

HOW TO ASSESS MAXIMUM VOIDED VOLUME: COMPARISON OF MAXIMUM VOIDED VOLUME OBTAINED DURING UROFLOW TO MAXIMUM VOIDED VOLUME OBTAINED BY FREQUENCY VOLUME CHART

Hypothesis / aims of study

Urinary flow rate (Q) is one the most important yardsticks by which lower urinary tract symptoms (LUTS) are assessed and it has been well documented that Q_{max} is dependent upon voided volume. Maximum voided volume (MVV) is another useful metric of LUTS. Most urologists ask their patients to wait to void until they feel a full bladder prior to obtaining Q; so, by proxy, measurement of uroflow voided volume (QVV) has been used as a measure of MVV. The purpose of this study is to compare QVV to MVV obtained by a 24 hour bladder diary (24hMVV).

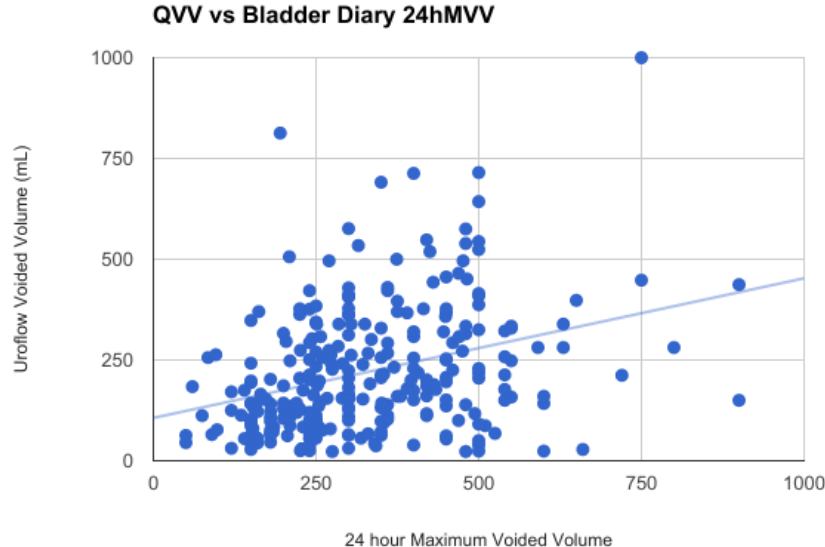
Study design, materials and methods

This is a retrospective study of patients evaluated for lower urinary tract symptoms (LUTS) who completed a 24h bladder diary and urinary flow rate. When multiple diaries were completed, the earliest was used. The 24hMVV was collected from diary data. A contemporaneous QVV was collected per patient after they were instructed to drink until their bladder felt full. Bladder diaries with no uroflow between 3 months prior to and 1 month after the diary were excluded. Spearman's correlation was calculated between the QVV and 24hMVV data.

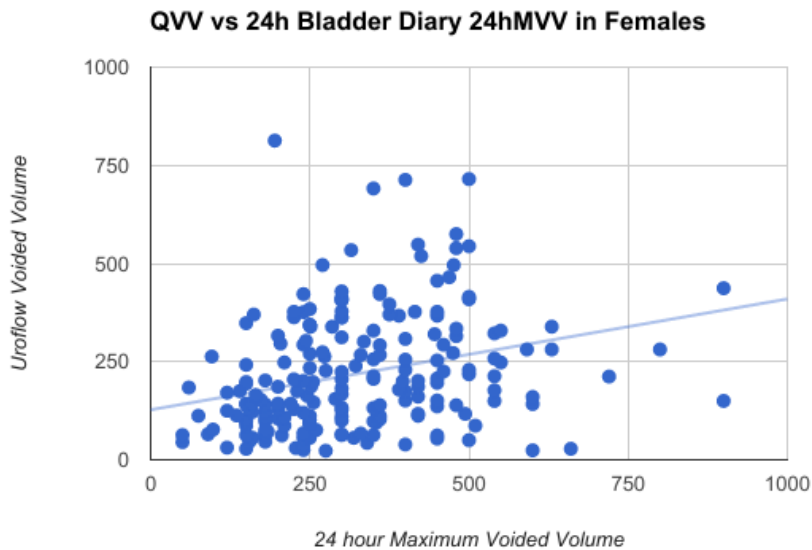
Results

643 patients, ages 20-94 (average 57, SD 17) completed bladder diaries. Of these, 272 patients, 67 men and 205 women, have uroflow data inputted to date. Data for all patients are shown in plot 1. The Spearman's r was 0.35 ($p = 0.001$). On average, the 24hMVV was 109 mL (SD 177) greater than the QVV. For the female patients the Spearman's r was 0.354 ($p=0.001$) and the average 24hMVV was 104 mL (SD 180) greater than the QVV (Plot 2). For the Male patients the Spearman's r was 0.341 ($p=0.005$) and the average 24hMVV was 127 mL (SD 168) greater than the QVV (Plot 3).

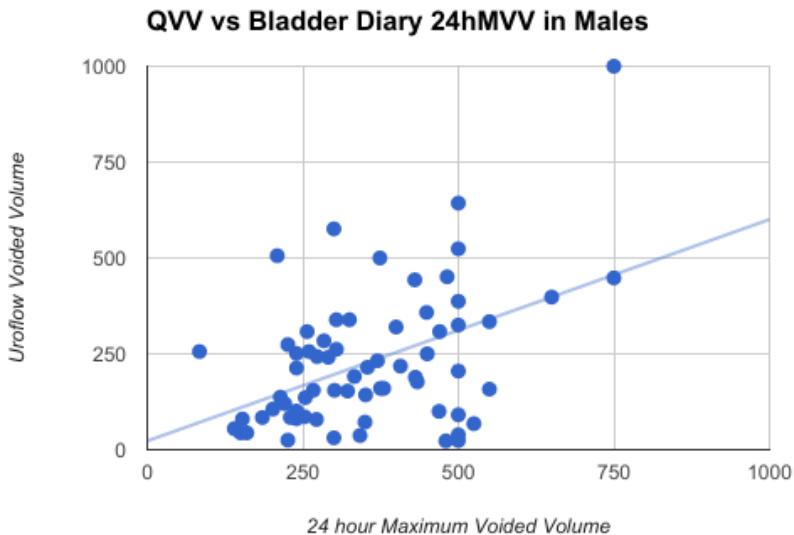
Plot 1: Scatterplot of bladder diary 24hMVV vs. QVV (n=272)



Plot 2: Scatterplot of bladder diary 24hMVV vs. QVV in females (n=205)



Plot 3: Scatterplot of bladder diary 24hMVV vs. QVV in males (n=67)



Interpretation of results

There was only a weak correlation between QVV and 24hMVV in both sexes. For best accuracy, MVV should be assessed by both a frequency volume chart and uroflow.

Concluding message

MVV is best assessed by comparing both uroflow and frequency volume chart data. Relying on only one of these measures can underestimate MVV by as much as 500% or more in women and 100% or more in men.

On average, the MVV obtained by frequency volume chart was over 100 mL greater than that obtained by uroflow data.

Disclosures

Funding: Institute for Bladder and Prostate Research **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** Western IRB approved **Helsinki:** Yes **Informed Consent:** No