

CT Urogram Split-Bolus

Updated 03/09/25

Reviewed 05/14/25

Indications - hematuria, renal/ureteral stones/calculi, nephrolithiasis, hydronephrosis, hydroureter, chronic urinary tract infection, urothelial malignancy.

Use this protocol on anyone under 50 years of age and on those who get frequent CTs.

GENERAL SCAN NOTES

Move the patient's arms over his/her head if possible. Remove any metal from the imaging field of view.

Topogram - lung bases through pubic symphysis (obtained during end inspiration).

Craniocaudal scan coverage - lung bases through pubic symphysis on both phases (obtained during end inspiration).

Adjust FOV (field of view) on topogram to smallest without cropping anatomy.

IV Contrast:

Administer weight-based **Omnipaque-300** - **1 mL/kg** up to **150 mL** (100 mL minimum).

Inject at **2.5 mL/sec** followed by 40 mL saline flush, 20-gauge or larger in forearm or more proximal.

Oral contrast:

Give patient 32 oz water 30 mins prior to imaging.

Tell patient not to use the restroom prior to scan. The bladder needs to be distended for the best study.

Split-Bolus Technique:

Inject patient with 1/3 IV contrast dose. **DO NOT SCAN PATIENT.**

About 3 mins after IV contrast, roll the patient three times to mix contrast within bladder.

After rolling the patient, inject the remaining 2/3 IV contrast dose.

90 seconds after start of second injection **SCAN PATIENT.**

For **GE scanners**, it is essential for the 1st recon thickness on the scanner to match the 1st recon thickness in this protocol book for the prescribed Noise Index to be valid. The 1st recon should generally be the thickest recon in the protocol.

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SIEMENS PARAMETERS & RECONS

For the **Pre Contrast** and **Split-Bolus** phases:

	Scan Mode	kV	mAs	Care Dose	Care kV & Lvl	Pitch	Acq	Coll	Rot Time	Scan Time
Sensation 16	spiral	120	200	on	NA	0.80	16	1.5	0.5	13.0
Go Up 32	spiral	130	92	on	on 145	0.80	32	0.7	0.8	22.3
Sensation 64	spiral	120	200	on	NA	1.20	24	1.2	0.5	7.2
Definition 64	spiral	120	180	on	off	0.60	64	0.6	0.5	21.7
Go Top 64	spiral	120	112	on	on 145	0.80	64	0.6	0.5	8.1
Drive 128	spiral	120	147	on	on	0.60	128	0.6	0.5	10.9
Force 192	spiral	120	147	on	on	0.60	192	0.6	0.5	7.2

PRE CONTRAST PHASE

Name of Series	Thick	Interval	Kernel	Window	IR Lvl	Recon Direction
AX PRE	3.0	3.0	Br40 / B41f	mediastinum	3	head/feet
COR PRE	3.0	3.0	Br40 / B41f	mediastinum	3	front/back

POST SPLIT-BOLUS PHASE

AX SPLIT	3.0	3.0	Br40 / B41f	mediastinum	3	head/feet
COR SPLIT	3.0	3.0	Br40 / B41f	mediastinum	3	front/back
SAG SPLIT	3.0	3.0	Br40 / B41f	mediastinum	3	left/right
COR SPLIT MIPS	5.0	3.0	Br40 / B41f	mediastinum	3	front/back
SAG SPLIT MIPS	5.0	3.0	Br40 / B41f	mediastinum	3	left/right

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GE PARAMETERS & RECONS

For the **Pre Contrast** and **Split-Bolus** phases:

	Scan Type	SFOV	kV	mA Range	Noise Index	Smart mA	Slice Thick	Beam Coll	Pitch	Speed	Rot Time	Dose Red	ASIR	Scan Time
LS 16	helical	large	120	50-440	16.36	on	2.5	20	1.375	27.50	0.6	NA	NA	10.9
Opt 540	helical	large	120	50-440	16.36	on	2.5	20	1.375	27.50	0.6	NA	NA	10.9
LS VCT 64	helical	large body	120	50-650	16.36	on	2.5	40	1.375	55.00	0.5	50	50	4.5
Disc VCT 64	helical	large body	120	50-650	16.36	on	2.5	40	1.375	55.00	0.5	NA	NA	4.5

PRE CONTRAST PHASE

Name of Series	Thickness	Interval	Recon Algorithm	Window Width/Level	Recon Direction
AX PRE	2.5	2.5	std full	400/40	head/feet
COR PRE	2.5	2.5	std full	400/40	front/back

Must be first recon.

POST SPLIT-BOLUS PHASE

AX SPLIT	2.5	2.5	std full	400/40	head/feet
COR SPLIT	2.5	2.5	std full	400/40	front/back
SAG SPLIT	2.5	2.5	std full	400/40	left/right
COR SPLIT MIPS	5.0	3.0	std full	400/40	front/back
SAG SPLIT MIPS	5.0	3.0	std full	400/40	left/right

Must be first recon.

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PHILIPS PARAMETERS & RECONS

For the **Pre Contrast** and **Split-Bolus** phases:

	Scan Mode	kV	Avg mAs	Dose Index	3D Dose	Pitch	Detect	Colli	Rot Time	Scan Time
Incisive 128	helical	120	115	20	on	1.00	64	0.625	0.75	5.6

PRE CONTRAST PHASE

Name of Series	Thick	Interval	Filter	Window	iDose	Recon Direction
AX PRE	3.0	3.0	B	mediastinum	3	head/feet
COR PRE	3.0	3.0	B	mediastinum	3	front/back

POST SPLIT-BOLUS PHASE

AX SPLIT	3.0	3.0	B	mediastinum	3	head/feet
COR SPLIT	3.0	3.0	B	mediastinum	3	front/back
SAG SPLIT	3.0	3.0	B	mediastinum	3	left/right
COR SPLIT MIPS	5.0	3.0	B	mediastinum	3	front/back
SAG SPLIT MIPS	5.0	3.0	B	mediastinum	3	left/right