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THE PREVALENCE OF CYSTIC PARAURETHRAL STRUCTURES IN ASYMPTOMATIC WOMEN AT ENDOVAGINAL AND PERINEAL SONOGRAPHY

Introduction: Previous studies evaluating urethral diverticula have concerned symptomatic women or described post mortem and surgical data [1-3]. Earlier radiological studies relied on invasive contrast studies which demonstrated paraurethral cystic structures where a urethral communication existed [2]. The prevalence of urethral diverticula or their pre-rupture equivalent is unknown in asymptomatic women although estimates have ranged from 1% to 6% [1,3,4].

Aim: In this study we prospectively determined the prevalence of paraurethral cystic structures in a large cohort of consecutive asymptomatic women using endovaginal (EVUS) and perineal sonography.

Methods: One hundred and forty consecutive women undergoing EVUS for symptoms unrelated to the urinary tract were prospectively recruited. Irrespective of the indication for ultrasound each patient was specifically questioned and denied any lower urinary tract symptoms. Ultrasound imaging was performed using either a Toshiba Powervision apparatus with a 6.0 - 8.0 MHz endovaginal transducer or a Toshiba SSD270 system with a 6.0 MHz transducer. Images of the urethra were obtained using endovaginal "pull-out" or transperineal techniques [5,6]. The pull-out view is a modification of EVUS for demonstrating the vaginal vault and urethra [6]. The transducer is withdrawn to just within the introitus and angled anteriorly to demonstrate the urethra and paraurethral structures. Transperineal ultrasound is performed using a variable frequency linear array transducer. The sheathed probe is applied directly to the perineum anterior to the vagina. Using either technique, images are obtained in the coronal and / or sagittal planes. In accordance with what we consider to be sensible practice for the display of endovaginal sonographic studies all endovaginal images are inverted to correspond to the orientation of the patient.

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Results: The urethra was demonstrated as a narrow hypoechoic funnel-like structure tapering from bladder base to the perineal surface. The urethral walls appeared to be unopposed for much of their length in both sagittal and coronal planes. Small hypoechoic leashes of paraurethral vessels were identified in the coronal plane in some subjects. Colour flow Doppler was performed to differentiate these vessels from the early stages of diverticulum formation. Of the 140 women examined (mean age 41, range 18- 60 years), 4 (2.9%) were found to have asymptomatic paraurethral cystic structures lying lateral to the urethra in the coronal plane. The mean diameter was 10mm (range 6 -15 mms). These structures appeared hypoechoic or contained low level echoes. A true sagittal plane is usually not possible to demonstrate these lesions and the urethra on a single image. No Doppler signals were demonstrated within these structures. Communication with the urethra was not convincingly demonstrated in any case.

Conclusion: This is the first prospective consecutive sonographic study to determine the prevalence of asymptomatic paraurethral cystic structures. Our results are in accordance with post mortem and surgical series which have indicated that asymptomatic diverticula are common and present in 1-6% of women [1,4,7]. We have found that the pull-out technique at EVUS and the perineal translabial approach provide excellent definition of the urethra, bladder neck and paraurethral structures. Small proximal structures however, are better imaged with a perineal approach using a linear array transducer rather than the EVUS technique because of the superior near field resolution of linear array transducers. A 7.5MHz linear array transducer is usually sufficient to demonstrate the urethra but a lower frequency will often be required to image the bladder base. Although a variable frequency probe is ideal, a small footprint transducer is preferable. Long footprint linear array transducers may be awkward for obtaining coronal images due to problems with adequate contact when scanning the perineum in this plane.

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