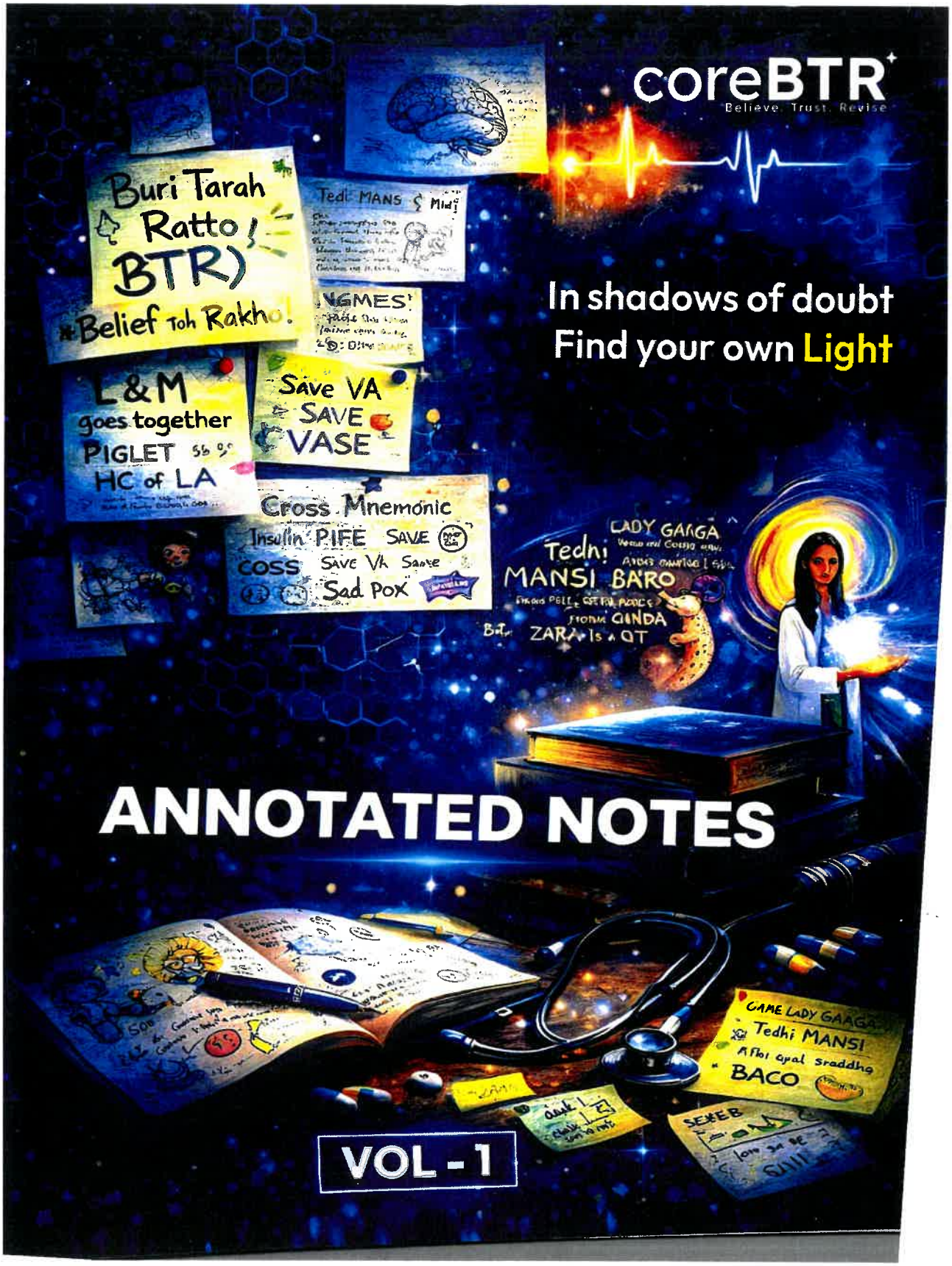

coreBTR
Believe. Trust. Revise
Buri Tarah Ratto! BTR)
Belief Toh Rakho!
Tedi MANS Midi
L&M goes together
PIGLET
HC of LA
Save VA
SAVE
VASE
Cross Mnemonic
Insulin PIFE SAVE
COSS Save Vk Saare
Sad POX
In shadows of doubt
Find your own Light
LADY GAAGA
Tedhi MANSI BARO
ZARA Is a QT
ANNOTATED NOTES
CAME LADY GAAGA
Tedhi MANSI
Affoi apal Sraddha
BACO
VOL - 1

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1 CHAPTER

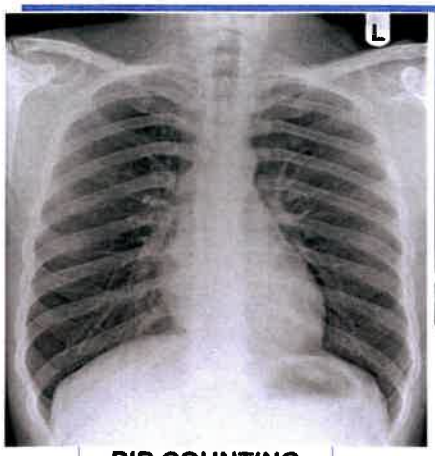
RADIOLOGY

BASIC INVESTIGATIONS

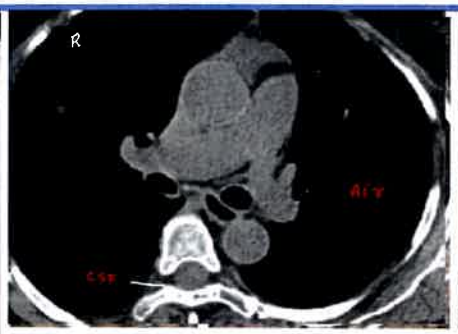
	Concept	Ionizing Radiation	Black	White
X-ray	Attenuation (2D)	+	Lucent	Opaque
CT Computed Tomography	Attenuation (3D)	+	Hypodense	Hyperdense
MRI Magnetic Resonance Imaging	* NMR :Nuclear Magnetic Resonance * Best Contrast resolution	-	Hypointense	Hyperintense
USG -Real time -2 to 20 MHz	* Piezoelectric crystals : Pb Zirconate Titanate * Transducer: sends sound waves	-	Hypoechoic	Hyperechoic
NUCLEAR MEDICINE	Gamma Rays * Scintigraphy * SPECT Single Photon * PET	+ + Max: PET-CT	-	Hot-spot/ Avid

Modality	Dose
CXR	0.02 mSv
Skull X-ray	0.07 mSv
Abdomen X-ray	1 mSv
Mammography	0.5-0.7mSv
CT Head	2 mSv
CT Chest	5 mSv
CT Abdomen	10 mSv
PET	10-12 mSv
Barium meal follow through/ enema	7-8mSv
IVP	2-3mSv

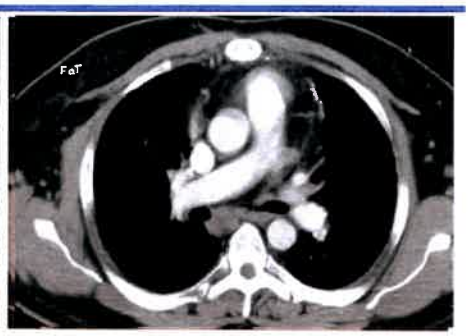
X-RAY , CT



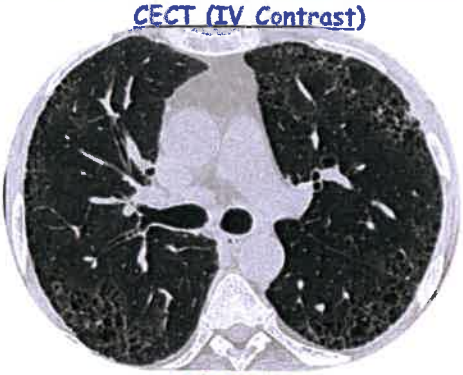
RIB COUNTING



NCCT



CECT (IV Contrast)



HRCT Lung

HOUNSEFIELD UNIT

-1000	-10 to -100	0	20-30	60-90	100-300	1000
Air	Fat	Distilled water	Soft tissue	Acute hemorrhage	Iodinated contrast	Bone

NCCT - IOC

CALCIFICATION

-IntraCranial Calcification

-Calcified masses

CALCULI

except:

-Gall stones- USG

-CBD stones- MRCP

BONE - CORTEX

- # (Fracture)

-Initial- X-Ray

-IOC- NCCT

except Stress # : MRI

- Osteoid Osteoma

ACUTE HEMORRHAGE

Head Trauma

except:

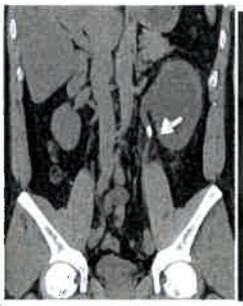
-DAI- MRI

METALLIC FB

- MRI is C/I



Periventricular: CMV
Parenchymal: Toxoplasma
GM-WM: Zika virus



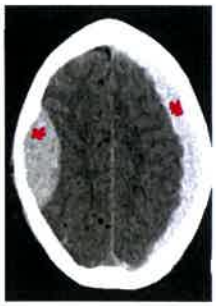
Lt. Ureteric stone
(Lt kidney shows HDN)



Chance #



Osteoid Osteoma



Rt. Acute EDH
Lt. Acute SDH



Metallic FB @ Lt Orbit

Approach to FOREIGN BODY





Coin in Esophagus

if @ Stomach-
Wait & Watch

if prox to stomach-
UGIE

Button Battery in Esophagus

Contain Alkali
(Liquefactive necrosis)

↓

Remove ASAP



Coin in Trachea

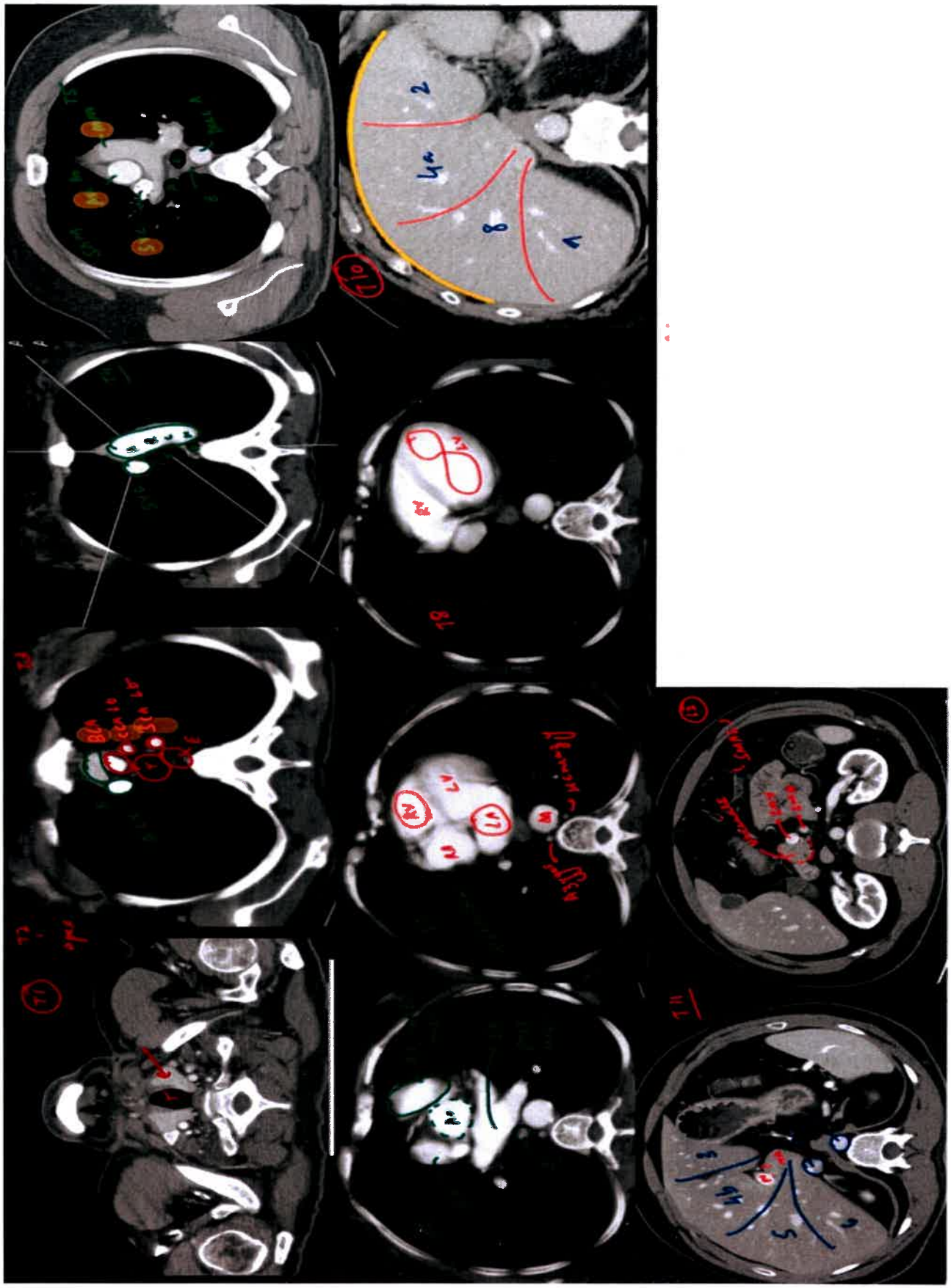
↓

Do Bronchoscopy

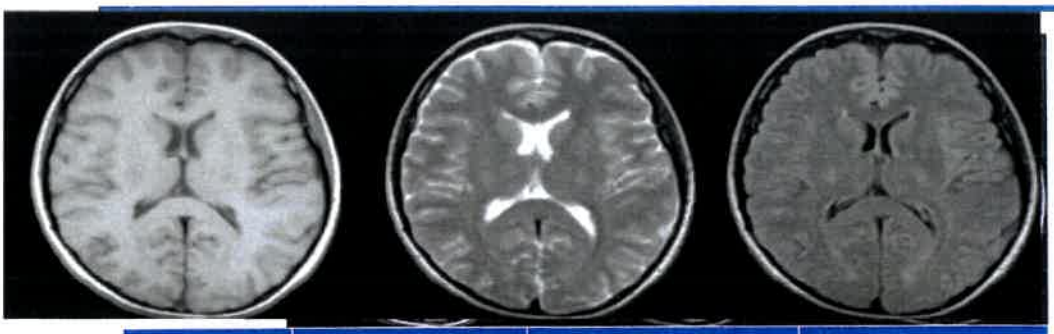


Child playing alone, now comes to emergency

- Air Trapping (Ball-Valve)
- Collapse (in complete obstruction of Airway)



MRI

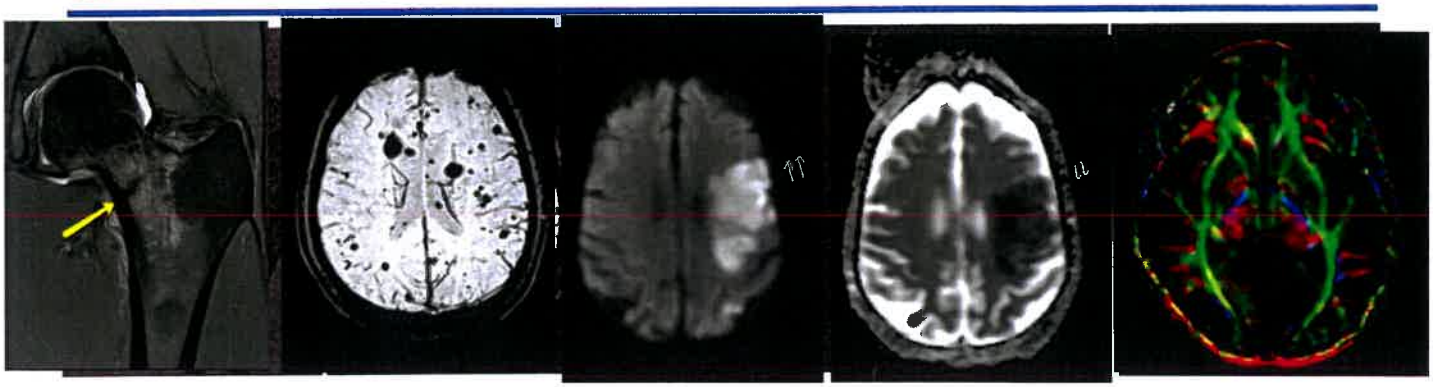




Dawson's Fingers

SEQUENCE	T1 w	T2 w	FLAIR (T2-CSF)
FLUID	↓	↑	CSF ↓ Edema ↑
GRAY MATTER	Grey	White	White
WHITE MATTER	White	Grey	Grey
FAT	↑	↑	↑

MRI SEQUENCES



STIR
IOC: BM edema

DAI
(Microbleeds)
↓
SWI

DWI

Acute Stroke:
Initial IOC: NCCT
Best/ Most Sn: MRI-DWI

Diffusion restriction:
1) Acute stroke
2) Abscess
3) Epidermoid cyst
4) Brain tumors

ADC

DTI
White matter tracts

Thumb Rules - MRI

CNS | SPINE | NERVES

→ IOC for Tumor

Spinal Cord Trauma :

SCIWORA→

No Radiographic Abnormalities

BM EDEMA

IOC : STIR

IOC for:

- Stress #
- Ac OM
- Sacroilitis
- Bone Tumors

LIGAMENTS

CARTILAGE

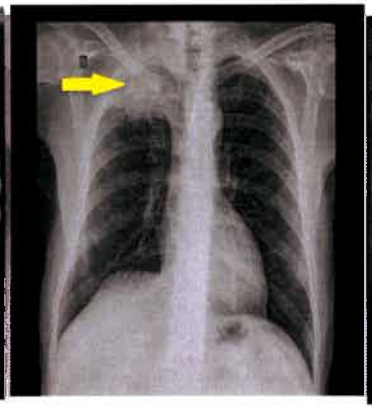
SOFT TISSUE



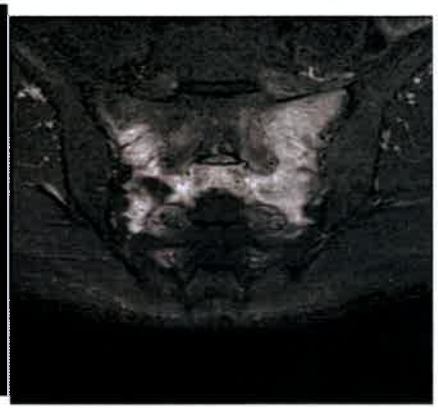
GBM

GlioBlastoma Multiforme

(POOR prognosis)



Pancoast Tumor



Sacral Insufficiency #

-Honda sign



Knee Ligaments

IOC: MRI

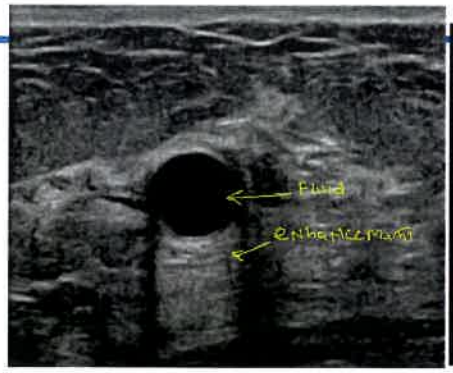
Gold Std: Arthroscopy

coreBTR by Dr. Zainab Vora

USG



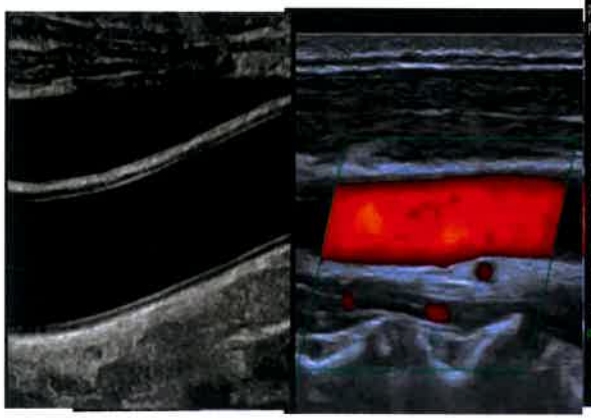
Post Acoustic Shadowing
- Stone
- Bone
- Air (Dirty Shadow)



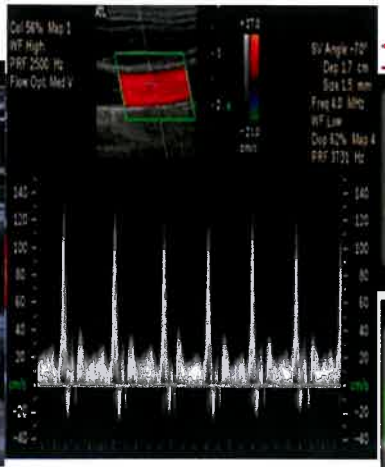
Post Acoustic Enhancement :
with Anechoic : FLUID/ Cyst



eFAST

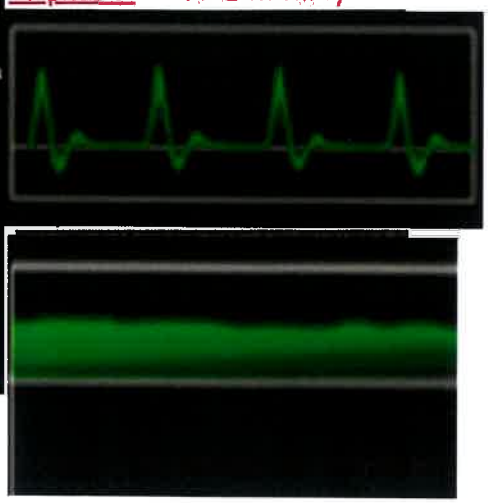


B-Mode



Color Doppler = DUPLEX
Direction of flow

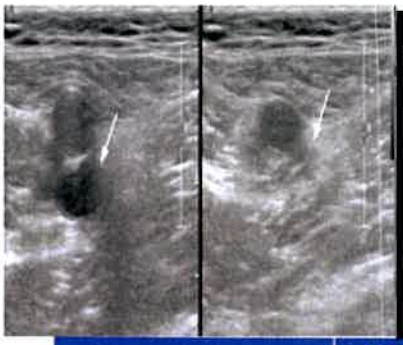
Triphasic → N Extremity

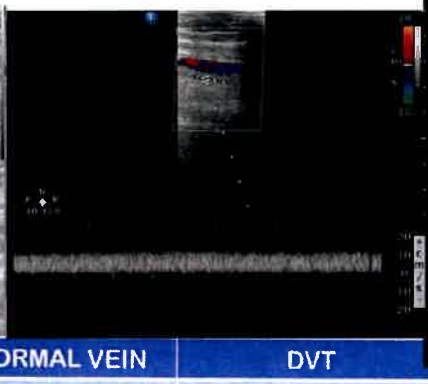


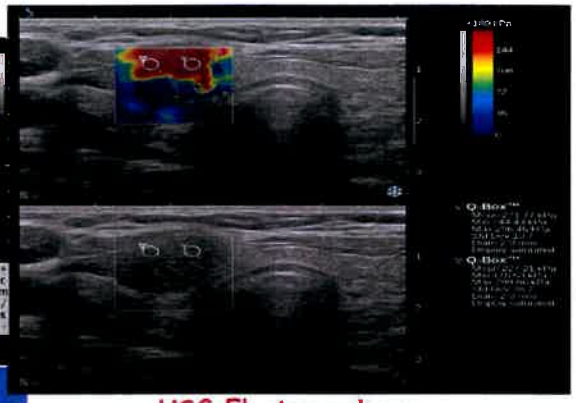
Spectral Doppler = TRIPLEX
Velocity of flow



Doppler Shift
Mickey Mouse sign

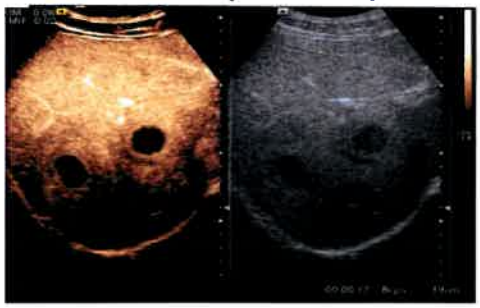






	NORMAL VEIN	DVT
COMPRESSIBILITY	++	Non Compressible
FLOW	Monophasic	-

USG Elastography→
stiffness (by shear wave)



CEUS (Contrast Enhanced USG)

Thumb Rules - USG

GALL BLADDER
- FLUID
- CYST

PREGNANCY
1st line : USG

DVT
- VARICOSE VEINS

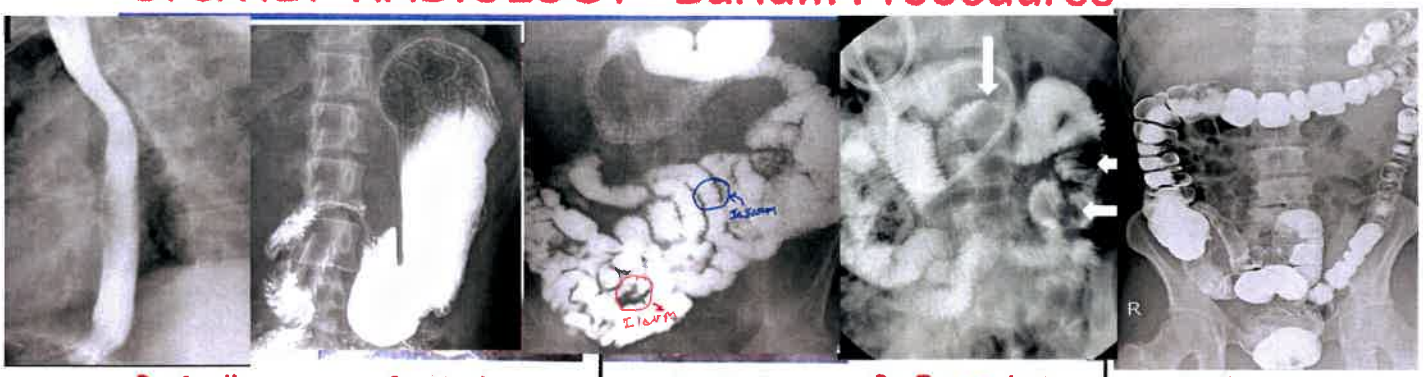
IOC : Doppler

ARTERIAL DISEASES
1st : Doppler
IOC : CT angio
Gold std: DSA

CONTRAST MEDIA

Contrast Media	Modality	Route	Pre-requisite	Complications
IODINATED CONTRAST	X-Ray / CT	IV/ Any route	RFT (eGFR <30 → C/I)	Contrast Induced Nephropathy (CIN): AKI within 48 hrs of injection
GADOLINIUM	MRI	IV	RFT	Nephrogenic Systemic Fibrosis (NSF)
SONOVUE (SF_6 bubbles)	USG	IV	Sulfa allergy to be ruled out	Safe in Renal Failure
BARIUM SULFATE	X-Ray	Oral/ Enema	Perforation, Obstruction, TEF, Post-op	• Barium C/I • Iodinated contrast preferred (Iohexol/ Gastrografin)

GI & HBP RADIOLOGY - Barium Procedures



Ba Swallow
Esophagus

Ba Meal
Stomach/
Prox Duodenum

Ba Meal Follow Through
Small Bowel

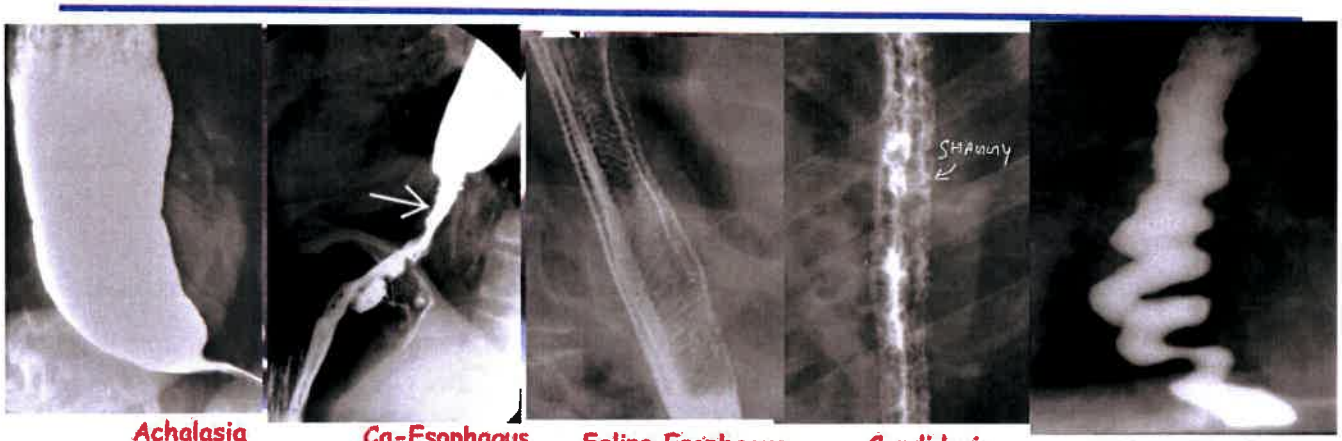
Ba Enteroclysis
Small Bowel
(Better distension)

Ba Enema
Large Bowel

Small Bowel:
Jejunum- Valvulae conniventes

Ileum- Featureless loops

ESOPHAGEAL PATHOLOGIES

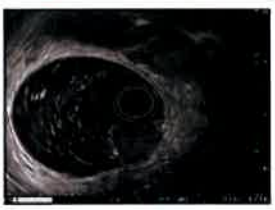


Achalasia
- VIP/ NO → x x
- Motility disorder
- IOC: Manometry

Dysphagia:
Liquid > Solid

Ba→ Bird Beak > Rat Tail

Ca-Esophagus



IOC: UGIE + Bx
Dysphagia: Solid > Liquid

Ba→ Rat Tail

Feline Esophagus
↓
Eosinophilic esophagitis

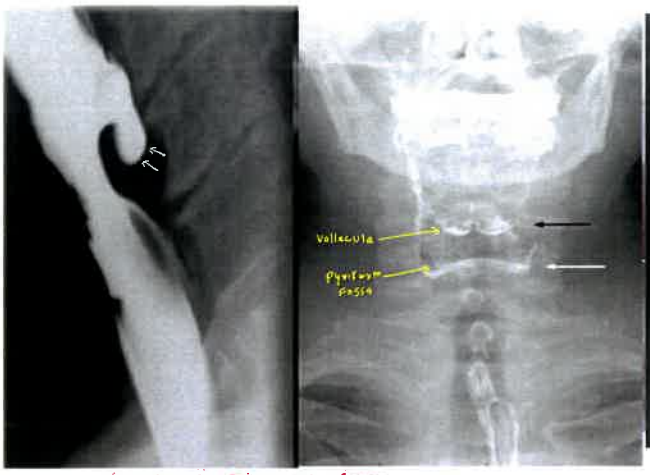
Candidasis
↓
h/o HIV
(AIDS Defining)

Rx: Fluconazole

Diffuse Esophagus Spasm
↓
Corkscrew

UGIE:
HSV: "Volcano-Punched out"

CMV→ Serpenginous



Zenker's Diverticulum

- False, Pulsion

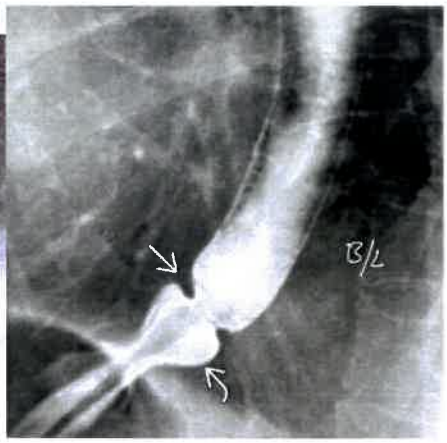
Rx: Dohlman procedure



Esophageal Web

- a/w : Plummer Winson syndrome (IDA, Glossitis)

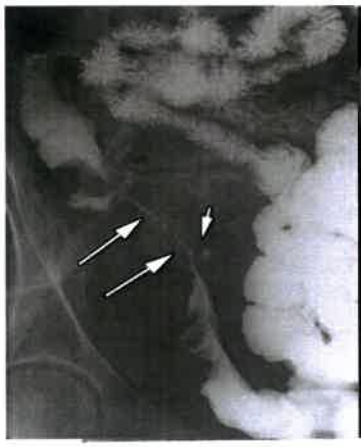
-Premalignant → SqCC



Esophageal RING

- a/w : Hiatal hernia

-Schiatzki Ring (B > A)



String sign

- Crohn's Disease: Terminal ileum
- TB: Pulled up Caecum, Ileo-caecal jn



Lead Pipe Colon sign

↓

Ulcerative Colitis



Apple Core sign

↓

Ca Colon

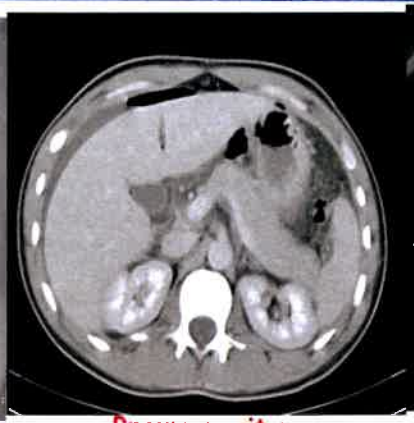
PNEUMOPERITONEUM



Pneumperitoneum
Rt. Air under Diaphragm



Chiladiti syndrome
Pseudo-
Pneumoperitoneum



Pneumoperitoneum
IOC: CECT + Oral iodinated contast



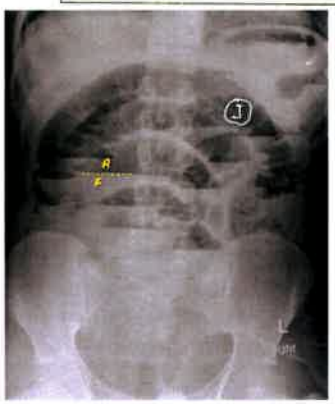
Football sign
NEC - Stage 3b

1st Ix: CXR-PA erect
Next: IV fluid

Best/ definitive: Exp Lap

Approach to INTESTINAL OBSTRUCTION

Pain abdomen + Obstipation + Abdominal distension + Vomiting → IVF + NPO + NG



Proximal SBO

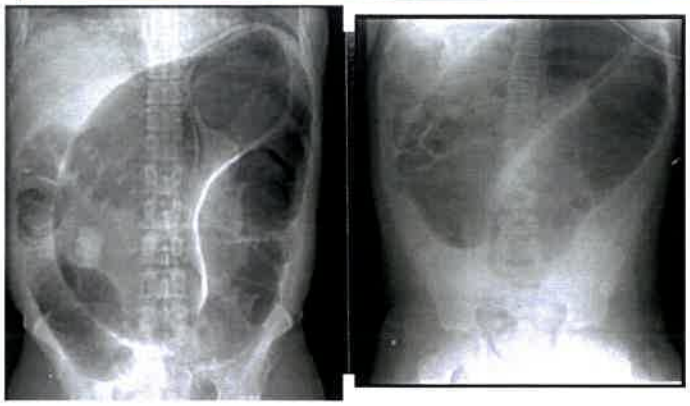
	SBO	LBO
MC Cause	Adhesions (Prior surgery)	Ca Rectum
Distribution	Central	Peripheral
Diameter	> 3cm	> 6cm
Valvulae Conniventes	+ +	-
Stepladder sign	+ +	-
Haustra	-	+ +
Mx	Conservative	Hartman's surgery

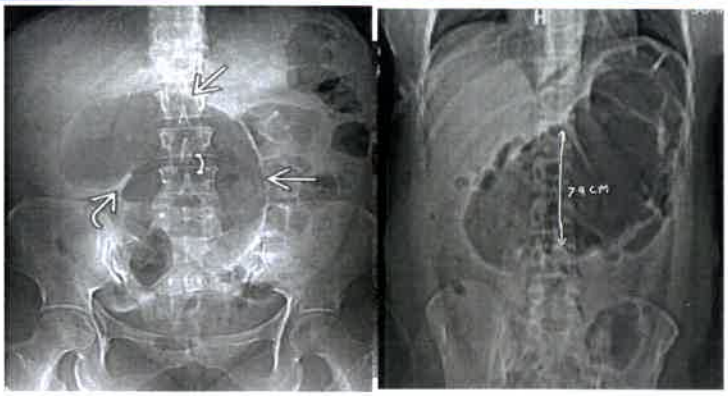


Paralytic ileus: ↓ Bowel sounds / post-op/ No transition zone

Mx: Rx underlying cause ⟶ Neostigmine (Cholinergics)

SIGMOID vs CECAL VOLVULUS





Sigmoid Volvulus

RF: Chronic constipation

Ix: Coffee Bean sign, Haustra absent

Rx: Flatus tube/ Endoscopy

Caecal Volvulus

RF: Pregnancy, Pelvic sxy

Ix: C -sign, Haustra + +

Rx: Surgery

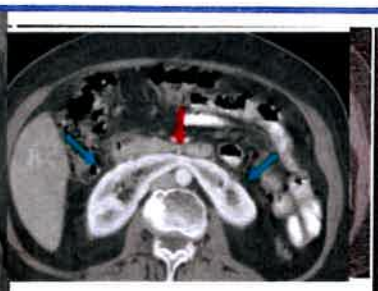
GU RADIOLOGY - IVP



Ureterocele
Adder head/ Cobra head



Flower Vase/ Shaking Hand sign



Horseshoe Kidney
-Stasis, Obstruction, Calculus
-Turner syndrome





Weigert - Meyer law

Ectopic Ureter
Upper: Obstruction, Ectopic, Infero-medial
Lower: VUR, Drooping Lily sign

'WHITE KIDNEY'- Pattern Approach

IVP:



Putty Kidney

- End stage GU-TB
- **Spread:** Hematogenous
- **Earliest:** Moth eaten calyx
- **Later:** Pipestem ureter, Golf-Hole ureter
- **Ix:** Sterile pyuria → Urine AFB



Staghorn Calculus
Struvite stone



Medullary Nephrocalcinosis

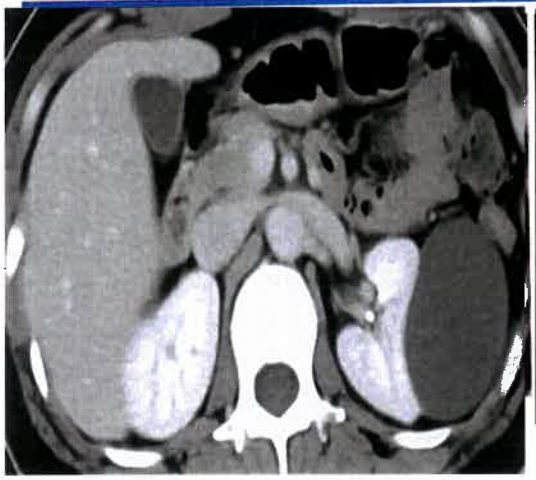
- Hyper-PTH
- Medullary Sponge kidney

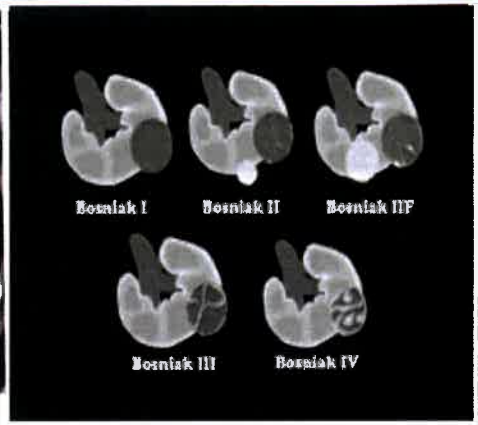




PUJ obstruction
Dietl' crisis
Rx: Anderson Hynes pyeloplasty

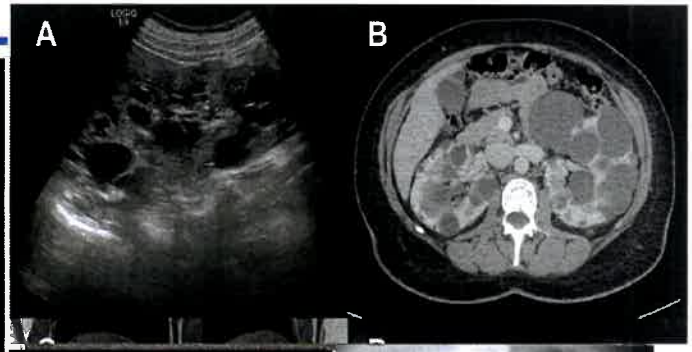
RENAL CYSTS





Bosniak Staging

Rx:
- F/up @ 6 months for Bosniak II.F
- Surgery for Bosniak III & IV







Spider Leg/ Swiss Cheese

AR-PCKD

Age: Infants
Gene: Fibrocystin (6)
a/w: Congenital Hep Fibrosis

AD-PCKD

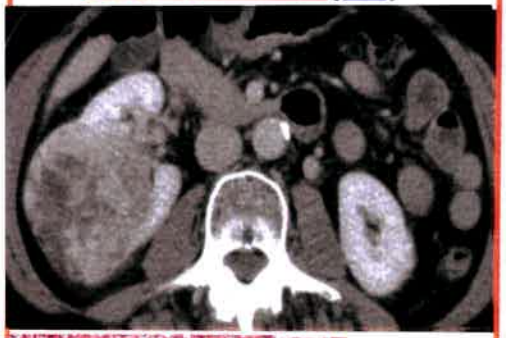
Age: Adults
Gene: PKD-1 (16)/ PKD-2 (4)
a/w: Berry's aneurysm
MVP, Diverticulosis

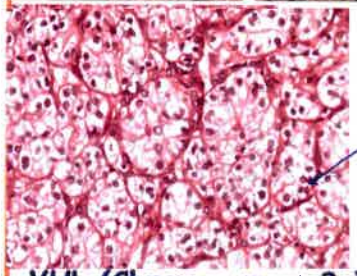
coreBTR by Dr. Zainab Vora Radiology

RENAL MASSES

IOC: CECT
Best Prognosis: Chromophobe
Worst Prognosis: Duct of Bellini > Clear cell RCC

Clear Cell RCC (MC)





VHL (Chromosome : 3p)

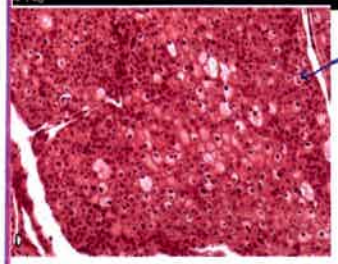
- Cerebellar hemangioblastoma
- Pheochromocytoma

HPe: Glycogen/ Lipid (PAS +/ DR)

-Hematogenous mets

Oncocytoma/ Chromophobe RCC





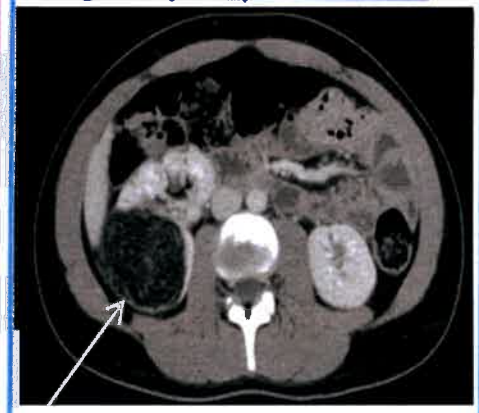
Birt-Hogg-Dube

- Lung cysts
- Fibrofolliculomas

HPe: "PLANT-like"
-Resinoid nuclei

O/E: Tan-colored'
Stain:Hale's coloidal Fe

Angio-Myo-Lipoma → TSC



Tuberous Sclerosis :

Seizures, Adenoma sebaceum

RP hemorrhage:
Wunderlich syndrome

Medullary RCC

-Sickle Cell Trait

Papillary RCC

-Dialysis
-Fumarate DH
-Trisomy 7/17

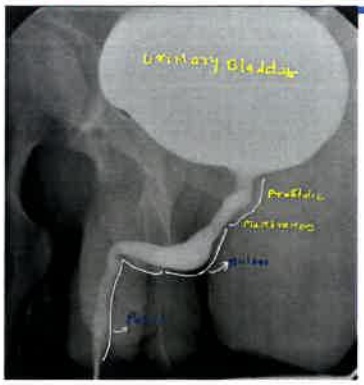
Child RCC

-Xp11 tranlocation

Radiology coreBTR by Dr. Zainab Vora

MCU / VCU

Procedure: Foley's inserted → 300 mL contrast + saline → Take X-Ray while Voiding





Vesico-Ureteric Reflux
- mcc of Recurrent UTI in children

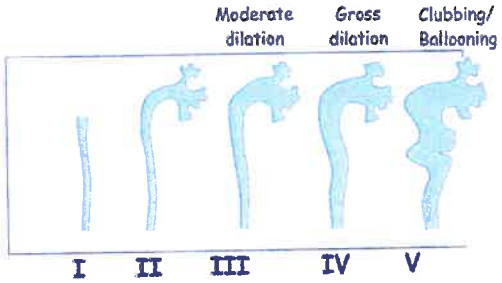
USG → MCU → DMSA



Posterior Urethral Valve
- mcc of Congenital urinary obstruction

Rx: Endoscopic ablation





UB PATHOLOGIES



Neurogenic Bladder (Christmas Tree)



Tear-Drop/ Pear UB

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Extrinsic compression
- Pelvic mass
- Lymph Node
- Lipoma



Fetal Skull sign

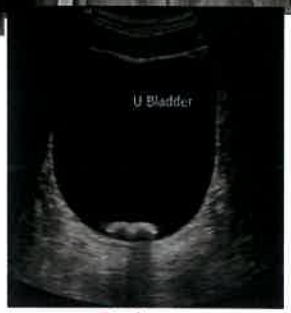
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Schistomsomiasis (RF: SqCC)





Calcified Fibroid



Jackstone