

# URORADIOLOGY I

D.HANA QUDSIEH

D.SULTAN ALNAWAYSEH

# MODALITIES OF IMAGING

KUB

IVU

ULTRASOUND

MCUG

CT SCAN (STONE PROTOCOL)

CT SCAN TRIPLE PHASE

MRI

DMSA

# KUB

## KIDNEY URETER BLADDER XRAY

FIELD OF VIEW: FROM LOWER RIBS TO SYMPHYSIS EMPHATIC

NO CONTRAST MUST BE USED

USUALLY PREPARATION WITH LAXATIVES AND FASTING PRECEED THIS XRAY  
USED MANY TO ASSESS ANY TYPE OF CALCIFICATION OR STONES

**AP projection**

**centering point** :the midsagittal point at the level of the iliac crest



NORMAL



URETHRAL CALCULUS



LT KIDNEY CALCULUS



MEDULLARY  
NEPHROCALCINOSIS

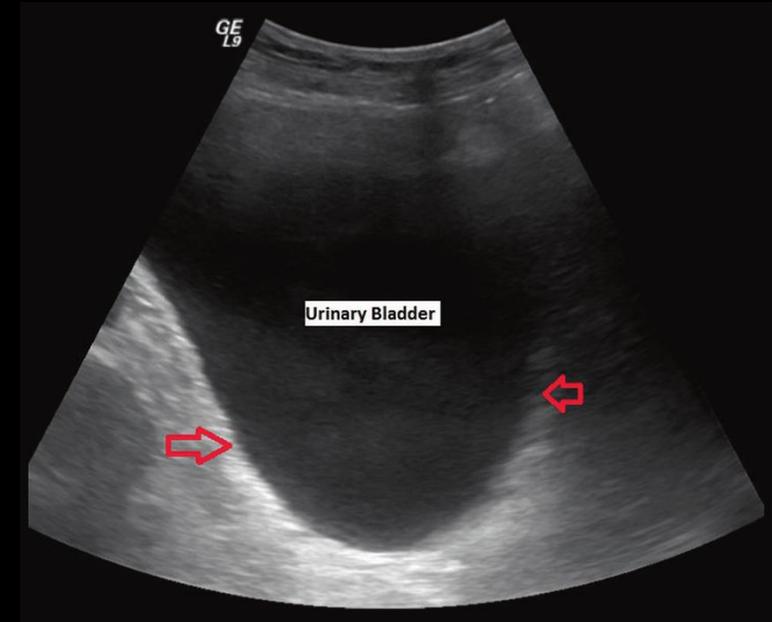


RT STAGHORN STONE

# ULTRASOUND



NORMAL KIDNEY



NORMAL URINARY BLADDER

## Qualitative grading of hydronephrosis severity

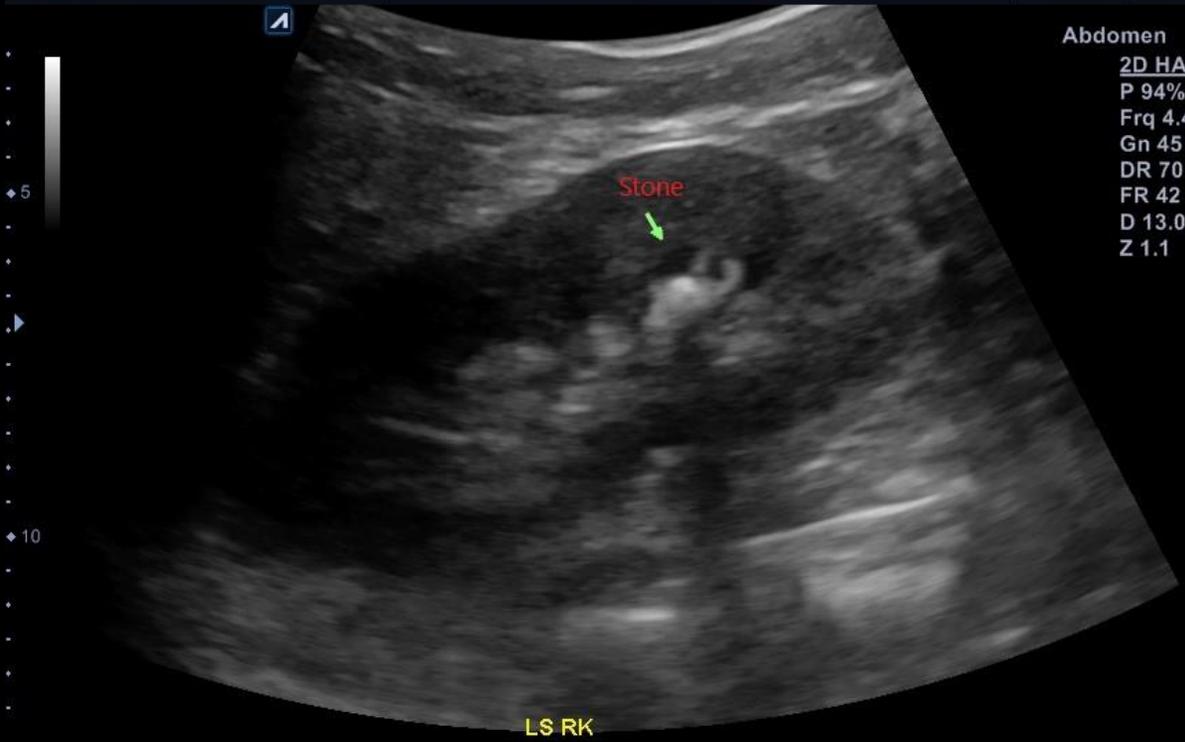




NR IMAGING  
24.08.2018 10:11:06 AM

20180824\_100720  
M20

Admin MI 1.4  
SC1-6H TIS 0.4



RENAL STONE : HYPERECHOIC WITH POSTERIOR ACOUSTIC SHADOW



HYPERECHOIC STRUCTURE WITH ACCOUSTIC SHADOW indicating bladder stone



ANECHOIC LESION IN THE LOWER POLE  
RENAL CYST



ISOECHOIC LESION IN THE MIDDLE POLE OF  
KIDNEY /RENAL CYST CARCINOMA RCC

# IVU/IVP: INTRAVENOUS PYELOGRAM/UROGRAM

- IT IS A FUNCTIONAL STUDY OF THE URINARY SYSTEM :  
THE PATIENT HAS TIME CONTROL SERIES OF XRAY IMAGES AFTER I.V.  
NICM(NON IODIATED CONTRAST MEDIA)

TECHNIQUE :

PRE EXAM : CHECK FOR ALLERGY HISTORY ,KFT AND CONTRAST RISK  
FACTORS

- EXAM:
- 1- KUB
- 2- GIVE CONTRAST THEN :
- IMMEDIATE FILM
- 5 MINUTES FILM
- 10 /15 MINUTES FILM
- 30 MINUTES FILM / POST VOIDE FILM



KUB (CONTROL) (PLAIN)



Immediate film (Nephrogram phase)



5 MINUTES FILM

shutterstock.com · 219607504



10 MINUTES FILM



R

post void



**CROSSED FUSED ECTOPIA  
INSERTION OF LT URETER STILLS ON THE LEFT SIDE**



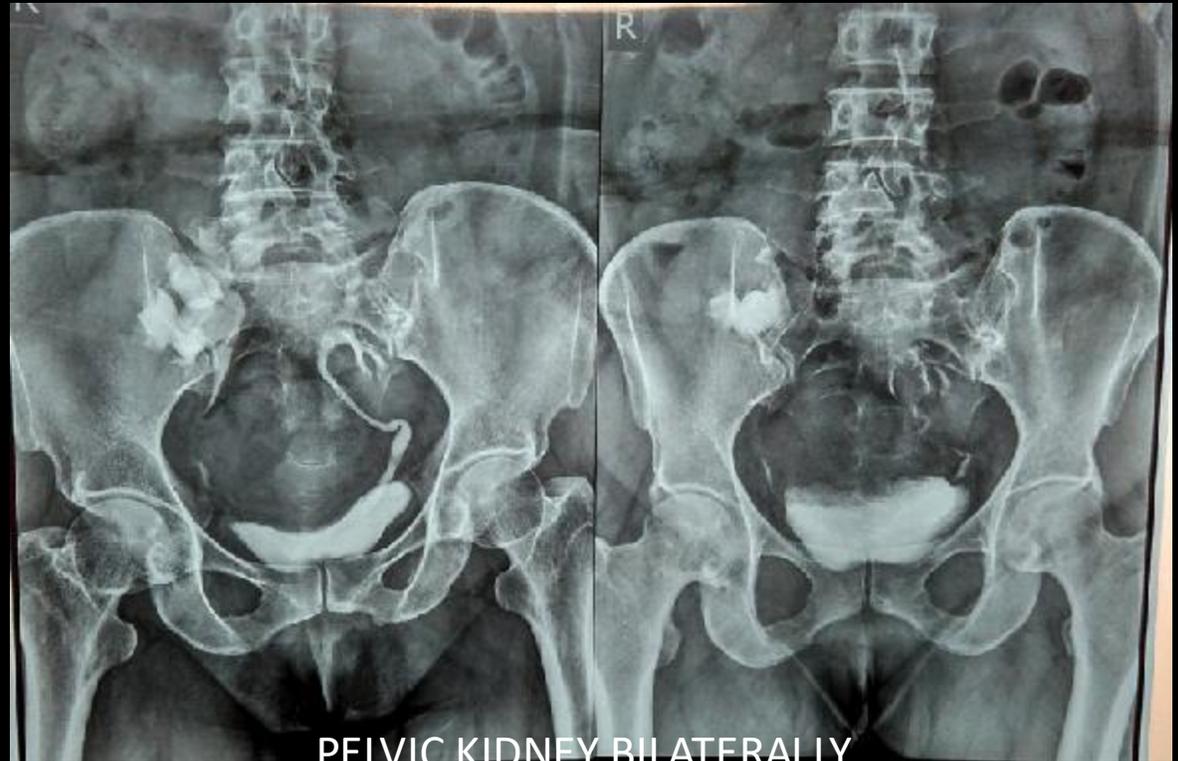
**DUPLICATED RT COLLECTING SYSTEM  
WITH HYDROURETRONEPHROSIS**



COMPLETE DUPLICATION ON THE RT SIDE WITH TWO URETER ORFFICES, INCOMPLETE DUPLICATION ON THE LEFT SIDE



HORSESHOE KIDNEY



PELVIC KIDNEY BILATERALLY



LT URETER PARTIAL OBSTRUCTION WITH  
MILD HYDRONEPHROSIS  
KUB SHOWED STONE AT THE SAME LEVEL



KUB SHOWS RADIOOPAQUE SHADOW OPPOSITE  
LT TRANSVERSE PROCESS OF L4



THERE IS DELAY EXCRETION ON THE LT SIDE  
WITH HYDRONEPHROSIS



A CHILD WITH HYDRONEPHROSIS SHOWED PUJ STENOSIS (PELVIURETRIC JUNCTION STENOSIS)

**Voiding cystourethrography (VCUG)**, also known as a **micturating cystourethrography (MCU)**, is a fluoroscopic study of the lower urinary tract in which contrast is introduced into the bladder via a catheter. The purpose of the examination is to assess the [bladder](#), [urethra](#), postoperative anatomy and micturition in order to determine the presence or absence of bladder and urethral abnormalities, including [vesicoureteric reflux \(VUR\)](#). It is more commonly performed in the pediatric population than adults. The most common indication is recurrent UTI and hydronephrosis

# Micturating cystourethrogram (MCU)/Anterior

## Urethrogram

### INDICATIONS :-

#### CHILDREN

- UTI
- Voiding difficulties.
- Vesico-ureteric reflux.
- Baseline study prior to urinary tract surgery.
- Post operative evaluation of ureteric abnormalities.
- Trauma.
- Suspected anatomic abnormalities of bladder neck & urethra. (posterior urethral valve)

#### ADULTS

- Functional disorders of bladder & urethra.
- Suspected vesicovaginal / vesicocolic fistula.
- Suspected bladder / urethral trauma.
- Urethral diverticula



NORMAL MCU



Normal MCUG



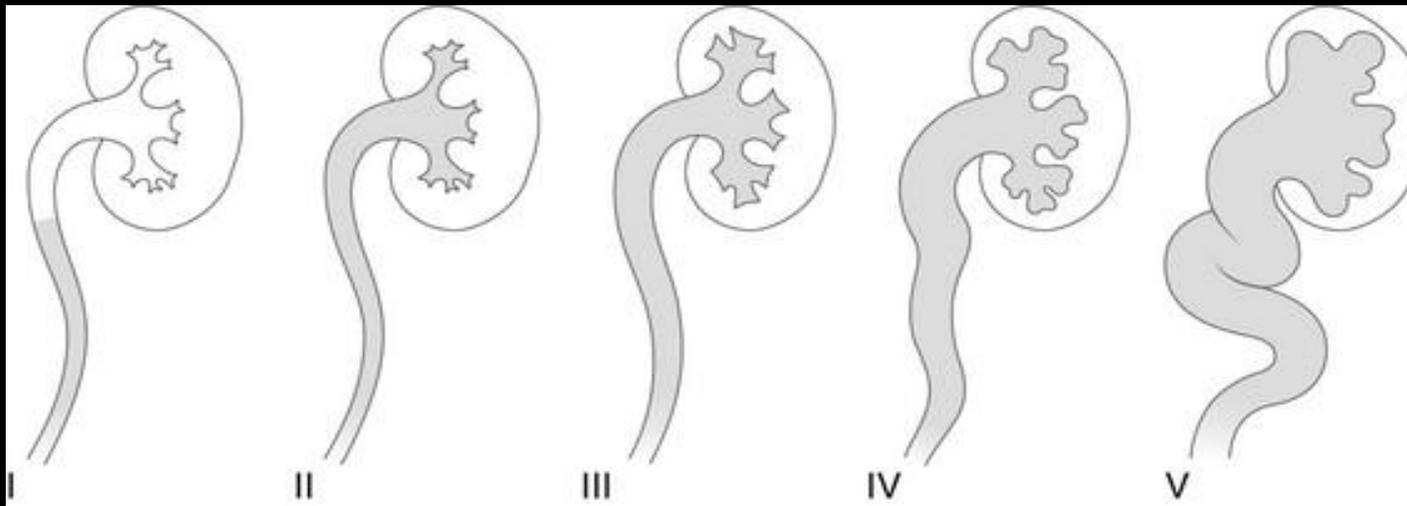
NORMAL MCUG DURING VOIDING

LEFT  
ERECT

**Vesicoureteric reflux (VUR) grading** divides [vesicoureteric reflux \(VUR\)](#) according to the height of reflux up the [ureters](#) and degree of dilatation of the ureters:

- **grade 1:** reflux limited to the ureter
- **grade 2:** reflux up to the renal pelvis
- **grade 3:** mild dilatation of ureter and pelvicalyceal system
- **grade 4**
  - tortuous ureter with moderate dilatation
  - blunting of fornices but preserved papillary impressions
- **grade 5**
  - tortuous ureter with severe dilatation of ureter and pelvicalyceal system
  - loss of fornices and papillary impressions<sup>2</sup>

It is important to note that each side may have a different grade of reflux.





Bilateral VUR grade 5



Rt sided VUR grade 4

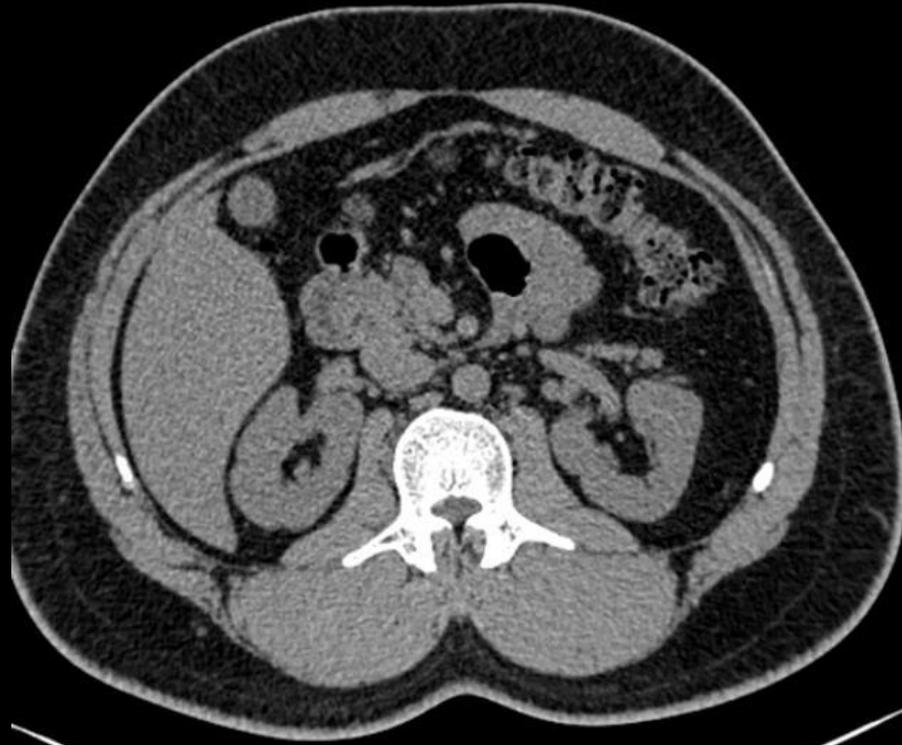


Elongated urinary bladder with irregular outline and trabeculation /diverticuli  
NEUROGENIC BLADDER



POSTERIOR URETHRAL VALVE  
( CONGENITAL  
:dilated proximal urethral

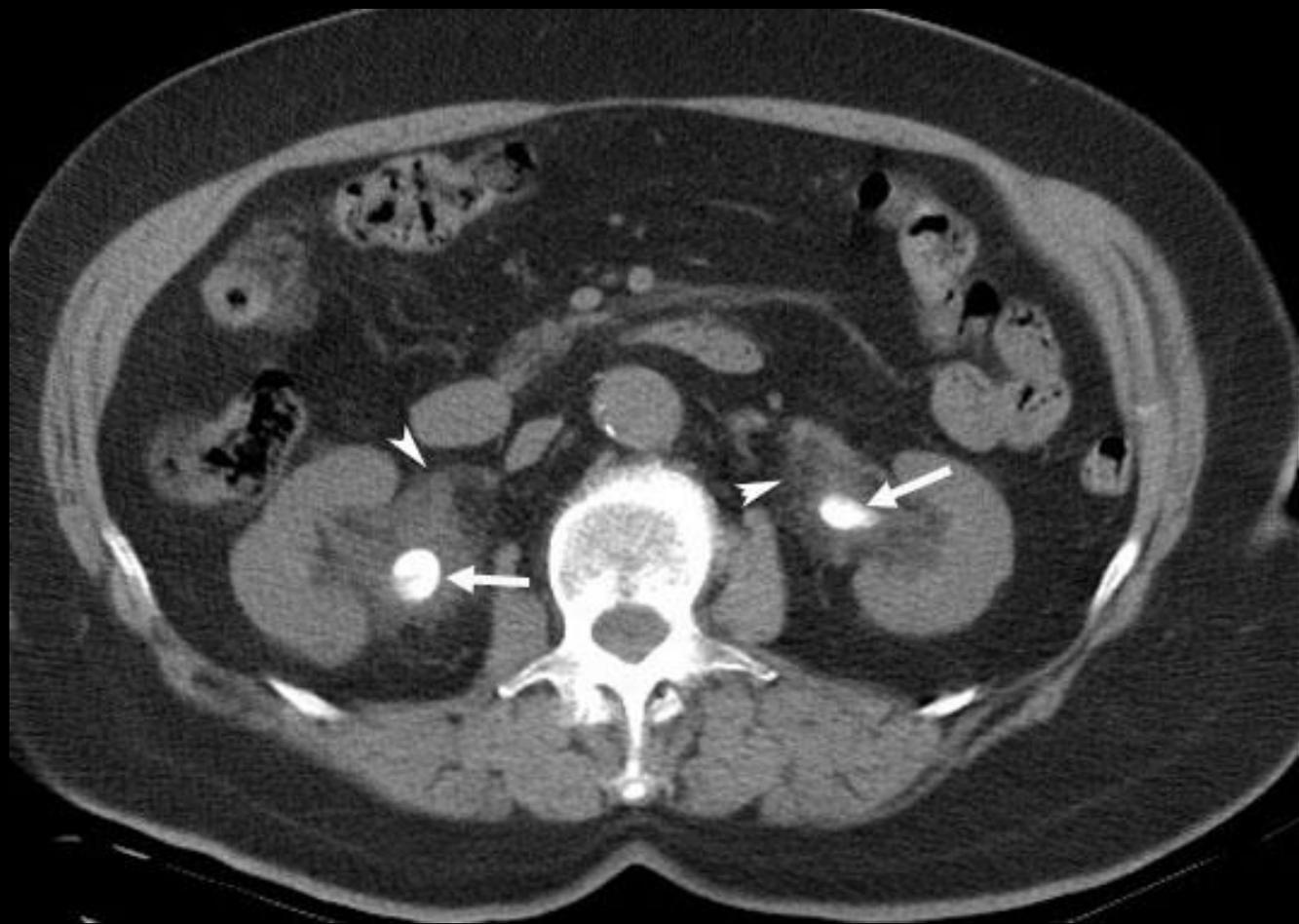
CT SCAN WITHOUT ORAL AND IV CONTRAST  
(STONE PROTOCOL ) BEST INVESTIGATION FOR  
STONES.



NORMAL CT WITHOUT ORAL OR IV (PLAIN)



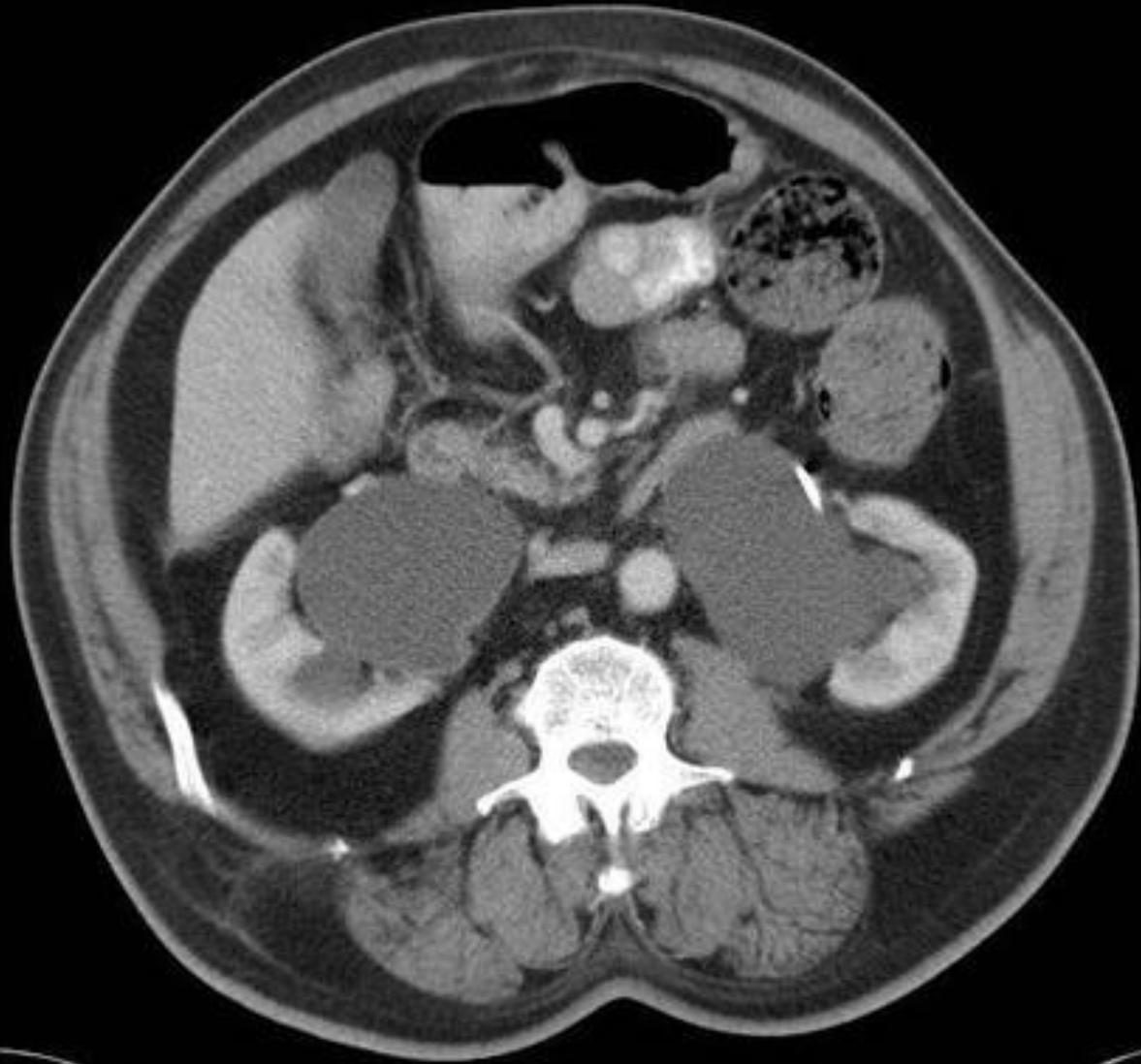
CT SCAN (STONE PROTOCOL ) BILATERAL RENAL STONE.



BILATERAL PUJ STONES WITH HYDRONEPHROSIS



CORONAL RECONSTRUCTION CT STONE PROTOCOL  
SHOWED LEFT RENAL STONE



SEVERE HYDRONEPHROSIS BILATERALLY

# CT WITH ORAL AND IV CONTRAST FOR PARANCHYMAL LESIONS



ENHANCING ISODENSE LESION RCC IN THE RT KIDNEY

THE END