

# Assessment of Urinary Stone Chemical Compositions and Prevalence of Metabolic Disorders among Urolithiasis Patients in Northern Sri Lanka: A Prospective Study

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**Introduction:** Urolithiasis, a prevalent urological condition (8-13% globally) exhibits regional variations, influenced by water quality, climate, health factors and diet. Sri Lanka with its tropical climate and dietary patterns is part of the "Stone Belt" of Asia. This study in Northern Sri Lanka examines urinary stone compositions and assesses the prevalence of metabolic disorders among urolithiasis patients.

**Methods:** This prospective cross-sectional study, conducted at tertiary urology centre from July 2022 to June 2023, focused on surgically treated urolithiasis patients. Institutional ethical clearance was obtained. Patient details and investigational findings were collected through questionnaires and data extraction forms. Stone analysis utilized Fourier transform infrared spectroscopy and detailed metabolic evaluation of 24-hour urine collection sample is carried out.

**Results:** This study followed 153 surgically treated urolithiasis patients, primarily male (64.3%), mean age 48.64. Ureteric colic (48.4%) was common, with kidney stones (45.8%) prevalent; 57.52% had recurrent stones. Diabetes mellitus (DM=23.5%) was the top comorbidity. Calcium oxalate monohydrate (COM) stones (78.4%) were most frequent, followed by uric acid (12.4%). COM predominated in 40-59 age group. No significant gender-stone type association. 86.9% had metabolic abnormalities, notably hypocitraturia (60.1%). 23% had both hypocitraturia and hypomagnesuria. Some metabolic disorders showed gender differences, with a marginal age-metabolic disorders association ( $p < 0.061$ ). Urine oxalate levels were normal with higher variability in males.

**Conclusion:** Middle-aged males with urolithiasis commonly presented with ureteric colic and predominantly had calcium oxalate monohydrate stones. Recurrent stones were common, often accompanied by metabolic abnormalities such as hypocitraturia and hypomagnesuria, with diabetes mellitus as the primary comorbidity.

**Keywords:** Analysis , Calcium Oxalate , Sri Lanka , Urolithiasis

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