

COMPARISON OF WATER AND AIR-CHARGED TRANSDUCER CATHETERS DURING VOIDING PRESSURE STUDIES

Hypothesis / aims of study

Water – perfused (WP) catheters and Air-Charged catheters (AC) during voiding pressure studies should work similarly within the bladder during the voiding phase of Urodynamics. We believe that a single, dual functioning catheter, and the same experienced clinician throughout the study will provide analogous point pressures for the voiding pressure study in both AC and WP catheters when analysed

Study design, materials and methods

The primary objective of this study is to demonstrate the reproducibility of AC versus WP catheters when measuring pressures during the voiding pressure studies in urodynamics (UDS).

This IRB approved prospective study included women above the age of 21 with complaints of lower urinary tract symptoms who needed UDS as part of their diagnostic work-up. A commercially available AC catheter was utilized to form a dual catheter to simultaneously read water and air pressures within the bladder 1cm apart . The water-filling channel serves both as a bladder filler and water pressure sensor to an external transducer on a Laborie urodynamics machine. A comparative analysis was performed on the maximum peak pressures during the voiding pressure study (VPS).

Results

Forty women with a mean age of 57 years were recruited. N=30 as several patients were unable to void, catheter fell out, or water perfusion pressures stopped working. Significant correlations were observed between AC and WP catheter pressures during the VPS at max pressure as shown in Figures 1 and 2. Trendline equations comparing AC and WP measurements during VPS showed a high correlation (average R²=0.99). Visual impression of the two overlying measurement methods show virtually identical tracings in Figure 3. The voiding pressure portion of the CMG showed a high correlation.

Figure1

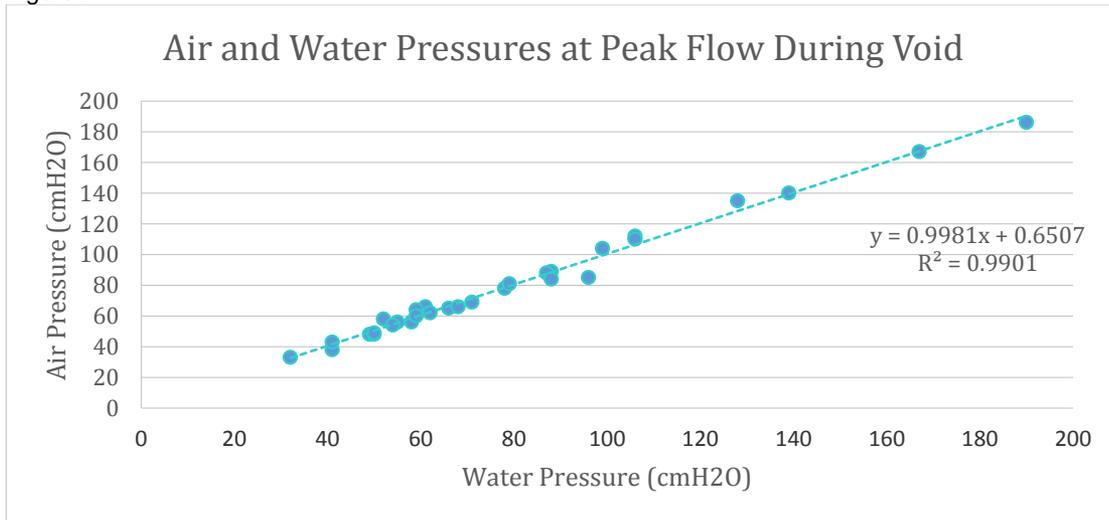


Figure2

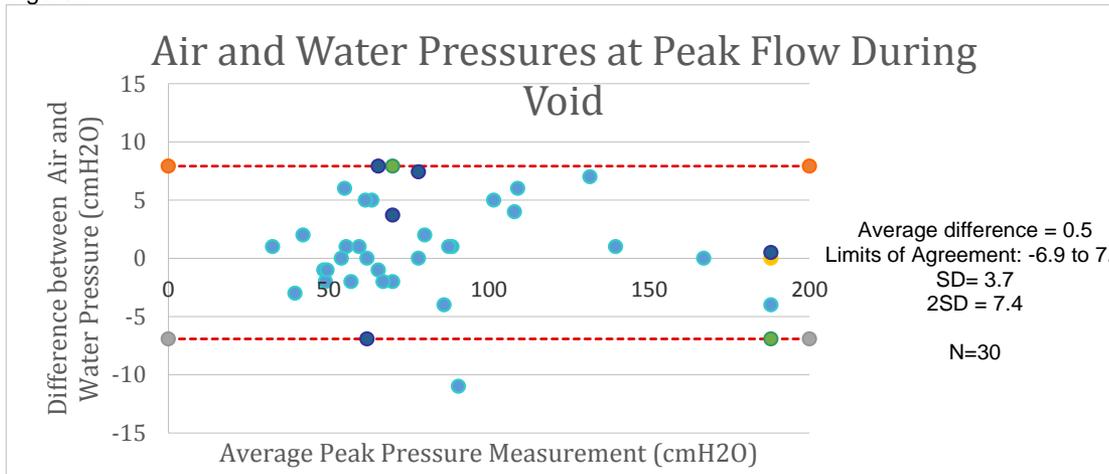
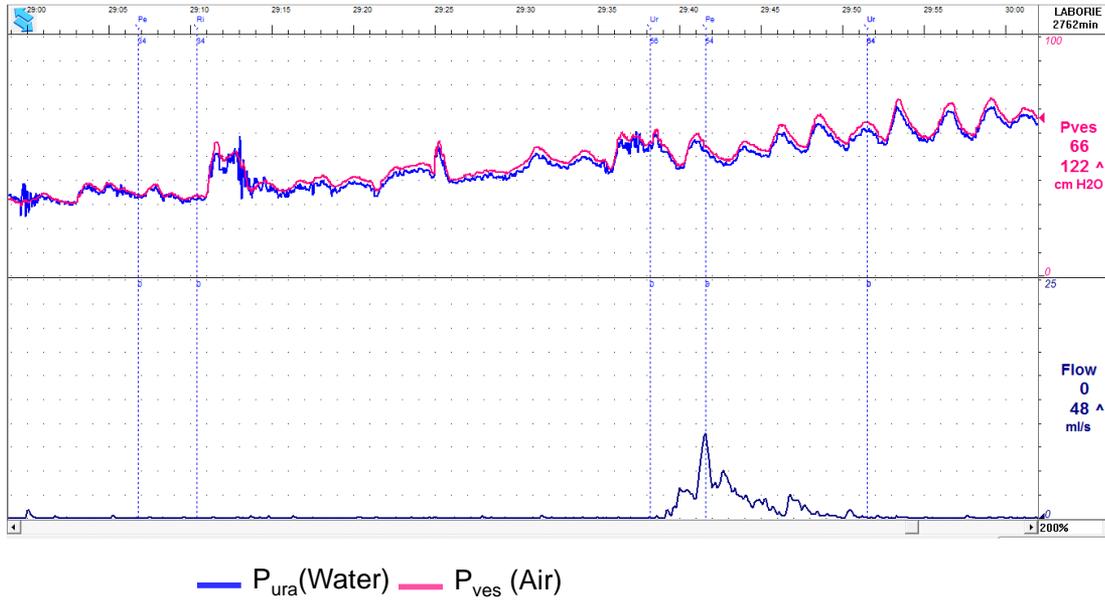


Figure 3.

Sample graph showing P_{ves} (air) and P_{ura} -water during a Void Pressure Study



Interpretation of results:

Both air charged catheters and water perfused catheters are comparable in their pressure readings during maximum pressure during a voiding pressure study. This correlates well with the Cleveland Clinics engineering data on the comparison of air and water technologies (1)

Concluding message:

Voiding Pressure studies are comparable whether using Air or water perfusion catheters.

Disclosures

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