



Imaging Redefined

VITAL

IMAGING Newsletter

**VITAL
IMAGING
Newsletter
Imaging
Redefined**

November 2004

**IT'S AMAZING
WHAT YOU CAN
SEE**

- DIGITAL X-RAY
- DIGITAL IVP
- DIGITAL HSG
- PORTABLE DIGITAL X-RAY
- MULTISLICE CT SCAN
- SONOGRAPHY
- COLOR DOPPLER
- PATHOLOGY

**VITAL IMAGING
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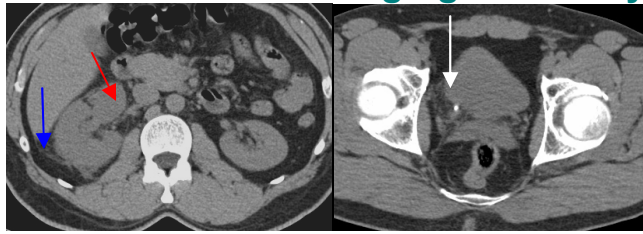
vitalimaging@yahoo.com

8:30A.M. – 8:30P.M.

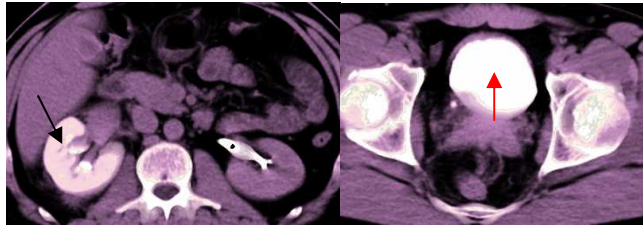
**24 HRS
EMERGENCY
SERVICE
AVAILABLE**

For more information, or
for any questions or
concerns, please do call
us.

**MULTISLICE Non-Contrast CT IVP / CT KUB
State-Of-The-Art Imaging of Urinary Calculi**



Non-Contrast Transverse Image showing a 6 mm sized calculus (white arrow) in the region of the right uretero-vesical junction with PCS dilatation (red arrow) and perinephric fat stranding (blue arrow).



Post-Contrast Delayed Images showing a dilated PCS and delayed nephrogram & excretion of contrast (black arrow) & contrast in the bladder (red arrow).

What is Multislice CT IVP ?

Multislice CT Imaging of the urinary tract, when properly performed, allows for rapid detection of urinary calculi, including renal, ureteral, and bladder calculi.

Non-Contrast CT IVP is significantly better than Routine IVP for acute renal colic.

Curved Reformatted Images allow for **3D Multiplanar** visualization of the ureters, especially when dilated due to obstruction. This is performed on an **Advanced 3D Workstation** to produce **"IVP-like"** coronal sections depicting the course of the ureters as shown above.

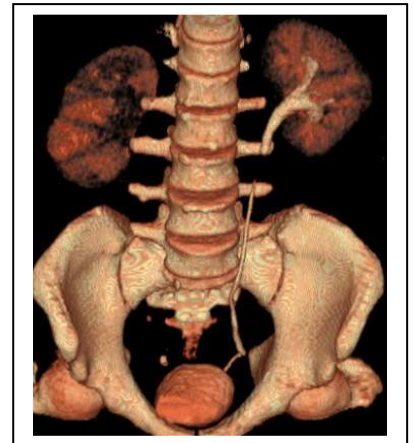
Contrast CT IVP is sometimes required to assess the function of the kidneys.

How is the Study performed ?

At **VITAL IMAGING**, we obtain a thin spiral set of high-resolution (3 mm) non-contrast images through the urinary tract. This invariably suffices to look for any calculi. However if a renal mass, infective lesion or function of kidney needs to be seen than a Contrast CT is required, for which an immediate post-contrast phase and a delayed phase is obtained which also allows for distinction between ureteral stones and arterial calcifications & phleboliths.

What is the accuracy of CT IVP compared to Routine IVP for detection of urinary calculi?

CT IVP is much more accurate and much faster than IVP and should be the modality of choice for detection of urinary calculi.



Upper Image is a **3D Color Coronal VRT** clearly showing obstruction in the right kidney with delayed function and calculus at the uretero-vesical junction.

Points To Remember:

Non-Contrast CT IVP:

A ONE-STOP SHOP FOR ACUTE RENAL COLIC

Non-Contrast CT IVP is significantly better than IVP for urinary calculi and evaluation of urinary obstruction.

Contrast CT IVP may be required to assess the function of kidneys, mass lesions & infection.

Advantages of Non-Contrast CT IVP over Routine IVP

- Faster (just 30 sec)
- Most sensitive (mm sized calculus is visible)
- No bowel preparation required
- No fasting required.
- Acute appendicitis, the closest differential is also ruled out simultaneously.
- Economical.

CT is Best for Evaluating Patients with Microhematuria (1)

One of the most significant developments in the evaluation of renal colic has been the use of unenhanced spiral CT for the detection of urinary calculi and the evaluation of urinary obstruction. (3)

Diagnosing Urinary Tract Stones: Non-Contrast Spiral CT vs. IVP

When **Non-Contrast Spiral CT** is readily available, the amount of time required to evaluate patients in the emergency department is actually reduced and potential contrast complications that may occur with conventional radiologic imaging is avoided. Chang comments that **when Spiral CT is available, it is the imaging study of choice for flank pain and presumed diagnoses of urinary tract stones.** (2, 4)

In addition, unenhanced helical CT can detect radiolucent stones that would not be detected on plain radiographs (5)

REFERENCES:

- (1) Gray Sears CL, et al. Prospective comparison of computerized tomography and excretory urography in the initial evaluation of asymptomatic microhematuria. J Urol December 2002; 168:2457-60.
- (2) Worster A, et al. The accuracy of noncontrast helical computed tomography versus intravenous pyelography in the diagnosis of suspected acute urolithiasis: a meta-analysis. Ann Emerg Med September 2002; 40:280-6, and Chang S. What is the best test to diagnose urinary tract stones? [Clinical Commentary] J Fam Pract August 2001 50; 8:657-8.
- (3) Dalrymple NC, Verga M, Anderson KR et al. The value of unenhanced helical computerized tomography in the management of acute flank pain. J Urol. 1998 Mar; 159(3): 735-40.
- (4) Lanoue MZ, Mindell HJ. The use of unenhanced helical CT to evaluate suspected renal colic. AJR Am J Roentgenol. 1997 Dec; 169(6): 1579-84.
- (5) Preminger GM, Vieweg MD, Leder RA, et al. Urolithiasis: detection and management with unenhanced spiral CT—a urologic perspective. Radiology. 1998 May; 207(2): 308-9.