



The abdominal pressure theory of stress urinary incontinence—questioning validity

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I read Dr Bergstrom's recent publication with interest and from a specifically scientific perspective. His "urethral hanging hypothesis" (UHT) [1] mimics the Integral Theory (IT) that a sound pubourethral ligament (PUL) is key to urethral closure [2]. One difference is Dr Bergstrom (without any experimental proof) proposes PUL as a fracture (his Fig. 1), whereas the IT states PUL "laxity" is due to defective collagen, proven by the application of the mid-urethral sling (MUS), which harnesses the wound reaction of an implanted tape to create new collagen to repair PUL [2].

Another difference is that Dr Bergstrom maintains the accepted dogma that urethral closure is initiated by a rise in abdominal pressure (AP). By using Pascal's law of pressure transmission equivalence as fact, he uses it to dismiss the IT: "as IT rejects Pascal's law, it cannot be considered scientifically sound" [1].

All proponents of urethral closure by abdominal pressure—Bergstrom, De Lancey, Mostwin, and Enhorning—would need to explain how AP closure, which they all propose, explains the following apparent contradictions:

- (1) If a rise in abdominal pressure closes the urethra, why does urine flow increase and not stop on straining (i.e. raising AP) during micturition? We have all observed this from personal experience.
- (2) Kamo et al. demonstrated that "During sneezing, the middle urethral closing response was observed and it still remained after opening the abdomen" [3]. If AP was the mechanism of urethral closure, this would be physically impossible.
- (3) Constantinou and Govan showed that the pressure rise in the mid-urethra on raising AP preceded and exceeded that of the abdominal pressure rise [4]. If the rise in the urethral pressure came from a wave from

the abdomen, such a finding would also be physically impossible.

- (4) Bush's experiment [5] made any AP explanation for closure untenable: "an abdominal pressure two orders of magnitude (100 times) greater was found to be required to forcibly funnel the urethra."

Thus, the integral theory, which states that the closure reflex is due to pelvic muscular reflexes (also supported by Kamo who found that division of the nerves to the pelvic muscles abolished the urethral reflex and induced SUI) [3], is the only scientifically supported and as yet non-invalidated theory.

References

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