

## NEUROUROLOGY & FEMALE UROLOGY

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### **What Are the Supportive Structures of the Female Urethra?**

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**Aims:** Female stress urinary incontinence is thought to result from impairment of the connective tissue “ligaments” of the urethra. Surgical repair of female incontinence mainly involves fixation of the urethra to the pubic bone or other surrounding structures. In the present anatomical-radiological study, the anatomy of the connective tissue structures around the female urethra was investigated to determine the anatomical structures that support the urethra and the rhabdosphincter.

**Materials and Methods:** The topography of the anterior compartment of the female pelvis was studied in serial sections and one anatomical preparation of 30 female fetuses and of six adult females. The pelves of 29 female fetuses were processed according to plastination histology technique. The pelves of the six adult specimens were processed according to sheet plastination technique. In addition, the anatomical findings were compared with MR images of 41 adult female volunteers.

**Results:** The ventro-lateral aspect of the urethra remains free of fixating ligaments throughout its pelvic course. Ventro-laterally the urethra is enclosed by the ventral parts of the levator ani, its fasciae and a ventral urethral connective tissue bridge connecting both sides. Dorsally, the urethra is intimately connected to the wall of the vagina.

**Conclusions:** The female urethra has no direct ligamentous fixation to the pubic bone. Urethral continence after pregnancy and childbirth may be explained by a widening of the hiatus of the levator ani or the anterior vaginal wall, resulting in overstretching of the ventral urethral connective tissue bridge or the disruption of the fixation between urethra and vagina.

### **Editorial Comment**

The authors analyze the anatomy of the female urethra with regards to the support of the urethra and rhabdosphincter. This was accomplished through analysis of the pelves of 30 female fetuses and 6 female adults. The authors find that there is no pubourethral ligament attaching the urethra to the pubic bone; instead the tissues attaching the pubic bone to the bladder neck are mostly tissue containing smooth muscle cells. In addition, the dorsal end of the rhabdosphincter is connected at its dorsal end through a strong connective tissue fixation to the ventral wall of the vagina. The neurovascular bundles are identified in the dorsal lateral pelvic wall in the ventral lateral aspects of the urethra.

This excellent article is extremely well written with beautiful anatomical pictures. That the investigators were not able to find the existence of any true pubourethral ligaments helps explain the ability of a patient to continue with urinary continence after a transvaginal urethrolisis, especially one utilizing the suprameatal transvaginal technique (1). That the authors found that the neurovascular bundles ran in the dorsal lateral pelvic wall on the lateral and ventral aspects of the urethra may explain a potentiality for sexual dysfunction after formal urethrolisis. There is an excellent discussion with regards to 3 supportive structures of the urethra and rhabdosphincter, which were identified, and the pathologic effects on same, which may lead to voiding dysfunction.

## Reference

1. Petrou SP, Brown JA, Blaivas JG: Suprameatal transvaginal urethrolisis J Urol. 1999; 161: 1268-71.

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## **How do the Prevalences of Urogenital Symptoms Change During Pregnancy?**

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**Aim:** The aim of this study was to report the changes in prevalences of urogenital symptoms during pregnancy and to evaluate the amount of bother nulliparous pregnant women experience from these symptoms.

**Methods:** We have used a prospective longitudinal cohort study design. Five hundred fifteen nulliparous women with a singleton pregnancy were recruited from 10 midwifery practices between January 2002 and July 2003. The women received postal questionnaires. Urogenital symptoms were assessed with the Dutch version of the standardized and validated Urogenital Distress Inventory (UDI). We analyzed our data on item level and on the clustering of items.

**Results:** The prevalences of the frequency and urgency symptoms are high at 12 weeks (74% and 63%) and remain stable during pregnancy. The prevalences of urinary incontinence and voiding difficulties increase with gestational age. Frequency disappears in 12% in late pregnancy, urgency in 22%, and stress incontinence in 23%. The prevalence of bothersome frequency symptoms is much higher than of urinary incontinence (21% compared to 6%). All UDI subscales increase significantly during pregnancy.

**Conclusions:** Urogenital symptoms occur in almost all women during pregnancy. Whereas the prevalence of overactive bladder symptoms is high and remains stable from early pregnancy on, the prevalences of urinary incontinence symptoms increase with gestational age. Despite the high prevalences of symptoms, the majority of women report not to be bothered by it.

## **Editorial Comment**

The authors study a large number of women during their first pregnancy and quantify both the prevalence and level of bother of the voiding symptoms that developed during this period. The investigation found that by twelve weeks of pregnancy, urgency and frequency had been identified and this symptom remained stable during pregnancy. In contrast, the incidence of urinary incontinence increased as the pregnancy matured. The authors concluded that though almost all women in pregnancy have some voiding dysfunction and the prevalence of overactive bladder symptoms is quite high from early on, the majority of women are not bothered by these symptoms.

That nulliparous women have a known rate of voiding dysfunction is well known and quoted by the authors of this manuscript. Perhaps the pregnant women of this study felt almost no bother from their urinary symptoms secondary due to the understanding that this was a self limited phenomena that would cease because of: it was the miracle of childbirth; or, the life changes and challenges associated with a maturing pregnancy reduced voiding dysfunction to a lower priority on the list of physical, mental and situational events that may affect and bother the pregnant female. A clear message from this article is that almost all women who are pregnant will have some kind of voiding dysfunction with urge and frequency starting early and urinary

incontinence continuing to worsen as the pregnancy continues; nevertheless, the physician probably will not be challenged to find a solution to this problem for the pregnant woman does not view it as a significant bother.

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## **PEDIATRIC UROLOGY**

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### **Antegrade Scrotal Sclerotherapy for Treating Primary Varicocele in Children**

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**Objective:** To evaluate the effectiveness and limitations of antegrade sclerotherapy (AS) for the treatment of primary varicocele in childhood.

**Patients and Methods:** From December 1996 to December 2004, 88 patients (mean age 13.3 years, range 9-18) with primary varicocele underwent AS (91 varicocele ablations in all). The indications for surgery were testicular pain (16 boys, 18%), a large varicocele with cosmetic implications, testicular hypotrophy (one) and in 71 (81%) the varicocele was detected incidentally during a routine physical examination; all were left-sided. According to the classification used by Tauber, 46 (52%) varicoceles were grade II and 42 (48%) grade III. The clinical and ultrasonography (US) results were evaluated over a median (range) follow-up of 11 (3-60) months, and the operative duration, X-ray exposure time, persistence rate of varicoceles and complications were compared with those using other techniques. **RESULTS:** In 11 patients there was a palpable difference in size between the testicles, but in only five (6%) was testicular hypotrophy (testicular volume (< 75% testicular volume vs the normal side) confirmed by US. The mean (SEM) operative duration for AS was 33.2 (2.14) min. In 16 (18%) patients it was necessary to expose a second or third vein because the first vein chosen was unsuitable for sclerotherapy. The mean operative radiation exposure was 2.18 (0.21) s. One patient (1%) was treated with a high ligation of the testicular vein (Palomo procedure) after initial unsuccessful AS, and was excluded from the analysis. Eighty-four (97%) patients were eligible for follow-up: six (7%) had a persistent varicocele (four grade II, two grade III), four of whom had repeat sclerotherapy successfully (no recurrence at follow-up). Fourteen (15%) patients had enlarged testicular veins only on US (varicocele grade 0). No patient developed a hydrocele after AS. There were complications after surgery in three (3%) patients (two superficial wound infections, one scrotal haematoma together with focal testicular necrosis).

**Conclusions:** AS is an efficient minimally invasive surgical method for correcting varicoceles in older children, although the operative duration is sometimes longer than in adults, and surgery can be more difficult because of the smaller veins. Partial testicular necrosis, despite correct AS, is a very rare but serious complication.

### **Editorial Comment**

This paper provides more data on a new, innovative and “minimally invasive” treatment for varicocele. The technique, which uses a short time of fluoroscopy to assess venous drainage and a venous injection of a sclerosing agent, should be associated with minimal postoperative morbidity.