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# CAN THE VALSALVA MANOEUVRE BE STANDARDISED?

## Aims of Study

The valsalva manoeuvre is used in everyday clinical practice in the assessment of patients with incontinence and pelvic organ prolapse. It also forms the basis of many research investigations such as measurement of bladder neck mobility and diagnostic imaging of the pelvic floor. The first part of this study examines whether the valsalva manoeuvre is reproducible by the same patient, or within a given population. The second part of the study is involved in the assessment of a new prototype device called a valsalvometer.

## Methods

This research was carried out within a tertiary referral urogynaecology centre in the United Kingdom. The study group comprised of women who were undergoing routine urodynamic assessment. During the first experiment, each patient was given an identical verbal request to produce abdominal straining, thus achieving a valsalva manoeuvre. This request was made three times in both supine and erect positions. The change in intra-abdominal pressure was measured both rectally using an air filled balloon, and intravesically by a microtip pressure transducer.

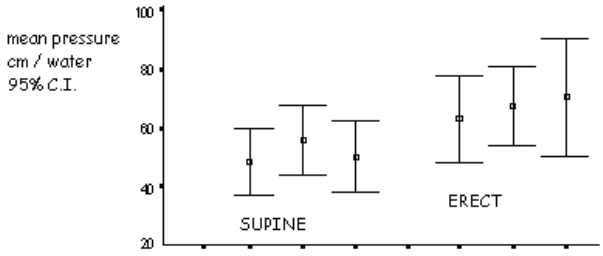
The experiment was repeated in the same way, but substituting a verbal instruction with a device called a valsalvometer. Each patient in this group were asked to blow forcefully into the mechanism and the pressure changes were again measured with both rectal and intravesical transducers. As with the verbal instruction this procedure was carried out three times, both in supine and erect positions.

## Results

A total of 45 patients were included in this study. Figure 1 below shows the reproducibility of pressure changes during valsalva initiated with verbal instruction (n = 20). The confidence intervals show that women vary considerably in the abdominal pressures they generate when given identical verbal instructions. In each position, the mean pressure changes for the first, second and third manoeuvres are not statistically different from each other (paired t test / $p<0.05$). It can also be seen that generally pressure changes when erect are greater than those in the supine position.

**FIGURE 1**

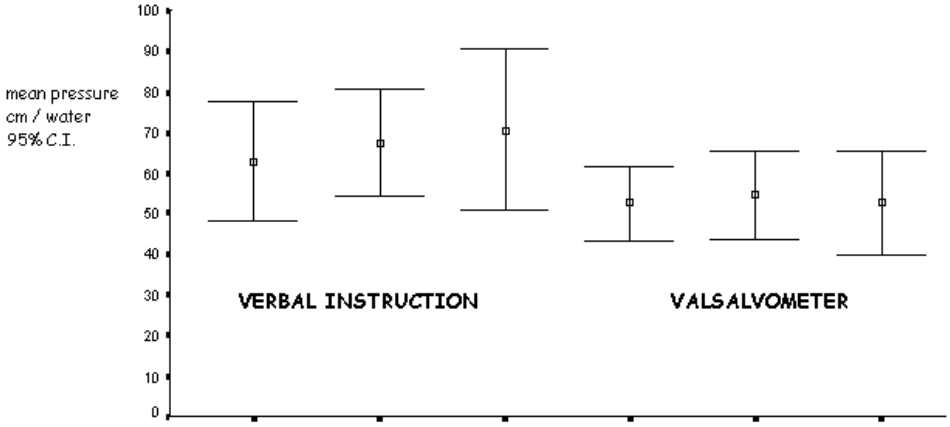
**INTRAVESICAL PRESSURE CHANGES - VERBAL INSTRUCTION**




The results shown in figure 2 are mean intravesical pressures obtained with 95% confidence intervals (n=25). The results of the standard verbal instruction are compared to those obtained with the new valsalvometer. On average, using the valsalvometer in the erect position results in a 29% reduction in the variability of intra-abdominal pressure recorded during straining ($p<0.05$).

FIGURE 2

INTRAVESICAL PRESSURE CHANGES - ERECT POSITION




## Conclusions

This preliminary study shows that there is substantial variation in the intra-abdominal pressure generated during the valsalva manoeuvre. This is an important observation because many research studies use the valsalva manoeuvre as a standard against which other measurements are made. This investigation also shows that the variability in pressure during verbal instruction valsalva could be reduced with the use of the valsalvometer device. Work is in progress to assess an improved design valsalvometer to further reduce intra-abdominal pressure variability.