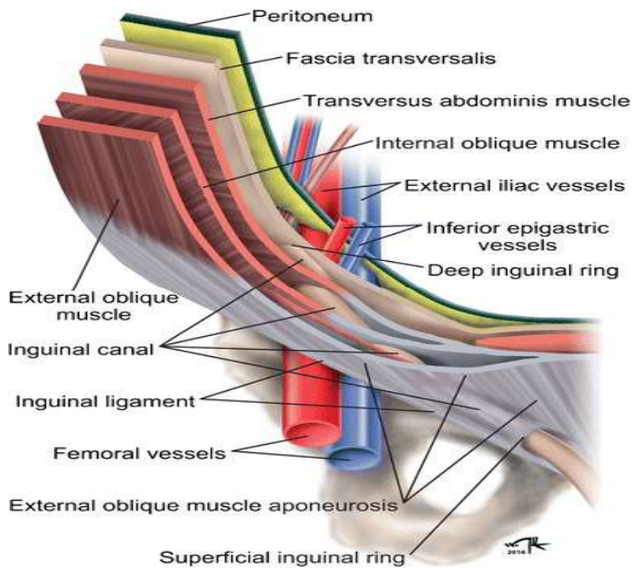


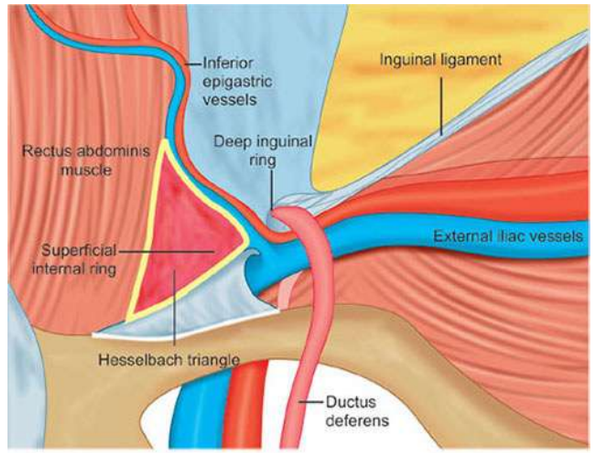


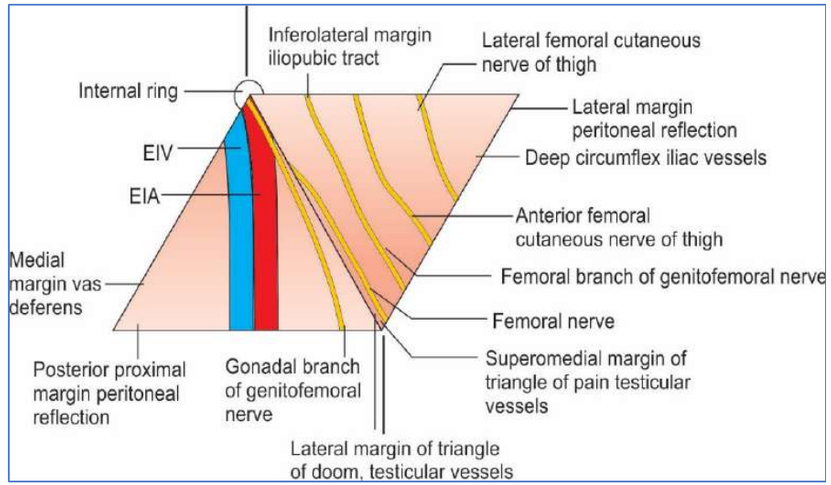


Only distal:

Hernia







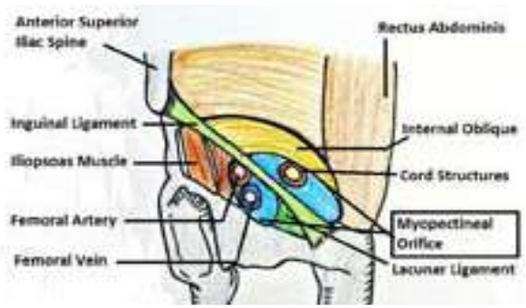
Int oblique + Transversus abdo: Roof

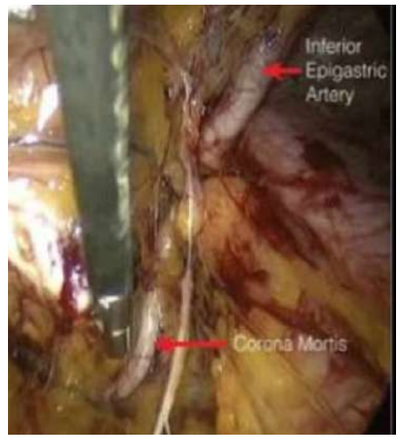
Due to weakness of conjoint tendon

External oblique: LIP

Femoral: Below and lateral to PT
Inguinal: Above and medial to PT

MYOPECTINEAL ORIFICE:
Rectus abdominis
Conjoint tendon
Iliopsoas muscle
Lacunar ligament



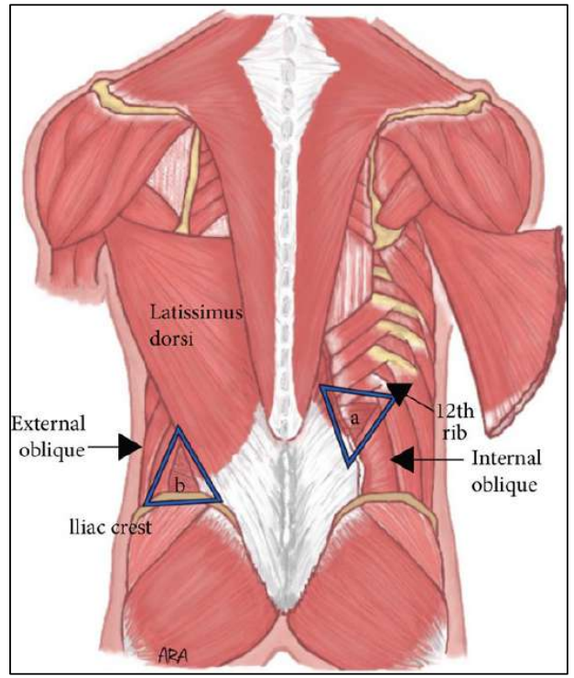


Other Hernias

Midline (M)
- Subxiphoidal – M1
- Epigastric – M2
- Umbilical – M3
- Infraumbilical – M4
- Suprapubic – M5

Lateral (L)
- Subcostal – L1
- Flank – L2
- Iliac – L3
- Lumbar – L4

P = Primary hernia
R = Recurrent hernia
0 = No hernia detectable
1 = < 1.5 cm (one finger)
2 = < 3 cm (two fingers)
3 = > 3 cm (more than two fingers)
L = Lateral / Indirect hernia
M = Medial / Direct hernia
F = Femoral hernia



- Infraumbilical, above arcuate line:
- Litter
- Amyand
- Gibson
- Pantaloon
- Sliding
- Richter
- Oglive
- Maydle

Omentocele VS Enterocele

Hernia Surgeries

Congenital inguinal hernia/ hydrocele

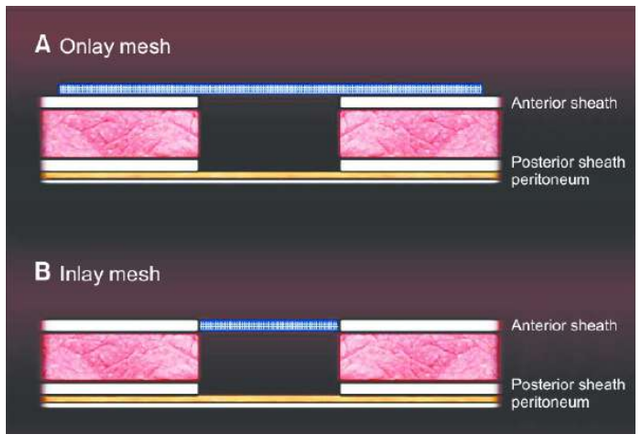
Conjoint tendon sutured to the inguinal ligament

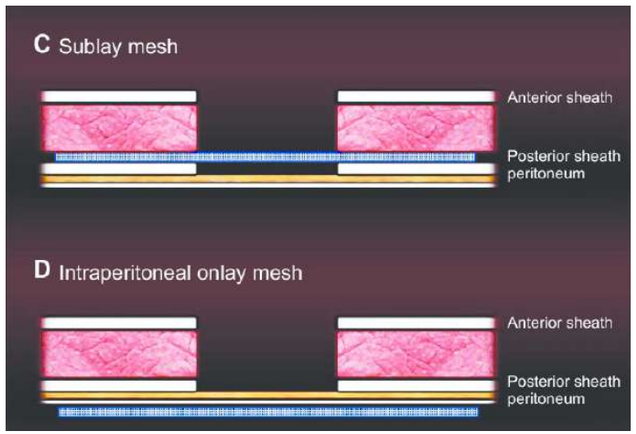
Four-layer imbrication/ double-breasting of the transversalis fascia

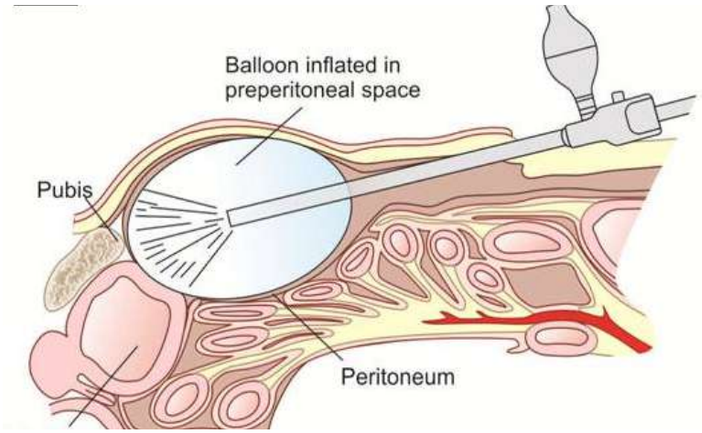
Strip from the external oblique aponeurosis

Tension-free, suturing the mesh to the inguinal ligament and conjoint tendon

Appropriate mesh for hernia:







Transplant Surgery

UW solution :
Adenosine
Allopurinol
Hydroxyethyl starch (HES)
Glutathione
Lactobionate
Warm Ischemia time: Time after devascularization before it is cooled
Cold ischemia time: Time organ can be preserved in cold preservation solution
Min (3-6hrs)-
Max(24-36hrs)-

Renal transplant
MC indication adult
MC indication child
Placed in RIF extraperitoneal
MC infection(3-6mon) :
MC malignancy:
PTLD:
Graft dysfunction:

	Maastricht	DCD Situation
I	Dead on arrival	Uncontrolled
II	Unsuccessful resuscitation	Uncontrolled
III	Anticipated cardiac arrest	Controlled
IV	Cardiac arrest in brain dead donor	Controlled
V	Unexpected cardiac arrest in a hospital inpatient	Uncontrolled

Contraindications to Renal Transplantation
Absolute
Untreated malignancy
Active infection / HIV
Any condition with a life expectancy < 2 years
Malignant melanoma within the previous 5 years
Relative
Co-morbidities (e.g., diabetes mellitus/ obesity)
Age > 65 years
HBV or HCV infection
Previous malignancy

Liver Transplant

MC indication adult:
MC indication child:
TYPES OF LT:
Split LT:
HALT:
APOLT:
Domino LT:
Orthotopic LT Sequence:

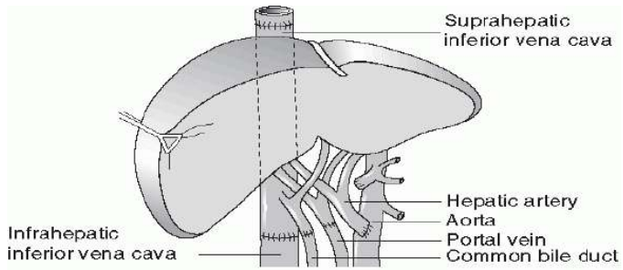
Contraindications to Liver Transplantation

Absolute

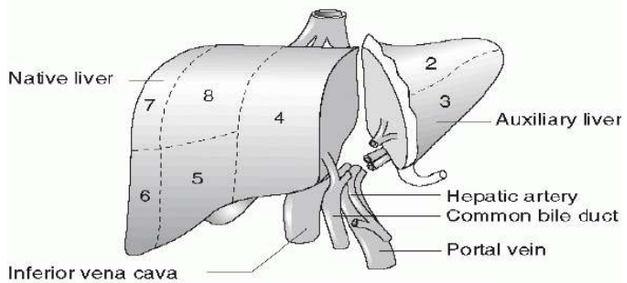
- Uncontrolled sepsis
- Active alcohol or substance abuse
- Advanced cardiac or pulmonary disease
- Extra-hepatic malignancy (**Except:**)

Relative

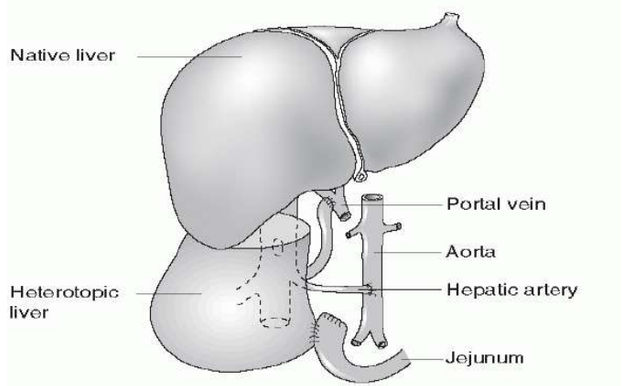
- Multi-system organ failure with fulminant liver failure
- Active infection
- Advanced age, frailty, or extensive co-morbidities
- Medication-resistant HBV cirrhosis



Orthotopic liver transplant



Auxiliary orthotopic liver transplant



Auxiliary heterotopic liver transplant