

# ASSESSING THE INFLUENCE OF BLADDER FULLNESS FOR THE DETECTION OF URINARY TRACT OBSTRUCTION IN DYNAMIC RENAL SCINTIGRAPHY

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### OBJECTIVE

To investigate the influence of bladder fullness on the diagnosis of urinary tract obstruction during dynamic renal scintigraphy with a diuretic stimulator.

### MATERIAL AND METHODS

162 renal units in 89 patients (27 females and 62 males) with ultrasonic diagnosis of hydronephrosis and PUJ obstruction were prospectively investigated through MAG-3 scan during the period from August – November 2019. We compared the proportional elimination of the radiopharmaceutical 99mTc-MAG-3 from the kidneys before and after bladder emptying in post-diuretic images, classifying each image as representing completely obstructed and unobstructed kidney. The data analyzed by statistical computer software (SPSS version 20) using Pearson correlation test and cutoff value  $\leq 30\%$  percentage difference considered for obstructive units analyzed through ROC curve. P value  $< 0.05$  was considered statistically significant.

### RESULT

Positive correlation found between pre and post void counts, significant at the level of  $< 0.01$  (Fig. A and Fig. B). From 162 renal units, 73 units were cleared; remaining 89 units were further analyzed with full

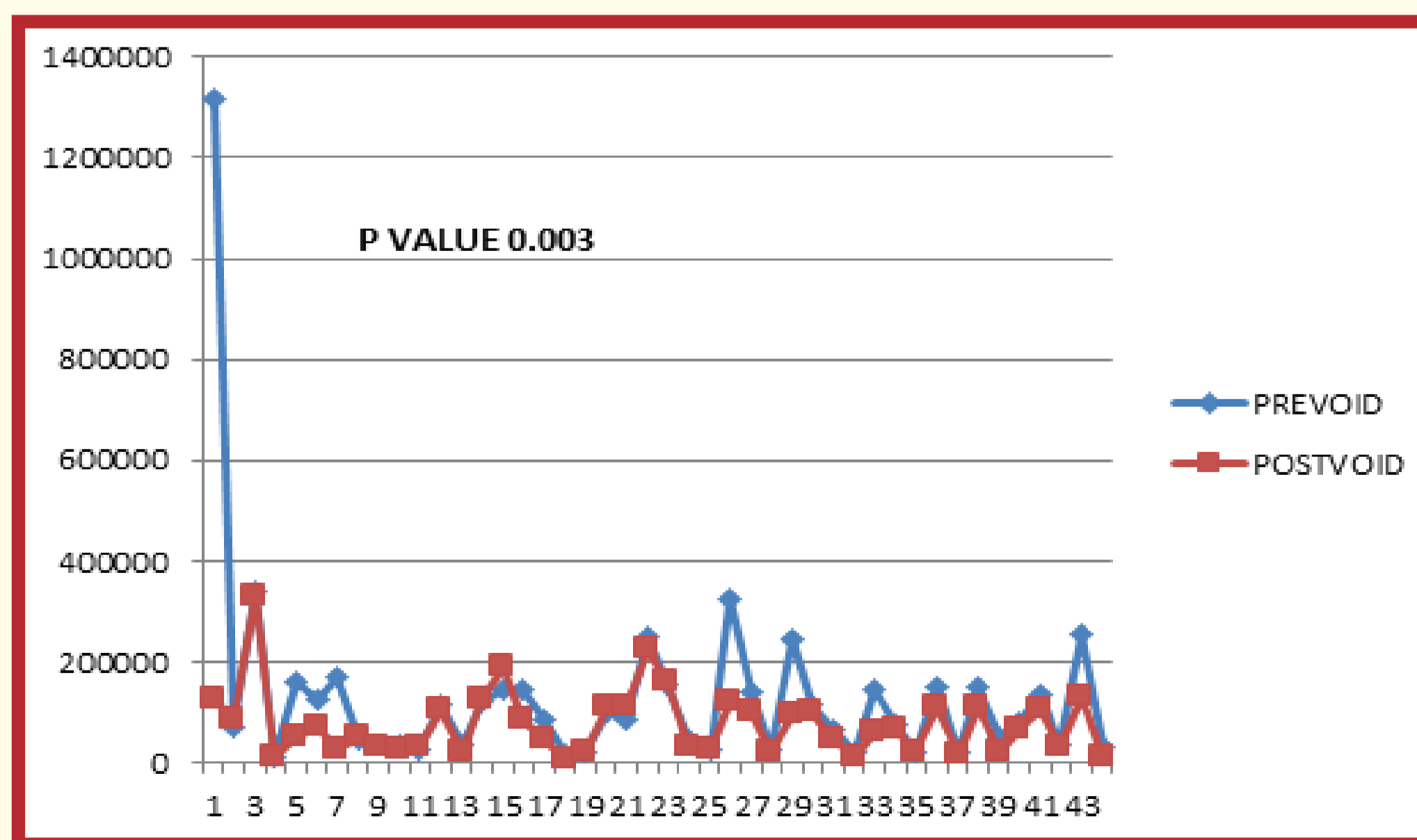


FIGURE A: CORRELATION BETWEEN PRE AND POSTVOID OF COMPLETE OBSTRUCTIVE UNITS

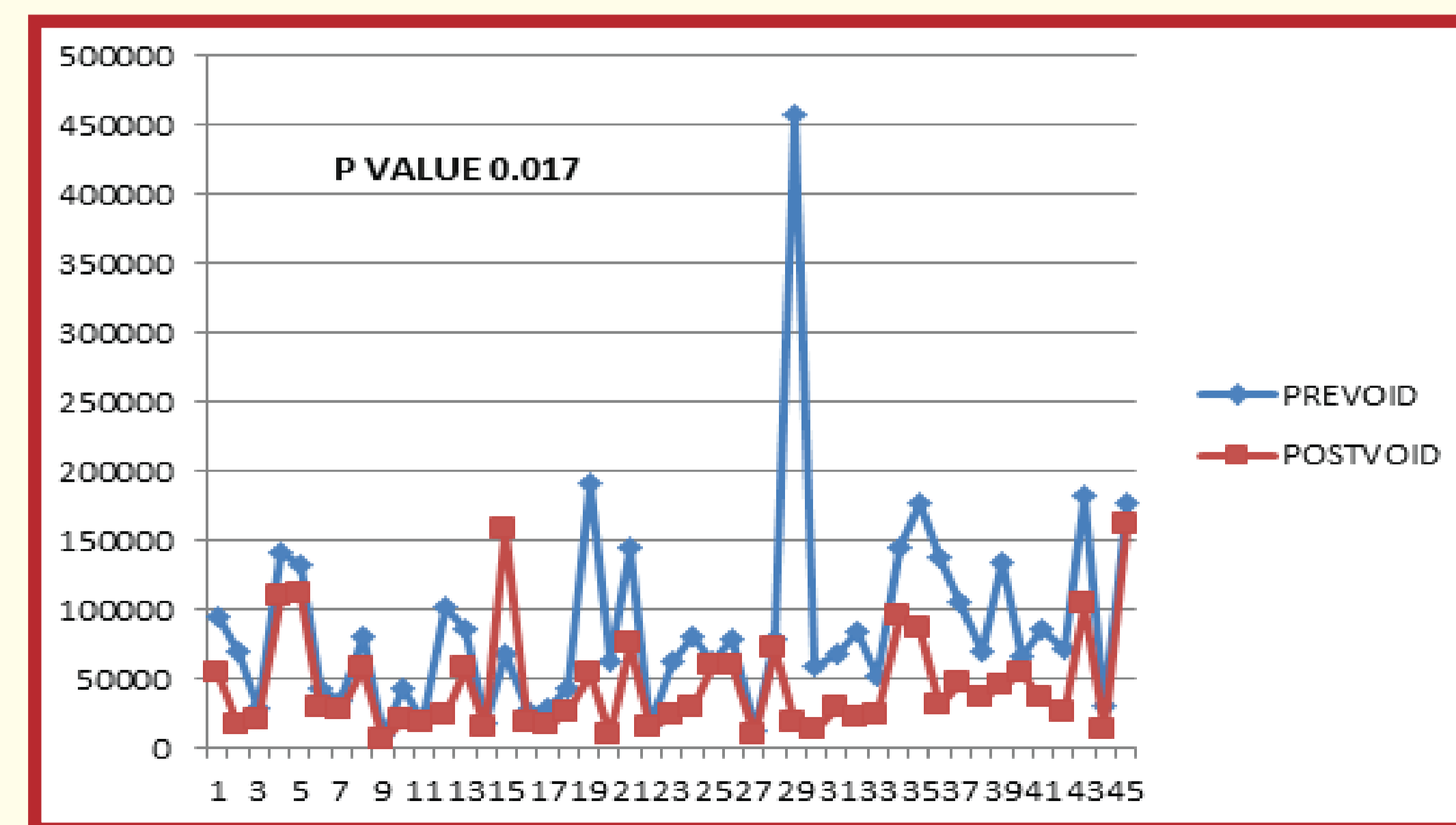


FIGURE B: CORRELATION BETWEEN PRE AND POSTVOID OF PARTIAL OBSTRUCTIVE UNITS

bladder and categorized into two groups as completely obstructed units (49%) and partially obstructed units (51%) (Table A). Out of completely obstructed units, 29 units remained obstructed and 15 units were cleared in post-void. Whereas, 15 units persisted as partially obstructed and 30 units were found to be unobstructed after voiding in partially obstructed units (Fig C). The mean percentage difference of pre and post void counts was  $30.56 \pm 31.571$ .

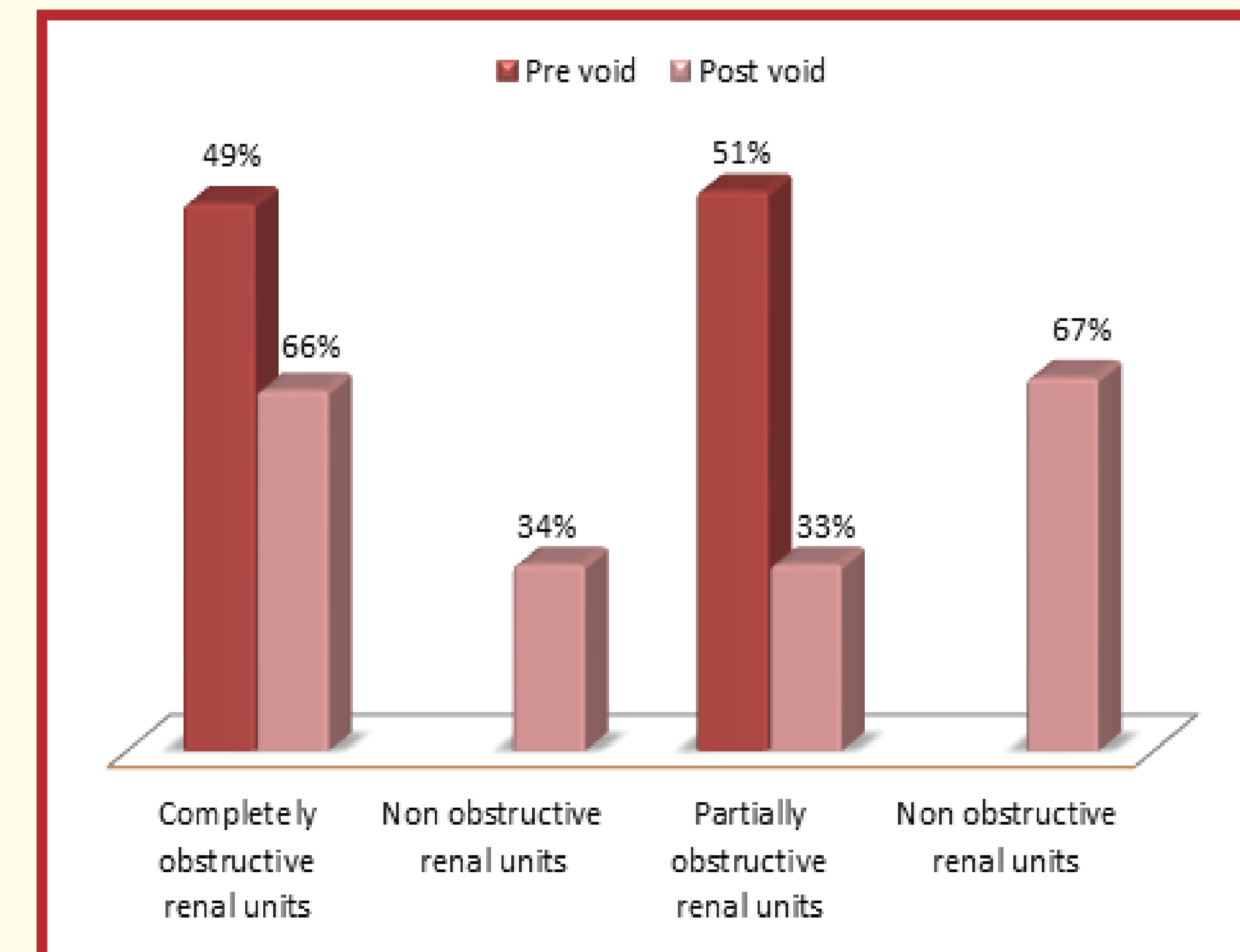


FIGURE C: COMPARING PRE AND POST VOID OF COMPLETELY AND PARTIALLY OBSTRUCTIVE RENAL UNITS

Table A: Descriptive analysis of Pre and Post Void Counts

	Number of Renal Units	Mean	Std. Deviation
PRE-VOID	89	109279.44	151586.604
POST-VOID	89	60243.33	55000.149
%DIFFERENCE	89	30.56	31.571
PRE-VOID Completely Obstructive	44	130930.02	201002.234
POST-VOID Completely Obstructive	44	75842.23	65210.029
PRE-VOID Partially Obstructive	45	88109.98	74473.116
POST-VOID Partially Obstructive	45	44991.07	37591.021

### CONCLUSION

In MAG-3 scan, post void images are necessary to obtain, in order to perform a reliable analysis of the proportional excretion of 99mTc-MAG-3 from the kidneys, avoiding possible false positive results for detection of urinary tract obstruction.