# Introduction

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Obstructive uropathy is a relatively common entity that is treatable and often reversible. It occurs at all ages from infancy to elderly subjects and result from functional or structural impedance to the flow of urine anywhere along the urinary tract. Unidentified and untreated obstructive uropathy can lead to hydronephrosis, which is dilation of the renal pelvis and calyces resulting from obstruction to flow of urine. The damage caused by these conditions often leads to obstructive nephropathy, that is, damage to the renal parenchyma. All three of the terms are interrelated and collectively contribute to a decrease in renal function ***(Palmieri, 2002)***.

For may years excretory urography was the investigation of choice for imaging patients with urinary tract obstruction. Functional and anatomic details are provided by this imaging technique. The use of ionizing radiation, contrast material, inability to visualize radiolucent stones and the possible obscuring of small stones by superimposed bowel and bony structures are the major drawbacks of excretory urography ***(El-Diasty et al, 2003)***.

Several conditions can preclude the use of excretory urography including severe renal failure, pregnancy, inability to co-operate (mainly children), cases with severe cardiac disease, multiple myeloma, sickle cell anemia, polycythemia, pheochromocytoma and cases refusing iodinated contrast injection ***(Sudah et al, 2001)***.

Given the relatively low cost and quick performance times, ultrasonography has become one of the most important tools for assessing urinary tract obstruction. Ultrasonography does not require intravenous contrast and does not use ionizing radiation. In addition, there are no known side effects caused by this test ***(Palmieri, 2002)***.

However, the level of obstruction is often difficult to be determined by ultrasonography because of overlying bowel gas and dilatation may not be seen early in acute cases ***(Jung et al, 2000).***

In the past decade, computed tomography (CT) has challenged excretory urography in the evaluation of the genitourinary system. CT is well established as being more sensitive and specific in the detection and characterization of the specific cause of the obstruction. Studies have shown helical CT to be superior to radiography and excretory urography for the detection of renal and ureteral calculi (***Caoili et al, 2002***).

However, acute and chronic obstruction are difficult to be differentiated by CT and the radiation dose may preclude use of this technique in pregnant ***(Sudah et al, 2002).***

MR urography has become an integral part of the recently emerging advances that involve clinical uroradiology. It is new non invasive tool of good diagnostic value that can be used to image all kinds of urinary tract disorders in adults and pediatric patients. It does not require ionizing radiation or iodinated contrast material and provide an alternative to invasive urinary tract imaging techniques ***(Nolte-Ernsting et al, 2003).***

The RARE (rapid acquisition with relaxation enhancement) sequence technique initially described by ***Hennig et al, 1986*** and by ***Hennig & Friedburg, 1988*** was the first approach to visualize the urinary tract by means of MR imaging. Then, heavily T2-weighted fast spin echo sequence originated from the development of the RARE technique ***(Nolte-Ernsting et al, 2003).***

HASTE technique (half-fourier acquisition single-shot turbo spin-echo) uses modified rapid acquisition with relaxation enhancement to obtain heavily T2-weighted images in a short time making it suitable for patients unable to cooperate, especially children, older patients, and patients in deteriorated condition ***(Nolte-Ernsting et al, 2003).***

T1-weighted Gadolinium enhanced MRU technique provided excellent depiction of the nondilated urinary tract which is invisible or incompletely visualized by T2 Weighted MRU ***(El-Diasty et al, 2003)***.