

Lymphology 29 (1996) 60-66

STRUCTURE OF THE LYMPHATIC MICROCIRCULATION IN THE HUMAN URINARY BLADDER WITH DIFFERENT INTRALUMINAL PRESSURE AND DISTENSION

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ABSTRACT

The localization, morphology and fine structure of initial lymphatic vessels in the mucosa of the empty and distended urinary bladder were studied. Endoscopic transurethral biopsies of the empty (collapsed) bladder showed under light and electron microscopy numerous intramural lymphatics with a dilated lumen and thin profile. Contacts between endothelial cells were single, overlapping, interlocking, and open while the perivascular connective tissue was filled by fascicles of collagen fibers. In the most superficial layer (subepithelial mucosa), lymphatics were not seen. Biopsies obtained under elevated intraluminal pressure and distension showed on light and electron microscopy lymphatic vessels with small lumens characteristically reduced to irregular slits. Endothelial cell contacts were simple or overlapping; open junctions were rare. The perivascular connective tissue was dense and collagen and elastic fibers often abutted one another. These findings support that with a distended or expanded urinary bladder, the effect of increased intraluminal pressure on the superficial (mucosal) layer radially pulls on the connective tissue that in turn compresses the initial lymphatics thereby restricting lymph transport.