

## **Kidney Stone Disease**

## **PERCUTANEOUS NEPHROLITHOTOMY UNDER CONSCIOUS SEDATION IN MORBIDLY OBESE PATIENTS**

*Kanaroglou A, Razvi H*

**ABSTRACT:** Two morbidly obese males weighing 159 kg and 184 kg underwent percutaneous nephrolithotomy (PCNL) for large, symptomatic renal stones. To avoid anesthetic complications and cardiorespiratory compromise in the prone position, the procedures were performed under IV sedation with local anesthesia. The risks of PCNL in this patient population are reviewed, and the technique employed to mitigate the risks in these two cases is described.

## **IS BMD MONITORING NEEDED IN STONE PATIENTS?**

*Chawla A, Matsumoto ED*

**ABSTRACT:** The majority of patients with renal stone disease have a metabolic disorder that could result in decreased bone mass. Through careful assessment of patient-specific risk factors, it is possible to determine which patients are at greatest risk for BMD loss. By regularly monitoring these patients, physicians can help to minimize the risk of bone fractures.

## **CORRELATION OF CT SCAN VERSUS PLAIN RADIOGRAPHY FOR MEASURING URINARY STONE DIMENSIONS**

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**PURPOSE:** To correlate the measured dimensions of urinary stones from spiral non-contrast computerized tomography (CT) with that of plain radiography (KUB).

**METHODS:** The transverse diameter as reported on CT was compared to the measured transverse diameter on KUB for 61 stones. The transverse and craniocaudal dimensions on CT were then re-measured for 30 urinary stones and again compared to the re-measured values for KUB. The craniocaudal dimension on CT was determined by measuring the stone on reconstructed coronal CT images. Measurements between imaging modalities were blinded and performed consecutively by a dedicated investigator.

**RESULTS:** The mean transverse size of the stones on the initial CT report was 6.0 mm +/- 2.8 mm versus 5.6 mm +/- 2.3 mm on KUB (paired t-test,  $p = 0.05$ , 95% CI difference between the means -1.3 to 0.5). The stones were categorized in transverse size ranges of 1.0 mm to 5.0 mm, > 5.0 mm to 10.0 mm, and > 10.0 mm. A total of 14 stones failed to be put into the same size categories by the two methods. The largest difference in measurements was 5 mm. In the second analysis, where the CT dimensions were re-measured, the mean transverse dimension on CT was 4.5 mm +/- 2.1 mm versus 4.7 mm +/- 2.0 mm on plain radiography (paired t-test,  $p = 0.06$ , 95% CI difference between the means -0.02 to 0.6). Mean craniocaudal dimension of the stones on CT was 7.4 mm +/- 3.2 mm versus 6.0 mm +/- 2.7 mm on plain radiography (paired t-test,  $p = 0.0001$ , 95% CI between the means -2.0 to -0.9). When the stones were categorized in transverse size ranges of 1.0 mm to 5.0 mm, >5.0mm to 10.0mm, and >10.0mm, CT and KUB agreed for 30/30 stones.

**CONCLUSIONS:** In this study, the initially reported CT transverse values were found to be significantly different from measured KUB values; moreover, large differences of up to 5 mm were found between the measurements. With fastidious measurement of stone dimensions on both CT and KUB, we found that the transverse dimension of stones measured by the two imaging modalities were similar. The craniocaudal measurements of the stones were found to be significantly different on CT versus KUB, with CT measurement being 1.4 mm larger on average.

## **EFFECT OF HIGH AND LOW CALCIUM DIET DURING LIBERAL OXALATE INTAKE: IMPACT ON URINARY OXALATE**

*Matsumoto ED, Heller H, Brinkley L, Huet B, Pak CY, Pearle MS*

**PURPOSE:** Recent studies suggest that a high calcium diet protects against calcium oxalate stone formation. We compared the effect of high and low calcium diets on urinary saturation of calcium oxalate during liberal oxalate intake.

**MATERIALS AND METHOD:** A total of 10 healthy subjects (5 male, 5 female) participated in a 2-phase, randomized, crossover study comparing high (1,000 mg daily) and low (400 mg daily) calcium intake on a liberal oxalate diet (200 mg daily). During each phase subjects adhered to an instructed diet for 3 days followed by a controlled, metabolic diet for 4 days. Blood and 24-hour urine specimens collected on the last 2 days of each phase were analyzed for serum biochemistry studies and stone risk factors, respectively.

**RESULTS:** Urinary calcium was higher (mean  $\pm$  SD  $171 \pm 64$  vs  $124 \pm 49$  mg daily,  $p = 0.002$ ) and oxalate was lower ( $25 \pm 4.8$  vs  $27 \pm 4$  mg daily,  $p = 0.02$ ) on the high vs low calcium diet. Overall, the urinary relative saturation ratio of calcium oxalate was higher on the high compared with the low calcium diet (3.3 vs 2.5,  $p < 0.0001$ ) even after adjusting for confounding variables.

**CONCLUSIONS:** In normal subjects urinary saturation of calcium oxalate was higher on a high calcium diet than a low calcium diet during liberal oxalate intake because the decrease in urinary oxalate did not overcome the effect of increased calcium. A high calcium diet during liberal oxalate intake may pose an increased risk of calcium oxalate stone formation.