

NUCLEAR UROLOGY

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Nuclear Medicine

NUCLEAR UROLOGY

- INDICATIONS:
 - RENAL PERFUSION AND FUNCTION
 - QUANTITATIVE ANALYSIS (GFR, ERPF)
 - OBSTRUCTIVE UROPATHY
 - RENOVASCULAR HYPERTENSION
 - RENAL TRANSPLANT
 - CORTICAL FUNCTION
 - VESICoureTERAL REFLUX
 - TESTICULAR IMAGING (torsion, epididimitis, ...)



RADIOPHARMACEUTICALS

- GLOMERULAR AGENTS:

- * ^{99m}Tc -DTPA

- * ^{99m}Tc -GHA

- * ^{51}Cr -EDTA

- TUBULAR AGENTS:

- * ^{123}I -OIH(HIPPURAN)

- * ^{99m}Tc -MAG3

- * ^{99m}Tc -E.C

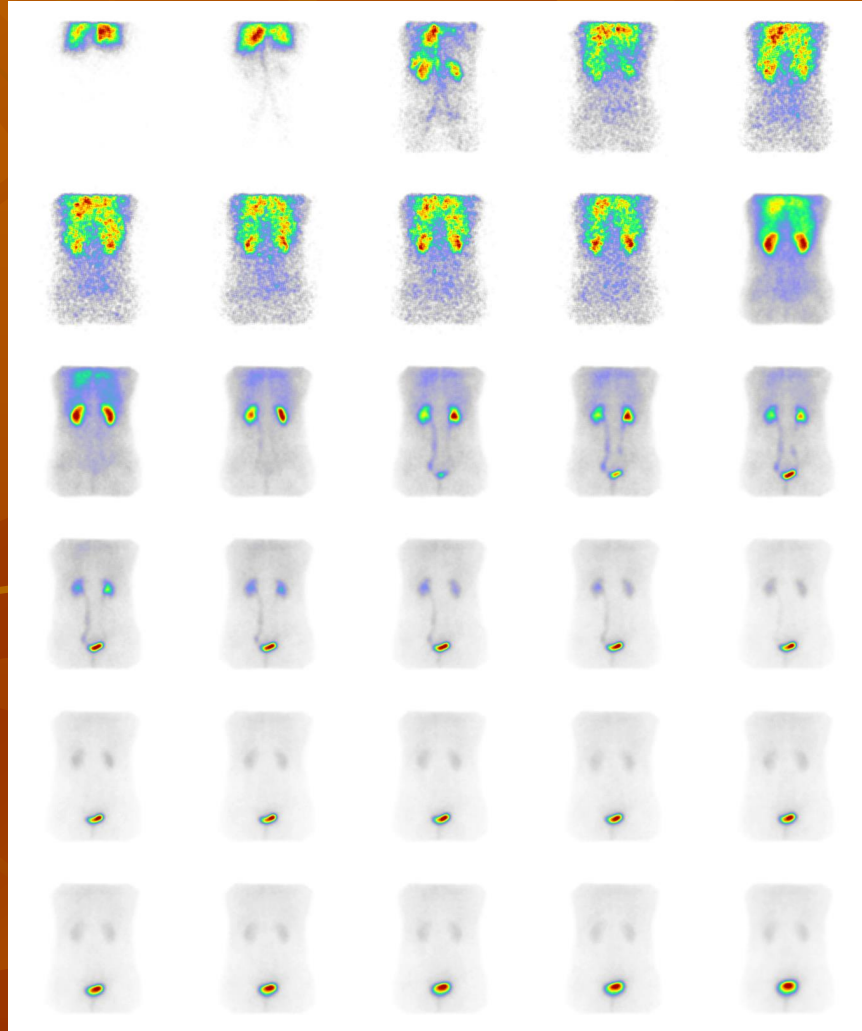
- CORTICAL AGENTS:

- * ^{99m}Tc -DMSA

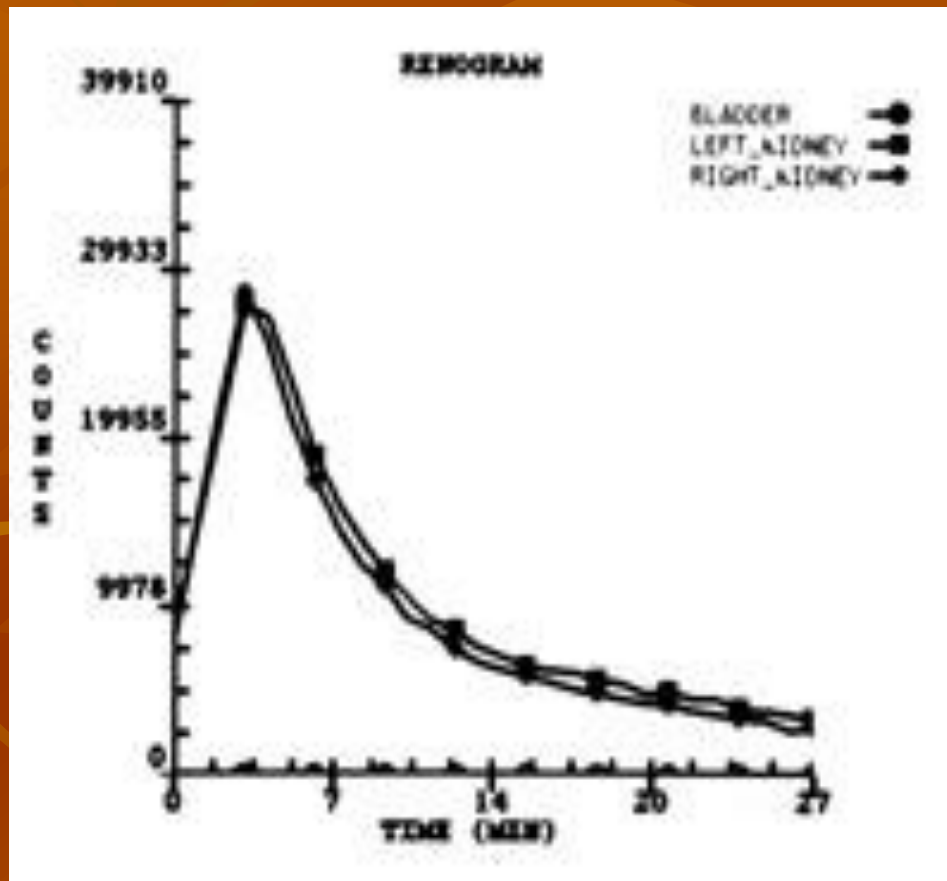
- * ^{99m}TC -GHA



NORMAL RENAL SCAN (^{99m}Tc -DTPA)



NORMAL RENOGRAPHIC



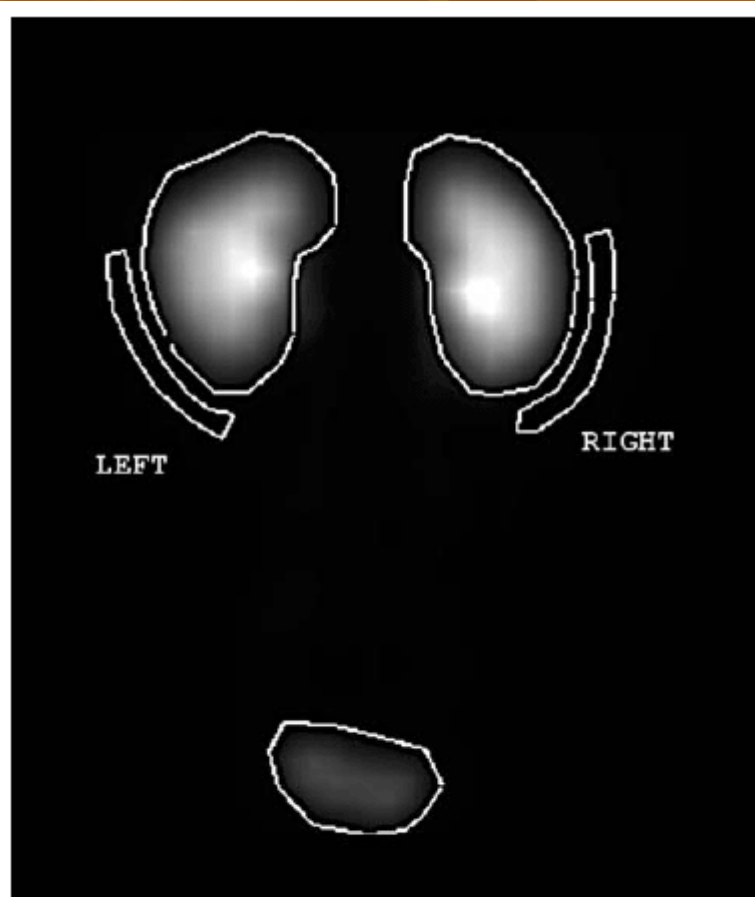
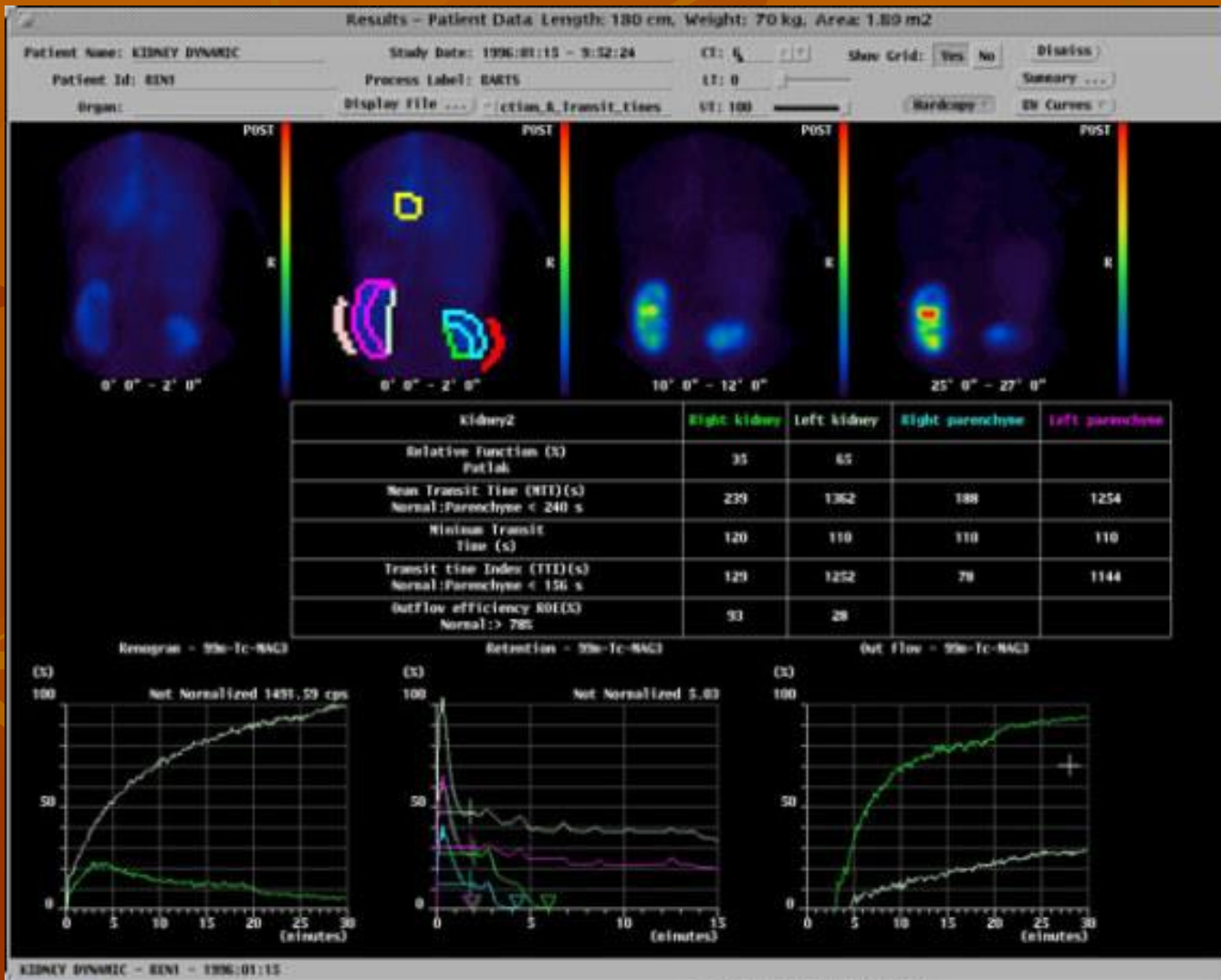
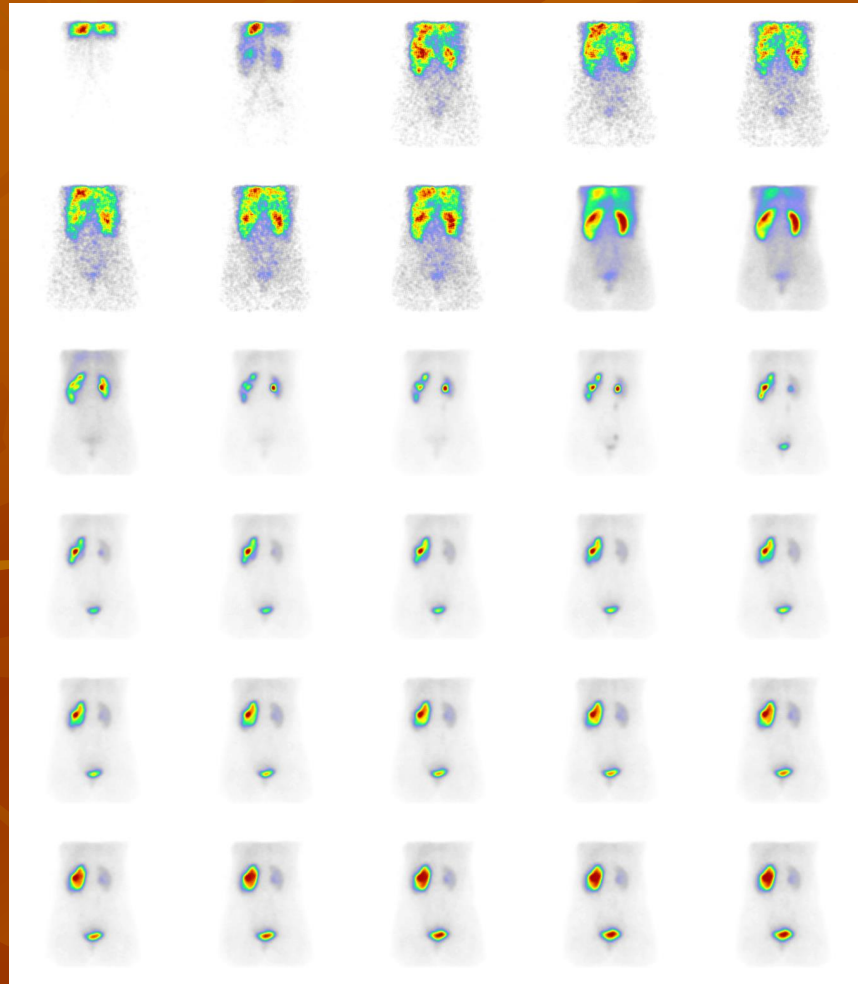


Figure 1 – Regions of interest (ROIs) drew manually in a composite image (1 to 3 minutes after the injection) of the ^{99m}Tc -DTPA or ^{99m}Tc -EC dynamic scintigraphies.

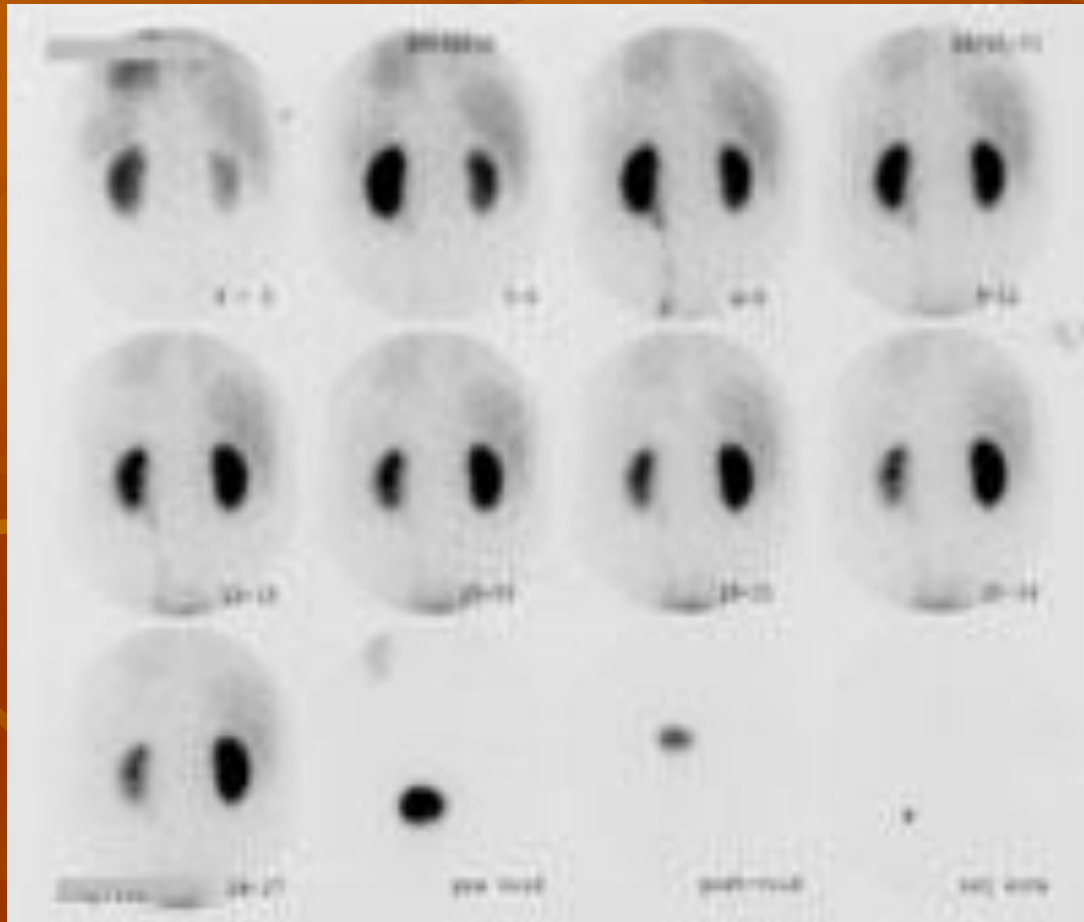




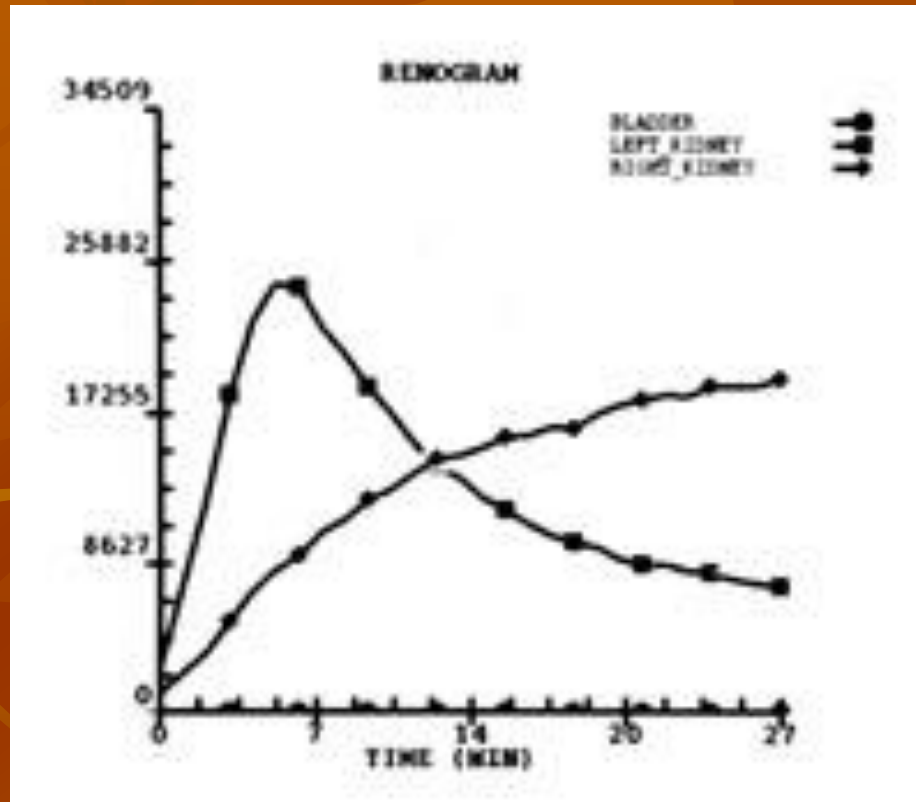
OBSTRUCTIVE LT. KIDNEY



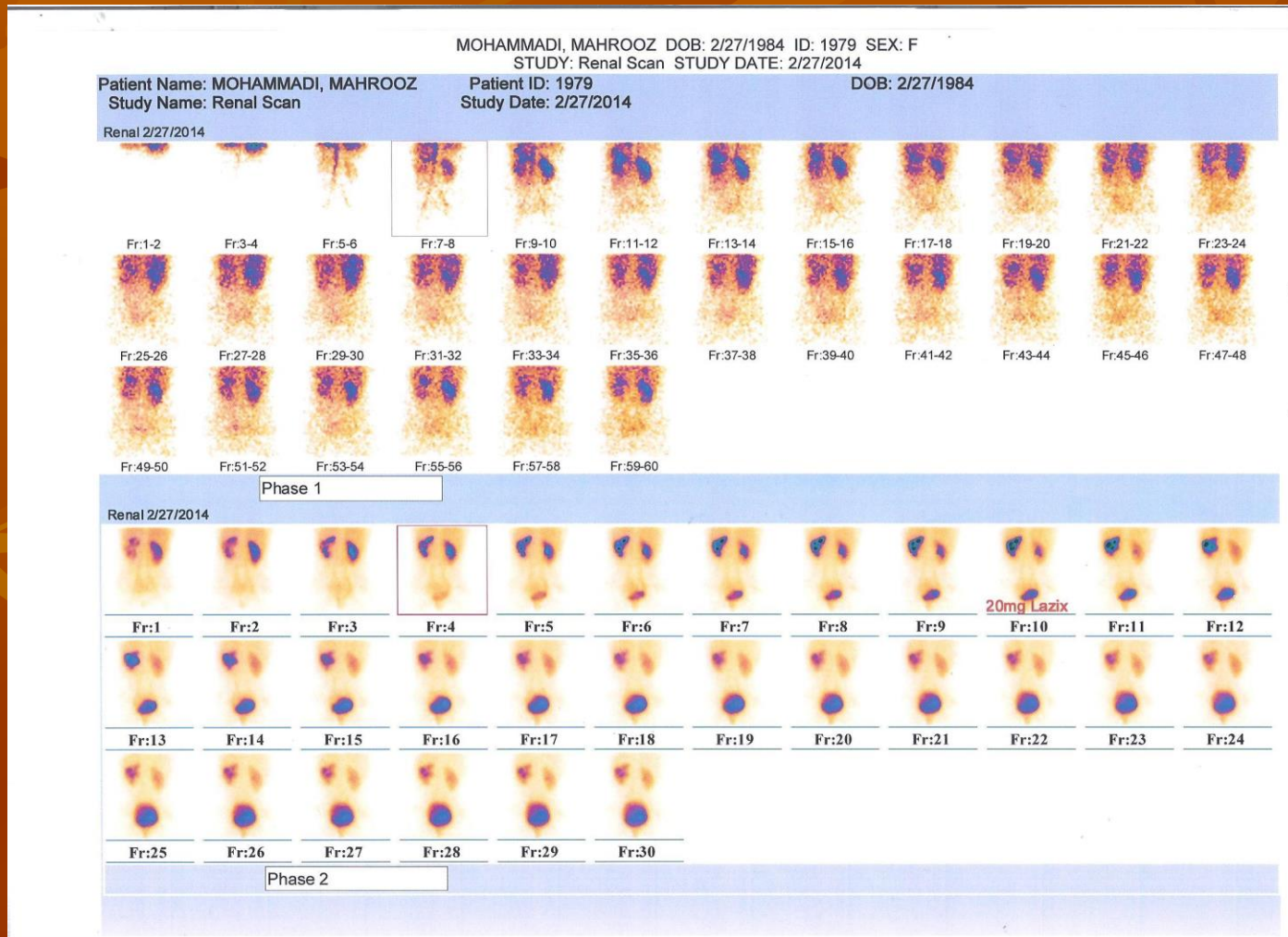
OBSTRUCTIVE RT.KIDNEY

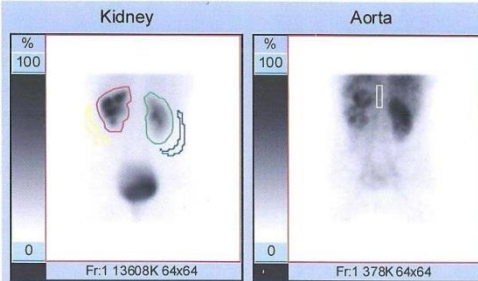


OBSTRUCTIVE DIURETIC RENOGRAM



Dilated(non Obstructed)pelvis





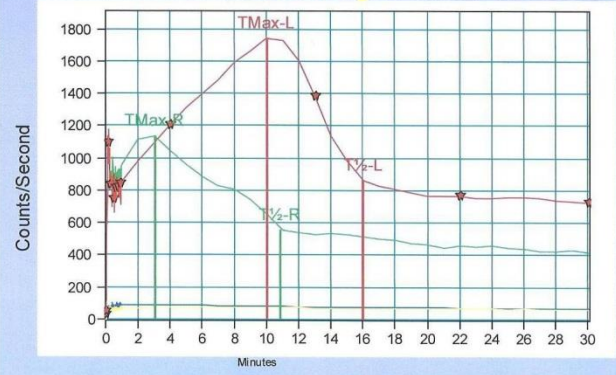
— Left Kidney
 — Right Kidney
 — Left Backgr...
 — Right Backgr...

Table of Patient Parameters	
Parameters	Values
Renal Protocol	Gates GFR (DTPA)
Kidney Depth Method	Standard
Patient Name	MOHAMMADI, MAHROOZ
Patient ID	1979
Sex	Female
Age	30
Height	150.0 cm
Weight	57.0 kg
Body Surface Area	1.56 m ²
Reference BSA	1.73 m ²
Split Uptake Interval (min)	2.0 - 3.0
Radiopharmaceutical	0.0 mCi 99m Technetium DTPA
Presyringe Counts (Kcpm)	2511
Postsyringe Counts (Kcpm)	125
Net Injected Counts (Kcpm)	2385
Method	Adult
Hematocrit	0.00

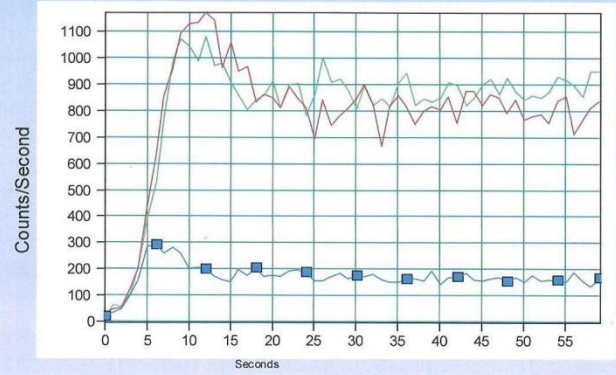
Table of Result Summary			
Parameters	Left	Right	Total
Split Function (%)	46.5	53.5	
Kidney Counts (cpm)	140377	161192	301569
Kidney Depth (cm)	5.716	5.754	
Uptake (%)	5.885	6.757	12.6
GFR (ml/min)	54.6	62.7	117.2
Normalized GFR (ml/min)			129.8
GFR Low Normal (ml/min)			86.0
Mean GFR (ml/min)			112.0
Time of Max (min)	10.0	3.005	
Time of 1/2 Max (min)	16.0	10.9	

— Left Kidney
 — Right Kidney
 — Aorta

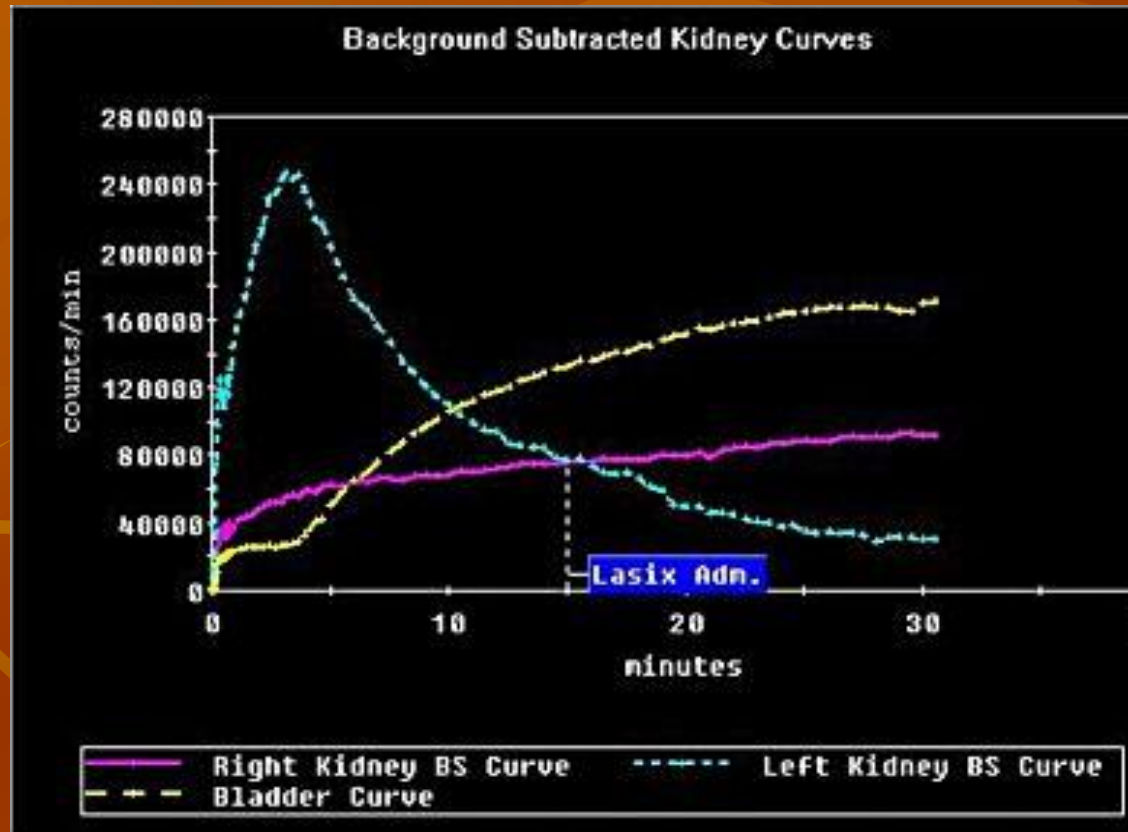
Kidney



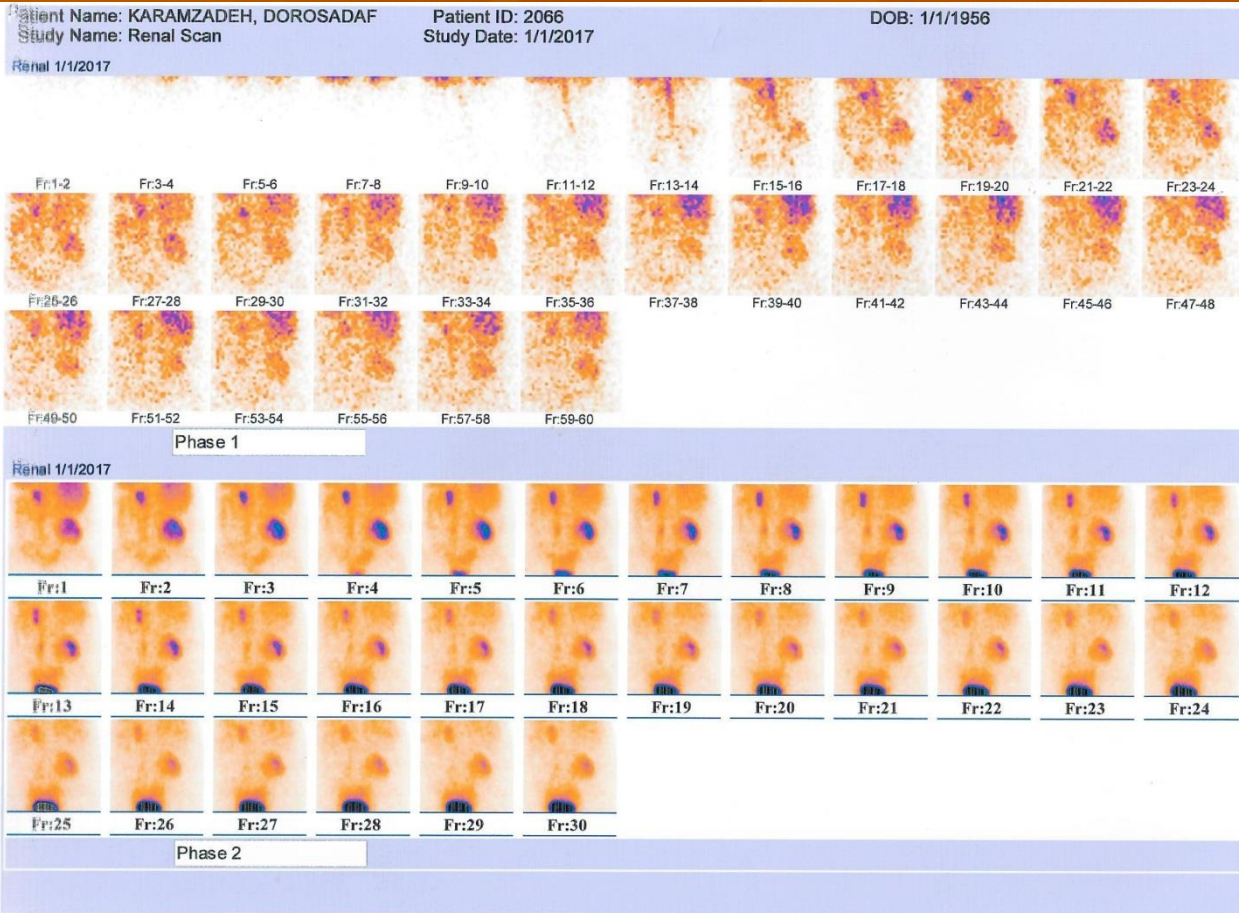
Flow



DIURETIC RENOGRAPHAM



Ectopic kidneys



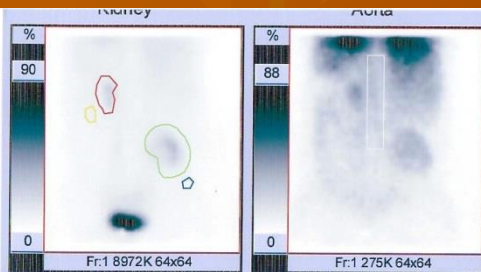


Table of Patient Parameters

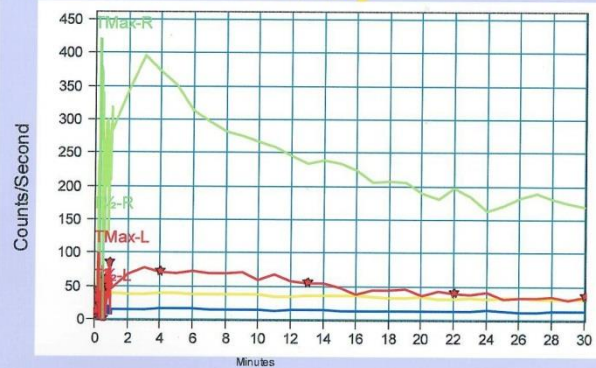
Parameters	Values
Renal Protocol	Gates GFR (DTPA)
Kidney Depth Method	Standard
Patient Name	KARAMZADEH, DOROSADAF
Patient ID	2066
Sex	Female
Age	61
Height	153.0 cm
Weight	69.0 kg
Body Surface Area	1.74 m ²
Reference BSA	1.73 m ²
Split Uptake Interval (min)	2.0 - 3.0
Radiopharmaceutical	0.0 mCi 99m Technetium DTPA
Presyringe Counts (Kcpm)	1993
Postsyringe Counts (Kcpm)	66
Net Injected Counts (Kcpm)	1927
Method	Adult
Hematocrit	0.00

Table of Result Summary

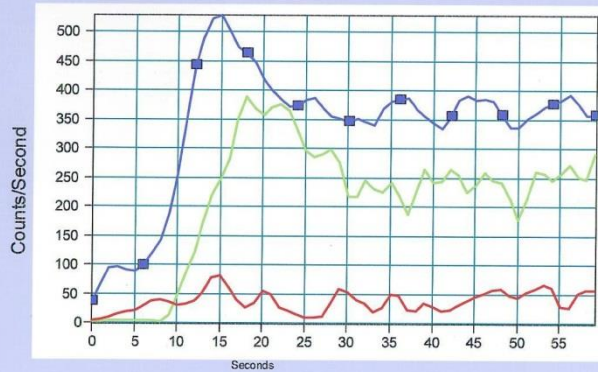
Parameters	Left	Right	Total
Split Function (%)	16.3	83.7	
Kidney Counts (cpm)	11154	57357	68511
Kidney Depth (cm)	6.653	6.698	
Uptake (%)	0.579	2.977	3.556
GFR (ml/min)	4.569	23.5	28.1
Normalized GFR (ml/min)			27.9
GFR Low Normal (ml/min)			73.0
Mean GFR (ml/min)			96.0
Time of Max (min)	0.234	0.301	
Time of 1/2 Max (min)	0.276	0.496	



Kidney

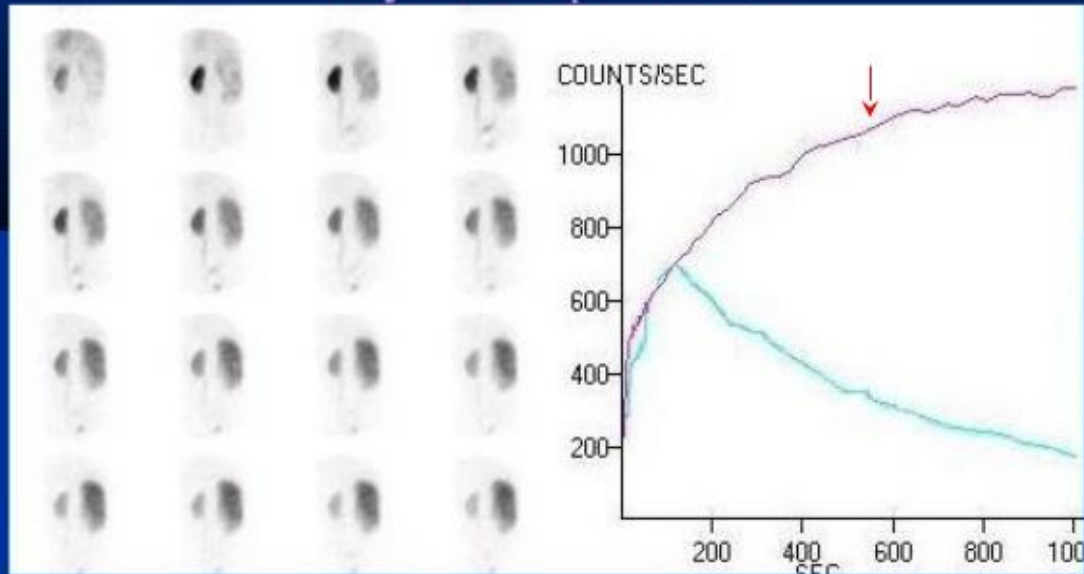


Flow



R.K Hydronephrosis

Scintigraphic evaluation of Hydronephrosis



Showing obstructive hydronephrosis of the right kidney,
The arrow indicating a no response to intravenous diuretic.



05Nov2004

Rotate FLOW

2

3

4

5

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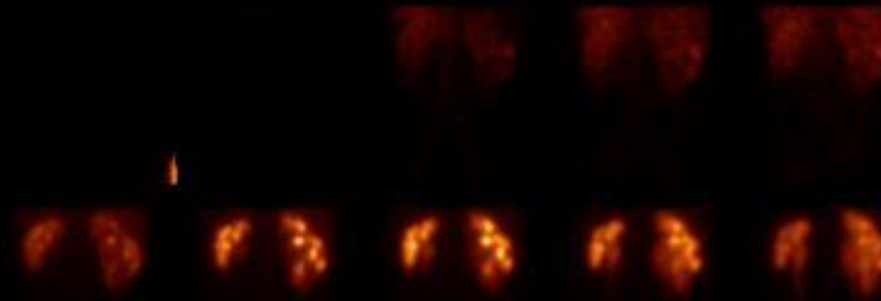
26

27

28

29





20

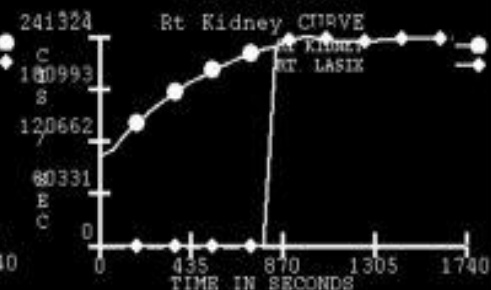
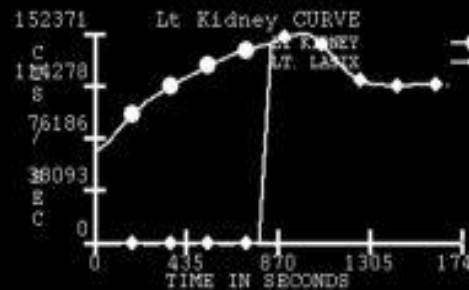
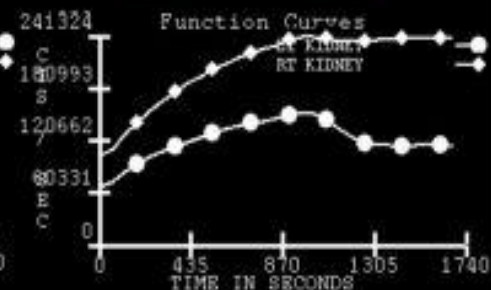
05Nov2004

UPTAKE RESULTS

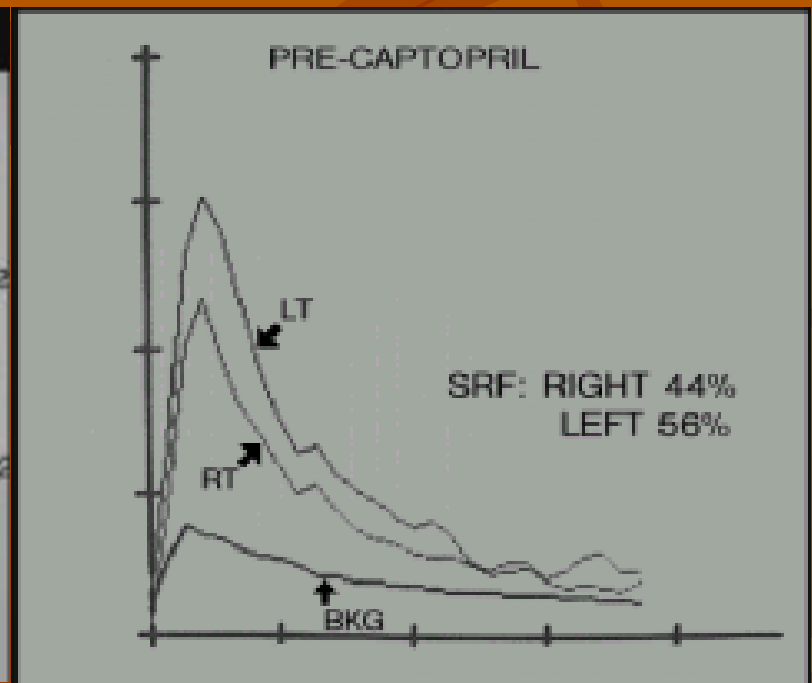
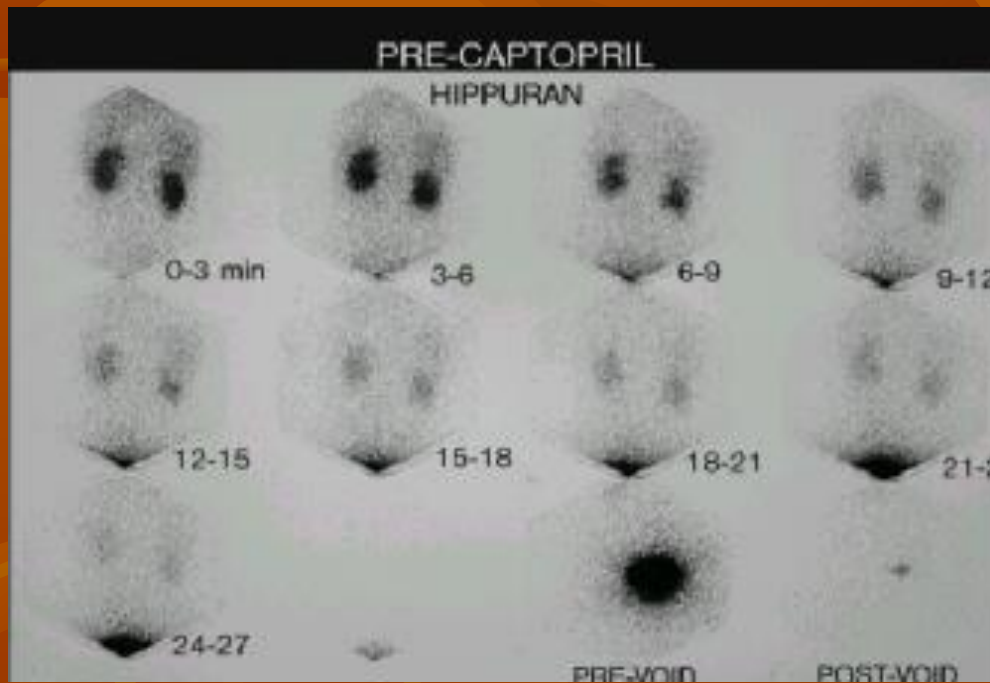
TIME TO PEAK LT(sec): 1020.0
TIME TO PEAK RT(sec): 1080.0
% AT 2-3 MIN LT: 39.7
% AT 2-3 MIN RT: 60.3

CLEARANCE RESULTS

T1/2 PRE LASIX L(min): 0.0
T1/2 PRE LASIX R(min): 0.0
T1/2 LASIX LT(min): 23.0
T1/2 LASIX RT(min): -1308.0



RENOVASCULAR HYPERTENTION(BASAL)



POST CAPTOPRIL

POST-CAPTOPRIL

MAG - 3

0-3 min

3-6

6-9

9-12

12-15

15-18

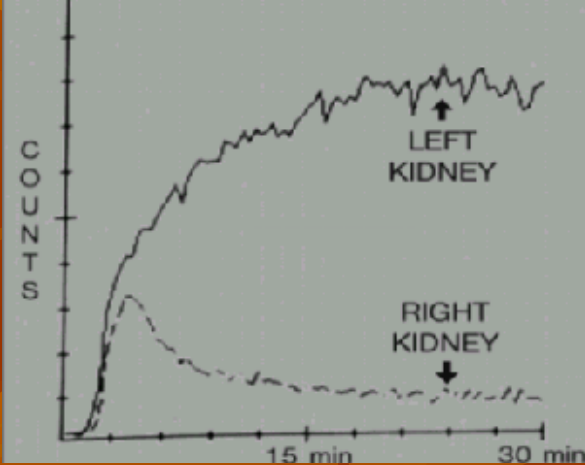
18-21

21-24

24-27

POST-CAPTOPRIL

I - 131 HIPURAN



ANGIOGRAPHY

(LT.RENAL A.STENOSIS)



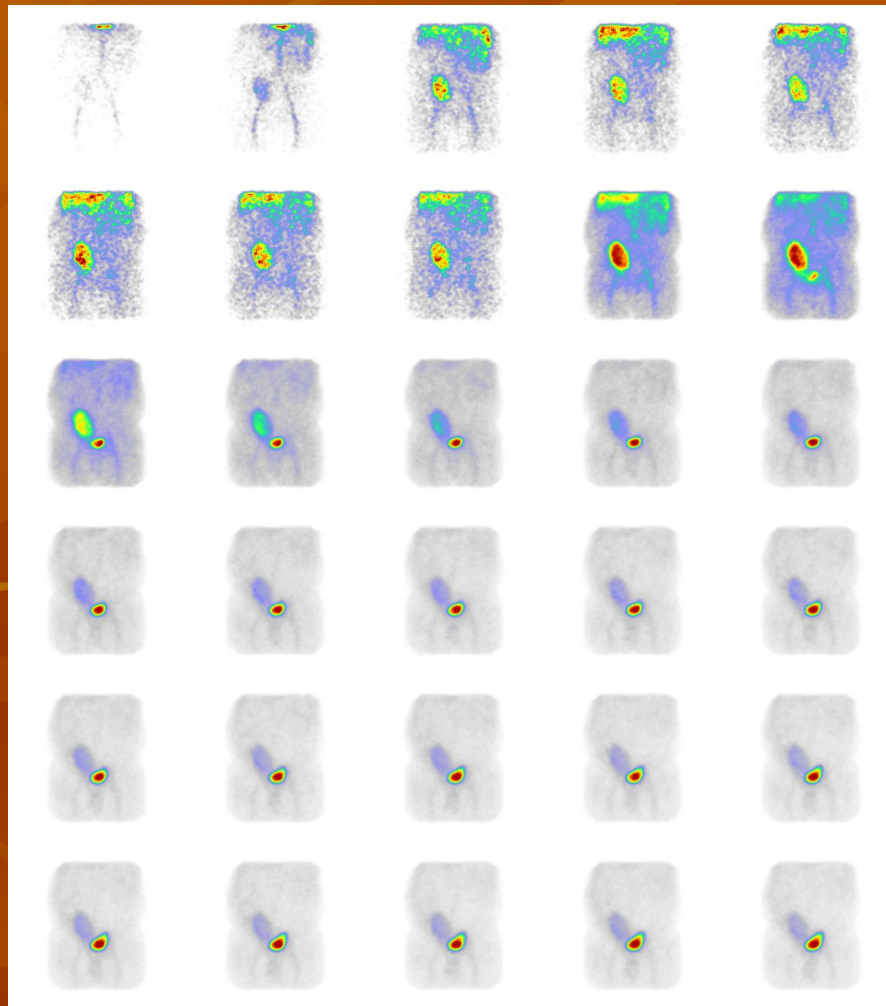
RENAL TRANSPLANT

■ COMPLICATIONS:

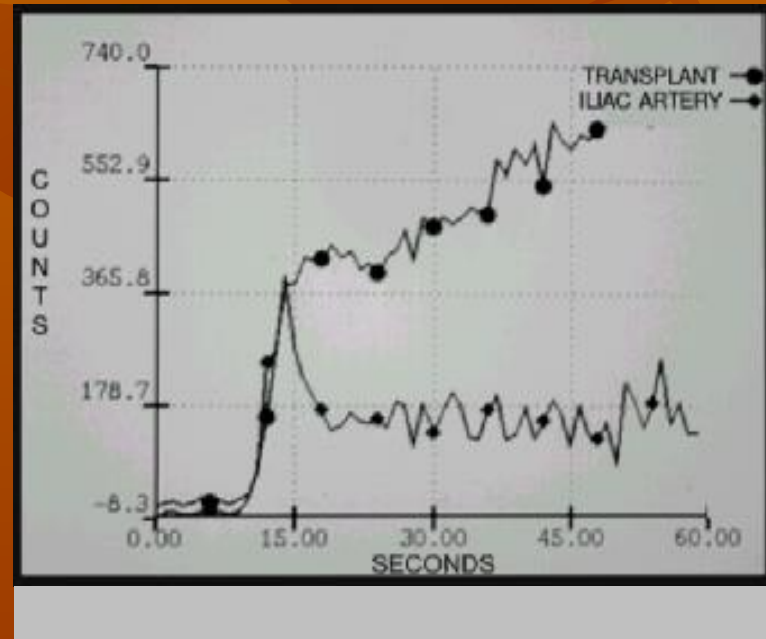
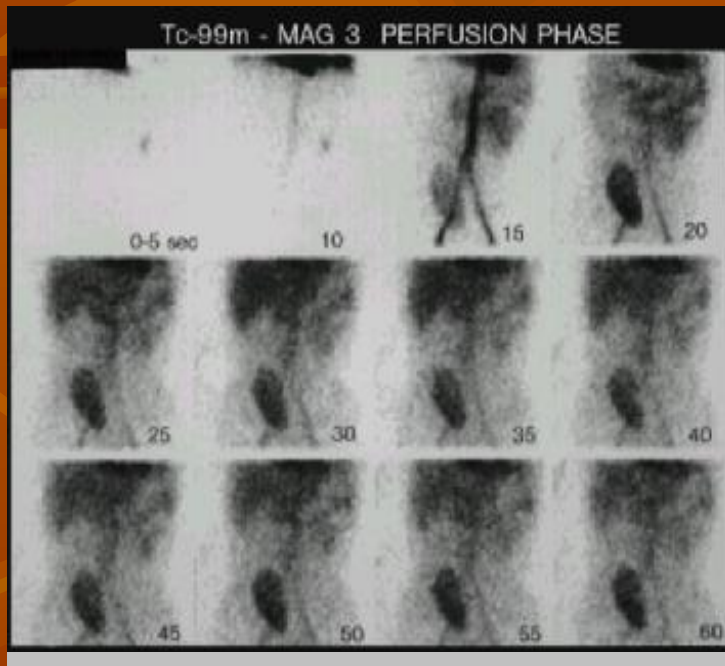
- * REJECTION
- * ACUTE TUBULAR NECROSIS(ATN)
- * OBSTRUCTION
- * LEAKAGE
- * THROMBOSIS
- * HEMATOMA



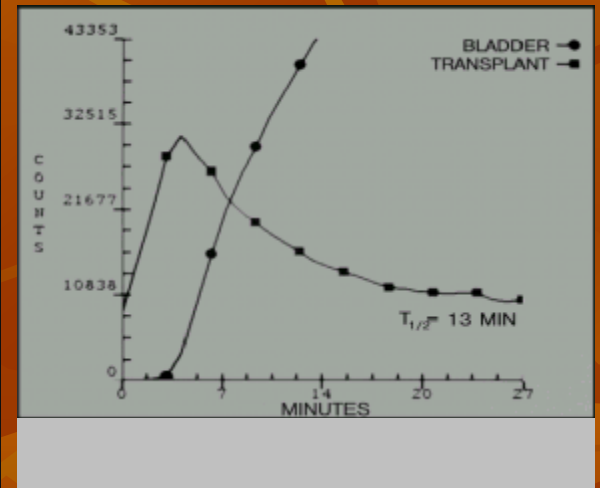
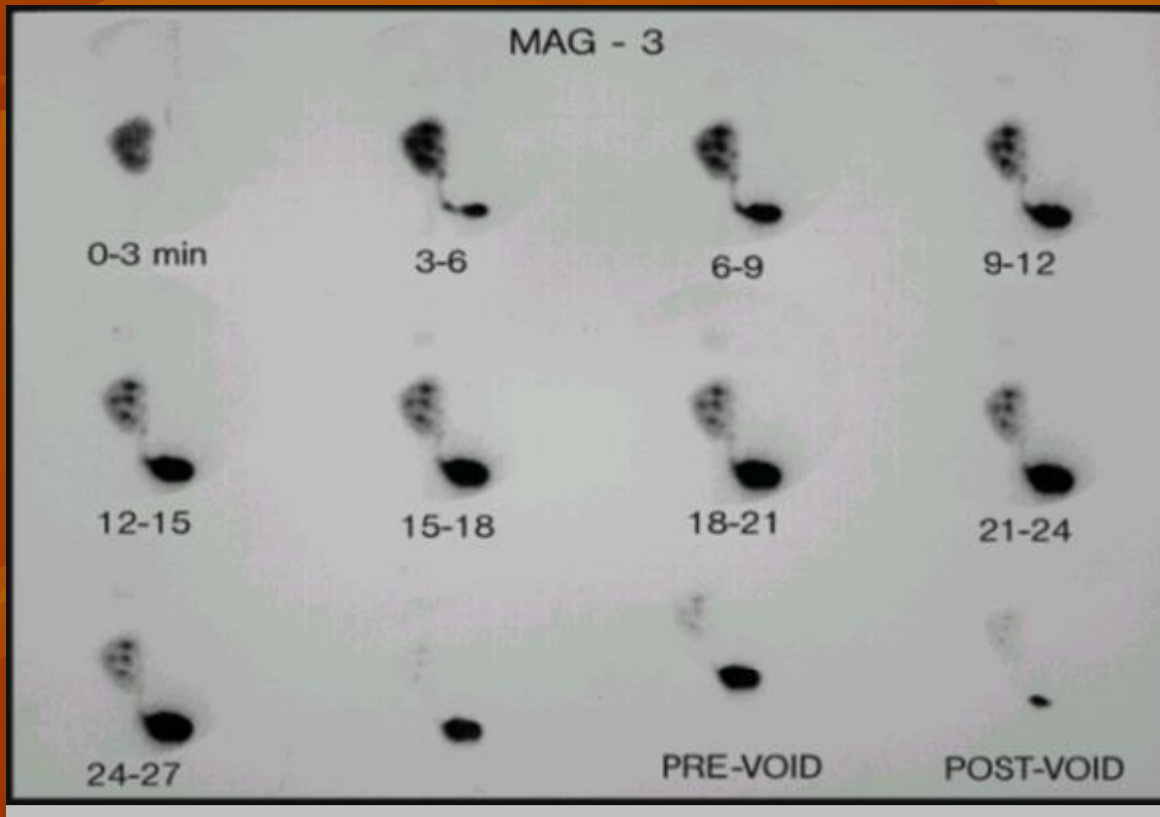
NORMAL T.KIDNEY



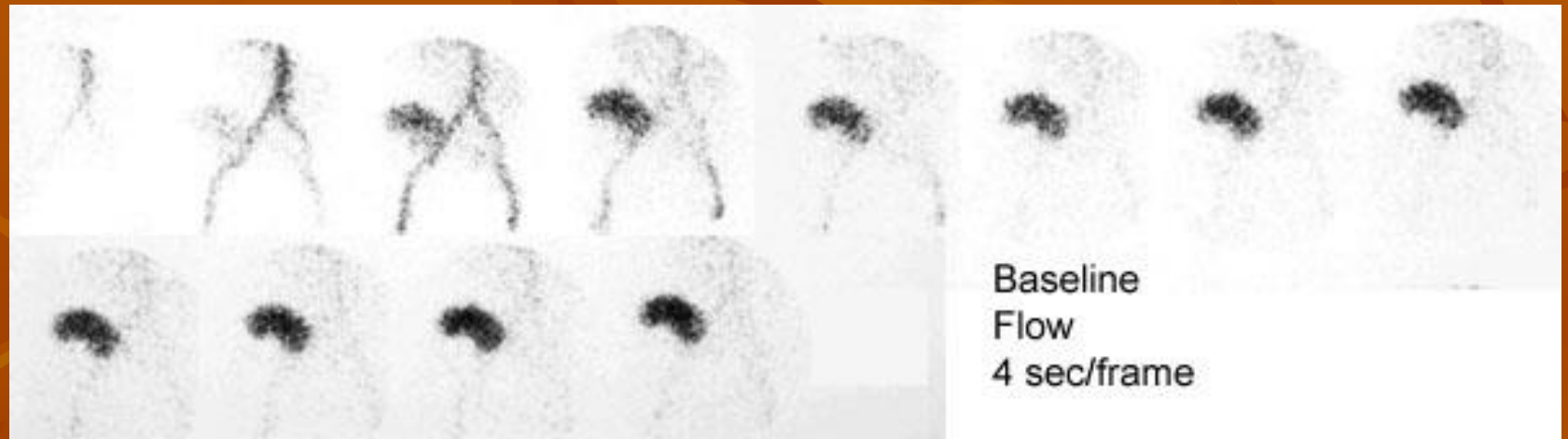
NORMAL T.RENAL SCAN (ANGIOGRAM)



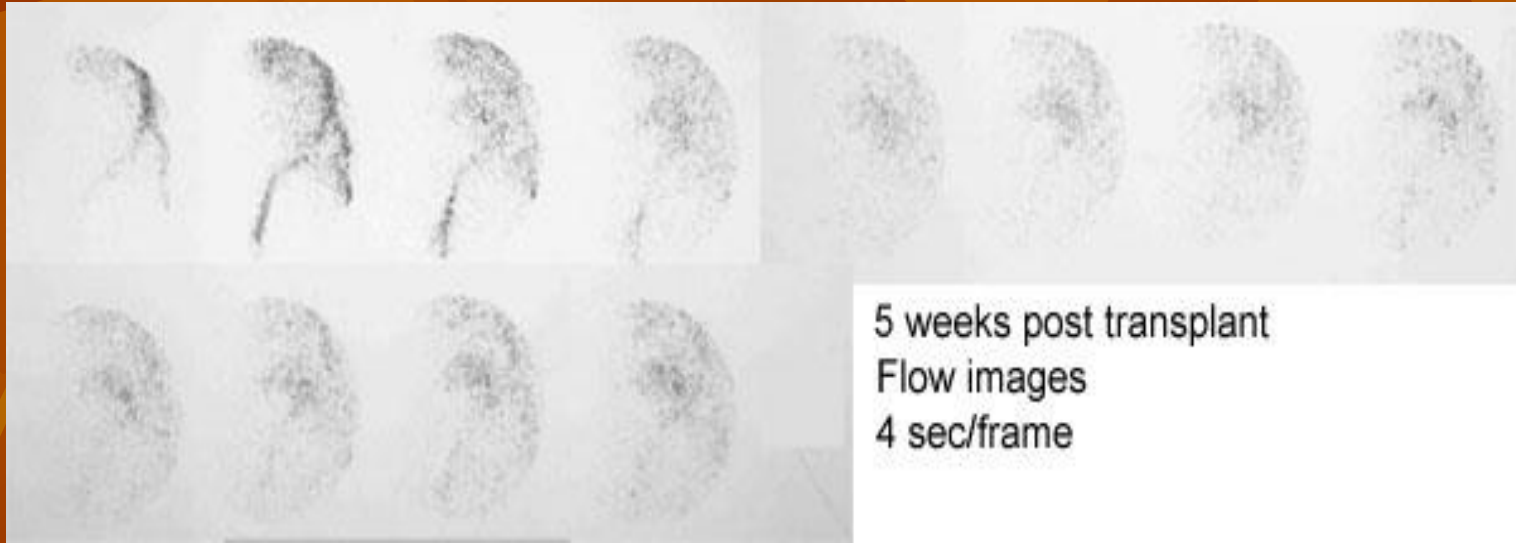
LONG TIME RENOGRAM

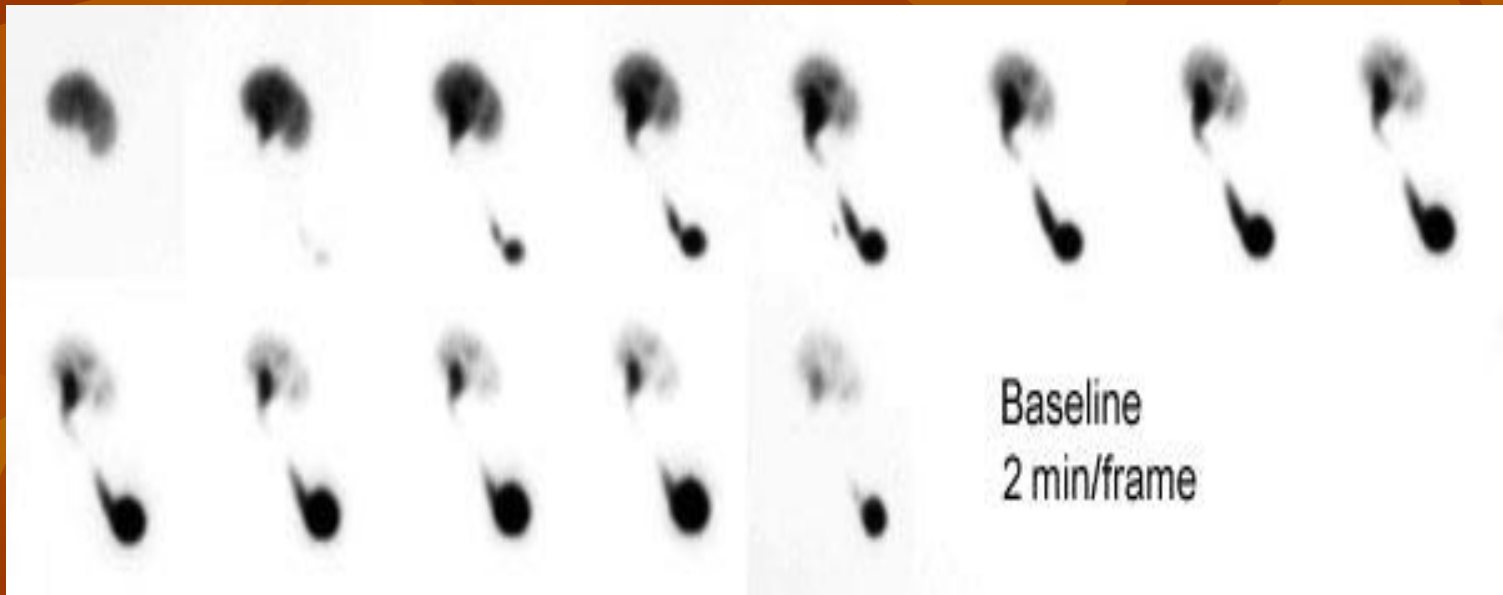


99mTc-MAG3

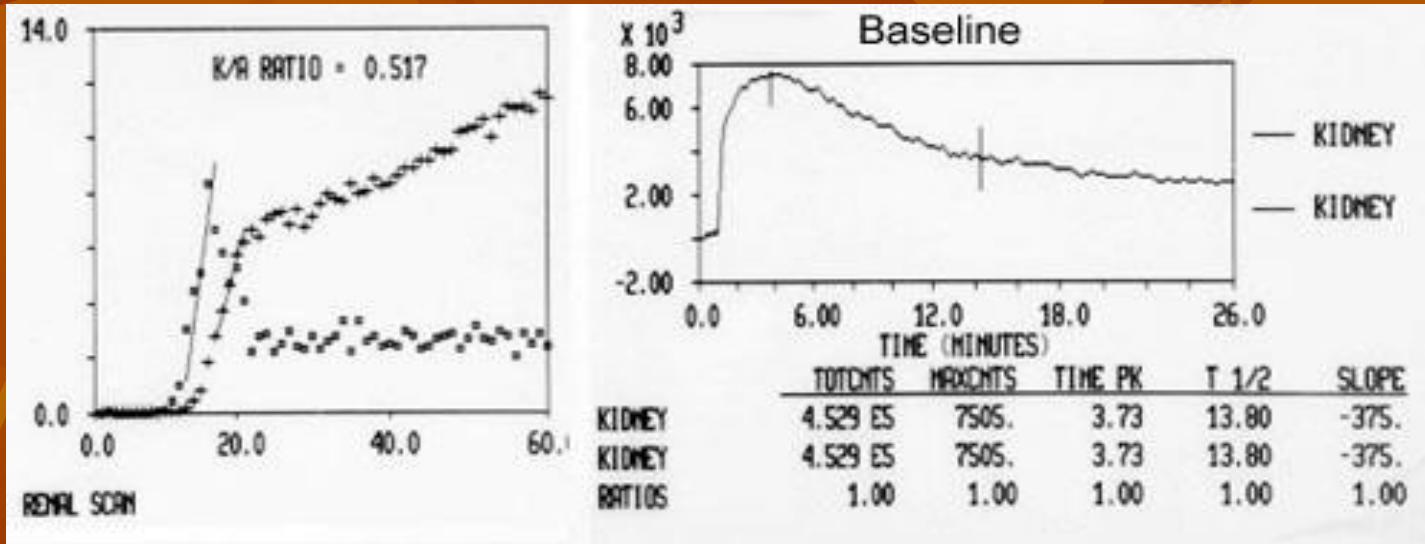


Acute rejection(99mTc-MAG3)

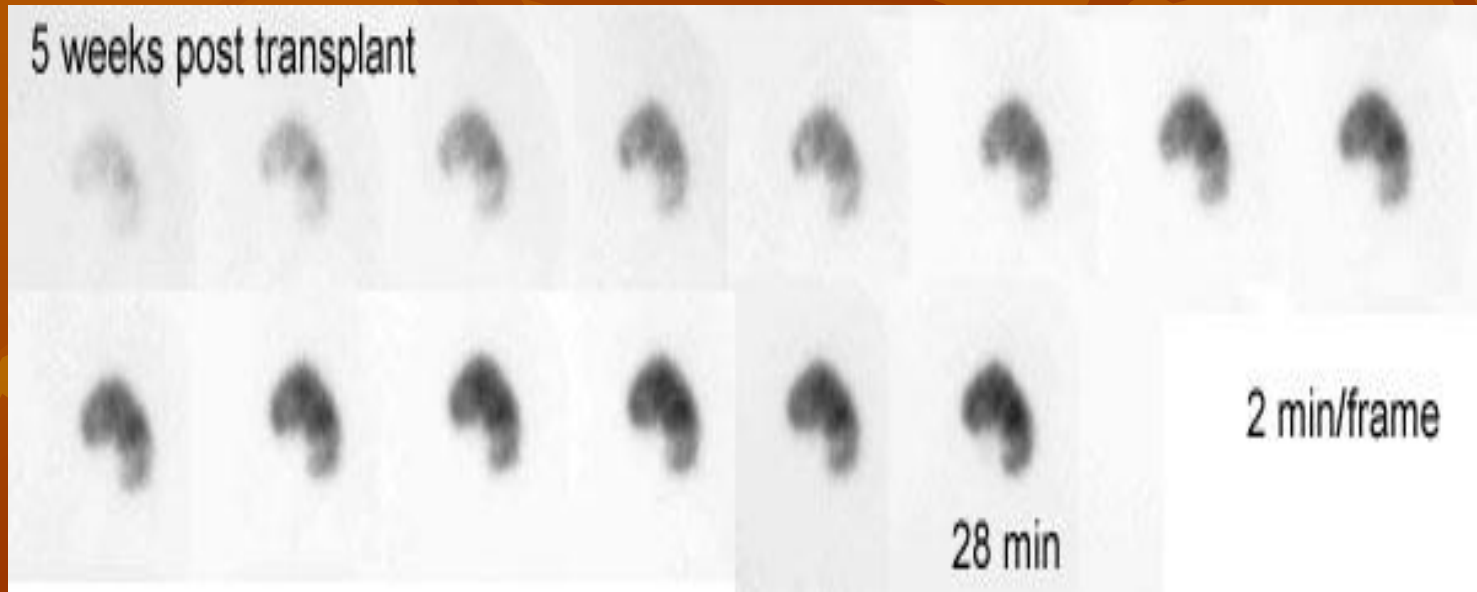




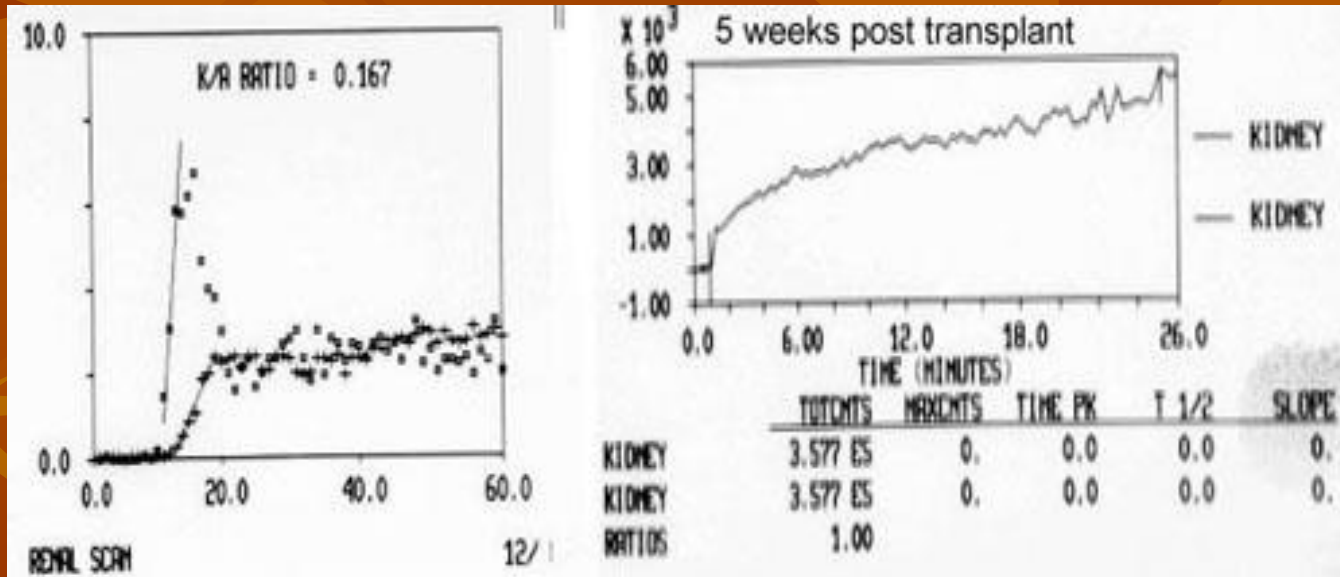
Renogram



Acute rejection(99mTc-MAG3)



Renogram



POST CAPTOPRIL

POST-CAPTAPRIL

MAG - 3

0-3 min

3-6

6-9

9-12

12-15

15-18

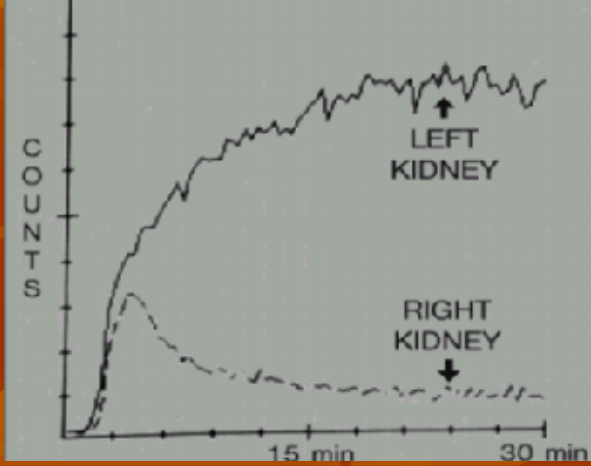
18-21

21-24

24-27

POST-CAPTAPRIL

I - 131 HIPURAN



ANGIOGRAPHY

(LT.RENAL A.STENOSIS)



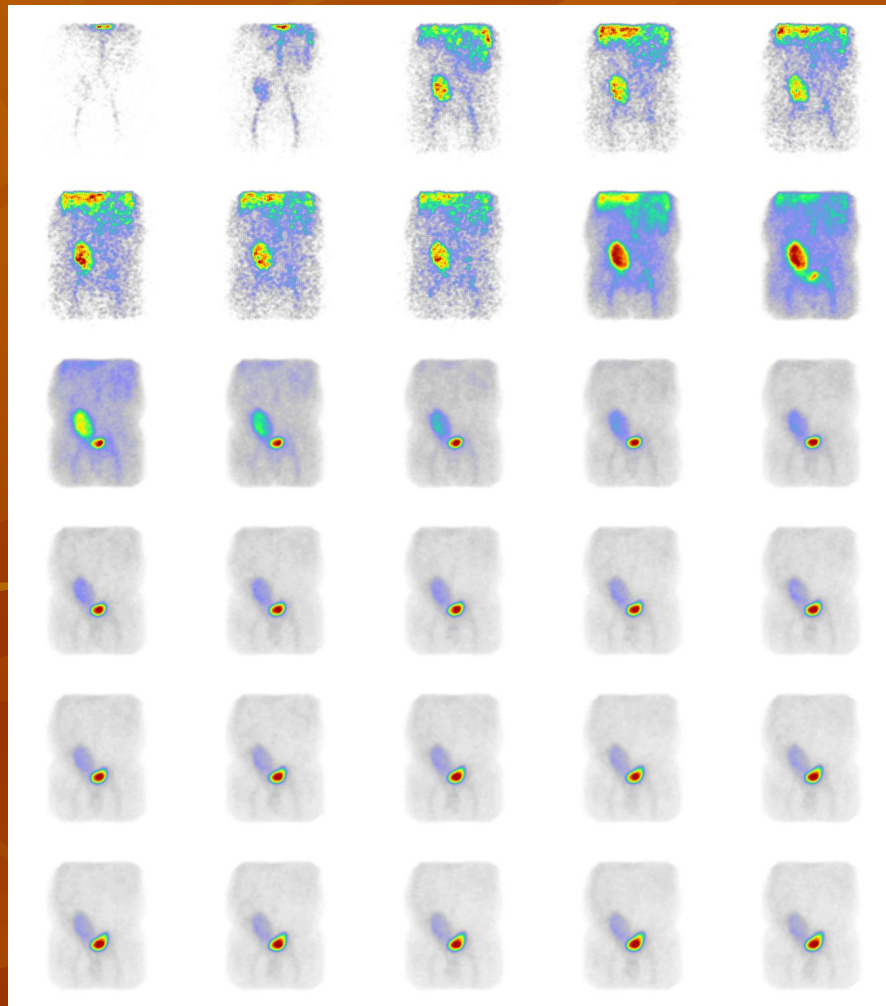
RENAL TRANSPLANT

■ COMPLICATIONS:

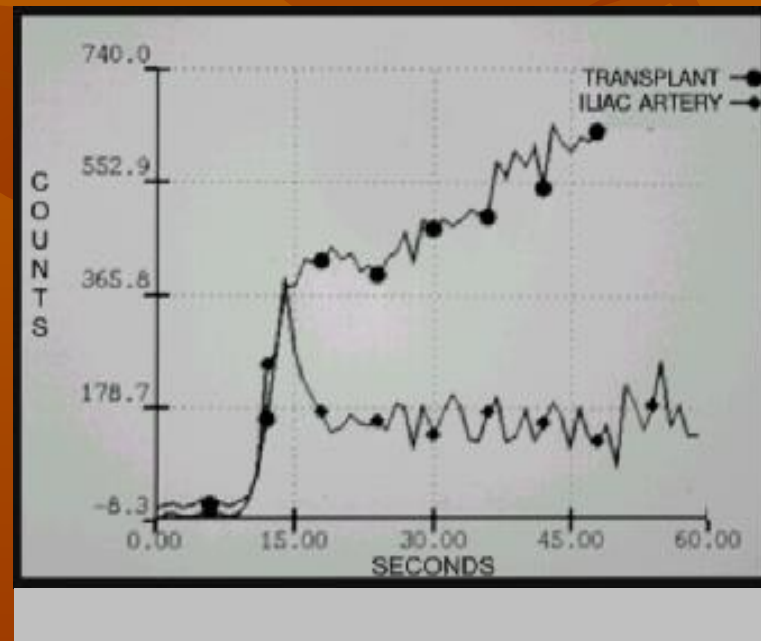
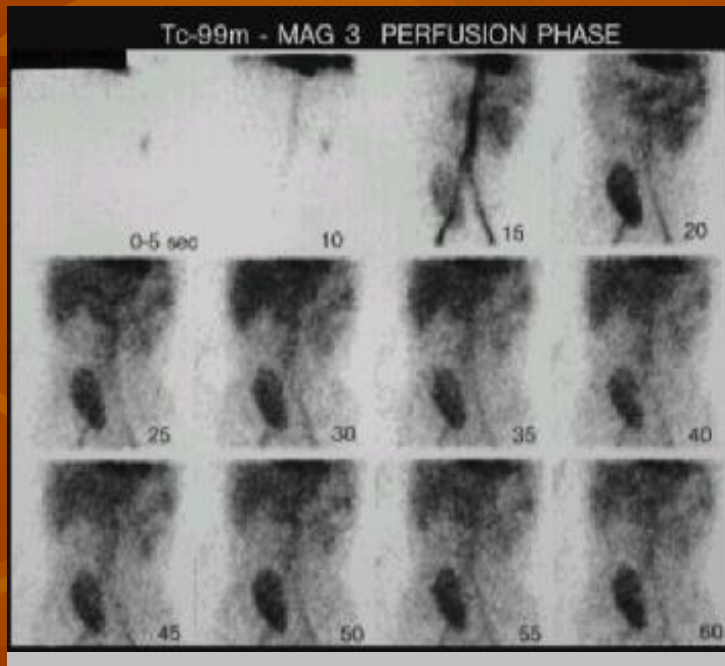
- * REJECTION
- * ACUTE TUBULAR NECROSIS(ATN)
- * OBSTRUCTION
- * LEAKAGE
- * THROMBOSIS
- * HEMATOMA



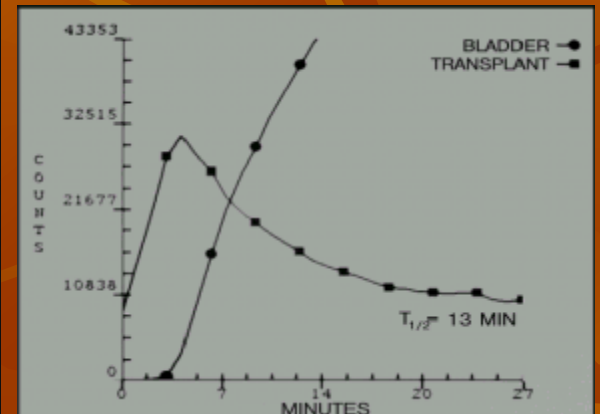
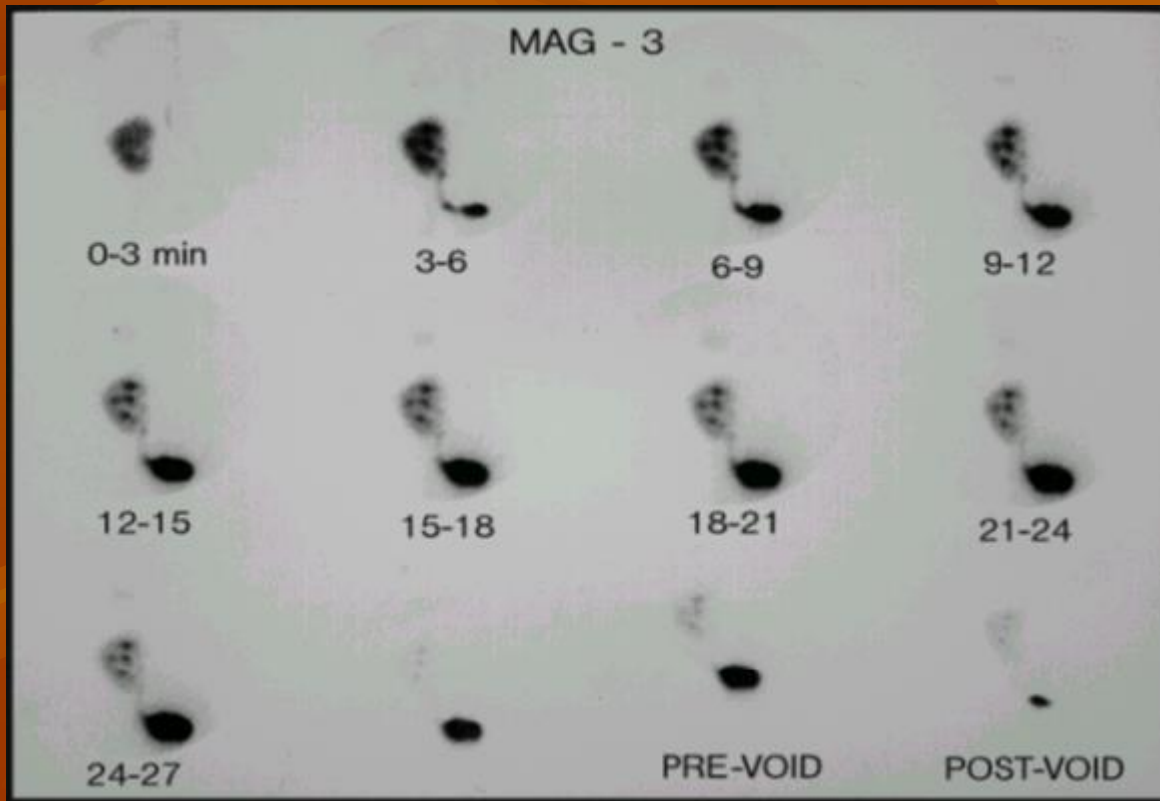
NORMAL T.KIDNEY



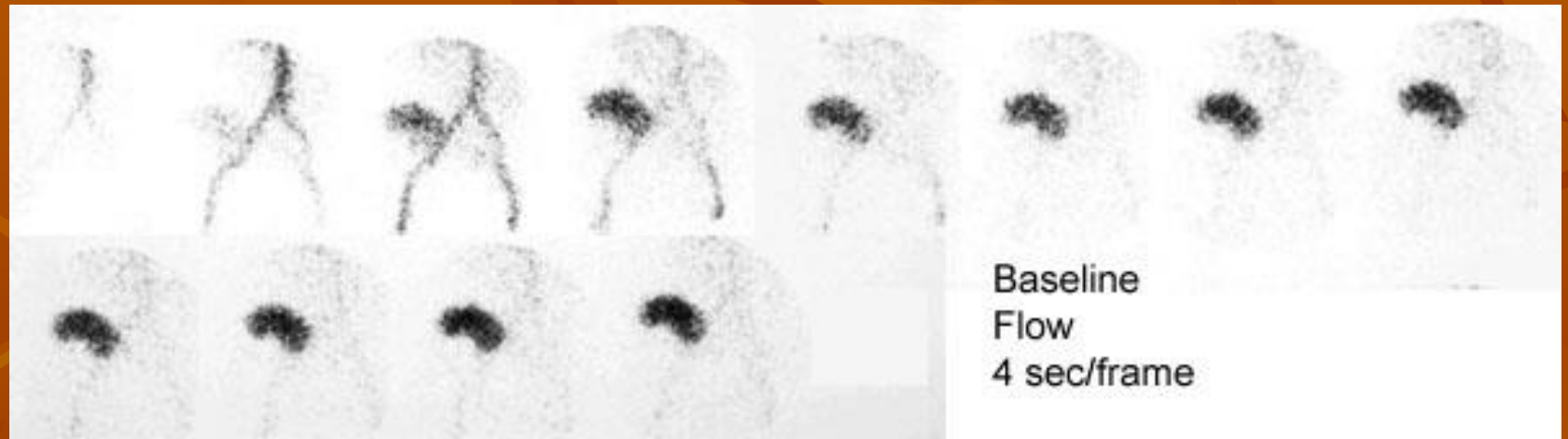
NORMAL T.RENAL SCAN (ANGIOGRAM)



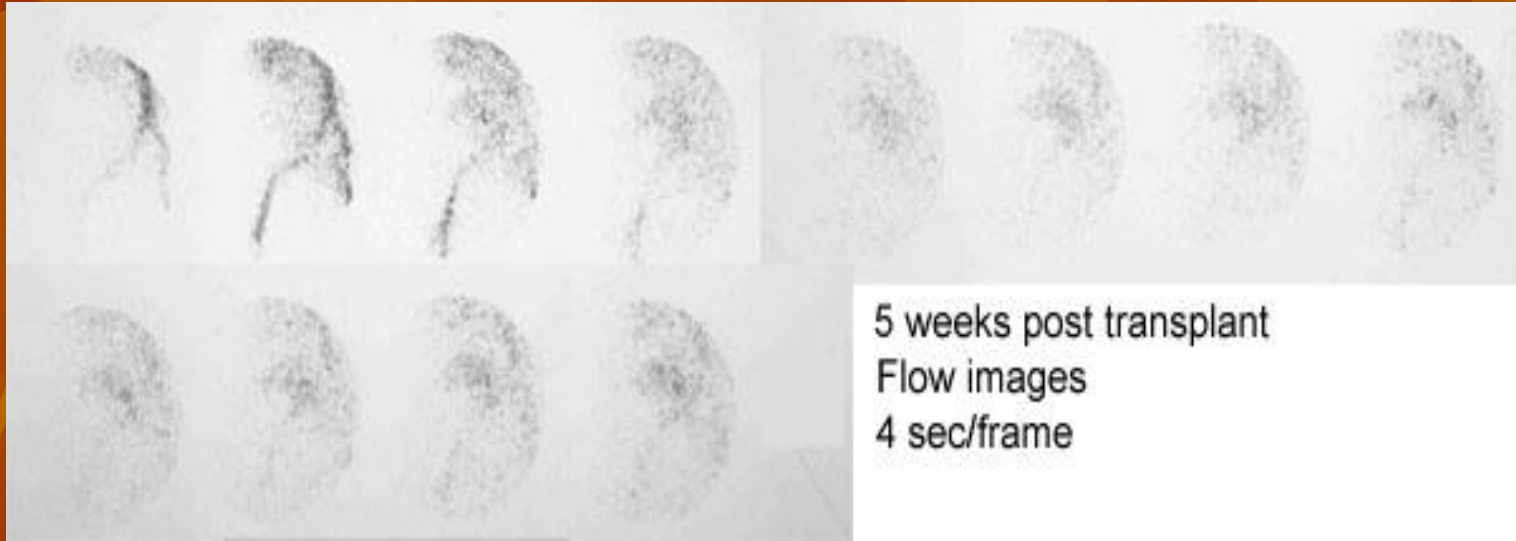
LONG TIME RENOGRAM

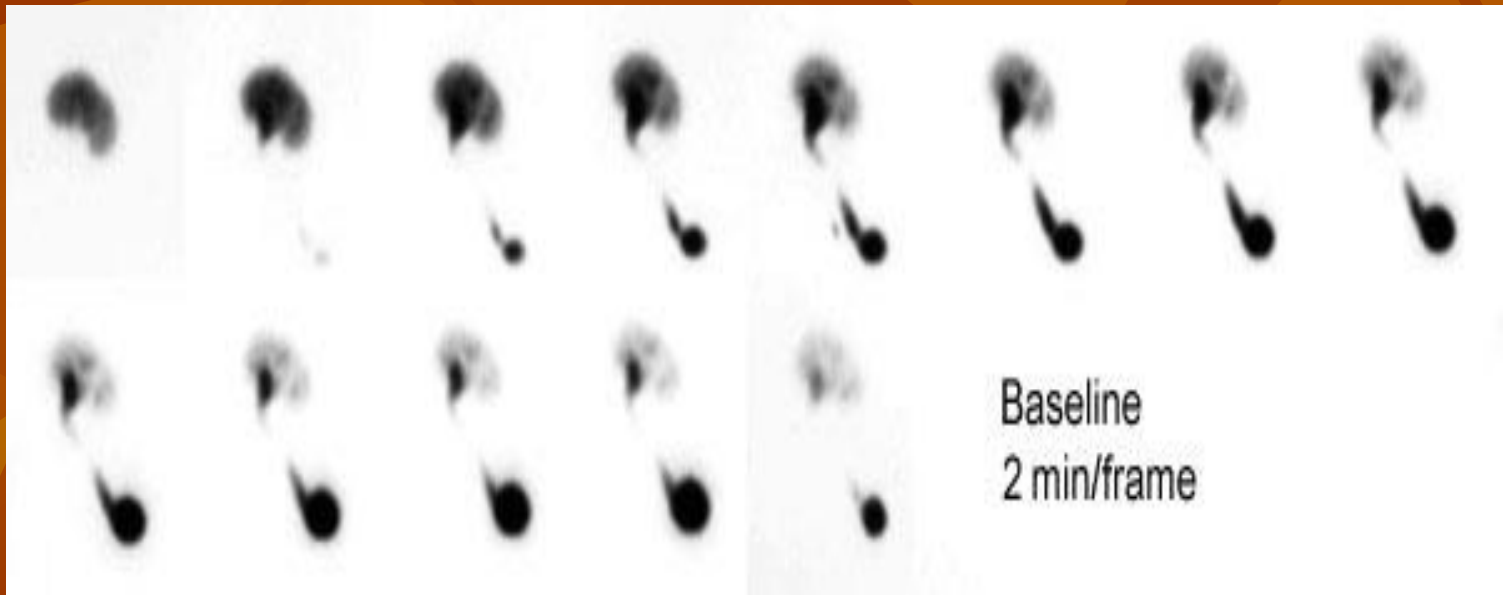


99mTc-MAG3

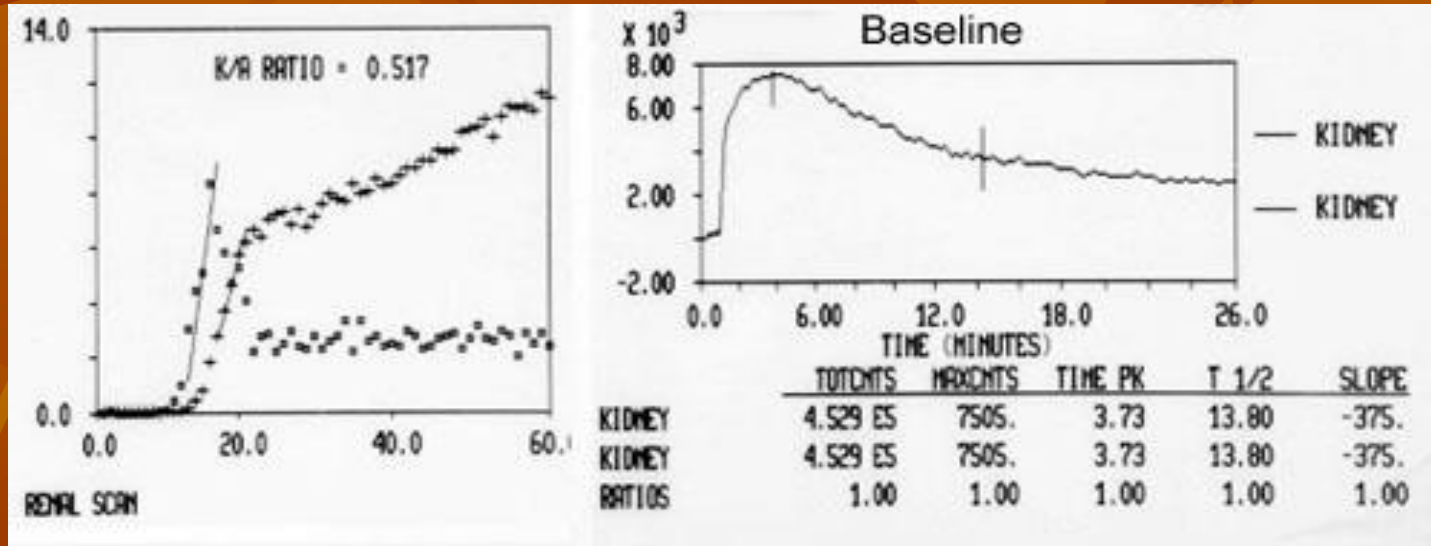


Acute rejection(99mTc-MAG3)

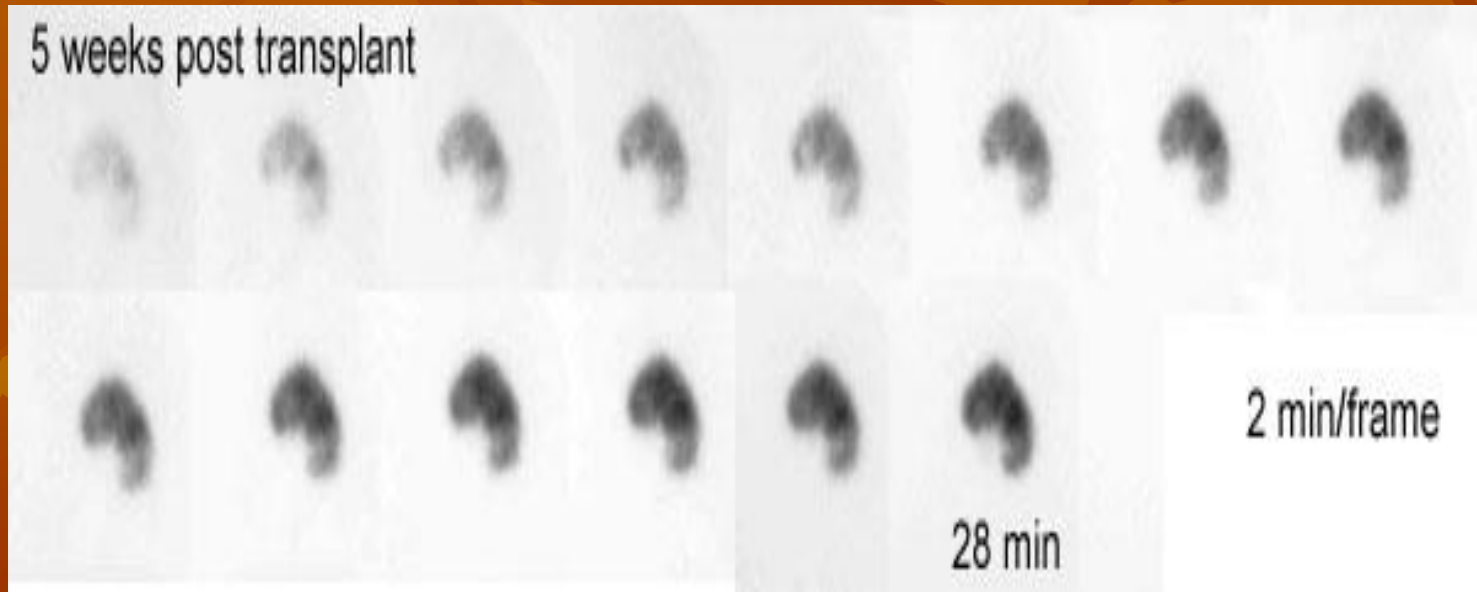




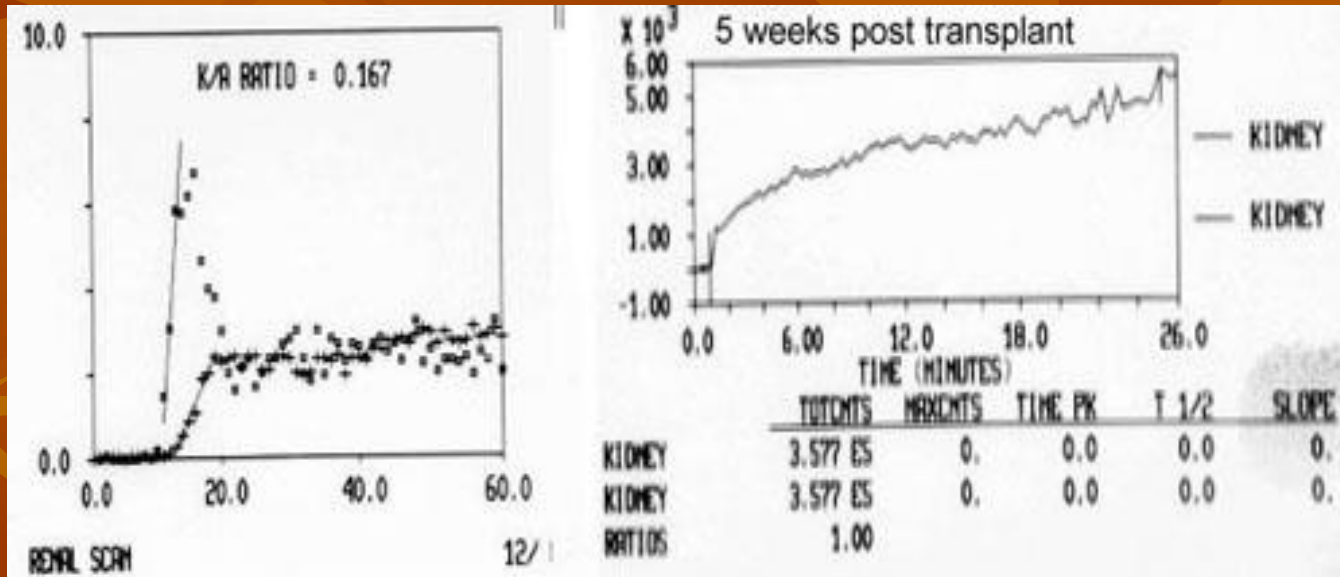
Renogram



Acute rejection(99mTc-MAG3)



Renogram



ACUTE REJECTION

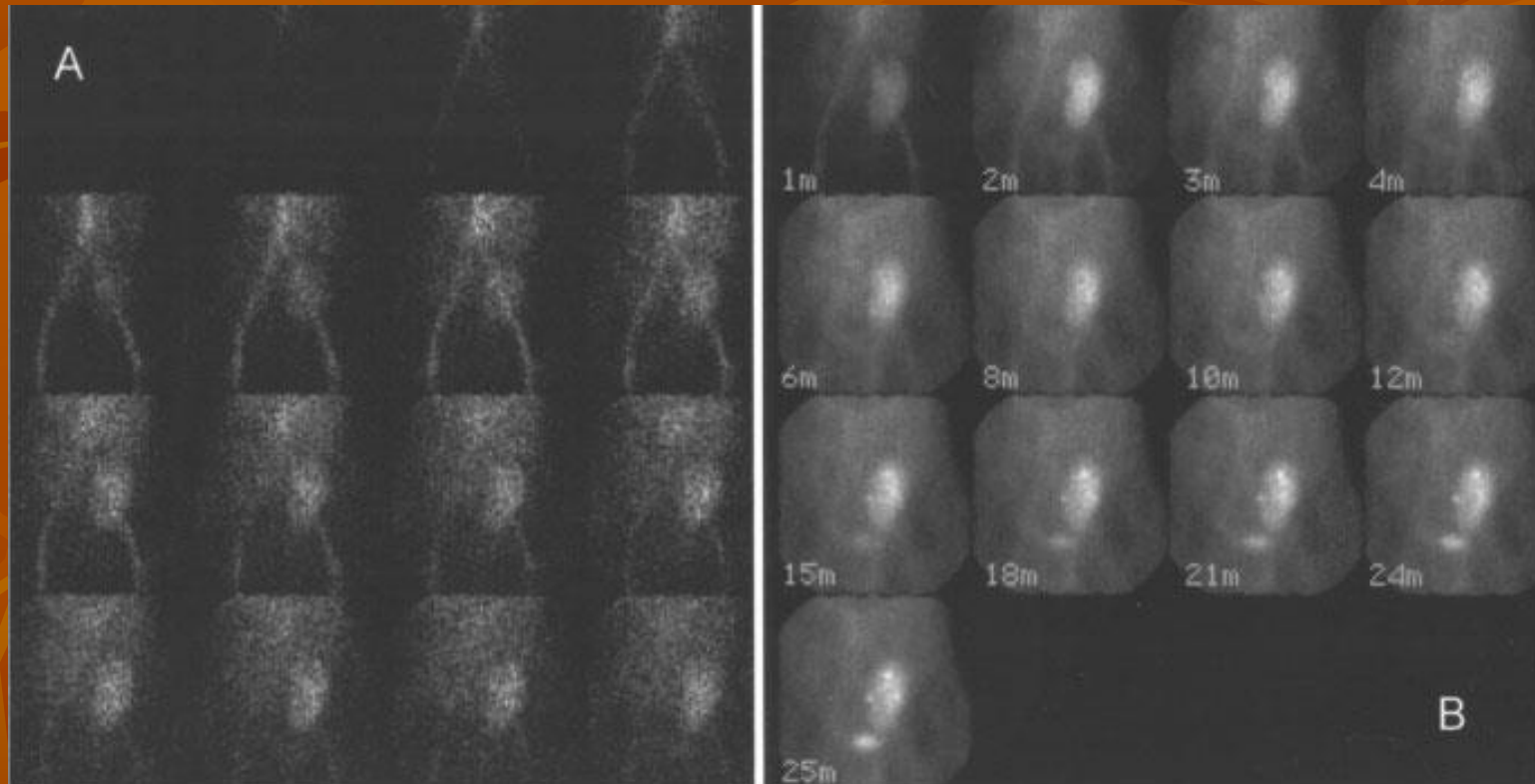
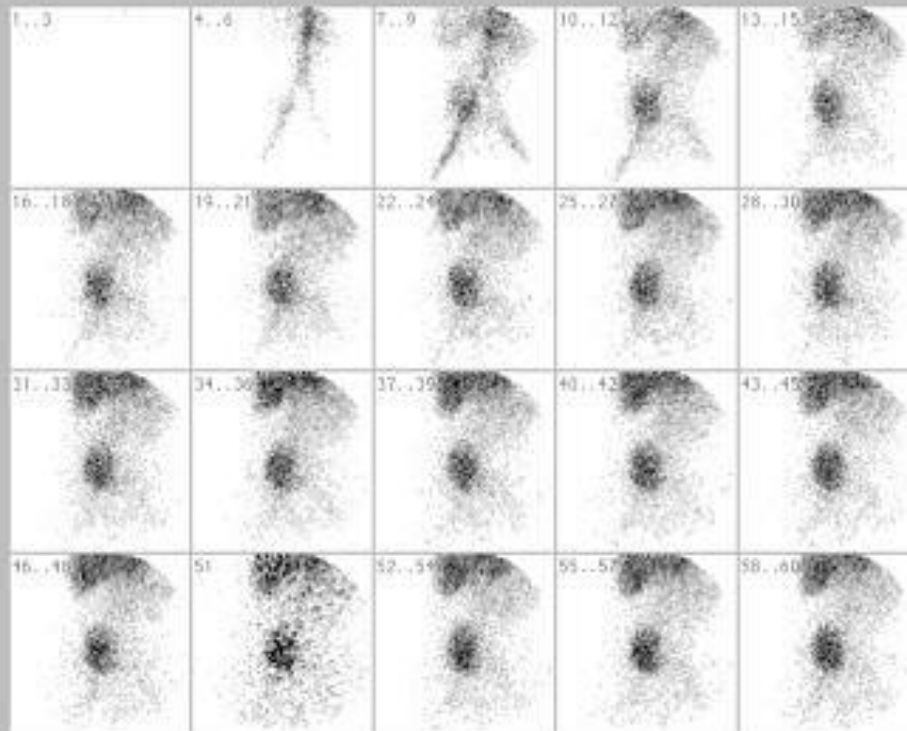


Figure 2 – Renal scintigraphic study with ^{99m}Tc -DTPA of a patient with acute rejection. A) Flow phase. Note the moderate reduction of the flow to the graft. B) Functional phase. There is moderately reduced accumulation, concentration and excretion of the radiotracer.



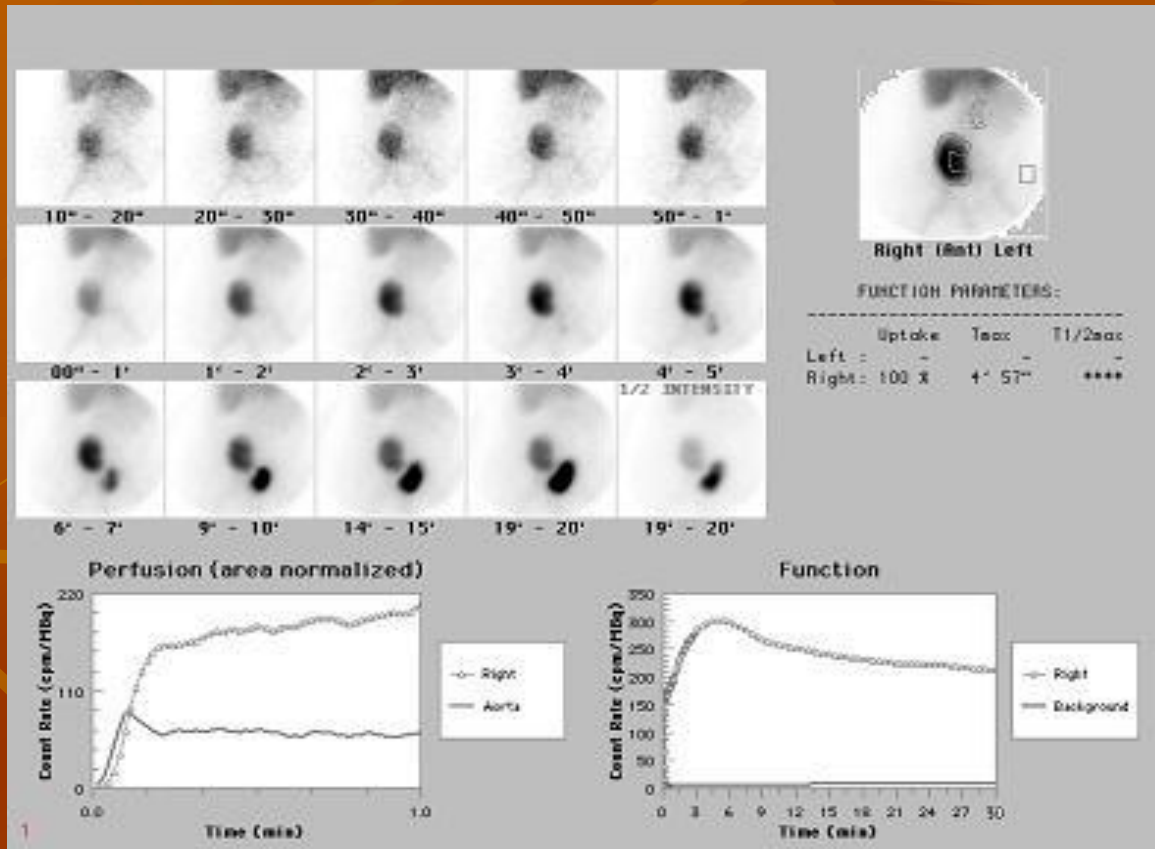
ATN(post cadaveric renal transplantation)

Perfusion



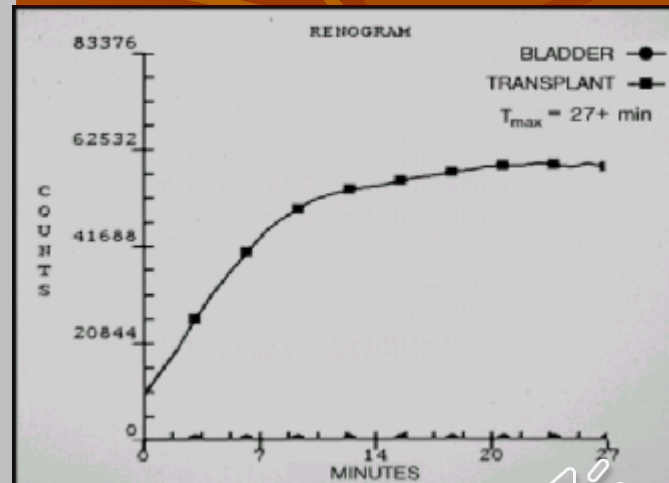
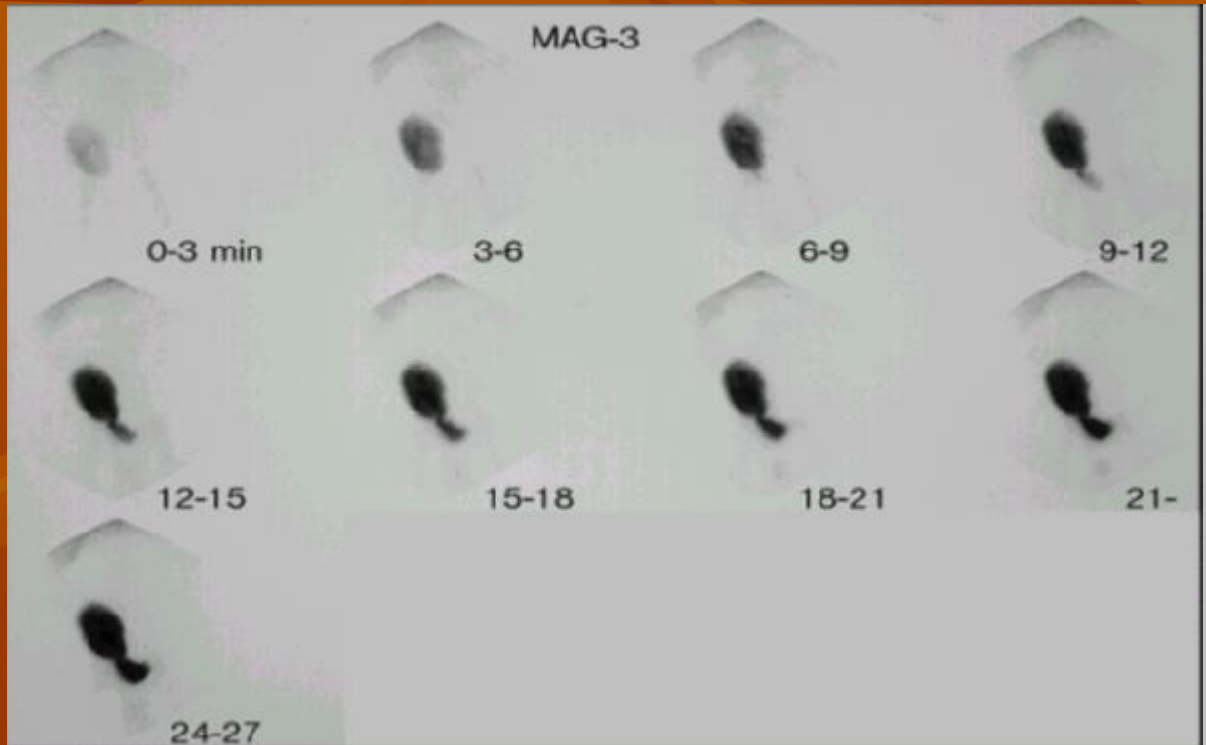
ATN (post cadaveric renal transplantation)

Renogram



ATN

(ONE DAY POST CADAVERIC TRANSPLANT)



Obstruction

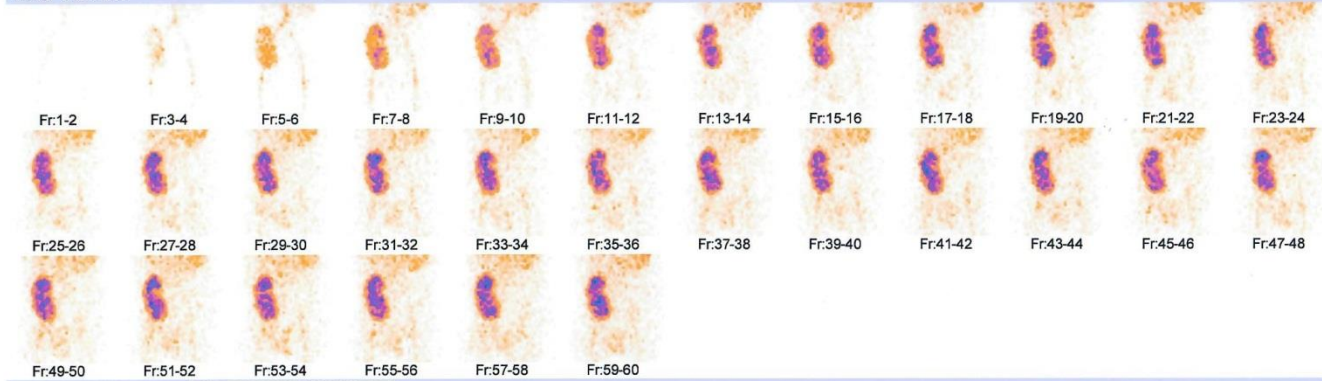
Patient Name: SEYEDLAR, AKBAR
Study Date: 1/22/2017

Patient ID: 2231

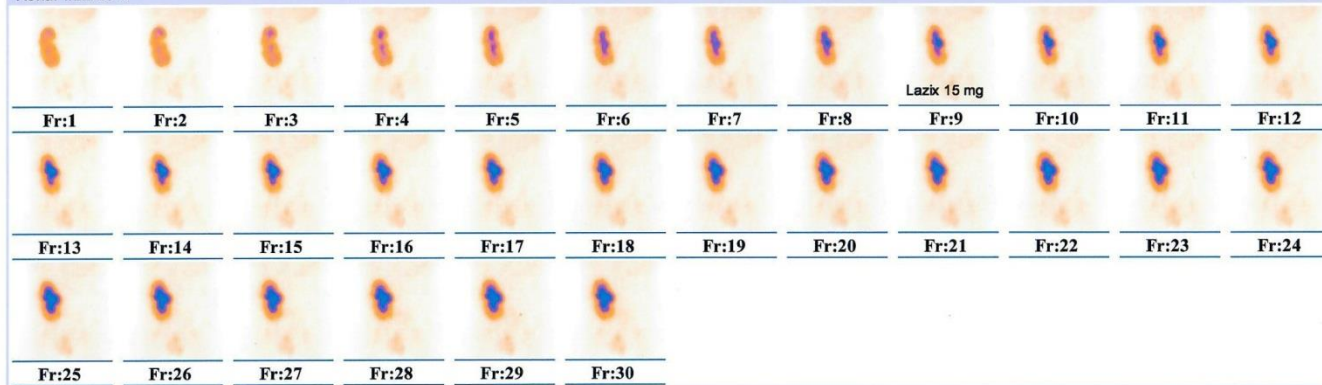
DOB: 1/22/1999

Study Name: Renal Scan

Renal 1/22/2017

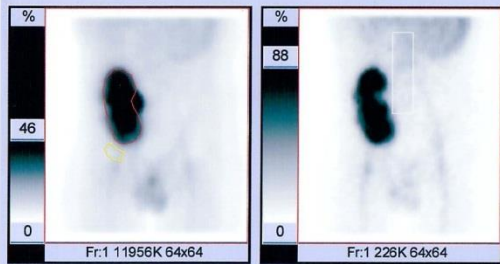


Renal 1/22/2017



Phase 2





— Transplant
— Background

Table of Patient Parameters

Parameters	Values
Renal Protocol	Gates GFR (DTPA)
Kidney Depth Method	Manual
Patient Name	SEYEDLAR, AKBAR
Patient ID	2231
Sex	Male
Age	18
Height	150.0 cm
Weight	55.0 kg
Body Surface Area	1.53 m ²
Reference BSA	1.73 m ²
Split Uptake Interval (min)	2.0 - 3.0
Radiopharmaceutical	0.0 mCi 99m Technetium DTPA
Presyringe Counts (Kcpm)	2437
Postsyringe Counts (Kcpm)	142
Net Injected Counts (Kcpm)	2295
Method	Adult
Hematocrit	0.00

Table of Result Summary

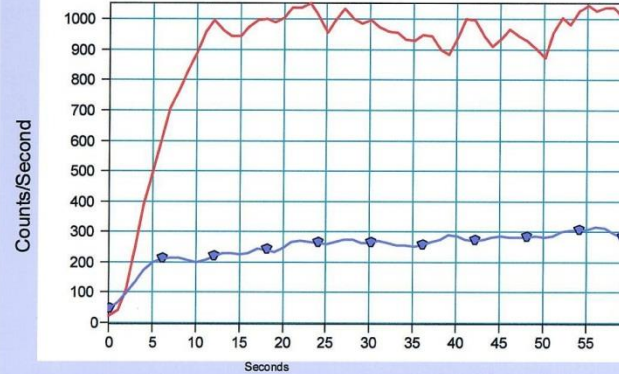
Parameters	Left	Right	Total
Kidney Counts (cpm)			117797
Kidney Depth (cm)			4.300
Uptake (%)			5.133
GFR (ml/min)			43.5
Normalized GFR (ml/min)			49.1
GFR Low Normal (ml/min)			90.0
Mean GFR (ml/min)			118.0
Time of Max (min)			29.0
Time of 1/2 Max (min)			

— Transplant
— Aorta

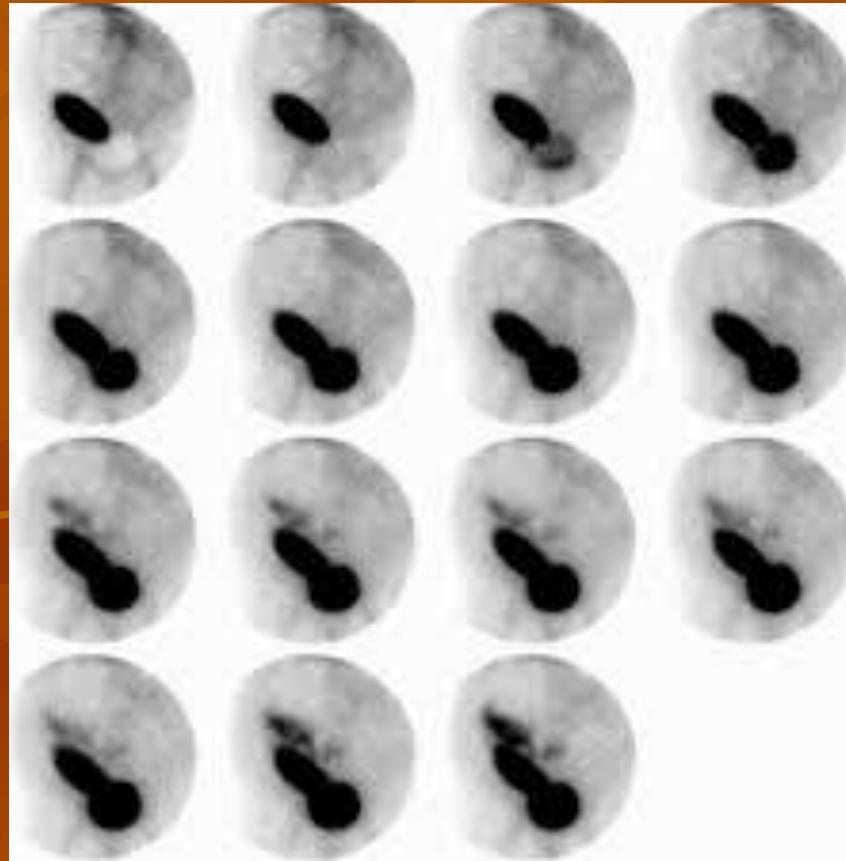
Kidney



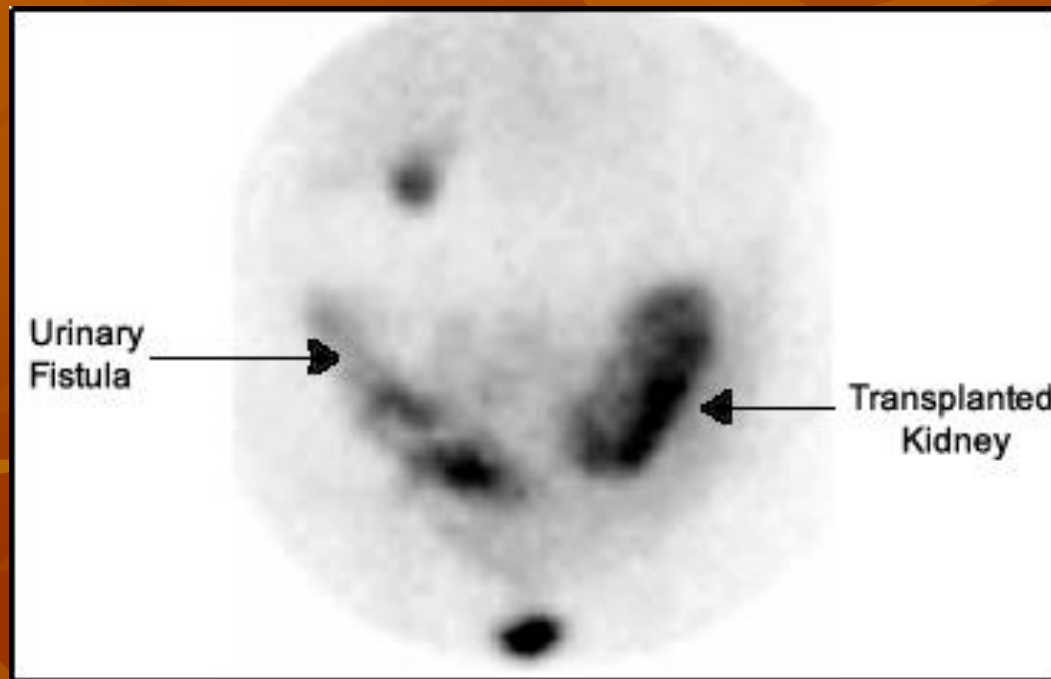
Flow



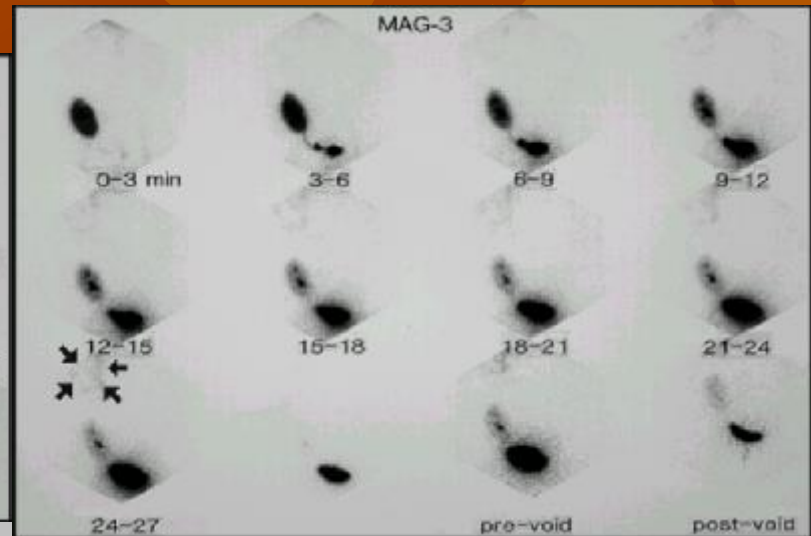
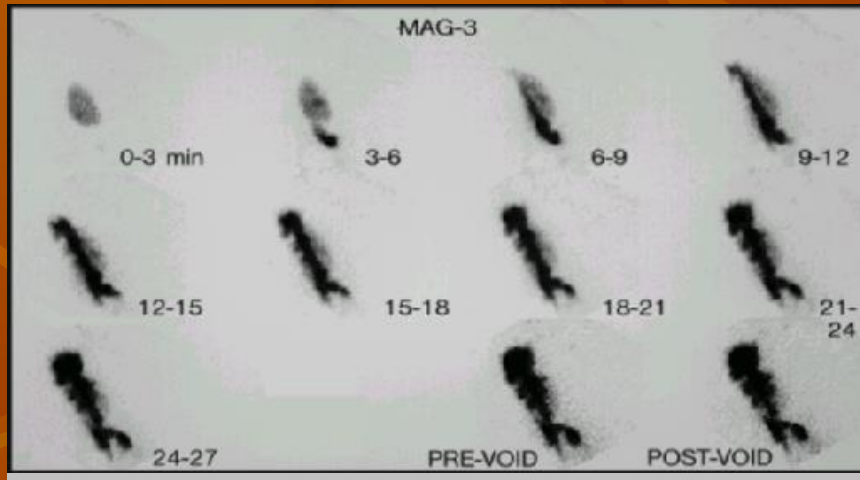
T.Kidney - Leakage



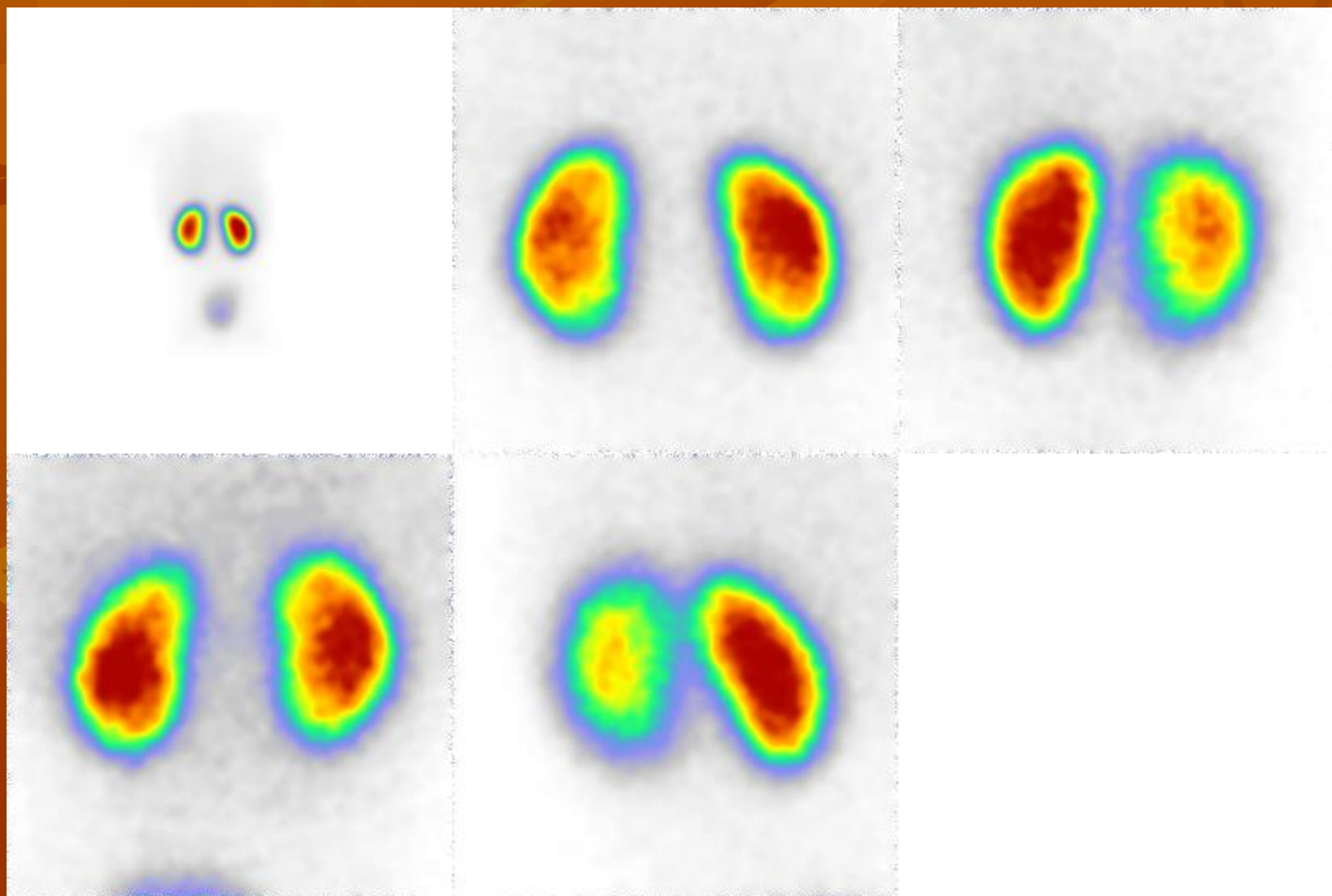
URINARY LEAKAGE



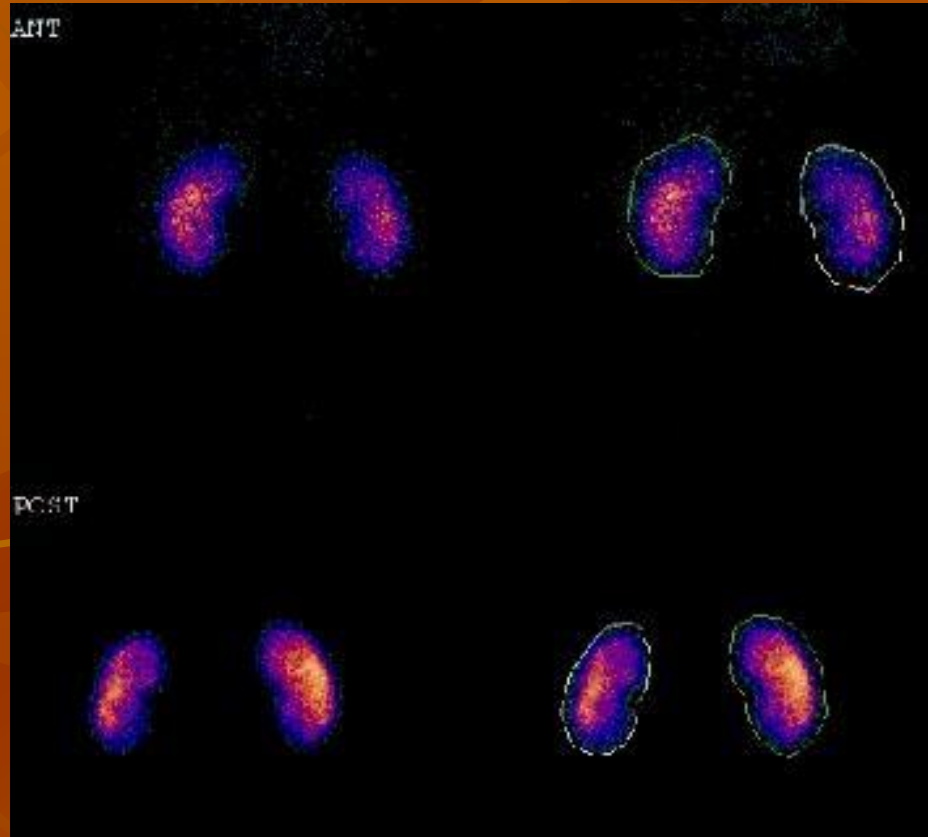
URINARY LEAKAGE (DISTAL URETER)



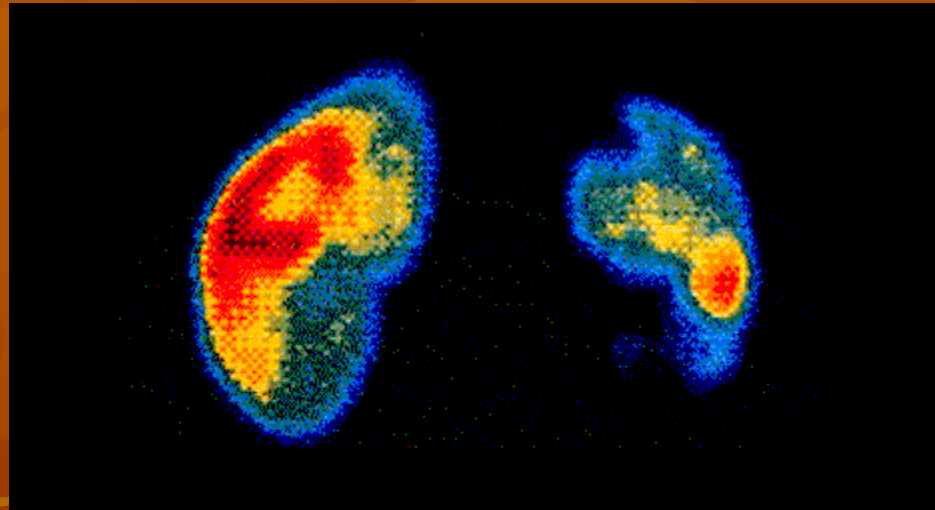
Normal DMSA Scan



Normal 99mTc-DMSA Scan



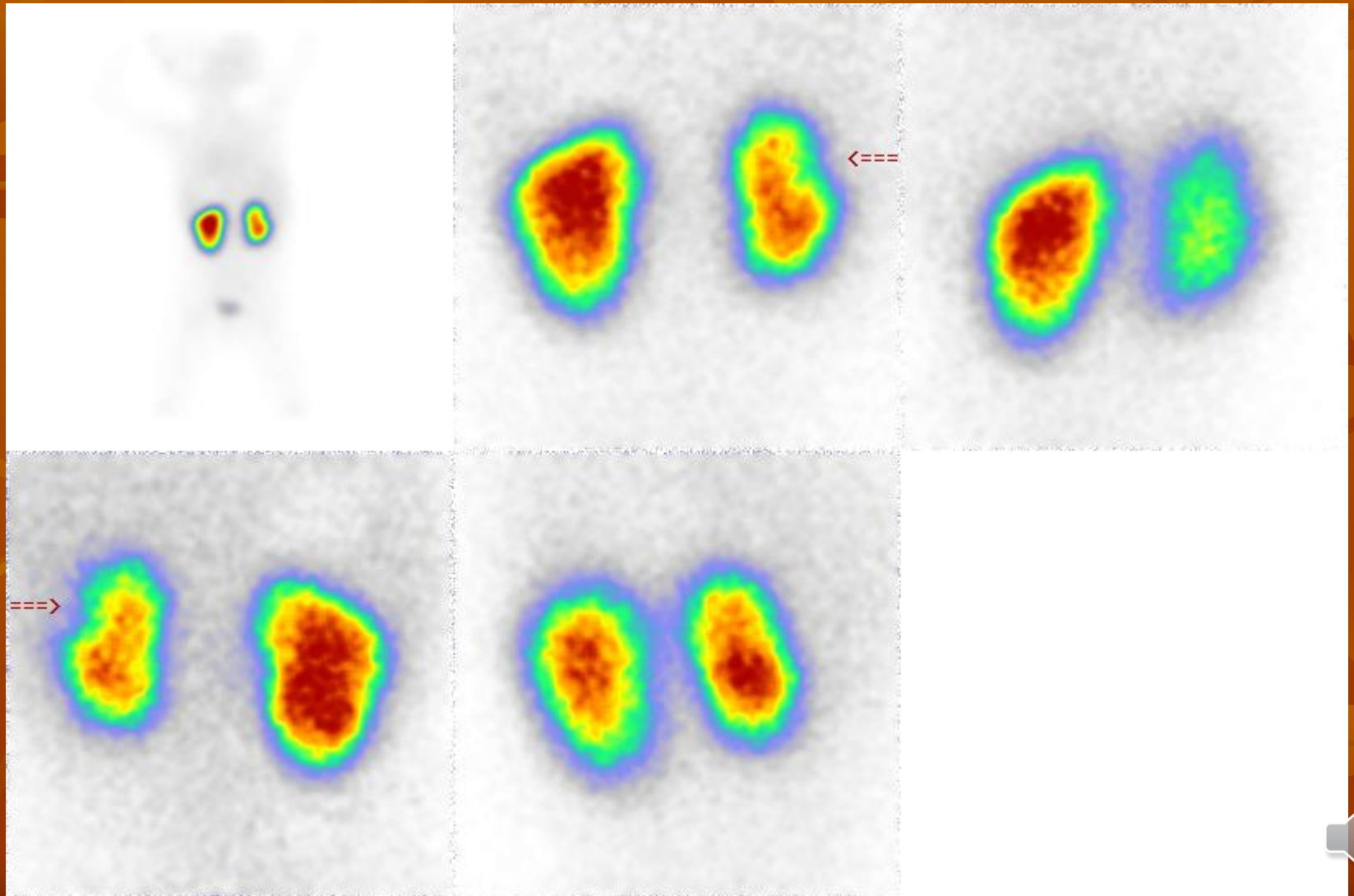
Acute Pyelonephritis



Acute pyelonephritis on radionuclide scan Renal scintigraphy with ^{99}Tc -DMSA in a patient with acute pyelonephritis showing large defects in the upper and lower poles of the right kidney (which is on the right side in this view). Note smaller defects in the lower and upper pole of the left kidney, indicating that pyelonephritis, although clinically right-sided, was in fact bilateral. Courtesy of Alain Meyrier, MD.



CORTICAL SCAR OF RT.KIDNEY



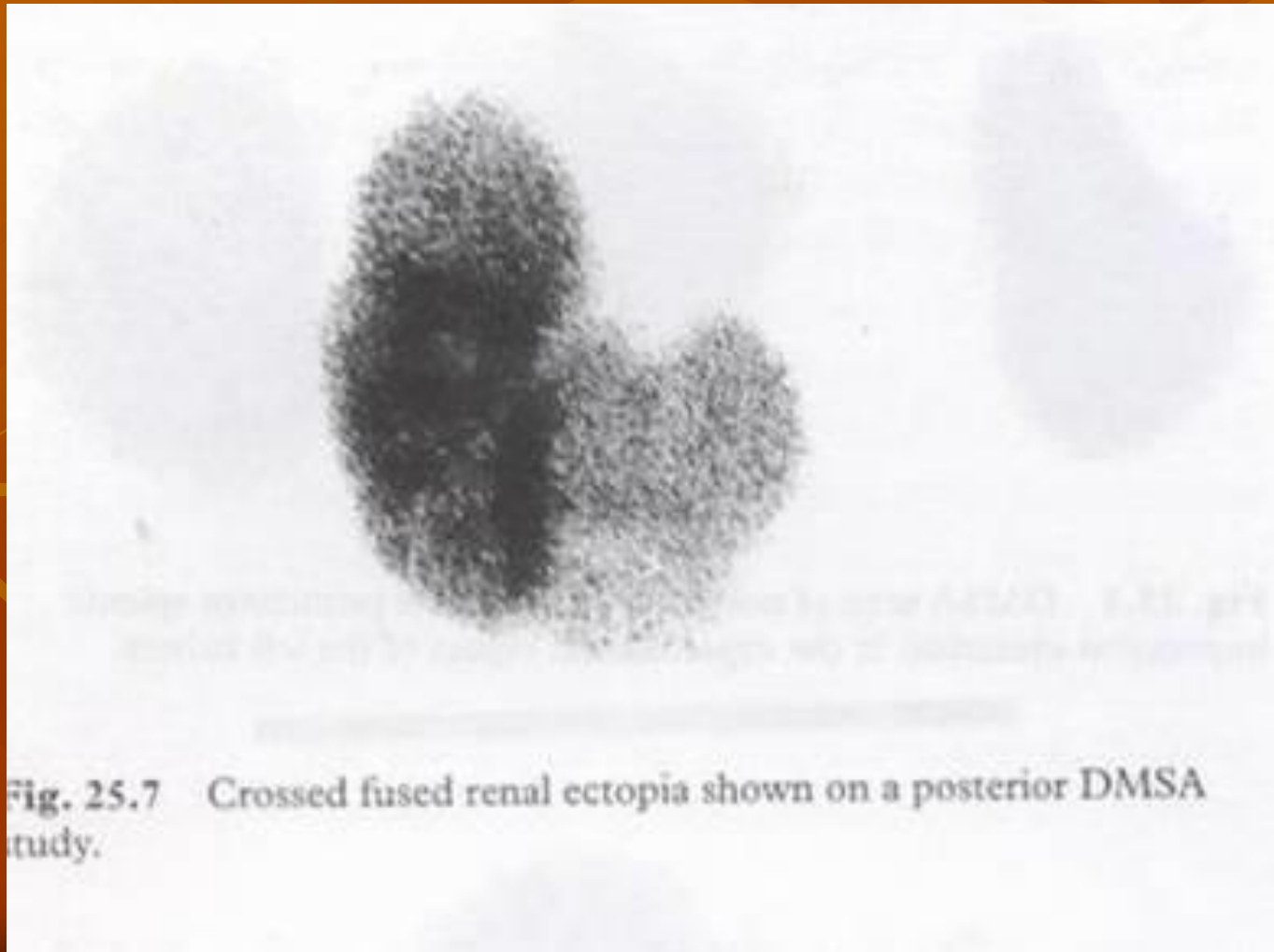
^{99m}Tc -DMSA Normal variants



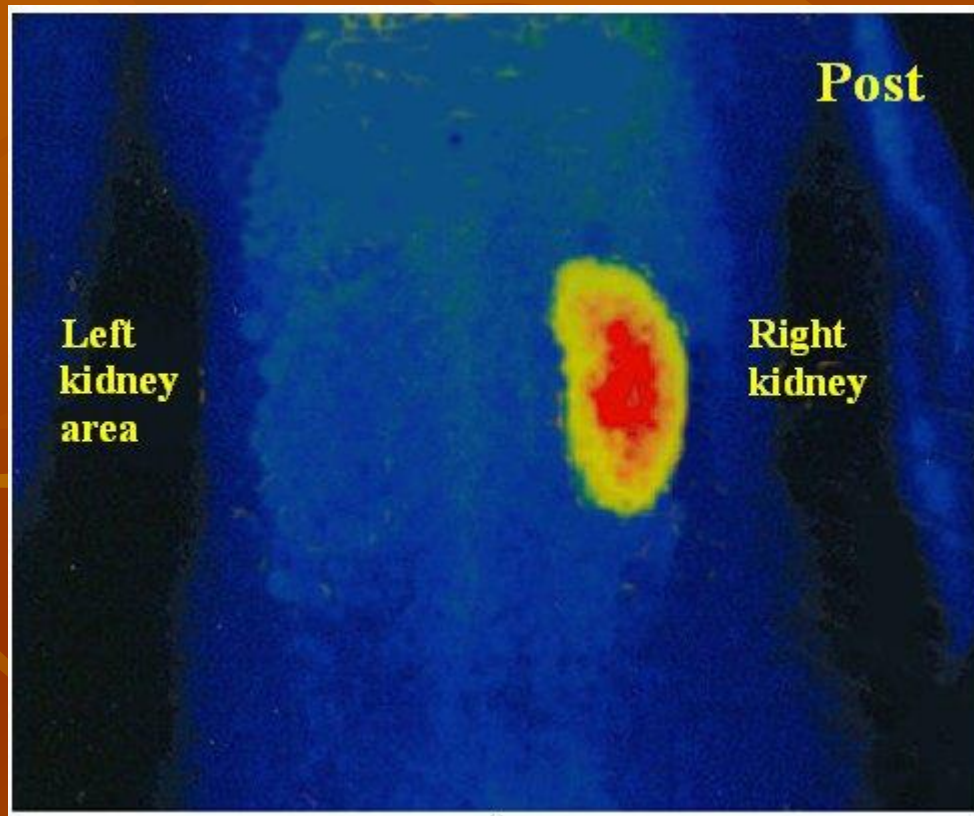
Fig. 25.6 Horseshoe kidney demonstrated on an anterior DMSA study.



^{99m}Tc -DMSA Normal variants



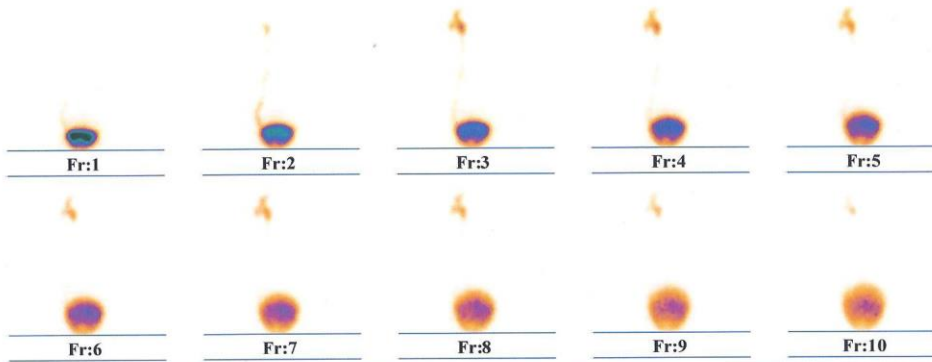
Non functioning Lt.Kidney



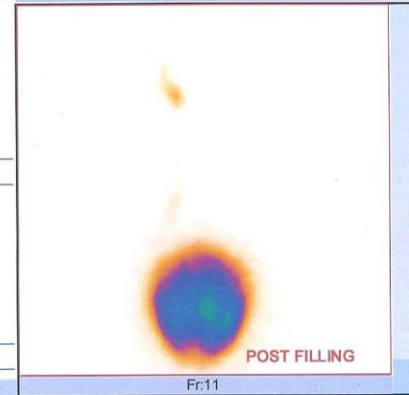
Lt. V.U reflux

Imam Reza Nuclear Medicine Department

Filling Phase 2/13/2014

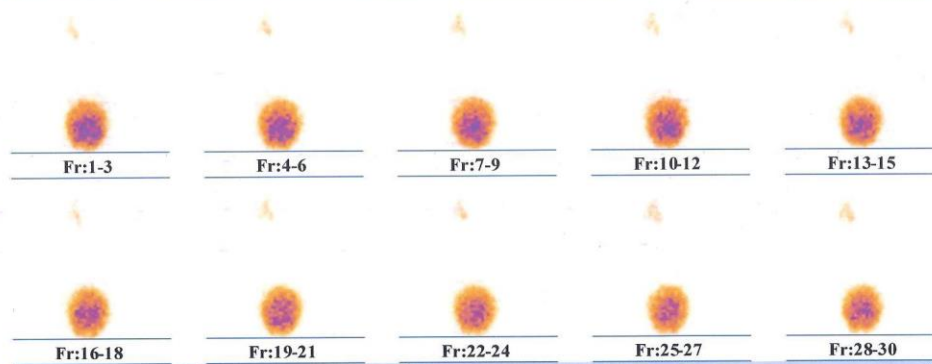


Filling Phase 2/13/2014

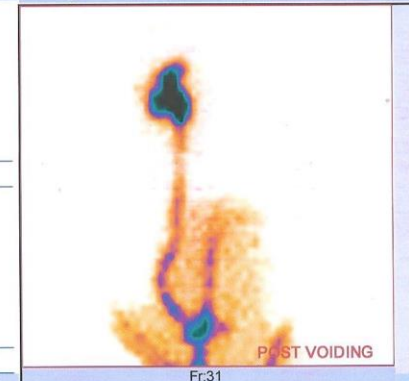


Phase 1

Voiding Phase 2/13/2014



Voiding Phase 2/13/2014



Phase 1

Patient Name: HAMRAHI, MASOUMEH
Study Name: Voiding Cystogram

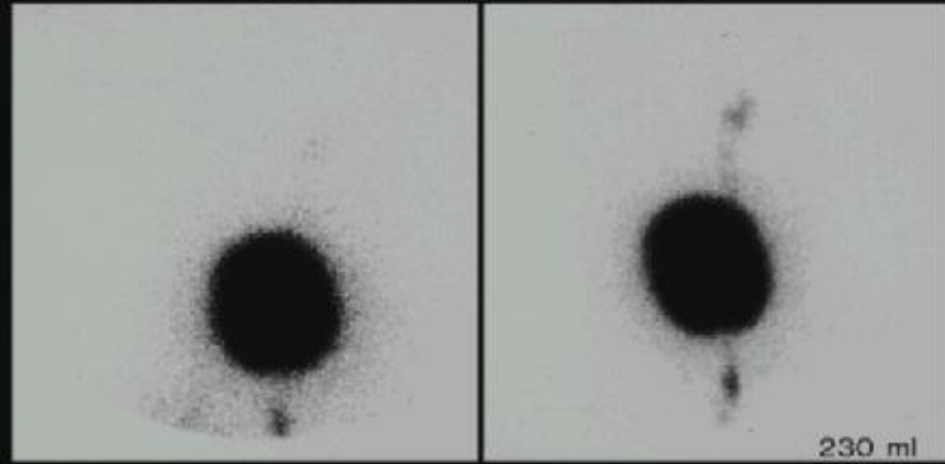
Patient ID: 1884
Study Date: 2/13/2014

Age: 010Y

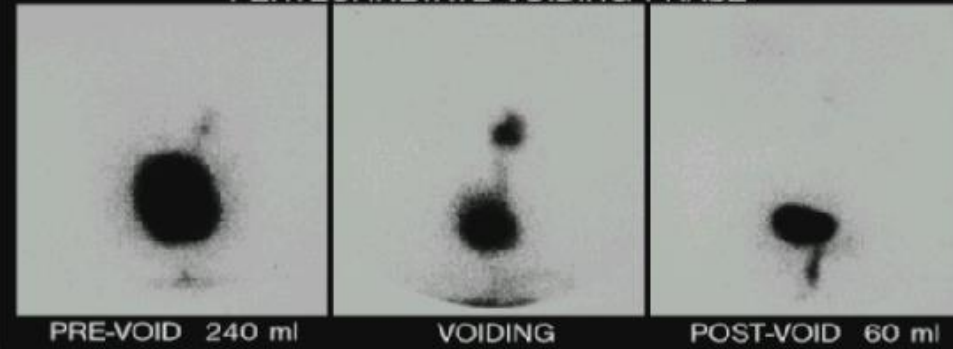


VESICOURETERAL REFLUX

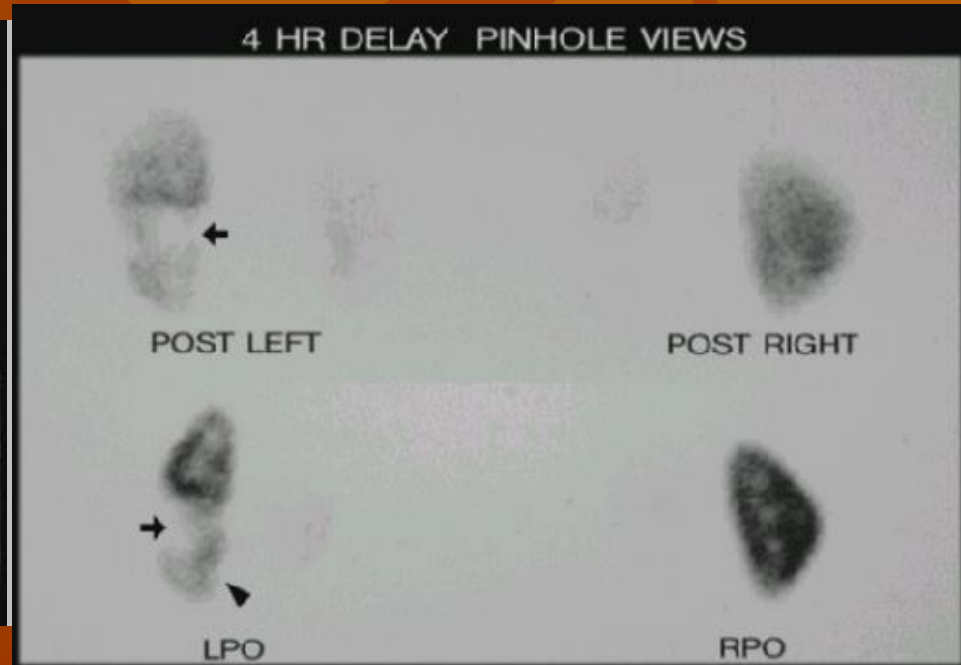
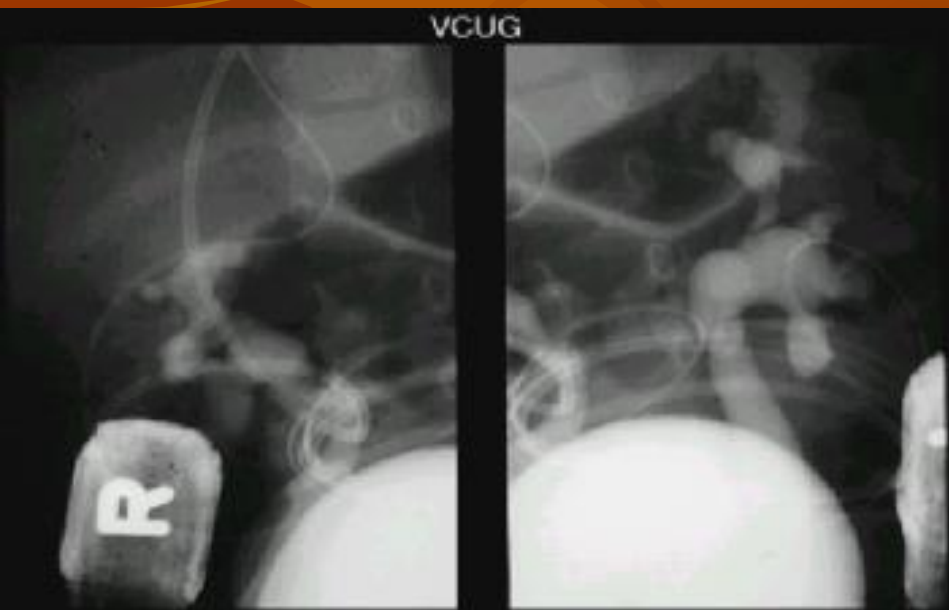
PERTECHNETATE FILLING PHASE



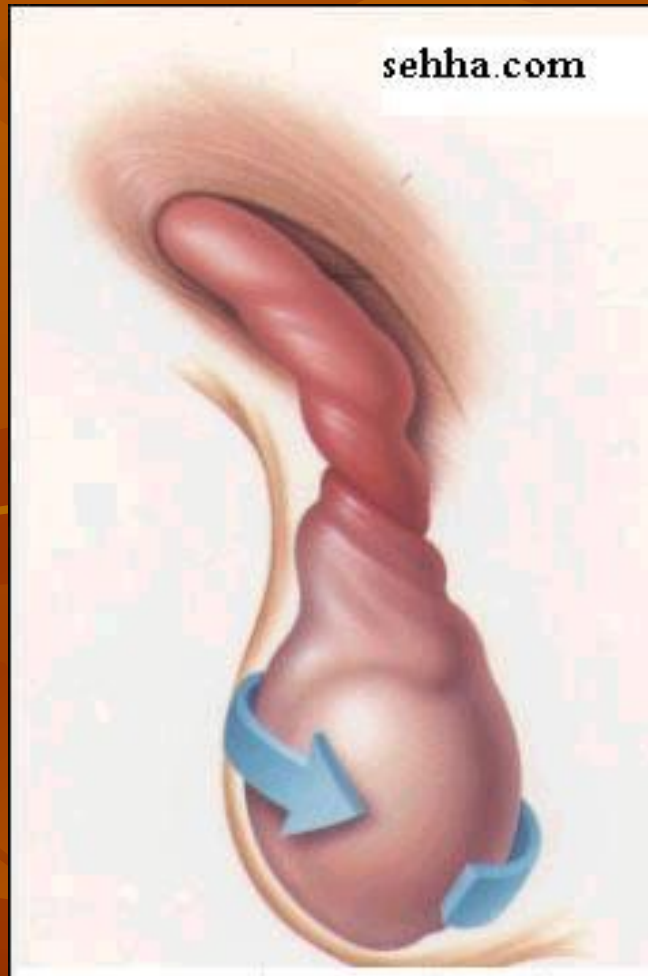
PERTECHNETATE VOIDING PHASE



V.U REFLUX (bilateral) & CORTICAL SCARS



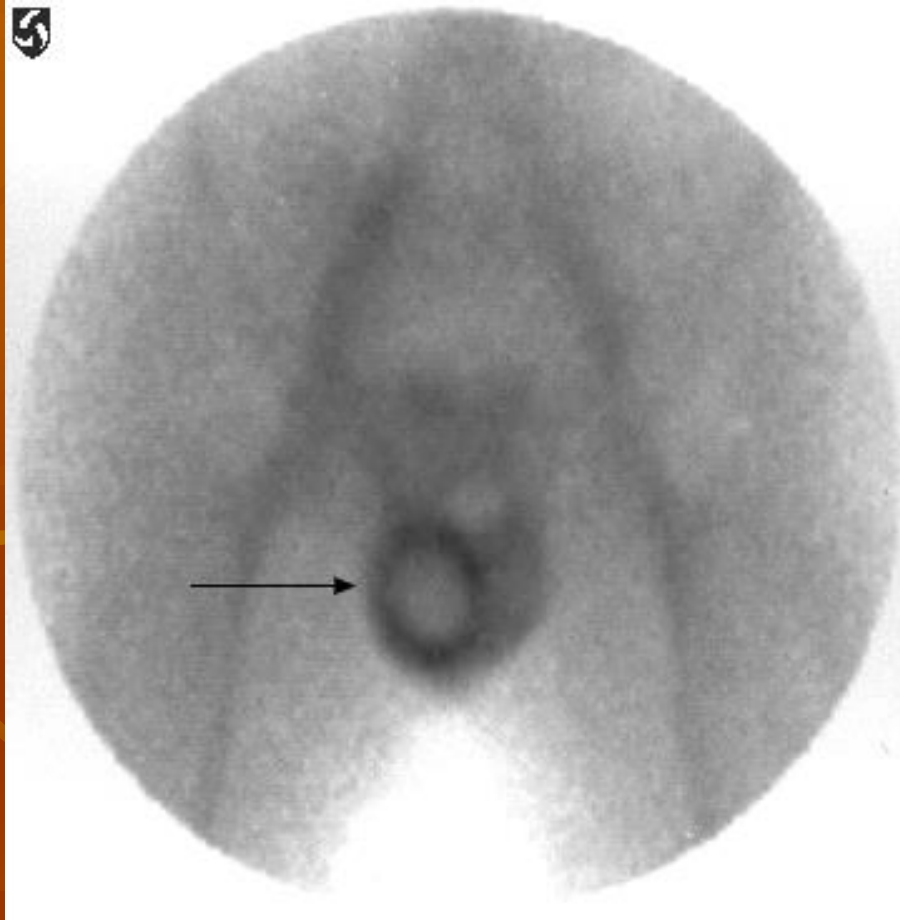
Scrotal scintigraphy



LT. TESTICULAR TORSION

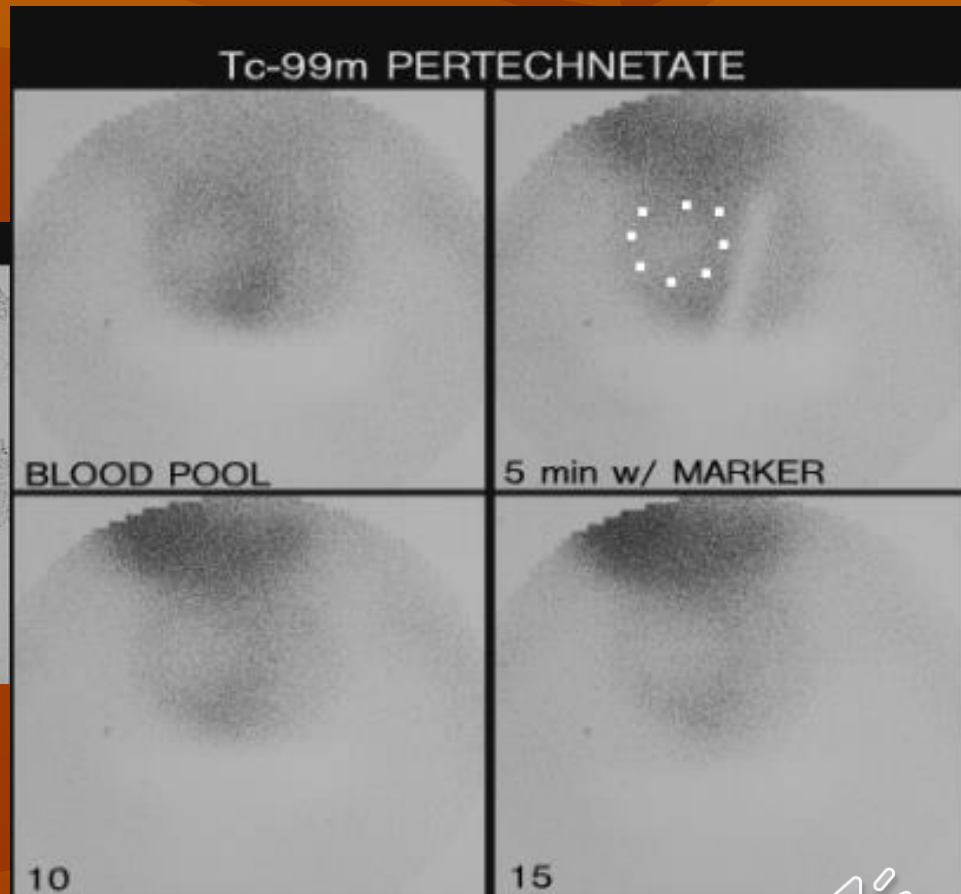
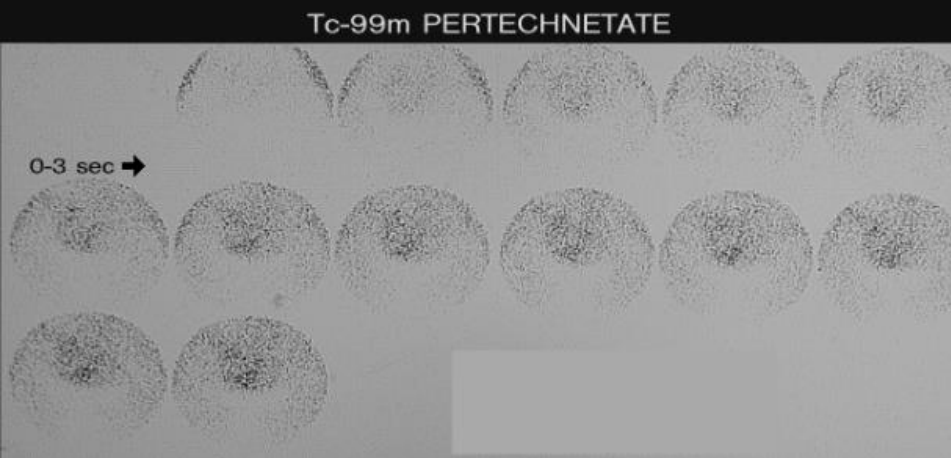


RT. TESTICULAR TORSION

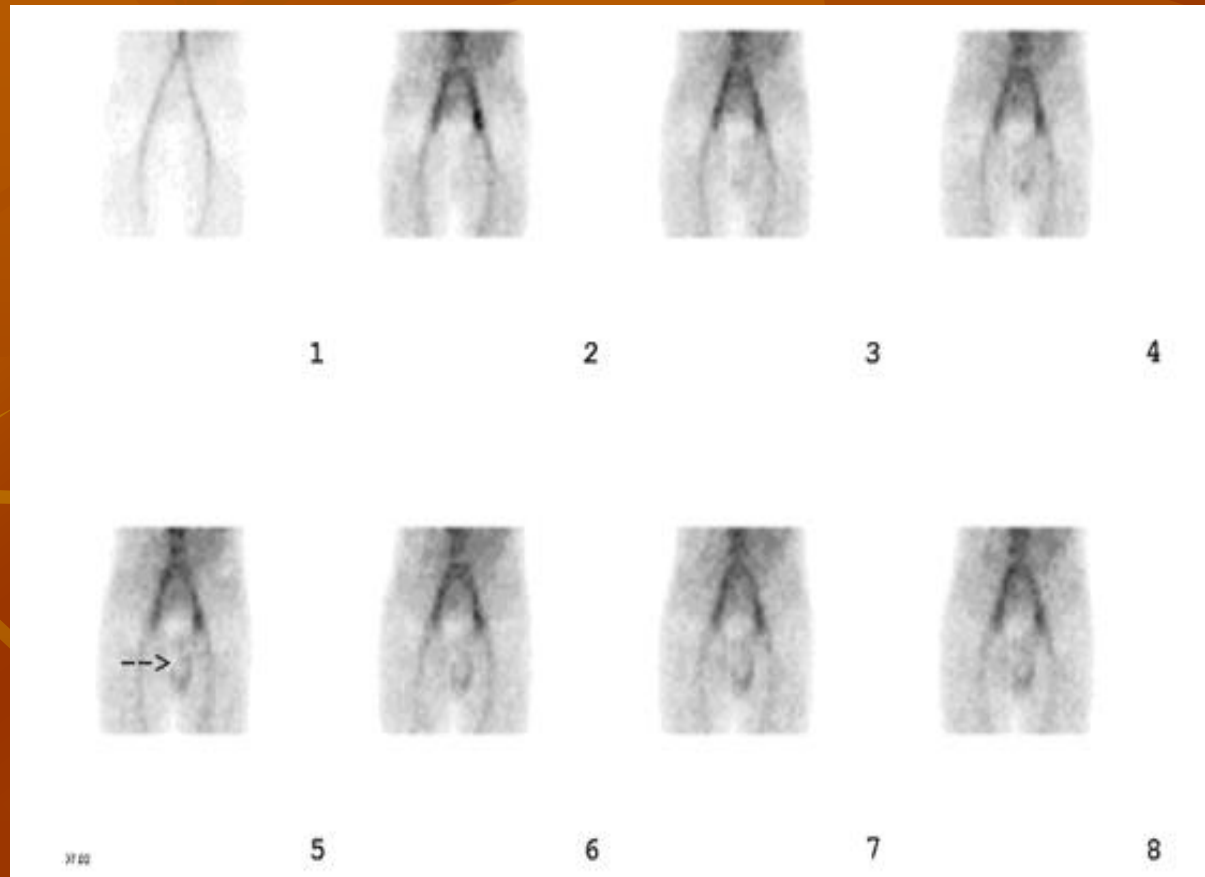


Scrotal scintigraphy

Missed torsion



TESTICULAR HEMATOMA



Lt.Epididymitis



Scrotal scintigraphy

Epididymitis

