



## The Use of Tamsulosin in Voiding Cystourethrograms for Pelvic Floor Urethral Distraction Injuries

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### ABSTRACT

**Purpose:** To analyze the utility of tamsulosin in patients with pelvic floor urethral distraction injuries (PFUDD) undergoing voiding cystourethrograms (VCUG) to assess the posterior urethra for length of the distraction defect.

**Materials and Methods:** A prospective randomized analysis of 107 patients with PFUDD who underwent VCUG from August 2007 to September 2011 at our tertiary referral center for urethral stricture. Patients were randomized into 2 groups. A dosage of 0.4 mg of tamsulosin, a potent selective alpha-blocker, was administered orally to patients in the study group (N = 53) undergoing VCUG in whom the posterior urethra was not delineated due to competency of the bladder neck. A repeat voiding film was taken 10 to 12 hours after administering tamsulosin. The control group (N = 54) did not receive tamsulosin. Instead, they underwent further diagnostic techniques (magnetic resonance imaging [MRI], bougiogram, and antegrade cystourethroscopy) to assess the distraction defect.

**Results:** Out of the 53 patients in the study group all 53 patients responded to oral tamsulosin. In the control group 32 patients required MRI, 20 patients required antegrade cystourethroscopy, and 2 patients required bougiograms.

**Conclusion:** Tamsulosin effectively relaxed the bladder neck and allowed the delineation of the posterior urethra in patients of PFUDD with a competent bladder neck. This prevented the patients from undergoing further invasive diagnostic techniques (bougiogram and antegrade cystourethroscopy). Further prospective studies with a larger number of patients with multicenter experience will be required to validate these results.

### INTRODUCTION

Traumatic injuries to the urethra occur in approximately 10% of patients who suffer pelvic fractures. In patients with pelvic floor urethral distraction injuries (PFUDD) the assessment of the distraction defect length can be difficult. We have described an easy method to overcome this commonly encountered problem of non-visualization of the posterior urethra during voiding cystourethrograms (VCUG) by the use of tamsulosin, which is commonly used by all urologists. PFUDD is treated surgically by the progressive perineal approach consisting of several well-defined surgical steps. The need for each step,

in turn, is predictable according to the length of the defect. Therefore, preoperative estimation of the distraction defect length is extremely important to plan the extent of the surgery preoperatively.

### PURPOSE

To analyze the utility of tamsulosin in patients with PFUDD undergoing voiding VCUG to assess the posterior urethra for length of the distraction defect.

**KEYWORDS:** Tamsulosin, VCUG, distraction defect

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## MATERIALS AND METHODS

A prospective randomized analysis of 107 patients with PFUDD underwent VCUG from August 2007 to September 2011 at our tertiary referral center for urethral stricture. Only patients whose bladder neck did not open on VCUG were included in this study. Patients were randomized into 2 groups. A dosage of 0.4 mg of tamsulosin, a potent selective alpha-blocker, was administered to patients in the study group (N = 53) undergoing VCUG in whom the posterior urethra was not delineated due to competency of the bladder neck. A repeat voiding film was taken 10 to 12 hours after the administration of tamsulosin. The method of analyzing the distraction defect in these patients was performed using simultaneous antegrade and retrograde urethrograms when the patient was asked to try and void in order to delineate the posterior urethra. No additional contrast was used or diuretics given.

The control group (N = 54) did not receive tamsulosin. Instead they underwent further diagnostic techniques (magnetic resonance imaging [MRI], bougiogram, and antegrade cystourethroscopy) to assess the distraction defect. The method of randomization was that alternate patients were allotted to the study and control groups.

## RESULTS

Out of the 53 patients in the study group all 53 patients responded to oral dosages of tamsulosin. In the control group 32 patients required MRI, 20 patients required antegrade cystourethroscopy, and 2 patients required bougiograms. Of the control group, 26 patients required anesthesia (22 patients for undergoing cystourethroscopy and 4 patients for MRI) while none of the patients in the study group required it. Of the control group, 2 patients developed urinary tract infection (UTI) following cystourethroscopy while none developed UTI in the study group.

The age of the patients in the study ranged from 10 to 47 years. All the patients were male. The site of urethral injury was the posterior urethra in all patients. No serious side effects due to the orally administered drug were noticed in the study.

## DISCUSSION

An assessment of the gap between the 2 ends of the urethra after posterior urethral injuries is important. In patients with a competent bladder neck the prostatic urethra is not opacified with the contrast inserted through the suprapubic catheter (Figure 1). The bladder neck region is richly innervated with alpha 1a autonomic receptors, which on stimulation increases bladder outlet resistance. Alpha-blockers relax the bladder neck and decrease bladder outlet resistance [1], allowing the contrast to enter the posterior urethra (Figure 3). Tamsulosin

Figure 1. Voiding cystourethrogram.



is an alpha antagonist with a modest degree of selectivity for the alpha 1a receptor [2]. The half-life of tamsulosin after an oral dose is 14 to 15 hours [3,4]. Tamsulosin is one of the commonly prescribed drugs, and most of the current urologists are well versed with the clinical usage of the drug. The side effect profile of tamsulosin is excellent. Postural hypotension is rarely seen with this selective alpha-blocker. Failing this technique, alternate methods include simultaneous antegrade and retrograde bougiograms or antegrade cystourethroscopy suprapubically [5], which requires anesthesia. Overfilling the urinary bladder with contrast through a suprapubic catheter is also attempted in some centers. MRI has also been used but the cost of this investigation is markedly higher. The average cost of tamsulosin tablets used in the study is \$0.11 while the cost of an MRI is approximately \$67.00 ( $P$  value = 0.00).

Of the control group, 26 patients required anesthesia (22 patients for undergoing cystourethroscopy and 4 patients for MRI) while none of the patients in the study group required it

Figure 2. Retrograde urethrogram.



Figure 3. Voiding cystourethrogram after tamsulosin.



( $P$  value = 0.00). All 26 patients requiring anesthesia required hospitalization. Of the control group, 2 patients developed UTI following cystourethroscopy while none developed UTI in the study group ( $P$  value = 0.499). The  $P$  value was calculated using the chi square test, and a  $P$  value < 0.05 was significant.

The purpose of all these investigative modalities was to assess the length of the distraction defect accurately. No study using tamsulosin for the purpose of assessing the length of distraction defect has been undertaken to date.

## CONCLUSION

Tamsulosin effectively relaxes the bladder neck and allows the delineation of the posterior urethra in patients of PFUDD with a competent bladder neck. This prevents the patients from undergoing further invasive diagnostic techniques (bougigram and antegrade cystourethroscopy). Further, prospective studies

with a larger number of patients with multicenter experience will be required to validate these results.

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