Normal defecation event follows voiding-defecating-voiding (VDV) pattern in both women and men: Study highlights role of voiding in the closing phase of the defecation reflex

Scan to PARTICIPATE

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Background

This pilot study investigates the two systems functional relationship during the natural process of urine/stool elimination focusing on the role of voiding in the closing phase of defecation reflex as mature defecation and voiding under the normal conditions always occur simultaneously.

Rectal distention (flux stretch receptors)
Afferents via pelvic nerve
Central integration (Spinal defecation/micturition center (S2-S4) Pelvic organ stimulation center (POSC) Cerebral cortex (voluntary command)
Parasympathetic efferents Sympathetic inhibition Somatic (pudendeal nerve to EAS/EUS)
Motor response (Rectal/Bladder contraction, Internal sphincter relaxation, External sphincter relaxation (voluntary), Valsalva maneuver/Pelvic floor muscles relaxation
Simultaneous defecation and micturition

Fig 1. Organization of excitatory pathway to simultaneous activation of voiding with defecation.

Methods

Research question was formulated to define a common pattern of a simultaneous stool and urine evacuation emphasizing voiding at the end of the defecation process: "Do you *void (pass some urine) after defecation*". Participants observed the act while on toilet in comfort of their home and reported when confident to answer. Observation was done when the participant felt a "normal" urge/desire to defecate. International Consultation on Incontinence (ICIQ)- Lower Urinary Tract Symptoms (LUTS) and Fecal Incontinence score (Wexner scale) questionnaires were used for assessment of the bladder/bowel control health.

Results

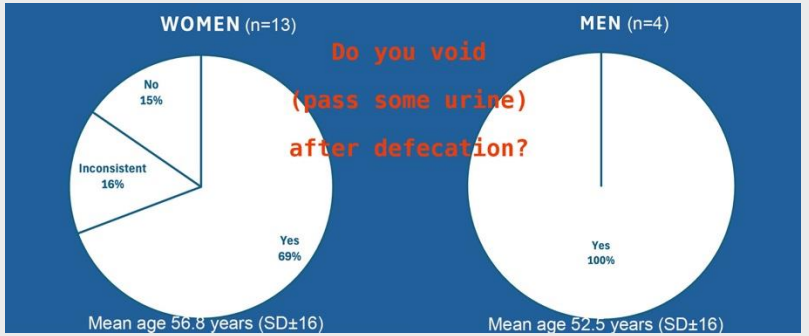

Fig 2. Study preliminary results showing prevalence of self-reported voiding-defecating-voiding (VDV) pattern during normal defecation process in the general adult population.

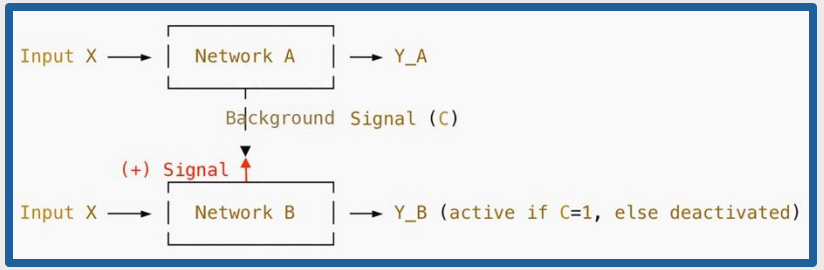

Fig 3. Hypothetical model of lower urinary tract (LUT)/lower bowel tract (LBT) neural networks' dynamics underlying execution of network B.

Conclusions

1) Findings suggest supporting role of voiding in processing of defecation activation and deactivation.
2) Voluntary defecation under the normal conditions is always functionally coupled with voiding.
3) Disruption or dissociation of neural pathways at any level may cause varied LUT/LBT dysfunctions such as incontinence.
4) Recognition of the VDV pattern can both aid in detecting LUT/LBT dysfunction and guide targeted training for recovery.