Introduction & Objectives: Stone size is a very important factor in determining the outcome of the treatment and follow-up in urolithiasis and so an accurate measurement of the actual stone size is desired. Though Computed Tomography (CT) is the imaging modality of choice in urolithiasis patients, Ultrasound (US) is still the preferred first-line imaging in the evaluation and follow-up in urolithiasis. But previous research has demonstrated that the US tends to overestimate the stone size and that there exists a need to study and develop additional tools, especially in the US, that will help in a more accurate estimation of the stone size. In comparison with the direct measurement of stone size on ultrasound, the posterior acoustic shadow (PAS) width has been speculated as a more accurate measurement of the stone size in urolithiasis. There are hardly a few studies to substantiate this. So, research was done to study the stone size measured directly in the US and the size of the posterior acoustic shadow width, and to compare these with the stone size measured in CT in urolithiasis patients.

Materials & Methods: After getting approval from our Institutional Ethics Committee, a total of 100 adult patients (more than 18 years of age) who had a confirmed diagnosis of urolithiasis [Renal Pelvic calculus, Renal Calculus, Renal PUJ (Pelviureteric Junction), and UVJ (Ureterovesical Junction) calculus] in CT were studied. The stone size measured in the CT was then compared with the size measured in the US directly and the PAS width.

Results: The Average stone size was 15.90 +/- 5.08 mm on CT, 18.66 +/- 5.38 mm on USG, and 16.65 +/-5.13 mm by PAS shadow width. The mean difference between CT Size and USG Size was 2.67 +/- 1.5 mm and SE was 0.860 (P = 0.0016). Hence the overestimation of the stone size by USG in comparison with CT was statistically significant. In contrast, the Mean difference between CT Size and PAS Size was 0.75 +/- 0.8 mm and SE was 0.839, which was not statistically significant (P = 0.3686). It was also found that the miscalculation of the stone size by the US was 33.76% whereas it is 12.1% in PAS width. Further, the major miscalculation in the US was in the size between 10 - 20mm (47.1%) but in PAS width it was in the size of more than 20mm (18.2%).

Conclusions: From our study, it can be concluded that the US overestimates stone size significantly in comparison with CT whereas, the measurement of the posterior acoustic shadow width gives a more accurate estimation of the true stone size than the direct stone measurement in the US. Hence PAS width can be routinely incorporated in US reports as it is a more reliable measurement of the actual stone size, and this will help in the management and follow-up in patients with urolithiasis.