A transvesical approach to müllerian duct remnants

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Abstract  Surgical extirpation is the treatment of choice for symptomatic müllerian duct remnants (prostatic utricle, PU), and several surgical approaches have been described for the treatment of this pathology. A group of 11 patients with symptomatic PU were observed and treated. Associated anomalies included proximal or penoscrotal hypospadias in all patients and cryptorchidism in 9 (81.8%). In all cases the PU needed surgical correction, as the patients had recurring symptomatology. Surgery was carried out transvesically in 10 (91%) cases and in 1 a perineal approach was used. There were no surgical complications, and at follow-up all patients showed complete resolution of the symptoms. We believe the transvesical approach, compared to other techniques, is more advantageous in the treatment of this pathology, as it permits excellent exposure, ease of surgery, good reconstruction, and good functional results with no sequelae.

Key words  Prostatic utricle • Posterior hypospadias • Transvesical approach • Urinary tract infection

Introduction  Although pathology related to müllerian duct (MD) remnants is not often encountered in clinical practice, the association between posterior hypospadias, cryptorchidism and prostatic utricle (PU) is a triad that was identified many years ago [4, 10, 19]. The small number of cases that have been reported may be explained by incomplete diagnostic studies of severe hypospadias, both before and after reconstruction of the urethra [15].

<table>
<thead>
<tr>
<th>Table 1  Symptoms in patients with prostatic utricle who underwent surgery</th>
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<tr>
<td>No. of patients</td>
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<tr>
<td>Urinary tract infections (UTI)</td>
</tr>
<tr>
<td>Orchiepididymitis + UTI</td>
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<td>Incontinence due to trapping</td>
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<td>Total</td>
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We report our experience in the treatment of this pathology via a transvesical approach and describe the clinical presentation and diagnostic and therapeutic complications associated with it.

Materials and methods  The charts of 11 patients with PU who underwent surgery from 1978 to 1994 were reviewed. All these patients had severe hypospadias, perineal in 7 (63.6%) and penoscrotal in 4 (36.3%). The karyotype was determined before hypospadias reconstruction in all patients, and in all cases 46, XY was found.

PU was diagnosed in all cases after hypospadias reconstruction; the diagnosis was made on the basis of the clinical symptomatology (Table 1) and a voiding cystourethrogram (VCU) that showed an abnormal PU. In association with the hypospadias and PU, 4 patients (36.3%) had bilateral and 5 (45.4%) had unilateral cryptorchidism. The mean age at surgery was 37.6 months and the mean weight was 18.6 kg. Surgery was performed transvesically in all cases except the 1st, in which removal of the PU was carried out perineally. All patients were studied clinically and radiologically at follow-up (VCU, IV urography).

Results  Early or late postoperative complications (mean follow-up: 46 months) were not encountered in any of our patients. Pathology studies of the 11 PU remnants submitted for examination showed that 6 (54.5%) were lined with cuboidal or low columnar epithelium and 5 (45.5%) with strati-
Fig. 1a Preoperative voiding cystourethrogram (VCUG) showing prostatic utricle in a patient who underwent posterior hypospadias repair. b Postoperative voiding VCUG after utricular surgery. Note absence of utricular remnants and dilatation of penile urethra.

Fig. 2a Intraoperative view of prostatic utricle approached by transvesical route. Note good exposure of operative field and utricle. b Operative field with residual utricular cavity and vas.

fied squamous epithelium. No areas of metaplasia were noted. At surgery, some anatomic peculiarities such as transutricular insertion of the vas deferens were found in 6 (54.5%) patients, and we therefore performed an antireflux vasocystostomy. The prostate appeared smaller than expected, and the enlarged utricle joined the urethra at the level of the verumontanum proximal to the external sphincter in all cases but 1. In this case (9%) the PU was subspincteric.

At 6-month follow-up, all patients, showed complete resolution of their symptomatology, and VCU showed minimal or no residual utricular stump (Fig. 1).

Discussion

All normal males have vestiges of regressed MDs, represented by the appendix testis and the cranial vault of the PU, and the presence of these structures by no means indicates an intersex problem [5].

Although the embryogenesis of the PU is still unclear, Glenister suggested that its organogenesis has mixed origins: müllerian and wolffian [7]. In careful embryologic studies in male human embryos, he recognized the utricular plate, a solid epithelial cord arising from the fused tips of the MDs. At 4 months of fetal age (65 mm) bilateral solid cords of urogenital sinus (UGS) epithelium grow into the utricular plate and eventually meet, fuse, and join. A lumen appears in this cord at 5 months, forming the hollow utricle, which is clearly of mixed origin, its cranial portion being from the MDs (squamous cell epithelium) and the caudal segment from the Wolffian duct and UGs (cuboidal and transitional epithelium). As is well known, sexual differentiation is initially an endocrinologic phenomenon, and androgens undoubtedly play an important role [1].

In order to understand the embryology of the PU, the formation of the fetal internal genitalia between the 7th and 12th weeks of life should be taken into consideration. During this stage there is a synergistic action of two basic substances in the masculine development of the fetus: müllerian inhibiting factor (MIF) secreted by testicular Sertoli cells and testosterone secreted by Leydig cells. Secretion of MIF begins immediately after testicular differentiation, antecedent the appearance of Leydig cells, and is the first histologic sign of MD regression. MIF is non-