

## Flexible cystoscopy a valuable diagnostic tool for lower urinary tract pathology

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### Abstract

**Objective:** To assess the role of flexible cystoscopy in the diagnosis of lower urinary tract pathologies and its suitability as a routine diagnostic protocol in outdoor patients.

**Methods:** The quasi-experimental study was conducted at the Urology Department, Pakistan Ordnance Factory Hospital, Wah Cantt., from June 2009 to June 2010. All adult patients presenting with lower urinary tract symptoms to outdoor department were included on the basis of universal non-probability sampling technique. Cystoscopy was performed as a clinic-based procedure without sedation. SPSS 17 was used for data analysis..

**Results:** Of the 1500 patients in the study, 810(54%) were females and 690(46%) were male. Lower urinary tract pathologies were found in 480(32%) patients. The most common pathology among males was enlarged prostate in 127(8.4%) patients. Among females, urethral stenosis was the most common pathology in 57(3.8%) patients. Transitional cell carcinoma was seen in 57(3.8%) patients having haematuria with inconclusive ultrasound and intravenous urography. All patients tolerated the procedure well.

**Conclusion:** Flexible cystoscopy is an effective, well-tolerated and easy way of detecting lower urinary tract pathologies among outpatients.

**Keywords:** Flexible cystoscopy, Transitional cell carcinoma, Urinary tract pathologies. (JPMA 65: 253; 2015)

### Introduction

Endoscopic examination of the bladder, lower urinary tract and prostate gland is a time-honoured investigation for thorough evaluation.<sup>1</sup> It can also be used to collect urine sample, perform biopsies and removal of small stones. Endoscopy of the urinary tract remains the cornerstone of urological therapy. Over the years, continued refinement of the endoscopic instruments has permitted a progressive increase in the number and methods of their application. Cystoscopy under local anaesthesia has been established as an office-based procedure since 1980s.<sup>2</sup> The development of the smaller diameter, flexible endoscopes represents the greatest advance in urological endoscopy.<sup>3</sup> Endoscopic methods for diagnosis and treatment of urological diseases, the characteristics of their value and their importance for modern urology become evident by the fact that by means of these methods, the basis of which was created 100 years ago with the introduction of cystoscopy,<sup>4</sup> the endoscopic treatment methods have reduced alternatives and carry insignificant complication rate. Most evidence suggests that outpatient cystoscopy is associated with minimal infections risk.<sup>5</sup>

The objective of the current study was to assess the role of

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flexible cystoscopy in the diagnosis of lower urinary tract pathologies and whether it is valuable enough to be used as routine diagnostic protocol in outdoor practice.

### Patients and Methods

The quasi-experimental study was conducted at the Urology Department, Pakistan Ordnance Factory Hospital, Wah Cantt., from June 2009 to June 2010. All patients over 18 years of age presenting with lower urinary tract symptoms to the outdoor department were included on the basis of universal non-probability sampling technique. X-ray of kidney, ureter, bladder (KUB) was done in all patients and those having positive findings were excluded. History was taken in the outpatient department (OPD) and patients were counselled about the procedure. One tablet of oral antibiotic (tab Ciprofloxacin 500mg) was given in the morning on the day of flexible cystoscopy which was performed without any sedation and Lignocaine gel was used as the topical local anaesthetic agent.

Patients with positive findings were further investigated. Presenting complaints were classified in 5 categories, i.e. i) one or more symptoms of bladder outlet obstruction i.e. frequency, urgency, nocturia, dysuria, hesitancy, intermittency and sense of incomplete emptying of bladder; ii) pain in the lower abdomen and dysuria; iii) urinary incontinence; iv) urinary retention; and v) haematuria not associated with flank pain.

Data was analysed using SPSS 17.

## Results

Of the total 1500 flexible cystoscopies performed, 810(54%) comprised females and 690(46%) males. Positive findings were noted in 480(32%) cases. In these patients, X-ray KUB had no positive finding. The most common pathology was enlarged prostate in 127(8.4%) male patients (Table-1). The common presenting complaints were also divided into five categories (Table-2). All the patients tolerated the procedure well, with no procedure-related complaints.

Out of 480 patients with positive findings 254(52%) cases presented with bladder outflow obstruction. On cystoscopy, 113(45%) of these patients were diagnosed as enlarged prostate, 56(22%) as cystitis, 28(12%) as trabeculated bladder, and 14(5%) as vesical calculus, urethral stenosis and urethral stricture.

In terms of presentation, 42(9%) of the 480 patients presented with dysuria and lower abdominal pain out of which 28(66%) were diagnosed as urethral stenosis and 14(34%) as vesical calculus. Besides, 70(15%) patients presented with urinary incontinence out of which 28(40%) were diagnosed as cystitis and 14(20%) each as trabeculated bladder, enlarged prostate and urethral stricture. Further, 43(9%) patients presented with urinary retention out of which 15(34%) were diagnosed as urethral stenosis and 14(33%) each as trabeculated

bladder and bladder growth. Finally, 71(15%) patients presented with haematuria out of which 28(40%) were diagnosed as bladder growth, 15(21%) as cystitis and 14(20%) each as trabeculated bladder and vesical calculus.

Bladder growth of  $\leq 1$ cm size was detected in 57(11.8 %) patients whereas ultrasonography in these subjects was found to be normal.

## Discussion

The introduction of high-quality flexible cystoscope has allowed comfortable examination on walk-in-walk-out basis, using local anaesthetic gel to aid introduction of instrument.<sup>6,7</sup> The use of local anaesthetic has been questioned and there is little evidence that gel insertion decreases pain sensation, especially in females.<sup>8</sup> There has been a considerable increase in the use of flexible cystoscopy and this has led to the criticism that this procedure is being overused with no management benefit.<sup>9</sup>

Lower urinary tract pathologies are grossly divided into two categories, i.e. pathologies related to urinary bladder and pathologies related to urethra. Urethral pathologies most of the time present with symptoms of bladder outlet obstruction and are sometimes not diagnosed on ultrasonography alone. Both pathologies of urinary bladder and urethra can easily be diagnosed by cystoscopy alone. Cystoscopy alone or in combination with excretory urography, or intravenous urography (IVU), is one of the most significant diagnostic tools in young patients with microscopic haematuria.<sup>10-12</sup> Haematuria was the presenting complaint in 17 patients in our study.

With the use of urethroscopy, there is rapid completion of diagnostic workup, and operations for surgical conditions can be scheduled more promptly. The patients included in our study were all those who presented with lower urinary tract symptoms only and who had no pathology detected on X-ray KUB. Instead of waiting for ultrasonography, flexible cystoscopy was performed. There was detection of pathologies in 32% of

**Table-1:** Pathologies detected on flexible cystoscopy.

Pathologies	Frequency	Percentage from Total Sample	Percentage from Positive Pathological Findings
Cystitis	99	6.6 %	20.6 %
Enlarged Prostate	127	8.4 %	26.5 %
Trabeculated bladder	70	4.6 %	14.7 %
Bladder Growth	57	3.8 %	11.8 %
Urethral Stenosis	57	3.8 %	11.8 %
Vesical Calculus	42	2.8 %	8.8 %
Urethral Stricture	28	1.8 %	5.9 %
Total	480	32 %	

**Table-2:** Presenting symptoms of pathologies.

Diseases	Presenting Symptoms				
	Bladder outflow obstruction	Dysuria and pain lower abdomen	Urinary Incontinence	Urinary Retention	Haematuria
Cystitis (99)	56 (56.6%)	--	28 (28.3%)	--	15 (15.1%)
Trabeculated Bladder (70)	28 (40%)	--	14 (20%)	14 (20%)	14 (20%)
Vesical Calculus (42)	14 (33.3%)	14 (33.3%)	--	--	14 (33.4%)
Bladder growth (57)	15 (26.3%)	--	--	14 (24.6%)	28 (49.1%)
Urethral Stenosis (57)	14 (24.6%)	28 (49.1%)	--	15 (26.3%)	--
Enlarged prostate (127)	113 (89%)	--	14 (11%)	--	--
Urethral stricture (28)	14 (50%)	--	14 (50%)	--	--

cases. Another study<sup>9</sup> conducted with flexible cystoscopy in 1390 patients with positive findings in 46.14%. In our study enlarged prostate was found in 26.5% patients. Flexible cystoscopy in these cases ruled out any other pathology in bladder like small growth and carcinoma in situ (CIS), which is not detected on ultrasonography. So, open prostatectomy was performed, in some of these patients who had grossly enlarged prostate not suitable for endoscopic resection. Vesical calculus was found in 8.8% patients and urethral stricture in 5.9%. Our findings correlate with a study<sup>13</sup> which detected prostatic enlargement in 27%, urethral stricture in 13% and lithiasis in 10% patients.

Both flexible and rigid cysto-urethroscopy are routinely used in surveillance of transitional cell bladder tumour.<sup>14</sup> Urethrocytostomy (UCS) is the reference standard diagnostic test in the follow-up of patients with superficial bladder cancer, and flexible cystoscopy is frequently used for follow-up of bladder carcinomas.<sup>15,16</sup> Although by combining ultrasonography and flexible cystoscopy most carcinomas can be diagnosed and abnormalities detected, but there would be a delay in diagnosis due to overburdened radiology department.<sup>11</sup> Bladder growth was detected in 57(11.8%) cases with haematuria. One study<sup>9</sup> showed cancer detection rate of 6.10%. Early diagnosis of patients with bladder growth helped in early management as these patients did not have to wait for ultrasonography. Early resection of tumour was done on the next available elective list.

Newer advancements have made cystoscopy not only a good diagnostic, but a therapeutic tool as well. The incorporation of distal sensor has improved the optical resolution, colour depth without the need of white balancing.<sup>17,18</sup> Due to the widespread use and advantages of cystoscopy, studies are being planned to check the feasibility and cost-effectiveness of flexible cystoscopy on an outpatient or domiciliary basis using a prototype battery-powered flexible cystoscope.<sup>19</sup>

## Conclusion

Flexible cystoscopy is a very effective, well-tolerated, easy way of detecting lower urinary tract pathologies. It can alter the management as well as support the diagnosis and management. It is also helpful in routine surveillance

of bladder tumours of low grade and low stage. Flexible cystoscopy should, therefore, be used as routine diagnostic protocol in outdoor practice.

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