

Perineal surface electromyography does not typically demonstrate expected relaxation during normal voiding. Kirby AC, et al. Neurourol and Urodynam 2011 30(8):1591-1596.

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Background and method

Study was done during urodynamics with external patch electrodes on the external anal sphincter (EAS). They call them "perineal" but it appears they really were perianal.

Study points out that the best measure of the urethral sphincter is the needle electrodes and then reviews the thoughts that needle and external patch are considered to be interchangeable. But this study seems to point to the fact that they cannot be. Bottom of page 7 to top of page 8 in discussion supports this. Would be interesting to redo the study with needle.

Study was done to determine if this measure - lack of relaxation of the EAS during voiding urodynamics could be used as a predictor for those patients who would have post operative dysfunctional voiding.

Page 3 describes the placement of the EMG electrodes

- "at the time of the rectal catheter insertion" - would the presence of the rectal catheter change the function of the EAS
- "1 to 3 cm from the anus" - ??? 3 cm is more than a thumb width away, was this reading the gluts?

Very detailed collection of EMG data on page 4. Statical analysis on page 5 points out one of the troubles in comparing EMG data and states they used each patient as her own baseline. This decreases the influence of confounding factors such as adipose tissue, hair, and skin resistance which can vary from patient to patient and result in differences in EMG signal.

Bottom of page 5 has a good review of the percent of patients with various voiding dysfunctions. Just good for pelvic PTs to know as they will be in our clinic.

321 tests with only 131 (41%) that had all EMG time-points. Shows the difficulty of getting it correct every time. The test is not perfect.

Very strict criterion for end point - post operative voiding dysfunction - surgical revision or 6 months of catheter use. Maybe patients we see are not so sever.

Results

EMG signals from the external anal sphincter during voiding are greater than during filling.

- So it appears the anal canal contracts while the urethral sphincter is relaxing?
- It is important to remember these muscles could contract and relax separately - men do it all the time while voiding in standing

Also seems there was no difference in baseline between standing (CMG baseline) and sitting (PFS baseline)

Table 3 is so interesting

Perianal EAS EMG activity increased more during voiding than during filling in more than 50% of pts

Limitations of the study

- they measured the EAS and maybe the gluts
- page 8 admits no standardization of electrode placement - it does not matter that the patient served as their own control if you are measuring the wrong muscle
- authors do admit perianal electrodes did not measure urethral activity
- possible artifact of squeeze with discomfort of the test
- many UDS studies not included due to technical problems

Conclusion - perianal surface EMG does not measure urethral relaxation during void and does not predict post operative voiding dysfunction - I wonder if needle would or there are other factors occurring during the surgery.