

DEVELOPMENT OF A URODYNAMIC TRAINER

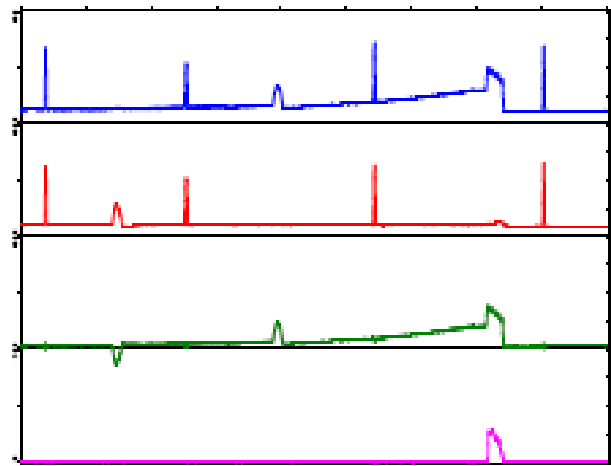
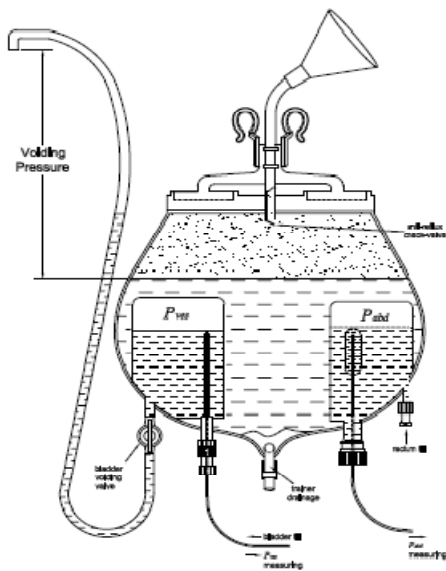
Hypothesis / aims of study

To create a "trainer" that could be used to teach students the basic principles and concepts underlying standard urodynamic testing, as well as to teach some of the skills required to perform these tests using modern computerized urodynamic testing equipment.

Study design, materials and methods

At the onset of the project, criteria were set for the trainer as follows: it must work with water-filled and air-charged catheters; relatively normal bladder and abdominal pressures should be measured at the onset of the study; Pves and Pabd must be independent; the trainer should generate relatively normal tracings during the filling process; and it should generate relatively normal tracings during the voiding process. A trial and error experimental method was employed. Various balloons, plastic bags, connecting tubes, and designs and were tried, before a working prototype could be created.

Results



Sample tracing of the urodynamic trainer

Interpretation of results

The sample tracing above shows relatively normal Pves and Pabd values at the onset. A simulated "cough" is produced as the study begins; it shows spikes in the Pves and Pabd tracings, with little or no effect on Pdet. A rectal contraction is simulated, followed by another "cough"; then a bladder contraction is simulated followed by another cough. One problem can be noted: the Pves rises slowly and steadily as the study progresses. The "bladder" that has been created in the trainer has a low compliance. We have not, as yet, found a readily material with the flexibility and compliance of normal bladder tissue. At the conclusion, a somewhat spiky flow was generated with appropriate elevations in Pves and Pdet.

Concluding message

A trainer has been successfully developed that can be used to assist in the education of students learning basic urodynamic principles and testing. Improvements are ongoing.

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