

VALIDATION OF SIMULTANEOUS ABDOMINAL PRESSURE MEASUREMENT USING RECTAL AND NASOGASTRIC SENSORS IN URODYNAMICS

Hypothesis / aims of study

Rectal transducer is the standard for abdominal pressure (Pabd) measurement in urodynamics (UDS). Lax anal sphincter tone in patients with neurogenic bladders makes accurate Pabd recording unreliable. Anecdotal case reports of intravaginal sensors exist. We validated a novel nasogastric (NG) abdominal sensor for Pabd measurement in urodynamics.

Study design, materials and methods

This study was performed in a referral UDS unit of a tertiary care urological centre in South India from February 2016 to February 2017. For this purpose, we placed a NG Pabd sensor in addition to the conventional rectal Pabd sensor, using the urethral profile pressure channel of an Andromeda Ellipse UDS suite and performed UDS in the standard fashion.

Results

We performed 71 UDS using simultaneous NG and rectal Pabd sensors. The mean (\pm SD) age was 44.46 (\pm 19.02) (range: 7 – 69) years and 54 (76.1%) were males. The indications were neurogenic bladder in 32 (45.1%), urinary retention in 20 (28.2%), urinary incontinence in 11 (15.5%) and stress incontinence in 8 (11.2%). NG Pabd calibration initially and throughout the study was similar to that of rectal Pabd sensor. Pearson correlation done between NG and rectal Pabd measurements at initial cough ($r=0.913$), Valsalva ($r=0.898$), midcystometric capacity ($r=0.855$) and end filling stage ($r=0.777$) of filling phase and during voiding phase ($r=0.998$) showed good correlation ($p<0.001$). Bland Altman plot analysis showed that mean bias and limits of agreement (Mean difference; 95% CI) between NG Pabd and rectal Pabd values at initial cough (2.11; -0.04 to 4.26), Valsalva (-1.41;-4.68 to 1.87), midcystometric capacity (0.17;-1.42 to 1.75) and end filling stage (1.54;-1.32 to 4.39) of filling phase and during voiding phase (0.05;-0.54 to 0.64) included the line of equality thus showing good agreement. It was possible to make definitive urodynamic diagnosis in all patients using NG Pabd sensor similar to that of rectal Pabd sensor.

Interpretation of results

Our results show that Pabd measurements using NG transducer is accurate when compared to that measured by rectal Pabd transducer. It was checked at various stages of the filling phase and voiding phase.

Concluding message

The Pabd measurement done using NG tube is accurate when compared to that measured by the standard rectal transducer and hence NG Pabd measurement is a feasible and viable alternative for Pabd measurement in patients where rectal Pabd measurements are unreliable.

Disclosures

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