

**Abstract Reproduction Form B-1**

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Title (type in CAPITAL LETTERS)	ULTRASTRUCTURE OF THE TRIGONE AND ITS FUNCTIONAL IMPLICATIONS

Aims of study: To investigate the ultrastructure of trigonal smooth muscle, correlate it with normal function, and identify changes it may undergo with voiding dysfunction.

Methods: 20 men (median age 66 years) with low-stage prostatic carcinoma, 10 with and 10 without bladder outlet obstruction, were selected by comprehensive urodynamic evaluation. Biopsy of the trigone (= superficial trigone) was performed at radical prostatectomy, and processed for electron microscopic study by standard procedure. All specimens (1001 photomicrographs) were evaluated without prior knowledge of the urodynamic data by 2 examiners. The findings were compared to the previously described ultrastructure of the normal and dysfunctional detrusor [1].

Results: One obstructed and 3 unobstructed bladders had impaired detrusor contractility, and 1 obstructed bladder had detrusor overactivity. Smooth muscle of the trigone were more compactly organized than detrusor, as smaller bundles and fascicles with less collagen and much more elastic tissue components. The muscle cells had no or rare intermediate junctions that mediate mechanical cell coupling in the detrusor, but were predominantly adjoined by close cell appositions that propagate electrical cell coupling. Smooth muscle of most biopsies had widespread or focal features characteristic of the aged detrusor. None, however, had the features previously associated with the obstructed detrusor, or the detrusor with impaired contractility. Our findings had a striking similarity to the previously described ultrastructural feature of the ureteral muscularis [2].



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Conclusions: The trigone does not participate in structural bladder changes associated with voiding dysfunction. It seems to have a supportive role in normal micturition, mooring the terminal ureters to the bladder base to allow efflux and guard against reflux of urine. Activation of its volume and tension sensory receptors may trigger or contribute to some micturition reflexes in both storage and voiding phases of micturition, and may be related to normal or abnormal perception of urge.

References:

- [1] Functional pathology of urinary bladder muscularis: the new frontier in diagnostic uropathology. *Seminars in diagnostic pathology* 10: 314-354, 1993.
- [2] Ultrastructure of smooth muscle cells in the urinary system. In: *Ultrastructure of Smooth muscle*. Boston, Kluwer Academic Publishers, 1990, pp 1-22.